RESPONSE TO NICE INTERVENTIONAL PROCEDURES SECOND REVIEW OF UTERINE ARTERY EMBOLISATION FROM FEmISA PATIENT GROUP

EXECUTIVE SUMMARY

1,007 published papers listed on uterine artery embolisation with 611 new papers since the last review. See Appendix 7 (*page 62*) for a complete listing of these abstracts, the most recent first. NICE has reviewed only 18 papers, although state that these cover 36 papers. FEmISA has reviewed all 611 papers and these show important advances in UFE missed by the NICE review. It is also important to read the full summaries

1. Pregnancy and Fertility – abstracts of important papers Appendix 1 (Page 16)

There are a number of papers that consider fertility rates after UFE and compare these with myomectomy. Originally UFE was not recommended for women wishing to become pregnant, so results from earlier papers may not have been a fair reflection on fertility after embolisation. Ref 8.

12 of the most recent significant studies papers are shown in appendix 1, only 2 of which is included in the NICE review of literature. Early papers are highlighted in purple in appendix 7.

Success from UFE is better than myomectomy in the latest paper, but results vary from paper to paper. Blood loss can be reduced significantly by pre-treating with UFE before myomectomy.

2. Long-Term Outcomes – abstracts Appendix 2 (Page 20)

Many FEmISA members had UFE treatment over 9 years ago. There was little data on the long-term side effects such as effect on age of menopause etc. This is still the case. Most longer-term studies have follow-up at 5 years, but particularly for younger women having UFE more long-term data is needed. FEmISA asks that the Fibroid Registry is funded to enable it to continue to collect data for up to 25 year follow up.

3. Effectiveness and Advances in UFE – abstracts Appendix 3 (page 29)

39 recent significant papers can be found in appendix 3, only 5 of which have been reviewed by NICE. The advances in UFE treatment do not appear to be reflected in the NICE review, probably because so few papers were reviewed. In particular pedunculated subserosal fibroids on a wide stalk can be safely embolised and on a narrow stalk can be embolised and then immediately removed by myomectomy. This also reduces blood loss in myomectomy, which can be significant. Women previously having been treated with myomectomy can be successfully re-treated with UFE after fibroid re-growth and vice versa. Of particular significance are **2 papers studying re-embolisation after an initial failure. The success rates are high and this should be considered as a standard follow-up before hysterectomy**. There are also papers advocating a bilateral versus unilateral approach to reduce radiation dose. This does however, mean two femoral artery punctures instead of one.

A question arose about **sexual dysfunction** at the NICE Interventional Procedures Review meeting. There are 2 papers showing that UFE does not adversely affect sexual function, as well as an earlier one by Watkins not cited here.

4. Safety – abstracts Appendix 4 (page 50)

The comments in the consultation document about the safety of UFE are potentially alarming to patients and public and do not accurately reflect the data from the NICE review and certainly not the larger review shown here. Eleven papers on safety are shown in appendix 4, only 1 of which has been reviewed by NICE. However these papers should be read alongside those on Long-term Outcomes and Effectiveness as most studies look at safety and effectiveness together.

The largest UK study is the Fibroids Registry published by BSIR.

The summary of their findings on safety is copied here from 1,500 patients

Safety

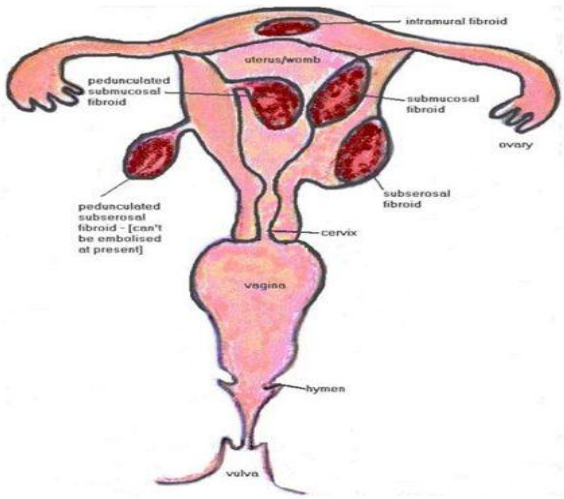
- 2% of patients suffered a pre discharge adverse event but in only 1% of patients did this result in delayed discharge
- 94% of patients were discharged within 48 hours
- There were no deaths within 30 days.
- 14% of patients reported a post discharge adverse event, the majority occurring within the first 12 months
- One death was recorded 17 months post UAE from a uterine sarcoma. The small risk of sarcomatous change is well known; one of the drawbacks to UAE, in common with other uterine conserving treatments, is that the uterus is not removed.
- Only 2.7% of patients were known to have a subsequent hysterectomy
- 70% of patients received prophylactic antibiotics; there were significantly more infective complications post discharge for patients who did NOT receive antibiotic prophylaxis

1. Description

Indications and current treatment

The Interventional Procedure Review assesses the safety and effectiveness of new surgical/ medical technologies for treating disease. It is not clear if the procedure – uterine artery embolisation itself is being reviewed for all the disease areas it might treat or solely UFE for the treatment of fibroids. Certainly evidence on fibroid treatment alone has been included in the review, but UFE has been used for some years to successfully treat post-partum haemorrhage, which can be life threatening and which traditionally has been treated by hysterectomy, not always successfully, leaving young women infertile and unable to complete their families.

Paragraph 1 – Not all fibroids develop within the wall of the uterus –



Pedunculated fibroids develop outside the walls of the uterus and until recently pedunculated subserosal fibroids on thin stalk could not be treated by uterine artery/fibroid embolisation [UFE], but now they can. **However, this is not included in the review.**

Paragraph 2 and bulk symptoms from large fibroid masses can cause sciatica, pressure on surrounding organs e.g. kidney enlargement etc

Paragraph 5 The other important advantages of UFE are that –

- a woman remains fertile;
- does not appear to suffer early menopause associated with hysterectomy and often requiring HRT;
- a woman can become pregnant after UFE;
- can return to work and normal life in 2-3 weeks versus 3 months with hysterectomy;
- a woman's family do not normally need to take time off work to look after her compared with hysterectomy were women are told 'not even to lift a kettle' and not to drive for over a month after this surgery
- UFE can be used to successfully treat women whose fibroids have re-grown after myomectomy

- Requires normally only a 1-night hospital stay compared with 5-10 with hysterectomy or myomectomy
- Can also be used to successfully treat post-partum haemorrhage – maintaining fertility
- There is no scar after UFE and unlike surgical treatments no damage to surrounding muscle, which subsequently needs to heal and restricts normal life significantly
- UFE can be successfully combined with myomectomy
    - before myomectomy to reduce bleeding, which can be significant
    - immediately after embolisation for a pedunculated subserosal fibroid on a thin stalk
    - after fibroid re-growth from an earlier myomectomy
    - myomectomy after fibroid re-growth from an earlier embolisation

What the procedure involves

An extremely important fact missing from this section is that UFE normally only requires a 1-night hospital stay compared with 5-10 days with hysterectomy or myomectomy. Also, women can return to work/normal life considerably quicker with UFE, normally 2-3 weeks compared with ~3 months with hysterectomy. Women also require much less convalescence at home and care from members of their family with UFE compared with these 2 surgical treatments.

WHAT IS A SUCCESSFUL OUTCOME FROM TREATMENT OF UFE?

The objective of treating women with fibroids is to relieve their symptoms, not to reduce the size of their fibroids and to do this with as few adverse effects as possible e.g. maintaining fertility.

WHAT QUESTIONS REMAIN FROM WOMEN ABOUT UFE?

- Long-term outcomes – 10, 15, 20, 25 years – will UFE cause any adverse effects in the future e.g. early menopause?
- What is the best treatment for women wishing to become pregnant? – UFE or myomectomy? Previous treatments for fibroids; previous pregnancies; size of fibroids; number of fibroids; etc do they play a part in the decision about optimal treatment?
- What advances have there been in UFE? – sharing best practice, fibroids that could previously not been treated by UFE e.g. Pedunculated subserosal fibroids
- Are there other gynaecological diseases that can be successfully treated with UFE? e.g. Post-partum haemorrhage, post-abortion haemorrhage
- Why do women still not have access to UFE and not being given the choice of UFE?
- Why are women often not informed of UFE, as a treatment option, particularly by their gynaecologists and also their GPs
- Why is there so much misinformation about UFE amongst gynaecologists, who inform women they are suitable for UFE, when they probably are.
- Recent research shows what the public, patients and their families 'value' in a medical treatment -

"There is a large disparity between what the NHS 'values' and what taxpayers (who fund the NHS), patients and other stakeholder groups 'value'. Effectiveness/efficacy and safety rank top, but patients and other stakeholders also consider their dignity, care needed by friends and family, convenience, side effects, time away from work, time to feeling completely well and the invasiveness of treatment as being very important, as well as costs to their employers and the economy." - Improving Patient Outcomes: How Can Value-Based Pricing Improve Access and Adoption of New Treatments? Interim report – Valuing Medical Treatments G Camps-Walsh, Dr I Aivas, Dr H Barratt 2020Health Sept 2009

REVIEW OF CLINICAL REFERENCES

Entrez Pub Med has **1,007 published papers listed on uterine artery embolisation**. A complete literature search does not appear to have been conducted by NICE, as with the first review.

The number of new papers, published since the last review in May 2004 is 611. See Appendix 7 (*page 61*) for a complete listing of these abstracts, the most recent first. A search for "UFE & fibroids" produced 592 papers. Many of the other papers consider UFE for treatment of other diseases, particularly post-partum haemorrhage.

It is recommended in future that stakeholders be encouraged to submit papers to the NICE Interventional Procedures review committee prior to review to ensure that all the important papers are reviewed and advanced in new medical technologies are then highlighted.

NICE has reviewed only 18 papers, although state that these cover 36 papers and has listed another 52 papers with reasons why they did not consider them. Of the 52 other papers listed, which were not included, the reason often stated for this omission was "Larger studies are included". This is not a reason to exclude them, as they were performed on different patients and usually in different centres. The outcomes should therefore have been added to the others so agreement/disagreement and the range of endpoints could be determined.

This is not a complete or representative appraisal that covers all new advances in UFE and additional data on safety and effectiveness. Other papers and evidence needs to be considered.

The Kennedy review of NICE recommended that medical devices/technologies should not be viewed in the same way as pharmaceuticals and that in particular randomised controlled trials [RTCs] may not be a most appropriate way to assess them. Nevertheless NICE does not seem to have considered Sir Ian Kennedy's recommendations fully enough in the review of papers.

SUMMARY OF IMPORTANT MISSING PAPERS

These have been summarised under the following headings -

1. Pregnancy and Fertility
2. Long-Term Outcomes
3. Effectiveness and Advances in UFE
4. Safety
5. Patient Access
6. UFE – Non-Fibroid indications – Post-partum Haemorrhage; Treatment of Cervical Pregnancy; Placenta accrete; Uterine artery pseudoaneurysm rupture; haemorrhage following abortion;

1. Pregnancy and Fertility – abstracts of important papers Appendix 1 (Page 15)

There are a number of papers that consider fertility rates after UFE and compare these with myomectomy. Originally UFE was not recommended for women wishing to become pregnant, so results from earlier papers may not have been a fair reflection on fertility after embolisation.

12 of the most recent significant studies papers are shown in appendix 1, only 2 of which is included in the NICE review of literature. Early papers are highlighted in purple in appendix 7.

8. J Vasc Interv Radiol. 2010 Jul;21(7):1011-7. Epub 2010 May 31.
Uterine artery embolization versus abdominal myomectomy: a long-term clinical outcome comparison.
Narayan A, Lee AS, Kuo GP, Powe N, Kim HS.
CONCLUSIONS: UAE results in long-term clinical
success with outcomes comparable or superior to those of abdominal myomectomy.

Success from UFE is better than myomectomy in the latest paper, but results vary from paper to paper. Blood loss can be reduced significantly by pre-treating with UFE before myomectomy.

Fertil Steril. 2010 Jun;94(1):324-30. Epub 2009 Apr 9.
Uterine artery embolization for fibroids is associated with an increased risk of miscarriage.
Homer H, Saridogan E.
In this meta-analysis 227 completed pregnancies after UFE were identified and these were compared with fibroid-containing pregnancies match for age and fibroid location. This matching is very questionable since presumably the second group had not required fibroid treatment before they became pregnant. Unsurprisingly adverse effects were higher in the group that has received UFE treatment.

Fertil Steril. 2008 Dec;90(6):2356-60. Epub 2008 Mar 12.

Pregnancy after uterine fibroid embolization: follow-up of 100 patients embolized using tris-acryl gelatin microspheres.
Pinto Pabón I, Magret JP, Unzurrunzaga EA, García IM, Catalán IB, Cano Vieco ML.
CONCLUSION(S): Despite the small sample
size, uterine artery embolization appears to be viable in young women who still want to become pregnant. Larger series and studies comparing uterine fibroid embolization and myomectomy are needed**.**

Women can become pregnant after UFE. They may have more miscarriages, their babies may be smaller, may require caesareans , have a lower birth weight. However, it is known that this is also true for women undergoing fertility treatment and myomectomy. More research needs to be done, with large multi-centre trials and at least 5-year follow-ups. This should establish which women benefit most from which treatment. It is known that multiple intramural fibroids are better treated by UFE than myomectomy. It is possible/likely that size, number and position of fibroids may dictate which procedure should be used.

More research is required – myomectomy vs UFE for women who wish to become pregnant.

2. Long-Term Outcomes – abstracts Appendix 2 (Page 19)

Many FEmISA members had UFE treatment over 9 years ago. There was little data on the long-term side effects such as effect on age of menopause etc. This is still the case. Most longer-term studies have follow-up at 5 years, but particularly for younger women having UFE more long-term data is needed. FEmISA asks that the Fibroid Registry is funded to enable it to continue to collect data for up to 25 year follow up.

10 recent, significant papers were found including the 5-year follow up in the EMMY study. Only 2 of these papers were reviewed by NICE.

However, the long-term outcomes – safety and effectiveness for UFE are well established and satisfaction and success rates at 1 year appear to reflect those at 5 years. The number of failures and subsequent hysterectomies varies considerably.

Uterine artery embolization vs hysterectomy in the treatment of symptomatic uterine fibroids: 5-year outcome from the randomized EMMY trial.
Five years after treatment 23 of 81 UAE patients (28.4%) had undergone a hysterectomy because of insufficient improvement of complaints (24.7% after successful UAE). HRQOL measures improved significantly and remained stable until the 5-year follow-up evaluation, with no differences between the groups. UAE had a positive effect both on urinary and defecation function

Semin Reprod Med. 2010 May;28(3):235-41. Epub 2010 Apr 22.
Uterine artery embolization for fibroids: a review of current outcomes.
Freed MM, Spies JB
Morbidity is low and recovery rapid; serious complications are quite rare.

Although pregnancy is certainly possible after embolization,
existing data suggest better reproductive outcomes for myomectomy in the first 2 years after treatment. The current recommendation is for myomectomy as a first choice for patients seeking to become pregnant.

HOPEFUL Study – 5 year follow-up UFE vs HYSTERECTOMY – This study is included in the NICE review and it should be noted that FEmISA were involved in this study and most members of FEmISA submitted data and their individual case reports and questionnaires are included, as they did not have the opportunity to send individual case studies and views to NICE. *"The study results suggest that both UAE and hysterectomy are safe. No unexpected problems were detected following UAE after a long follow-up period (average 5 years). Complications are less common for UAE than hysterectomy."*

274. J Vasc Interv Radiol. 2008 Mar;19(3):319-26.
Long-term outcome of uterine artery embolization for symptomatic uterine leiomyomas.
Lohle PN, Voogt MJ, De Vries J, Smeets AJ, Vervest HA, Lampmann LE, Boekkooi PF
RESULTS: Follow-up was available in 93 women (median follow-up, 54 months; range, 45-87 y). Continued symptom relief was observed in 72% of patients (n = 67). Among the 26 women with treatment failure (28%), 11 (42%) underwent hysterectomy, four (15%) myomectomy, and eight (31%) repeat embolization.

445. BJOG. 2006 Apr;113(4):464-8.
Long-term follow up of uterine artery embolisation--an effective alternative in the treatment of fibroids.
Walker WJ, Barton-Smith P.
A total of 258 women were identified as being between 5 and 7 years post-UAE and suitable for long-term follow up in October 2004 More than 80% of fibroid-related symptoms were still resolved or improved. Sixteen percent of women required further treatment for fibroids. Premature menopause directly following UAE occurred in only one woman in the study group. Eighty-eight percent of women were satisfied with the outcome of the procedure at 5-7 years and would choose it again or recommend it to others.

453. AJR Am J Roentgenol. 2006 Mar;186(3):848-54.
Long-term outcomes of uterine artery embolization using gelatin sponge particles alone for symptomatic fibroids.
Katsumori T, Kasahara T, Akazawa K.
96 consecutive women treated between
December 1997 and December 2001, were collected in January 2005
RESULTS: Of all 96 women, 16 (17%) were lost to follow-up during the period. Cumulative rates of symptom control were 96.9% at 1 year, 89.5% at 3 years, and 89.5% at 5 years. Cumulative rates of complications related to the gynecologic intervention and overall gynecologic interventions were 2.1% and 4.2%, respectively, at 1 year, 2.1% and 5.4% at 3 years, and 2.1% and 10.5% at 5 years. Cumulative rates of overall failure were 4.2% at 1 year, 12.7% at 3 years, and 12.7% at 5 years.
Major complications were noted in 3.1% (3/96).

458. Cochrane Database Syst Rev. 2006 Jan 25;(1):CD005073.
Uterine artery embolization for symptomatic uterine fibroids.

Gupta JK, Sinha AS, Lumsden MA, Hickey M. ***An earlier Cochrane review has been includedin the NICE review, but not this one.***
OBJECTIVES: To review the benefits and/or harms from randomised controlled trials (RCTs) of uterine artery embolization (UAE) versus other interventions for symptomatic uterine fibroids. ***N.B. only RCTs were included – please note earlier remarks about the kennedy Review recommendations.***
Three trials were included in this review. Two RCTs compared UAE with abdominal hysterectomy in 234 women. Although the follow-up period was intended for two years, the available published results was only for six months follow-up. The second trial included 63 women comparing UAE with myomectomy in women who wished to preserve their fertility.
The clinical success rate measured by improvement in fibroid-related symptoms e.g. menstrual loss was **at least 85% in the UAE group from both trials**. The mean dominant fibroid volume decreased by 30 to 46% in two trials. UAE significantly reduces length of hospital stay compared to surgery for either hysterectomy or myomectomy. Women undergoing UAE resumed routine activities sooner than those undergoing surgery. UAE was associated with a higher rate of minor post procedural complications such as vaginal discharge, post puncture haematoma and post embolization syndrome (pain, fever, nausea, vomiting), as well as higher unscheduled visits and readmission rates after discharge, compared with hysterectomy. There were no major complication differences between the two groups. Three women in the myomectomy trial had elevated FSH levels post UAE indicating possible ovarian dysfunction. AUTHORS' CONCLUSIONS: UAE offers an advantage over hysterectomy with regards to a shorter hospital stay and a quicker return to routine activities. There is no evidence of benefit of UAE compared to surgery (hysterectomy / myomectomy) for satisfaction. The higher minor complications rate after discharge in the UAE group as well as the unscheduled visits and readmission rates require more longer term follow-up trials to comment on its effectiveness and safety profile. There is currently an ongoing trial (REST, U. K.) and EMMY trial yet to report on the long term follow up, the results of which are awaited with interest.

3. Effectiveness and Advances in UFE – abstracts Appendix 3 (page 29)

39 recent significant papers can be found in appendix 3, only 5 of which have been reviewed by NICE.

The advances in UFE treatment do not appear to be reflected in the NICE review, probably because so few papers were reviewed. In particular pedunculated subserosal fibroids on a wide stalk can be safely embolised and on a narrow stalk can be embolised and then immediately removed by myomectomy. This also reduces blood loss in myomectomy, which can be significant.

Women previously having been treated with myomectomy can be successfully re-treated with UFE after fibroid re-growth and vice versa.

Of particular significance are **2 papers studying re-embolisation after an initial failure. The success rates are high and this should be considered as a standard follow-up before hysterectomy**.

There are also papers advocating a bilateral versus unilateral approach to reduce radiation dose. This does however, mean two femoral artery punctures instead of one.

Other papers advocate UFE as a day case, but most FEmISA members would not recommend this as UFE is much too painful immediately and for at least 12 hours after the treatment.

A question arose about **sexual dysfunction** at the NICE Interventional Procedures Review meeting. There are 2 papers showing that UFE does not adversely affect sexual function, as well as an earlier one by Watkins not cited here. –

329. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):866-75.
Sexuality and body image after uterine artery embolization and hysterectomy in the treatment of uterine fibroids: a randomized comparison.
Hehenkamp WJ, Volkers NA, Bartholomeus W, de Blok S, Birnie E, Reekers JA, Ankum WM.

126. Minim Invasive Ther Allied Technol. 2009;18(2):78-81.
Repeat uterine artery embolization following technical failure.
McLucas B.
All 731 patients completed
questionnaires. 728 patients (99.6%) reported symptom relief. Two-step bilateral embolization seems to be an effective management option after technical failure.

106. AJR Am J Roentgenol. 2009 Jul;193(1):267-71.
Long-term quality of life assessment among patients undergoing uterine fibroid embolization.

Popovic M, Berzaczy D, Puchner S, Zadina A, Lammer J, Bucek RA.
RESULTS: The analysis was based on questionnaires completed by 39 patients. The median follow-up period was 7 years. The general quality-of-life index increased significantly from 4.5 to 9 ($p < 0.001$). In the long term, there was no significant difference in parameters assessed compared with the midterm follow-up findings. Six patients (15.4%) underwent hysterectomy an average of 32.1 months after intervention. Thirty-two patients (82.1%) continued to be satisfied with the intervention, and 30 patients (76.9%) answered that they would recommend uterine fibroid embolization to other patients.

UFE with myomectomy –

14. JSLS. 2010 Jan-Mar;14(1):120-2.
Synchronous uterine artery embolization and laparoscopic myomectomy for massive uterine leiomyomas.
Madhuri TK, Kamran W, Walker W, Butler-Manuel S. . We present the first case of laparoscopic myomectomy for a fibroid measuring 30cm in maximum diameter.

75. Eur J Radiol. 2009 Oct 27. [Epub ahead of print]
Interest of uterine artery embolization with gelatin sponge particles prior to myomectomy for large and/or multiple fibroids.
Butori N, Tixier H, Filipuzzi L, Mutamba W, Guiu B, Cercueil JP, Douvier S, Sagot P, Krausé D, Loffroy R.
Preoperative uterine artery embolization is effective in reducing intraoperative blood loss and improves the chances of performing conservative surgery. It should be considered a useful adjunct to myomectomy in women at high hemorrhagic risk or who refuse blood transfusion.

176. J Radiol. 2008 Dec;89(12):1925-9.
[Uterine artery embolization with resorbable material prior to myomectomy]
[Article in French]
Tixier H, Loffroy R, Filipuzzi L, Grevoul J, Mutamba W, Cercueil J, Krausé D, Douvier S, Sagot P.
Preoperative uterine artery embolization with resorbable agents was effective in reducing surgical blood losses. This technique reduces the number of hysterectomies and hemorrhagic complications (hematoma, infection, weaker scar tissue). It should be considered in patients wishing uterine preservation when the hemorrhagic risk is high. Its use in patients seeking subsequent pregnancy should be further assessed with larger series.

292. Diagn Interv Radiol. 2007 Dec;13(4):210-2.
Is uterine artery embolization prior to myomectomy for giant fibroids helpful?
Ustünsöz B, Uğurel MS, Bozlar U, Duru NK, Ustünsöz A.
CONCLUSION:
UAE prior to myomectomy is more effective than myomectomy alone.

334. Cardiovasc Intervent Radiol. 2008 May-Jun;31(3):514-20.
Preoperative uterine artery embolization (PUAE) before uterine fibroid myomectomy.

Dumousset E, Chabrot P, Rabischong B, Mazet N, Nasser S, Darcha C, Garcier JM, Mage G, Boyer L.
CONCLUSION: Preoperative embolization is associated with minimal intraoperative blood loss. It does not increase the complication rate or impair operative dissection, and improves the chances of performing conservative surgery.

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- Only 2.7% of patients were known to have a subsequent hysterectomy
- 70% of patients received prophylactic antibiotics; there were significantly more infective complications post discharge for patients who did NOT receive antibiotic prophylaxis

Comapre this with hysterectomy figures below

The VALUE study is probably the most definitive study on hysterectomy, as it is an audit of results, from all hospitals -

Maresh MJA et al - The VALUE national hysterectomy study: description of the patients and their surgery - British J Obstet & Gynae March 2002 Vol 109 302-312
N=37, 298

Hysterectomy for fibroids - 6,571 +

total hysterectomy	- 87%
sub-total hyst	-3.9%
vaginal	- 6.9%
laproscopic	- 2.2%

Length of hospital stay -overall 5 days (range 1-205)

Abdominal - 5 days
Vaginal - 4 days
Laproscopic - 3 days
Deaths - 14 - 6 weeks post-op (0.38/1,000) PE - 3, MI/Cardiac arrest/coronary atheroma - 4, multiple organ failure/sepsis - 2, bronchopneumonia - 1, unknown - 1, brain heamorrhage - 1, MS - 1, hyponatraemia - 1
Fibroids - 2 (0.30/1,000) 1 - unknown, 1- cardiac arrest
Operative complications
Total - 3.5% (1 in 30 women)
Abdominal - 3.57%
Vaginal - 3.07%
Laproscopic - 6.07%
Resp/heart - 0.35%
Visceral - 0.73% - mainly bladder
Major haemorrhage - 2.27%
Return to theatre - 0.76%
Post-operative complications

Total - 9% (1 in 10 women)
Only 10% of ovaries removed had specific pathology - 30% may have had ovaries removed 'prophtlactically'

The mortality rate for UFE is not known as the numbers of procedures are not known, but it is very rare.

The complication cited in the NICE document are so unusual that each serious adverse event tends to have a paper published about it.

UFE, is certainly much safer than hysterectomy, which is regarded by gynaecoalgists, but not women, as a gold standard in treatment.

Fibroid expulsion – this is often cited as a complication, but many women FEmISA members, including one of whom expelled 3 fibroids are pleased to be rid of them as quickly as possible without surgery. This is posed in this paper.
564. Am J Obstet Gynecol. 2004 Nov;191(5):1713-5.
Myoma expulsion after uterine artery embolization: complication or cure?
Hehenkamp WJ, Volkers NA, Van Swijndregt AD, De Blok S, Reekers JA, Ankum WM.

Amenorrhea – can ocur in women over 45 who are treated by UFE.
208. Int J Gynaecol Obstet. 2008 Dec;103(3):217-21. Epub 2008 Sep 2.
Amenorrhea and resumption of menstruation after uterine artery embolization for fibroids.
Katsumori T, Kasahara T, Tsuchida Y, Nozaki
Over 77 months, 211 consecutive eligible women were grouped by age (group A, <40 years [n=39]; group B, 40-44 years [n=98]; and group C, > or =45 years [n=74])

and the cumulative rates of onset of permanent amenorrhea were compared between the groups. RESULTS: The likelihood of incurring permanent amenorrhea was significantly higher in group C. The cumulative rates in groups A, B, and C were 0%, 1.4%, and 19.7% at 3 years and 0%, 11.2%, and 40.4% at 6 years

68. Acta Radiol. 2009 Dec;50(10):1193-7.
Inflammatory response in patients undergoing uterine artery embolization as compared to patients undergoing conventional hysterectomy.
Brøchner AC, Mygil B, Elle B, Toft P.
CONCLUSION: Uterine artery embolization generates a reduced inflammatory response compared with conventional hysterectomy

5. Patient Access – abstracts Appendix 5 (page 56)

Patient access is a major issue for UFE. The strategy for the NHs from bothe the present and past Governments has been 'patient choiice' and a patient centred NHS. Despite 2 NICE reviews in favour of UFE – previos interventional procedures review and Clinical Guidelines on Heavy Menstrual Bleeding many women are still not informed about this treatment option.

NICE is advocating a multi-disciplinary apparoach, but although this should be the best approach it is usually gynaecologists who do not inform women of UFE, or give misinformation about it. In hodpitals where there is a good working relationship rather than rivalry between gynaceolgists and interventional radiologists patients have much easier access.

Part of the problem is that GPs are well informed about UFE and therefore do not mention it to their patients as an option. However, gynacoloagist are also not well informed, or do not have faith in UFE or think hysterectomy is best for most women and don't give them a choice. This is an issue that needs highlighting and tackling for the benefit of women. This also leads to a great health inequality as well educated women will ensure they ahve a choice, but the less educated, who may be apid on peice-work may not.

5 papers are cited in appendix 5 refect these issues in other countries.

6. UFE – Non-Fibroid indications – Post-partum Haemorrhage; Treatment of Cervical Pregnancy; Placenta accrete; Uterine artery pseudoaneurysm rupture; haemorrhage following abortion; - abstracts Appendix 6 (page 61)

UFE as a technique for treating patients can be used for many other obstetric and gyanaceological conditions, particualry post-partim haemorrhage, which is a serious condition and can be fatal.

10 papeers are shown in appendix 6, which show successful outcomes for all the conditions named above. FEmISA recommends that more research is conducted in the use of UFE for these treatments, as the benfits for patients are high. – reduced mortality and maintenance of fertility.

Important Missing Papers - Abstracts

All significant papers – abstracts listed in Appendix 1 are colour coded in line with the heading colours used

APPENDIX 1. PREGNANCY AND FERTILITY

5. Minerva Ginecol. 2010 Jun;62(3):225-36.
The impact of uterine leiomyomas on reproductive outcomes.
Cook H, Ezzati M, Segars JH, McCarthy K.

8. J Vasc Interv Radiol. 2010 Jul;21(7):1011-7. Epub 2010 May 31.
Uterine artery embolization versus abdominal myomectomy: a long-term clinical outcome comparison.
Narayan A, Lee AS, Kuo GP, Powe N, Kim HS.
PURPOSE: To assess long-term clinical effectiveness of uterine artery embolization (UAE) compared with abdominal myomectomy. MATERIALS AND METHODS: Women who received UAE (n = 87) or abdominal myomectomy (n = 98) for symptomatic uterine leiomyomata between 2000 and 2002 at a single institution were consecutively enrolled in this study. Patients whose procedures were performed within 5 years before the study were included RESULTS: The retrospective cohort included 185 patients, of whom long-term follow-up was completed by 89 patients (48.1%), 48 being treated with UAE, and 41 with myomectomy. Follow-up ranged from 50 to 83 months. A higher but not statistically significant number of patients received repeat interventions after abdominal myomectomy (14%) versus UAE (8%; P = .204).
Significantly higher symptom severity score improvements were seen in patients treated with UAE versus abdominal myomectomy (34 vs 31; P = .02). UAE recipients were less likely to attempt to get pregnant (P = .02), but those who did had a 66.7% success rate compared with 58.8% for patients who underwent myomectomy. Similar numbers of patients between groups were satisfied with the procedure (P = .57), reported effectiveness of symptom relief (P = .43), and would recommend the procedure to others (P = .37). CONCLUSIONS: UAE results in long-term clinical success with outcomes comparable or superior to those of abdominal myomectomy.

31. Semin Reprod Med. 2010 May;28(3):228-34. Epub 2010 Apr 22.
Minimally invasive approach for myomectomy.
Agdi M, Tulandi T.
Uterine fibroids are the most common benign tumor of the uterus in women of reproductive age. However, most of them are asymptomatic and do not require any treatment. Menorrhagia and pelvic pain are the most usual symptoms, and some women may present with infertility or pregnancy-related complications. In those with abnormal uterine bleeding, one should exclude other causes of abnormal vaginal bleeding including endometrial cancer. Diagnosis of uterine fibroid is established by pelvic ultrasonography with or without saline infusion hysterosonography. Management options depend on the patient's fertility potential and desire for future pregnancy. Submucous myoma should be treated by a

hysteroscopic approach. Intramural and subserous myomas in women who opt for nonsurgical treatment could be treated with uterine artery embolization (UAE), high-intensity focused ultrasound (HIFU), or medical treatment such as selective gonadotropin-releasing hormone agonists, progesterone receptor modulators, or aromatase inhibitors. All interventions aside from hysterectomy provide temporary relief, although myomectomy, UAE, and HIFU provides more durable symptom relief relative to current medical management. Patients wishing to preserve their fertility are best treated by myomectomy, which can be done by laparoscopy. A laparoscopic approach is more advantageous than laparotomy, but laparoscopic suturing is more demanding. This can be overcome by robotic-assisted laparoscopic myomectomy.

38. Curr Opin Obstet Gynecol. 2010 Jun;22(3):242-7.
Impact of previous uterine artery embolization on fertility.
Berkane N, Moutafoff-Borie C.
PURPOSE OF REVIEW: To describe data on the effects of uterine artery embolization (UAE) on fertility. RECENT FINDINGS: UAE is used to treat postpartum haemorrhage (PPH) and fibroids. This effective therapy is replacing surgery in many cases. One of the main goals of UAE is to preserve the uterus and therefore fertility (pregnancies, menses and ovarian reserve). Pregnancies after this technique have been described. The main complications encountered during these pregnancies are not only PPH but also miscarriages and caesarean deliveries after UAE for fibroids. Conflicting results varying from completely well tolerated to serious complications such as definitive negative effect on endometrium and ovary function have been reported. Nevertheless, the series differ in that they included women of different ages and used different material for vessel occlusion (definitive microparticles of varying sizes, temporary pledgets of gelatine sponge, etc.). We discuss the impact of these differences on uterus vascularisation and fertility. SUMMARY: UAE is an effective treatment for PPH and fibroids. Pregnancy is possible after UAE. Recurrent PPH is a serious and frequent complication. Synechia is also a potential complication. Desire of childbearing should be considered when choosing embolization or surgery and, in case of embolization, the choice of material used. Further studies on future fertility after UAE are needed as well as information on fertility after surgery.

136. Fertil Steril. 2010 Jun;94(1):324-30. Epub 2009 Apr 9.
Uterine artery embolization for fibroids is associated with an increased risk of miscarriage.
Homer H, Saridogan E.

OBJECTIVE: To investigate how uterine artery embolization (UAE) might alter the risk profile for pregnancies complicated by fibroids. DESIGN: Systematic literature review and meta-analysis of existing studies. SETTING: Academic reproductive medicine unit. PATIENT(S): Women with fibroids. INTERVENTION(S): A systematic literature review, raw data extraction, and data analysis. MAIN OUTCOME MEASURE(S): Rates of miscarriage, preterm delivery, malpresentation, intrauterine growth restriction (IUGR), cesarean delivery, and postpartum haemorrhage (PPH). RESULT(S): Two hundred twenty-seven completed pregnancies after UAE were identified. Miscarriage rates were higher in UAE pregnancies (35.2%)

compared with fibroid-containing pregnancies matched for age and fibroid location(16.5%) (odds ratio [OR] 2.8; 95% confidence interval [CI] 2.0-3.8). The UAE pregnancies were more likely to be delivered by cesarean section (66% vs. 48.5%; OR 2.1; 95% CI 1.4-2.9) and to experience PPH (13.9% vs. 2.5%; OR 6.4; 95% CI 3.5-11.7). Rates of preterm delivery (14% vs. 16%; OR 0.9; 95% CI 0.5-1.5), IUGR (7.3% vs. 11.7%; OR 0.6; 95% CI 0.3-1.3), and malpresentation (10.4% vs. 13%; OR 0.8; 95% CI 0.4-1.5) were similar in UAE pregnancies and in control pregnancies with fibroids. CONCLUSION(S): The risk of miscarriage seems to be increased after UAE. In contrast, apart from an increased risk of abdominal delivery and PPH, critical adverse obstetric sequelae of IUGR and prematurity appear no more likely after UAE.

258. Fertil Steril. 2008 Dec;90(6):2356-60. Epub 2008 Mar 12.
Pregnancy after uterine fibroid embolization: follow-up of 100 patients embolized using tris-acryl gelatin microspheres.
Pinto Pabón I, Magret JP, Unzurrunzaga EA, García IM, Catalán IB, Cano Vieco ML.
OBJECTIVE: To evaluate pregnancies in women who had previously undergone uterine fibroid embolization. DESIGN: Prospective study. SETTING: A city hospital in Spain. PATIENT(S): A cohort of 100 uterine fibroid embolization patients, 57 of whom wished to preserve their fertility. INTERVENTION(S): Uterine arteries were embolized by using 500-1,200 microm tris-acryl gelatin microspheres. After intervention, patient follow-up was performed at 1 week, 3 months, 6 months, and yearly. MAIN OUTCOME MEASURE(S): The number of pregnancies and course of pregnancy. RESULT(S): Eleven pregnancies in 10 women (19.2%). The pregnancies resulted in 8 live births, including 4 normal and 4 cesarean deliveries. Early miscarriage occurred in 3 cases (2 patients). None of the 8 newborns was a low-birth weight infant, and gestation lasted >or=37 weeks in all the patients, except for 1 case of a macrosomic fetus delivered at 33 weeks. There were no cases of abnormal placental implantation. **CONCLUSION(S): Despite the small sample size, uterine artery embolization appears to be viable in young women who still want to become pregnant. Larger series and studies comparing uterine fibroid embolization and myomectomy are needed.**

290. Fertil Steril. 2008 Nov;90(5):1886-91. Epub 2007 Dec 26.
Pregnancy outcomes after uterine artery occlusion: prospective multicentric study.
Holub Z, Mara M, Kuzel D, Jabor A, Maskova J, Eim J.
OBJECTIVE: To assess the reproductive outcomes after laparoscopic uterine artery occlusion (LUAO) and uterine artery embolization (UAE) in women with symptomatic fibroids. DESIGN: Prospective, clinical multicentric study. SETTING: Endoscopic center in the department of obstetrics and gynecology at a hospital in the Czech Republic. PATIENT(S): Thirty-eight pregnant women after LUAO and 20 pregnant women after UAE. INTERVENTION(S): Laparoscopic uterine artery occlusion and UAE. MAIN OUTCOME MEASURE(S): Pregnancy, abortion, preterm delivery, and live-birth rates. RESULT(S): Pregnancies after uterine embolization had a statistically significantly higher rate for spontaneous abortion (56%) than did pregnancies after surgical uterine artery occlusion (10.5%). The risk of malpresentation (20%) and the rate for cesarean section (80%) after UAE similarly were higher than was the risk after laparoscopic occlusion; however, these differences were

not statistically significant. Also, there were no significant differences between the groups in preterm deliveries (15.3% in the LUAO group vs. 20% in the UAE group). **CONCLUSION(S): Pregnancies of women who were treated with uterine embolization were at significantly increased risk for spontaneous abortion when compared with pregnancies of women treated with LUAO.**

307. Cardiovasc Intervent Radiol. 2008 Jan-Feb;31(1):73-85. Epub 2007 Oct 18.
Midterm clinical and first reproductive results of a randomized controlled trial comparing uterine fibroid embolization and myomectomy.
Mara M, Maskova J, Fucikova Z, Kuzel D, Belsan T, Sosna O.
Department of Obstetrics and Gynecology, General Faculty Hospital and First Medical Faculty of Charles University, Apolinarska 18, 128 00 Prague 2, Czech Republic. michal.mara@quick.cz
The purpose of this study was to compare the midterm results of a radiological and surgical approach to uterine fibroids. One hundred twenty-one women with reproductive plans who presented with an intramural fibroid(s) larger than 4 cm were randomly selected for either uterine artery embolization (UAE) or myomectomy. We compared the efficacy and safety of the two procedures and their impact on patient fertility. Fifty-eight embolizations and 63 myomectomies (42 laparoscopic, 21 open) were performed. One hundred eighteen patients have finished at least a 12-month follow-up; the mean follow-up in the entire study population was 24.9 months. Embolized patients underwent a significantly shorter procedure and required a shorter hospital stay and recovery period. They also presented with a lower CRP concentration on the second day after the procedure ($p < 0.0001$ for all parameters). There were no significant differences between the two groups in the rate of technical success, symptomatic effectiveness, postprocedural follicle stimulating hormone levels, number of reinterventions for fibroid recurrence or regrowth, or complication rates. Forty women after myomectomy and 26 after UAE have tried to conceive, and of these we registered 50 gestations in 45 women. There were more pregnancies (33) and labors (19) and fewer abortions (6) after surgery than after embolization (17 pregnancies, 5 labors, 9 abortions) ($p < 0.05$). Obstetrical and perinatal results were similar in both groups, possibly due to the low number of labors after UAE to date. **We conclude that UAE is less invasive and as symptomatically effective and safe as myomectomy, but myomectomy appears to have superior reproductive outcomes in the first 2 years after treatment.**

328. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):876-81.
Magnetic resonance imaging (MRI) analysis of fibroid location in women achieving pregnancy after uterine artery embolization.
Walker WJ, Bratby MJ.
Department of Radiology, Royal Surrey County Hospital, Egerton Road, Guildford, UK.
The purpose of this study was to evaluate the fibroid morphology in a cohort of women achieving pregnancy following treatment with uterine artery embolization (UAE) for symptomatic uterine fibroids. A retrospective review of magnetic resonance imaging (MRI) of the uterus was performed to assess pre-embolization fibroid morphology. Data were collected on fibroid size, type, and number and included analysis of follow-up imaging to assess response. **There have been 67**

pregnancies in 51 women, with 40 live births. Intramural fibroids were seen in 62.7% of the women (32/48). Of these the fibroids were multiple in 16. A further 12 women had submucosal fibroids, with equal numbers of types 1 and 2. Two of these women had coexistent intramural fibroids. In six women the fibroids could not be individually delineated and formed a complex mass. All subtypes of fibroid were represented in those subgroups of women achieving a live birth versus those who did not. **These results demonstrate that the location of uterine fibroids did not adversely affect subsequent pregnancy in the patient population investigated. Although this is only a small qualitative study, it does suggest that all types of fibroids treated with UAE have the potential for future fertility.**

356. Fertil Steril. 2007 Dec;88(6):1676.e15-7. Epub 2007 May 7.
Successful pregnancy following both endometrial ablation and uterine artery embolization.
Foote M, Rouse A, Gil KM, Crane S, Lavin JP Jr.
Department of Obstetrics and Gynecology, Akron General Medical Center, Akron, Ohio 44307, USA.
OBJECTIVE: To present a description of the management of a pregnancy in a woman who had undergone endometrial ablation and uterine artery embolization for fibroids. DESIGN: Case report. SETTING: Division of Maternal Fetal Medicine within a tertiary community-based teaching hospital. PATIENT(S): A 43-year-old G2P1 woman who had undergone a hydrothermal ballon ablatation and a bilateral, nonselective embolization. INTERVENTION(S): Management of a high-risk pregnancy. MAIN OUTCOME MEASURE(S): Successful pregnancy. RESULT(S): The patient was prophylactically treated with 250 mg of 17 alpha-hydroxyprogesterone intramuscularly weekly, beginning at 16 weeks gestation, received a rescue McDonald cerclage at 22 weeks and 4 days, and remained on modified bed rest at home. Ultrasonically estimated fetal weights were in the 30th to 40th percentile. At 35 4/7th weeks she presented with uterine pain. Ultrasound revealed fundal elevation of the amniotic membranes, estimated fetal weight had decreased to the 20th percentile and a biophysical profile score of 4/10 was obtained. A cesarean resulted in the delivery of a vigorous infant weighing 2466 g. CONCLUSION(S): With aggressive therapy, successful pregnancy is possible in similar patients.

429. Am J Obstet Gynecol. 2006 Nov;195(5):1266-71. Epub 2006 Jun 21.
Pregnancy after uterine artery embolization for leiomyomata: a series of 56 completed pregnancies.
Walker WJ, McDowell SJ.
Department of Radiology, The Royal Surrey County Hospital, Guildford, UK. wj.walker@virgin.net
OBJECTIVE: This study was undertaken to evaluate the incidence and outcome of pregnancies after uterine artery embolization (UAE) for symptomatic uterine fibroids. STUDY DESIGN: A retrospective analysis of all pregnancies after UAE by a single interventional radiologist. RESULTS: Fifty-six completed pregnancies were identified in approximately 1200 women after UAE. **One hundred eight patients were attempting to become pregnant and 33 of these became pregnant. Thirty-three (58.9%) of the 56 pregnancies had successful outcomes.** Six (18.2%) of these were premature. Seventeen (30.4%) pregnancies miscarried. There were 3 terminations, 2 stillbirths, and 1 ectopic pregnancy. Of the 33 deliveries, 24 (72.7%)

were delivered by cesarean section. There were 13 elective sections and the indication for 9 was fibroids. There were 6 cases of postpartum hemorrhage (18.2%). **CONCLUSION: Compared with the general obstetric population, there is a significant increase in delivery by cesarean section and an increase in preterm delivery, postpartum hemorrhage, miscarriage, and lower pregnancy rates. When taking into account the demographics of the study population, these results can be partly explained. There were no other obstetric risk identified.**

430. Curr Opin Obstet Gynecol. 2006 Aug;18(4):402-6.
Pregnancy outcomes following treatment for fibroids: uterine fibroid embolization versus laparoscopic myomectomy.
Goldberg J, Pereira L.
Department of Obstetrics, Jefferson Medical College, Philadelphia, Pennsylvania 19107, USA. jaygoldbergmd@yahoo.com
PURPOSE OF REVIEW: The management of uterine fibroids in patients requiring treatment who desire future fertility remains controversial. Myomectomy has been the most common operative procedure to improve pregnancy rates and outcomes. Uterine fibroid embolization is an increasingly popular, minimally invasive treatment for fibroids. This review aims to provide critical analysis of available data on pregnancy following myomectomy and uterine artery embolization. RECENT FINDINGS: Patients with distorted uterine cavities due to submucosal fibroids of more than 2 cm have higher pregnancy rates following hysteroscopic resection. Pregnancy rates following myomectomy, both via laparoscopy and laparotomy, are in the 50-60% range, with most having good outcomes. Pregnancy rates following uterine artery embolization have not been established. Pregnancies following uterine artery embolization had higher rates of preterm delivery (odds ratio 6.2, 95% confidence interval 1.4-27.7) and malpresentation (odds ratio 4.3, 95% confidence interval 1.0-20.5) than pregnancies following laparoscopic myomectomy. **SUMMARY: Both myomectomy and uterine artery embolization are safe and effective fibroid treatments, which should be discussed with appropriate candidates. Pregnancy complications, most importantly preterm delivery, spontaneous abortion, abnormal placentation and postpartum hemorrhage, are increased following uterine artery embolization compared to myomectomy. Although most pregnancies following uterine artery embolization have good outcomes, myomectomy should be recommended as the treatment of choice over uterine artery embolization in most patients desiring future fertility.**

2. Long-Term Outcomes

6. Am J Obstet Gynecol. 2010 Jun 24. [Epub ahead of print]

Uterine artery embolization vs hysterectomy in the treatment of symptomatic uterine fibroids: 5-year outcome from the randomized EMMY trial.

Kooij SM, Hehenkamp WJ, Volkers NA, Birnie E, Ankum WM, Reekers JA.

RESULTS: Patients were assigned randomly to UAE (n = 88) or hysterectomy (n = 89). Five years after treatment 23 of 81 UAE patients (28.4%) had undergone a hysterectomy because of insufficient improvement of complaints (24.7% after successful UAE). HRQOL measures improved significantly and remained stable until the 5-year follow-up evaluation, with no differences between the groups. UAE had a positive effect both on urinary and defecation function. CONCLUSION: UAE is a well-established alternative to hysterectomy about which patients should be counseled.

30. Semin Reprod Med. 2010 May;28(3):235-41. Epub 2010 Apr 22.
Uterine artery embolization for fibroids: a review of current outcomes.
Freed MM, Spies JB.
Since its introduction in 1995, uterine artery embolization (UAE) for fibroids has been extensively investigated. Particularly in the last 3 to 4 years, several high-quality studies assessing its outcome have been completed. Randomized trials and long-term observational studies have demonstrated that when successful, UAE can provide symptom control similar to that obtained after surgery. Although hysterectomy remains more effective in symptom control and durability, many women are seeking uterine-sparing alternatives. UAE has emerged as the leading minimally invasive treatment for fibroids: Morbidity is low and recovery rapid; serious complications are quite rare. With a few anatomical exceptions, UAE is appropriate for most patients with symptomatic fibroids who have completed childbearing. Although pregnancy is certainly possible after embolization, existing data suggest better reproductive outcomes for myomectomy in the first 2 years after treatment. The current recommendation is for myomectomy as a first choice for patients seeking to become pregnant.

264. Health Technol Assess. 2008 Mar;12(5):1-248, iii. – ***Included in NICE review***
A multi-centre retrospective cohort study comparing the efficacy, safety and cost-effectiveness of hysterectomy and uterine artery embolisation for the treatment of symptomatic uterine fibroids. The HOPEFUL study.
Hirst A, Dutton S, Wu O, Briggs A, Edwards C, Waldenmaier L, Maresh M, Nicholson A, McPherson K.
OBJECTIVES: To examine and compare the medium-term results of hysterectomy and uterine artery embolisation (UAE) as a treatment for symptomatic uterine fibroids with regard to safety, efficacy, special issues in the UAE group, cost-effectiveness, and women's own perspectives on the treatments. DESIGN: Data were collected locally from patients' hospital records and also from patients themselves by postal questionnaire. Questionnaire data included free-text comments and this qualitative material was analysed using constant comparison. A two-stage probabilistic decision model was designed to estimate UK NHS costs and

health outcomes in terms of quality-adjusted life-years (QALYs). SETTING: Eighteen NHS hospital trusts, 17 in England and one in Scotland. PARTICIPANTS: Eligible women (972 UAE, 762 hysterectomies) who had received treatment specifically for symptomatic fibroids were identified. INTERVENTIONS: The UAE patients were treated by experienced interventional radiologists and all received their index UAE prior to the end of 2002, ensuring a minimum 2-year follow-up. The average length of follow-up was 8.6 years for the hysterectomy cohort and 4.6 years for the UAE cohort. MAIN OUTCOME MEASURES: Primary outcome measures were complication rates to assess the comparative safety of the two interventions. Secondary outcome measures related to treatment efficacy including resolution of symptoms and patient-reported satisfaction with treatment. Further efficacy outcome measures obtained in the UAE group included fibroid/uterine size shrinkage and further treatments required for unresolved fibroid symptoms. Data were also gathered on pregnancies post-UAE. RESULTS: Data were available for 1108 women (649 UAE and 459 hysterectomy). Fewer complications were experienced by women in the UAE cohort compared to the hysterectomy cohort: hysterectomy n = 120 (26.1%), UAE n = 114 (17.6%), adjusted odds ratio 0.48 [95% confidence interval (CI) 0.26 to 0.89]. When only the severe/major complications were considered, this odds ratio was reduced to 0.25 (95% CI 0.13 to 0.48). Expected general side-effects of UAE occurred in 32.7% of the UAE cohort, of which 8.9% also experienced complications. Obesity and medical co-morbidity predisposed women to complications, whereas prophylactic antibiotics appeared to protect against both complications and the expected side-effects of UAE. More women in the hysterectomy cohort reported relief from fibroid symptoms (89% versus 80% UAE, p less than 0.0001) and feeling better (81% versus 74% UAE, p less than 0.0001), but only 70% (compared with 86% UAE, p = 0.007) would recommend their treatment to a friend. In the UAE cohort, 18.3% of the women went on to receive one or more further fibroid treatments including hysterectomy (11.2%). After adjusting for differential time of follow-up, the UAE women had up to a 23% (95% CI 19 to 27%) likelihood of requiring further treatment. The free-text data indicated that many women, in both cohorts, felt that their treatment had been a complete success. In the UAE cohort there were several areas where expectations were apparently high and outcome had not fulfilled their expectations. Disappointment was expressed mainly about continuation or return of symptoms or failure to become pregnant. Many continued to have remaining questions about their treatment. The economic analysis indicated that UAE is less expensive than hysterectomy even after further treatments for unresolved or recurrent symptoms are taken into account, with little difference in QALYs between the two treatments. Younger women are exposed to the risk of recurrent fibroids and subsequent additional procedures over a longer period and consequently UAE may no longer be cost-effective. **CONCLUSIONS: The study results suggest that both UAE and hysterectomy are safe. No unexpected problems were detected following UAE after a long follow-up period (average 5 years). Complications are less common for UAE than hysterectomy. The cost-effectiveness analysis favours embolisation even after taking account of complications, expected side-effects associated with the procedure and subsequent re-treatments for women with a preference for uterus preservation. It is important to improve the management of expectations following**

274. J Vasc Interv Radiol. 2008 Mar;19(3):319-26.
Long-term outcome of uterine artery embolization for symptomatic uterine leiomyomas.

Lohle PN, Voogt MJ, De Vries J, Smeets AJ, Vervest HA, Lampmann LE, Boekkooi PF.

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PURPOSE: To evaluate long-term outcomes and factors associated with treatment failure after uterine artery embolization (UAE) in women with symptomatic uterine leiomyomas. MATERIALS AND METHODS: One hundred consecutive women treated with UAE for symptomatic uterine leiomyomas participated. Clinical outcome data (ie, changes in symptoms, menstrual status, subsequent therapies) and satisfaction data were collected. Treatment failure was defined by subsequent major surgery (ie, hysterectomy or myomectomy), a second embolization, or a lack of symptom improvement at the patient's final follow-up interval. Possible predictors of failure were age, clinical baseline characteristics (ie, bleeding, pain, and bulk), and imaging results (eg, percent volume reduction of the dominant tumor). Cox proportional-hazards analysis was used to determine factors associated with failure. RESULTS: Follow-up was available in 93 women (median follow-up, 54 months; range, 45-87 y). Continued symptom relief was observed in 72% of patients (n = 67). Among the 26 women with treatment failure (28%), 11 (42%) underwent hysterectomy, four (15%) myomectomy, and eight (31%) repeat embolization. Three (12%) reported no improvement. In women without any additional surgery (n = 70), heavy menstrual bleeding, pain, and bulk-related symptoms improved in 97%, 93%, and 92%. Ninety percent of all women (n = 93) were satisfied or very satisfied at final follow-up. Predictors of failure were a lack of improvement in bleeding (hazard ratio [HR], 9.0; 95% CI, 3.1-26.3; P < .001) or pain (HR, 7.4; 95% CI, 2.2-24.4; P < .001) at 1 year after UAE and the percent reduction in dominant tumor volume (HR, 0.97; 95% CI, 0.95-0.99; P = .007). **CONCLUSIONS: UAE in women with symptomatic leiomyomas leads to long-term symptom improvement. Predictors of failure were a lack of improvement in bleeding or pain at 1 year and the percent reduction in dominant tumor volume.**

336. Acta Radiol. 2007 Jul;48(6):635-42.
Massive postpartum hemorrhage treated with transcatheter arterial embolization: technical aspects and **long-term effects on fertility and menstrual cycle.**
Eriksson LG, Mulic-Lutvica A, Jangland L, Nyman R.
Department of Radiology, Akademiska Sjukhuset, Uppsala, Sweden. lars-gunnar.eriksson@akademiska.se
BACKGROUND: Transcatheter arterial embolization (TAE) is considered a safe, life-saving procedure in postpartum hemorrhage (PPH), but its long-term effect on menstruation and fertility is unclear. PURPOSE: To investigate technical aspects and the evaluation of complications, focused on menstrual cycle and fertility, using TAE in patients with PPH. MATERIAL AND METHODS: A retrospective study including 20 patients (seven with vaginal and 13 with cesarean delivery) with severe PPH treated with bilateral TAE of the uterine artery was carried out. All patients were asked to answer a questionnaire regarding their post-embolization

history. In six patients, the radiation dose was measured. RESULTS: All 20 cases underwent bilateral TAE of the uterine artery. Gelfoam was used as the embolic agent. However, after cesarean delivery in six patients who had clear contrast medium extravasation and/or pseudoaneurysm-like lesion, metallic coils had to be used in order to achieve hemostasis. No major short- or long-term complications were registered. Normal menses resumed in all patients. Four patients had a total of five full-term and two preterm pregnancies, and all delivered healthy infants by cesarean section with no recurrence of PPH. The mean radiation dose to the ovaries was 586 mGy (range 204-729 mGy). **CONCLUSION: TAE in patients with PPH is safe and has no major short- or long-term side effects. A patient managed with TAE can expect return of normal menses and preservation of future fertility and successful pregnancies. PPH after cesarean section might need to be embolized with metallic coils in addition to Gelfoam in order to achieve secure hemostasis**.

445. BJOG. 2006 Apr;113(4):464-8.
Long-term follow up of uterine artery embolisation--an effective alternative in the treatment of fibroids.
Walker WJ, Barton-Smith P.
Radiology Department, Royal Surrey County Hospital, Guildford, Surrey, UK.
OBJECTIVES: To evaluate the long-term efficacy and complications of uterine artery embolisation (UAE) for treatment of symptomatic uterine fibroids. DESIGN: A prospective observational study. SETTING: A district general hospital and two private hospitals in the southeast of England. POPULATION: Women with symptomatic fibroids who had been offered surgical options for treatment. METHODS: Postal questionnaire follow up at 5-7 years to assess long-term clinical effects among women who had undergone UAE. MAIN OUTCOME MEASURES: The questionnaire was subdivided into sections dealing with menstrual flow, amenorrhoea and menopause, fibroid-related symptoms, fertility, vaginal discharge, sexual function, subsequent treatments for fibroids and satisfaction with the procedure. RESULTS:
A total of 258 women were identified as being between 5 and 7 years post-UAE and suitable for long-term follow up in October 2004. One hundred seventy-two completed questionnaires were analysed (67% response rate). Seventy-five percent of women still had either a return to normal or an improvement in menstrual flow compared with how they were prior to UAE. **More than 80% of fibroid-related symptoms were still resolved or improved. Sixteen percent of women required further treatment for fibroids. Premature menopause directly following UAE occurred in only one woman in the study group**. **Eighty-eight percent of women were satisfied with the outcome of the procedure at 5-7 years and would choose it again or recommend it to others. CONCLUSIONS: These findings show that UAE is of benefit to women wishing to avoid hysterectomy and it carries a low risk of complications.**

450. Obstet Gynecol Clin North Am. 2006 Mar;33(1):125-44.
Uterine artery embolization as a treatment option for uterine myomas.
Marshburn PB, Matthews ML, Hurst BS.
Division of Reproductive Endocrinology, Department of Obstetrics and Gynecology, Carolinas Medical Center, P.O. Box 32861, Charlotte, NC 28232, USA.
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Information is still being collected on the long-term clinical responses and appropriate patient selection for UAE. Prospective RCTs have not been performed to compare the clinical results from UAE with more conventional therapies for symptomatic uterine leiomyomata. At least three attempts at conducting such RCTs have been unsuccessful because of poor patient accrual that related to differing patient expectation and desires, clinical bias, insurance coverage, and the tendency that patients who have exhausted other treatment options may be disposed more favorably to less invasive treatments. Other comparative studies have serious limitations. For example, the retrospective study that compared outcomes after abdominal myomectomy with UAE suggested that patients who received UAE were more likely to require further invasive treatment by 3 years than were recipients of myomectomy. Lack of randomization introduced a selection bias because women in the group that underwent UAEwere older and were more likely to have had previous surgeries. A prospective study of "contemporaneous cohorts," which excluded patients who had sub-mucosal and pedunculated subserosal myomas, sought to compare quality of life measures and adverse events in patients who underwent UAE or hysterectomy. The investigators concluded that both treatments resulted in marked improvement in symptoms and quality of life scores, but complications were higher in the group that underwent hysterectomy over 1 year. In this study,however, a greater proportion of patients who underwent hysterectomy had improved pelvic pain scores. Furthermore, hysterectomy eliminates uterine bleeding and the risk for recurrence of myomas. Despite the lack of controlled studies that compared UAE with conventional surgery, and despite limited extended outcome data, UAE has gained rapid acceptance, primarily because the procedure preserves the uterus, is less invasive, and has less short-term morbidity than do most surgical options. The cost of UAE varies by region, but is comparable to the charges for hysterectomy and is less expensive than abdominal myomectomy. The evaluation before UAE may entail additional fees for diagnostic testing, such as MRI, to assess the uterine size and screen for adenomyosis. Other centers have recommended pretreatment ultrasonography, laparoscopy, hysteroscopy, endometrial biopsy, and biopsy of large fibroids to evaluate sarcoma. Generally,after UAE the recovery time and time lost from work are less; however, the potential need for subsequent surgery may be greater when compared with abdominal myomectomy. Any center that offers UAE should adhere to published clinical guidelines, maintain ongoing assessment of quality improvements measures, and observe strict criteria for obtaining procedural privileges. After McLucas advocated that gynaecologists learn the skill to perform UAE for managing symptomatic myomas, the Society of Interventional Radiology responded with a precautionary commentary on the level of technical proficiency that is necessary to maintain optimum results from UAE. The complexity of pelvic arterial anatomy, the skill that is required to master modern coaxial microcatheters, and the hazards of significant patient radiation exposure were cited as reasons why sound training and demonstration of expertise be obtained before clinicians are credentialed to perform UAE.A collaboration between the gynecologist and the interventional radiologist is necessary to optimize the safety and efficacy of UAE. The primary candidates for this procedure include women who have symptomatic uterine fibroids who no longer desire fertility, but wish to avoid surgery or are poor surgical risks. The gynecologist is likely to be the primary initial consultant to patients who present with complaints of symptomatic myomas. Therefore, they must be familiar

with the indications, exclusions, outcome expectations, and complications of UAE in their particular cent er. When hysterectomy is the only option, UAE should be considered. Appropriate diagnostic testing should aid in the exclusion of most, but not all, gynecologic cancers and pregnancy. Other contraindications include severe contrast medium allergy, renal insufficiency, and coagulopathy. MRI may be used to screen women before treatment in an attempt to detect those who have adenomyosis; patients should be aware that UAE is less effective in the presence of solitary or coexistent adenomyosis. Because some women may experience ovarian failure after UAE, additional studies to determine basal follicle-stimulating hormone and estradiol before and after the procedure may provide insight into UAE-induced follicle depletion.UAE is a unique new treatment for uterine myomas, and is no longer considered investigational for symptomatic uterine fibroids. There is international recognition that data are needed from RCTs that compare UAE with surgical alternatives. Current efforts to provide prospective objective assessment of treatment outcomes and complications after UAE will help to optimize patient selection and clinical guidelines. FIBROID should provide critical data for the assessment of safety and outcomes measures for women who receive UAE for symptomatic uterine myomas

453. AJR Am J Roentgenol. 2006 Mar;186(3):848-54.
Long-term outcomes of uterine artery embolization using gelatin sponge particles alone for symptomatic fibroids.
Katsumori T, Kasahara T, Akazawa K.
Department of Radiology, Saiseikai Shiga Hospital, Ohashi 2-4-1, Ritto-city, Shiga 520-3046, Japan.
Comment in:
AJR Am J Roentgenol. 2006 Mar;186(3):846-7.
OBJECTIVE: The purpose of this study was to evaluate the long-term outcomes of uterine artery embolization using only gelatin sponge particles for symptomatic fibroids. MATERIALS AND METHODS: As part of an ongoing study of the procedure for fibroids, prospective data of the initial 96 consecutive women treated between **December 1997 and December 2001, were collected in January 2005**. It had been more than 3 years since embolization in all cases. The follow-up period ranged from 4 to 60 months (mean, 37.4 months). On the basis of serial questionnaires, we investigated the cumulative rates of symptom control, gynecologic interventions, and overall failure, using the Kaplan-Meier product limit estimator. Symptom control was defined as meaning patients whose symptoms had improved as indicated on the last questionnaire and who had not undergone any further gynecologic intervention because of symptoms. Overall failure was defined as meaning the patients who indicated that there had been no symptom improvement or recurrence or that they had undergone further gynecologic interventions. RESULTS: Of all 96 women, 16 (17%) were lost to follow-up during the period. **Cumulative rates of symptom control were 96.9% at 1 year, 89.5% at 3 years, and 89.5% at 5 years**. Cumulative rates of complications related to the gynecologic intervention and overall **gynecologic interventions were 2.1% and 4.2%, respectively, at 1 year, 2.1% and 5.4% at 3 years, and 2.1% and 10.5% at 5 years.** Cumulative rates of **overall failure were 4.2% at 1 year, 12.7% at 3 years, and 12.7% at 5 years. Major complications were noted in 3.1% (3/96)**. Of these three women, two required hospitalization for transvaginal resection of sloughing fibroids and one

developed sexual dysfunction. **Two women became pregnant, but both pregnancies resulted in miscarriage**. **CONCLUSION: Uterine artery embolization using gelatin sponge particles alone can achieve long-term symptom control for fibroids in most cases.**

458. Cochrane Database Syst Rev. 2006 Jan 25;(1):CD005073.
Uterine artery embolization for symptomatic uterine fibroids.
Gupta JK, Sinha AS, Lumsden MA, Hickey M.
Birmingham Women's Hospital, Academic Department of Obstetrics and Gynaecology,
Methley Park Road, Birmingham, UK, B15 2TG. j.k.gupta@bham.ac.uk
BACKGROUND: Uterine fibroids cause heavy and prolonged bleeding, pain, pressure symptoms and subfertility but are mostly benign. The traditional method of treatment has been surgery as long term medical therapies have not shown to be effective. Uterine artery embolization (UAE - complete occlusion of both the uterine arteries with particulate emboli) has been reported to be an effective and safe alternative in the treatment of menorrhagia and other fibroid-related symptoms in women not desiring future fertility, but thus far this evidence is based on case controlled studies and case reports. OBJECTIVES: To review the benefits and/or harms from randomised controlled trials (RCTs) of uterine artery embolization (UAE) versus other interventions for symptomatic uterine fibroids. SEARCH STRATEGY: We searched the Cochrane Menstrual Disorders & Subfertility Group Trials register (searched 10 August 2005), the Cochrane Central Register of Controlled Trials (CENTRAL) on the Cochrane Library, Issue 3, 2004), MEDLINE (January 1966 to November 2005) and EMBASE (January 1980 to November 2005). We also contacted authors of potential ongoing studies. SELECTION CRITERIA: RCTs of UAE versus any medical or surgical therapy for symptomatic uterine fibroids. DATA COLLECTION AND ANALYSIS: Two of the authors (AS and JKG) assessed the trials and extracted the data independently. They also contacted the investigators of eligible RCTs for unpublished data. MAIN RESULTS: Three trials were included in this review. Two RCTs compared UAE with abdominal hysterectomy in 234 women. Although the follow-up period was intended for two years, the available published results was only for six months follow-up. The second trial included 63 women comparing UAE with myomectomy in women who wished to preserve their fertility. The minimum follow-up reported was six months with a mean of 17 (+/- 9.3) months. The clinical success rate measured by improvement in fibroid-related symptoms e.g. menstrual loss was at least 85% in the UAE group from both trials. **The mean dominant fibroid volume decreased by 30 to 46% in two trials. UAE significantly reduces length of hospital stay compared to surgery for either hysterectomy or myomectomy. Women undergoing UAE resumed routine activities sooner than those**
undergoing surgery. UAE was associated with a higher rate of minor post procedural complications such as vaginal discharge, post puncture haematoma and post embolization syndrome (pain, fever, nausea, vomiting), as well as higher unscheduled visits and readmission rates after discharge, compared with hysterectomy. There were no major complication differences between the two groups. Three women in the myomectomy trial had elevated FSH levels post UAE indicating possible ovarian dysfunction. AUTHORS' CONCLUSIONS: UAE offers an advantage over hysterectomy with regards to a shorter hospital stay and a quicker

return to routine activities. There is no evidence of benefit of UAE compared to surgery (hysterectomy / myomectomy) for satisfaction. The higher minor complications rate after discharge in the UAE group as well as the unscheduled visits and readmission rates require more longer term follow-up trials to comment on its effectiveness and safety profile. There is currently an ongoing trial (REST, U. K.) and EMMY trial yet to report on the long term follow up, the results of which are awaited with interest.

476. Obstet Gynecol. 2005 Nov;106(5 Pt 1):933-9.
Long-term outcome of uterine artery embolization of leiomyomata.
Spies JB, Bruno J, Czeyda-Pommersheim F, Magee ST, Ascher SA, Jha RC.
Department of Radiology, Georgetown University Hospital, 3800 Reservoir Road NW, Washington, DC 20007-2113, USA. spiesj@gunet.georgetown.edu

Comment in:
Obstet Gynecol. 2006 Mar;107(3):741; author reply 741-2.

OBJECTIVE: To determine the long-term outcome from uterine artery embolization for leiomyomata. METHODS: In a prospective study, 200 consecutive patients treated with uterine embolization were each followed for 5 years. Outcome, including symptom status compared with baseline, reinterventions, menstrual status, and satisfaction were recorded. Summary statistics were used to report baseline characteristics and outcome at each interval. Predictors of subsequent interventions, failure, and satisfaction with treatment were analyzed using logistic regression and Cox proportional hazards models. Failure was defined as subsequent hysterectomy, definitive myomectomy, repeat embolization, or failure of symptom improvement at the patient's final follow-up interval. RESULTS: Of the 200 patients initially treated, 5-year follow-up was completed in 182 (91%), with 18 patients missing. **At 5 years after treatment, 73% had continued symptom control, whereas 36 (20%) had failed or recurred. There had been 25 hysterectomies (13.7%), 8 myomectomies (4.4%), and 3 repeat embolizations (1.6%). Long-term failure was more likely in those not improved at 1 year (relative risk [RR] 5.73; 95% confidence interval [CI] 2.32-14.12, P < .001) and in those with baseline leiomyoma volumes greater than the median (RR 2.18; 95% CI 1.05-4.51, P = .036). After adjustment, patients in the first tertile of leiomyoma volume reduction (< or = 30.5%) were 3 times more likely to be dissatisfied with outcome compared with women in the third tertile (> or = 56.3% volume reduction) (RR 3.23; 95% CI 1 07-9.81, P = .037). CONCLUSION: Uterine embolization provides durable symptom relief for most patients, with a 25% chance of failure of symptom control or recurrence over the course of a 5-year follow-up. LEVEL OF EVIDENCE: II-3.**

3. Effectiveness and Advances in UFE

14. JSLS. 2010 Jan-Mar;14(1):120-2.

Synchronous uterine artery embolization and laparoscopic myomectomy for massive uterine leiomyomas.

Madhuri TK, Kamran W, Walker W, Butler-Manuel S.
Uterine leiomyomas remain the commonest cause of menorrhagia and frequently cause pressure symptoms. Management of leiomyomas depends on the presenting symptoms, size, location, number of myomas, and the patient's desire to retain her uterus, fertility, or both. We present the first case of laparoscopic myomectomy for a fibroid measuring 30cm in maximum diameter.

34. J Vasc Interv Radiol. 2010 Jun;21(6):829-35; quiz 835. Epub 2010 Apr 15.
Bilateral versus unilateral femoral access for uterine artery embolization: results of a randomized comparative trial.
Costantino M, Lee J, McCullough M, Nsrouli-Maktabi H, Spies JB.

PURPOSE: To determine if uterine embolization via bilateral femoral puncture reduces fluoroscopy time with a similar frequency of puncture site complications compared with unilateral puncture. MATERIALS AND METHODS: Patients presenting for
uterine artery embolization (UAE) for leiomyomata at a single institution were randomly assigned to receive unilateral or bilateral femoral punctures. Procedures were performed in a standardized fashion. Patients were blinded to the puncture site with an opaque dressing. Outcome measures included fluoroscopy time, dose-area product (DAP), procedure time, and puncture site pain after treatment. Baseline characteristics of the two groups and outcome measures were compared with the use of t tests, analyses of variance, Pearson chi(2) tests, and nonparametric tests. RESULTS: Fifty-seven patients consented to participate: 22 received bilateral punctures and 35 received unilateral puncture. Bilateral puncture procedures had less fluoroscopy time (13 minutes vs 16.6 minutes; P = .0033), less procedure time (54.9 min vs 62.9 min; P = .026), and fewer angiographic images (46.5 vs 68.3; P < .001). There was no difference in DAP (12,986 muGy/cm(2)for bilateral vs 16,237 muGy/cm(2)for unilateral; P = .35). Groins that were punctured had greater-although still minor-pain than unpunctured groins at 24 hours (visual analog pain scores, 1.45 for punctured groins vs 0 for unpunctured groins; P = .039) and 48 hours (scores of 1 vs 0; P = .018). There were no complications in either group. CONCLUSIONS: Bilateral femoral puncture during UAE was associated with reduced fluoroscopy time and procedure time, minor puncture site pain, and no increase in complications.

37. Radiology. 2010 Jun;255(3):834-41. Epub 2010 Apr 14.
Uterine artery embolization for leiomyomas: percentage of infarction predicts clinical outcome.
Kroencke TJ, Scheurig C, Poellinger A, Gronewold M, Hamm B.
PURPOSE: To determine the effect of partial versus complete leiomyoma infarction on relief of leiomyoma-related symptoms and freedom from invasive reinterventions

and to assess if patient age, location of the dominant leiomyoma, number of leiomyomas, or baseline uterine and dominant leiomyoma volume were associated with clinical failure. MATERIALS AND METHODS: Study protocol was approved by the institutional review board, and informed consent was obtained. One hundred fifteen consecutive women (median age, 42 years; range, 34-61 years) with symptomatic uterine leiomyomas underwent contrast material-enhanced magnetic resonance (MR) imaging at baseline and 24-72 hours after uterine artery embolization (UAE) to determine the percentage of infarction of leiomyoma tissue (complete = 100%, almost complete = 90%-99%, and partial = 0%-89%). Clinical outcome and frequency of reinterventions were compared for up to 36 months. RESULTS: One hundred thirteen patients completed at least one clinical follow-up. Twenty-four months after UAE, 50% +/- 15.2 (standard error) of the patients with partial infarction and 80% +/- 13.4 (standard error) of patients with almost complete infarction had undergone no reintervention. No patient with complete infarction needed a second treatment (P < .001). The hazard ratios for reintervention between the complete infarction group and the almost complete and partial infarction groups were 15.88 (95% confidence interval [CI]: 1.22, 2225.54; P = .034) and 73.08 (95% CI: 8.33, 9636.35; P < .001), respectively. There were significant differences in hazard ratios between patients with partial and those with complete infarction for persistence or recurrence of menorrhagia (hazard ratio, 7.45; 95% CI: 2.08, 28.31; P = .002) and bulk-related symptoms (hazard ratio, 5.90; 95% CI: 1.66, 21.92; P = .007). There was no significant correlation between patient age, number of leiomyomas, location of the dominant leiomyoma, or baseline uterine and dominant leiomyoma volume and clinical failure. CONCLUSION: Women with leiomyoma infarction above 90% on contrast-enhanced MR images after UAE show significantly better symptom control and fewer reinterventions than do patients with a lower infarction rate.

38. Curr Opin Obstet Gynecol. 2010 Jun;22(3):242-7.
Impact of previous uterine artery embolization on fertility.
Berkane N, Moutafoff-Borie C.
PURPOSE OF REVIEW: To describe data on the effects of uterine artery embolization (UAE) on fertility. RECENT FINDINGS: UAE is used to treat postpartum hemorrhage (PPH) and fibroids. This effective therapy is replacing surgery in many cases. One of the main goals of UAE is to preserve the uterus and therefore fertility (pregnancies, menses and ovarian reserve). Pregnancies after this technique have been described. The main complications encountered during these pregnancies are not only PPH but also miscarriages and cesarean deliveries after UAE for fibroids. Conflicting results varying from completely well tolerated to serious complications such as definitive negative effect on endometrium and ovary function have been reported. Nevertheless, the series differ in that they included women of different ages and used different material for vessel occlusion (definitive microparticles of varying sizes, temporary pledgets of gelatine sponge, etc.). We discuss the impact of these differences on uterus vascularization and fertility. SUMMARY: UAE is an effective treatment for PPH and fibroids. Pregnancy is possible after UAE. Recurrent PPH is a serious and frequent complication. Synechia is also a potential complication. Desire of childbearing should be considered when choosing embolization or surgery and, in case of embolization, the choice of material used. Further studies on future

fertility after UAE are needed as well as information on fertility after surgery.

52. J Vasc Interv Radiol. 2010 Apr;21(4):490-5. Epub 2010 Feb 9.
Leiomyoma volume changes at follow-up after uterine artery embolization: correlation with the initial leiomyoma volume and location.
Naguib NN, Mbalisike E, Nour-Eldin NE, Jost A, Lehnert T, Ackermann H, Vogl TJ.
PURPOSE: To study the changes in uterine leiomyoma volume after uterine artery embolization (UAE) and to correlate these changes with the initial tumor volume and location within the uterus. MATERIALS AND METHODS: The study was performed retrospectively on 28 consecutive patients (age, 37-57 years; mean, 48 y +/- 4.81) with 84 uterine leiomyomas. UAE was performed between June 2006 and August 2007. All tumors in all patients were evaluated. Magnetic resonance imaging was performed before UAE and 3 months and 1 year after UAE. The volume and location of each tumor were evaluated in consensus by two radiologists. RESULTS: The mean pre-UAE volume of the leiomyomas was 51.6 cm(3) (range, 0.72-371.1 cm(3); SD, 79.3). Seven tumors were submucous, 28 intramural, and 49 subserous. At 3-month follow-up, 83 tumors (98.8%) showed volume reduction (mean, 52.62% +/- 21.85%; range, 12.79%-96.67%) and one (1.2%) increased in volume. At 1-year follow-up, five tumors (6%) were undetectable, 72 (85.7%) showed a further volume reduction of 20.5% +/- 11.92% (range, 2.52%-58.72%) relative to the 3-month volume, and seven (8.3%) increased in volume. A statistically significant difference (P = .026 at 3 months and P = .0046 at 1 year) in percentage of volume change was observed based on tumor location; submucous tumors showed the greatest volume reduction and subserous tumors the least reduction. The initial tumor volume showed a weak negative correlation (Spearman correlation coefficients, -0.35 at 3 months and -0.36 at 1 year) with tumor volume change. CONCLUSIONS: **UAE results in leiomyoma volume reduction at 3-month and 1-year follow-up. The tumor location plays an important role in volume changes and the initial tumor volume plays a minor role. Further studies with larger numbers of submucous leiomyomas are needed.**

59. Cardiovasc Intervent Radiol. 2010 Jan 12. [Epub ahead of print]
Uterine Artery Embolization in Patients with a Large Fibroid Burden: Long-Term Clinical and MR Follow-up.
Smeets AJ, Nijenhuis RJ, van Rooij WJ, Weimar EA, Boekkooi PF, Lampmann LE, Vervest HA, Lohle PN.

Uterine artery embolization (UAE) in patients with a large fibroid burden is controversial. Anecdotal reports describe serious complications and limited clinical results. We report the long-term clinical and magnetic resonance (MR) results in a large series of women with a dominant fibroid of >10 cm and/or an uterine volume of >700 cm(3). Seventy-one consecutive patients (mean age, 42.5 years; median, 40 years; range, 25-52 years) with a large fibroid burden were treated by UAE between August 2000 and April 2005. Volume reduction and infarction rate of dominant fibroid and uterus were assessed by comparing the baseline and latest follow-up MRIs. Patients were clinically followed at various time intervals after UAE with standardized questionnaires. There were no serious

complications of UAE. During a mean follow-up of 48 months (median, 59 months; range, 6-106 months), 10 of 71 patients (14%) had a hysterectomy. Mean volume reduction of the fibroid and uterus was 44 and 43%. Mean infarction rate of the fibroid and overall fibroid infarction rate was 86 and 87%. In the vast majority of patients there was a substantial improvement of symptoms. Clinical results were similar in patients with a dominant fibroid >10 cm and in patients with large uterine volumes by diffuse fibroid disease. **In conclusion, our results indicate that the risk of serious complications after UAE in patients with a large fibroid burden is not increased. Moreover, clinical long-term results are as good as in other patients who are treated with UAE. Therefore, a large fibroid burden should not be considered a contraindication for UAE**.

75. Eur J Radiol. 2009 Oct 27. [Epub ahead of print]
Interest of uterine artery embolization with gelatin sponge particles prior to myomectomy for large and/or multiple fibroids.
Butori N, Tixier H, Filipuzzi L, Mutamba W, Guiu B, Cercueil JP, Douvier S, Sagot P, Krausé D, Loffroy R.
PURPOSE: To evaluate the efficacy of pre-myomectomy uterine artery embolization with gelatin sponge particles to reduce operative blood loss and facilitate removal of fibroids. MATERIALS AND METHODS: This retrospective study included 33 women (mean age, 36 years; range, 24-45 years), of whom at least 18 wished to preserve fertility. They presented with at least one large myoma (mean diameter, 90mm; range, 50-150mm) and had undergone preoperative uterine artery embolization with resorbable gelatin sponge by unilateral femoral approach between December 2001 and November 2008. Clinical, radiological and surgical data were available for all patients. Mean haemoglobin levels before and after surgery were compared with Student's t-test. RESULTS: No complication or technical failure of embolization occurred. The myomectomies were performed during laparotomy (25 cases) or laparoscopy (8 cases). Dissection of fibroids was easier (mean, 3 per patient; range, 1-11), with a mean operating time of 108+/-50min (range, 30-260min). Bloodless surgery was the rule with a mean estimated preoperative blood loss of 147+/-249mL (range, 0-800mL). Mean pre-(12.9+/-1.3g/dL) and post-therapeutic (11.4+/-1.2g/dL) haemoglobin levels were not statistically different ($p>0.05$). There was no need for blood transfusion. None of the patients required hysterectomy. The mean duration of hospital stay was 7.5+/-1.3 days (range, 3-12 days). CONCLUSION: **Preoperative uterine artery embolization is effective in reducing intraoperative blood loss and improves the chances of performing conservative surgery. It should be considered a useful adjunct to myomectomy in women at high hemorrhagic risk or who refuse blood transfusion.**

91. J Vasc Interv Radiol. 2009 Sep;20(9):1172-5. Epub 2009 Jul 29.
Safety and effectiveness of uterine artery embolization in patients with pedunculated fibroids.
Smeets AJ, Nijenhuis RJ, Boekkooi PF, Vervest HA, van Rooij WJ, de Vries J, Lohle PN.
PURPOSE: To assess complications and outcomes of uterine artery embolization (UAE) in women with pedunculated fibroids in a large single-center patient cohort. MATERIALS AND METHODS: From a database with prospectively collected data from 716 women treated with UAE between 1996 and 2008, 29 women were

identified with 31 pedunculated fibroids. Magnetic resonance images obtained before and 3 months after UAE were used to calculate stalk diameter change and volume reduction of both the pedunculated fibroid and uterus. Two observers assessed the overall percentage infarction and infarction of pedunculated fibroid. Complications were recorded and long-term clinical follow-up (mean, 33 months; range, 10-78 months) assessed with use of a questionnaire. RESULTS: The mean reduction in uterine and pedunculated fibroid volume was 37% and 33%, respectively. The mean reduction in stalk diameter was 0.3 cm (95% confidence interval [CI]: 0.18, 0.52 cm) or 13% from initial mean diameter. Stalk enhancement was not affected by UAE. The mean pedunculated fibroid infarction and mean overall infarction rates were 87% and 92%, respectively, for observer 1 and 88% and 92% for observer 2, with good interobserver variability. All women returned the questionnaire and no early or late complications of UAE were reported (0%; 95% CI: 0.0%-13.9%). CONCLUSIONS: In this small series of pedunculated subserosal fibroids treated with UAE, no complications occurred. The findings suggest that the use of UAE to treat pedunculated subserosal fibroids may be safe and effective.

106. AJR Am J Roentgenol. 2009 Jul;193(1):267-71.
Long-term quality of life assessment among patients undergoing uterine fibroid embolization.
Popovic M, Berzaczy D, Puchner S, Zadina A, Lammer J, Bucek RA.
OBJECTIVE: The purpose of this study was assessment of the long-term outcome of fibroid-associated quality of life among patients treated with uterine fibroid embolization. MATERIALS AND METHODS: A retrospective follow-up cohort study included all patients described in a 2006 publication. Analysis was performed with a questionnaire consisting of 49 questions about six topics. Assessment was focused on comparing symptoms and quality of life in long-term follow-up. RESULTS: The analysis was based on questionnaires completed by 39 patients. The median follow-up period was 7 years (interquartile range, 1.5 years). Uterine fibroid embolization led to a reduction of bleeding symptoms in 89.7% of the patients, pain in 78.9%, bulk-related symptoms in 89.5%, fatigue in 76.9%, limitations of social life in 92.9%, and depression in 78.6%. The median impairment scores for bleeding and pain decreased significantly from 7 to 0 and from 5 to 0 (both $p < 0.001$). The general quality-of-life index increased significantly from 4.5 to 9 ($p < 0.001$). In the long term, there was no significant difference in parameters assessed compared with the midterm follow-up findings. Six patients (15.4%) underwent hysterectomy an average of 32.1 months after intervention. Thirty-two patients (82.1%) continued to be satisfied with the intervention, and 30 patients (76.9%) answered that they would recommend uterine fibroid embolization to other patients. **CONCLUSION: Uterine fibroid embolization seems to lead to notable long-term relief of fibroid-associated symptoms. In comparison with the midterm results, long-term outcome shows a clear continuance of improvement in general quality of life.**

126. Minim Invasive Ther Allied Technol. 2009;18(2):78-81.
Repeat uterine artery embolization following technical failure.
McLucas B.
This retrospective chart review was performed to evaluate the success of uterine

artery embolization performed in two sessions due to initial technical failure. Patients undergoing embolization for symptomatic uterine myomata between 1997 and 2007 were included in the study. Patients who initially suffered unilateral technical failure were offered repeat embolization. This group was contrasted with patients who underwent bilateral embolization during the initial procedure. Success was defined as relief of symptoms based on pre- and post-procedure questionnaires, and/or > 30% shrinkage of the largest myoma. During the study period, 1078 uterine artery embolization procedures were performed. 1024 (94.9%) were initial bilateral procedures; 34 (3.2%) were unilateral procedures due to technical failure and 20 (1.9%) were unilateral procedures due to anatomical reasons. Twenty-two of the patients who experienced technical failure elected to undergo a repeat procedure. Sixteen patients who underwent repeat embolization were available for review. Eleven patients underwent post-embolization imaging; seven (63.6%) had successful shrinkage of the largest myoma. Three patients underwent post-embolization magnetic resonance imaging evaluation; none demonstrated enhancement of myomata. Fifteen patients completed questionnaires, fourteen (93.3%) reported symptom relief. Seven hundred and thirty-one of the patients who underwent initial bilateral embolization during the study period were available for review. Of the 582 patients with imaging data, 376 (64.6%) had successful shrinkage of the largest myoma. **All 731 patients completed questionnaires. 728 patients (99.6%) reported symptom relief. Two-step bilateral embolization seems to be an effective management option after technical failure.**

137. J Vasc Interv Radiol. 2009 Jun;20(6):730-5. Epub 2009 Mar 31.
Management of uterine artery embolization for fibroids as an outpatient procedure.
Pisco JM, Bilhim T, Duarte M, Santos D.
PURPOSE: To evaluate whether it is safe to perform uterine artery embolization (UAE) as an outpatient procedure. MATERIALS AND METHODS: This retrospective study was approved by the institutional review board and included 234 patients (age range, 24-58 years; mean age, 40.5 years) who underwent UAE as an outpatient procedure with polyvinyl alcohol particles between January 2007 and March 2008. Patients were given acid-suppressing drugs, nonsteroidal anti-inflammatory drugs, anti-histaminic drugs, and laxatives twice on the day before UAE and once on the morning of UAE. Pain score, rated from 0 to 10, was evaluated by using a numeric pain scale during UAE, after the procedure, at discharge, at the night of discharge, and on the following morning. The outcome of UAE was evaluated at 6 months by means of pelvic magnetic resonance imaging and clinical observation.
RESULTS: The mean pain score was 0.9 during embolization, 2.5 4-8 hours after embolization, 0.9 at discharge, 1.1 the first night after discharge, and 0.7 the next morning. All patients were discharged from the hospital 4-8 hours after the procedure, with no overnight hospital admissions. At 6 months, 146 of 158 patients (92.4%) reported an improvement in menorrhagia, 39 of 44 (88.6%) reported an improvement in bulk symptoms, and 20 of 25 (80%) reported an improvement in pain. The volumes of the uterus and the dominant fibroid decreased 33.7% and 39.3%, respectively. CONCLUSIONS: With acid-suppressing, anti-inflammatory, and anti-histaminic drugs started on the day before UAE, the procedure can be performed safely as an outpatient procedure.

In FemISA's personal experience pain after UFE is too great to go home after treatment. I.v pain relief is often required.

164. Minim Invasive Ther Allied Technol. 2009;18(2):1-5.
Repeat uterine artery embolization following poor results.
McLucas B, Reed RA.
It was the objective of this study to assess the efficacy of repeat uterine artery embolization following lack of symptom relief from initial procedure. We performed a retrospective chart review of patients undergoing embolization for symptomatic uterine myomata between 1994 and 2007. Success was defined based upon responses to symptom-relief questionnaires. Patients who reported no relief or worsening of symptoms were offered repeat embolization as well as surgical intervention. Patients who elected to undergo repeat embolization were evaluated for success following the procedure. During the study period, 1058 patients underwent initial bilateral uterine artery embolization. Forty-two (3.97%) patients reported unsuccessful symptom relief. Thirty-nine patients who reported poor results underwent a second bilateral embolization. Thirty-four of these patients completed symptom-assessment questionnaires; thirty-two patients (94.1%) reported symptom relief lasting at least six months post-procedure**. The vast majority of our patients who underwent a second embolization after initial poor results had successful symptom relief. Patients should be offered a second uterine artery embolization after a poor outcome.**

176. J Radiol. 2008 Dec;89(12):1925-9.
[Uterine artery embolization with resorbable material prior to myomectomy]
[Article in French]

Tixier H, Loffroy R, Filipuzzi L, Grevoul J, Mutamba W, Cercueil J, Krausé D, Douvier S, Sagot P.

PURPOSE: Fibroids are a frequent cause of gynecology referral. Myomectomy is a conservative treatment alternative. The main risk from this procedure is hemorrhage. The main objective of this study was to demonstrate the efficacy of preoperative uterine artery embolization with resorbable agents to reduce blood losses and facilitate myomectomy. Secondary objectives were to evaluate morbidity and subsequent fertility. PATIENTS AND METHODS: Retrospective study of 21 patients with preoperative uterine artery embolization prior to myomectomy at the University Medical Center of Dijon over a 3 year period. RESULTS: Myomectomy after uterine artery embolization with resorbable agents was associated with only minimal blood loss. Mean preoperative and postoperative hemoglobin levels were comparable ($p<0.0001$). Uterine suturing was technically simpler. The number of resected fibroids ($p=0.2824$) and the presence of preoperative anemia ($p=0.474$) had no statistically significant impact on the duration of hospital stay. Uterine synechiae occurred in three patients after the procedure, and were easily treated. Two patients had normal subsequent pregnancies. **CONCLUSION: Preoperative uterine artery embolization with resorbable agents was effective in reducing surgical blood losses. This technique reduces the number of hysterectomies and hemorrhagic complications (hematoma, infection, weaker scar tissue). It should be considered in patients wishing uterine preservation when the hemorrhagic risk is high. Its use in**

patients seeking subsequent pregnancy should be further assessed with larger series.

180. Eur J Radiol. 2010 Feb;73(2):339-44. Epub 2008 Dec 11.
Long-term results of symptomatic fibroids treated with uterine artery embolization: in conjunction with MR evaluation.
Kim MD, Lee HS, Lee MH, Kim HJ, Cho JH, Cha SH.

OBJECTIVE: The aim of the present study is to determine long-term clinical efficacy of uterine fibroid embolization (UFE) for symptomatic fibroids in conjunction with MR evaluation. MATERIALS AND METHODS: Sixteen patients with a follow-up period of 4 years or longer were analyzed retrospectively. Ages ranged from 27 to 45 (mean 39.5) years. Mean follow-up periods were 5.8 years (range: 4.1-6.9 years). The symptom changes, in terms of menorrhagia and dysmenorrhea and bulk-related symptoms, were assessed. The primary embolic agent was polyvinyl alcohol particle (250-710microm). All patients underwent preprocedural and long-term follow up MR imaging. Uterine volumes were calculated using MRI. RESULTS: Symptom improvements were reported for menorrhagia (8/9, 88.9%), dysmenorrhea (5/5, 100%), and bulk-related symptoms (7/9, 77.8%) at long-term follow up. Two patients (12.5%) had symptom recurrences at long-term follow-up. Tumor regrowth from incomplete infarction was a cause of recurrence in one patient and newly developed leiomyomas in the other one. One patient underwent hysterectomy because endometriosis developed 4 years after UFE. Of the 14 necrotic myomas on short-term follow up MR after UFE, eight (57.1%) demonstrated maintaining necrosis with further shrinkage and six (42.9%) were no longer visualized on long-term follow up MR images. Overall, the mean volume reduction rates of the predominant fibroid and uterus were 80.5%, 36.7% at long-term follow up, respectively. **CONCLUSION: UFE is an effective treatment for symptomatic fibroids with an acceptable long-term success rate. Long-term MR imaging after UFE revealed persistent necrotic fibroid, non-visualization of fibroids and tumor regrowth when incompletely infarcted**.

191. Am J Obstet Gynecol. 2008 Dec;199(6):671.e1-6. Epub 2008 Nov 4.
Incidence and risk factors for surgical intervention after uterine artery embolization.
Park AJ, Bohrer JC, Bradley LD, Diwadkar GB, Moon E, Newman JS, Jelovsek JE.
OBJECTIVE: To determine the incidence and risk factors for surgical intervention after uterine artery embolization for symptomatic uterine fibroids. STUDY DESIGN: Electronic medical records of all patients who underwent uterine artery embolization for symptomatic uterine leiomyomata were reviewed. Logistic regression was used to identify independent risk factors for any surgical intervention and for hysterectomy alone after uterine artery embolization. RESULTS: Uterine artery embolization was performed in **454 patients** during the study period, with a median follow-up time (range) of 14 (0-128) months. Overall, 99 patients (22%) underwent any surgical intervention after uterine artery embolization in the operating room. Risk factors for any surgical intervention included younger age ($P < .003$), bleeding as an indication for uterine artery embolization ($P < .01$), presence of significant collateral ovarian vessel contribution to the uterus ($P < .01$), or use of 355-500 mum particles ($P < .008$).

CONCLUSION: Patients undergoing uterine artery embolization have a 22% risk for requiring additional surgical intervention, but overall uterine artery embolization is an effective minimally invasive option.

198. Aust N Z J Obstet Gynaecol. 2008 Aug;48(4):360-8.
What is the place of uterine artery embolisation in the management of symptomatic uterine fibroids?
Hickey M, Hammond I.

BACKGROUND: Uterine artery embolisation (UAE) is an alternative to surgical management for symptomatic uterine fibroids and is increasingly performed in Australia. AIMS: To review the evidence for the efficacy, safety and acceptability of UAE and to evaluate the place of UAE in Australia. METHODS: The study used literature review. **RESULTS: UAE compares favourably to hysterectomy and myomectomy in terms of short-term symptom relief, cost, patient satisfaction and complications. There is a paucity of evidence regarding fertility and pregnancy after UAE. A significant minority of women require re-intervention following UAE. CONCLUSIONS: UAE should be considered as an alternative to surgical management of symptomatic uterine fibroids in carefully selected and informed patients.**

213. Fertil Steril. 2009 Aug;92(2):756-61. Epub 2008 Aug 9.
Sexual functioning and psychological well-being after uterine artery embolization in women with symptomatic uterine fibroids.
Voogt MJ, De Vries J, Fonteijn W, Lohle PN, Boekkooi PF.
OBJECTIVE: To assess the effects of uterine artery embolization (UAE) on psychological and sexual well-being 3 months after treatment. DESIGN: Prospective study. SETTING: Large teaching hospital in Tilburg, the Netherlands. PATIENT(S): **141 Premenopausal women** with symptomatic uterine fibroids. INTERVENTION(S): UAE for symptomatic fibroids. MAIN OUTCOME MEASURE(S): Changes in scores on a questionnaire concerning sexual well-being (ranging from 0 to 32, a higher score indicating better functioning) and a questionnaire concerning psychological well-being (SCL-90, ranging from 0 to 360, a higher score indicating more emotional and somatic concerns). **RESULT(S): The total score for sexual functioning showed a statistically significant increase from 20.3 to 22.7, 3 months after UAE, indicating that sexual functioning improved. Thirty-four percent and 37% of women reported an increase in sexual activity and desire. The percentage of women reporting sexual problems of lubrication, orgasm, or pain decreased 7%, 36%, and 14%, respectively. The total SCL-90 score showed a statistically significant decrease from 133 to 116, 3 months after UAE, indicating a decrease in emotional and somatic concerns. CONCLUSION(S): Sexual and psychological well-being improved significantly 3 months after UAE in women with symptomatic uterine fibroids. Sixty-eight percent had an increase in the total score for sexual functioning. Problems with sexual functioning were statistically significantly decreased.**

224. J Vasc Interv Radiol. 2008 Jul;19(7):1007-16; quiz 1017.

Economic evaluation of uterine artery embolization versus hysterectomy in the

treatment of symptomatic uterine fibroids: results from the randomized EMMY trial.

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PURPOSE: To investigate whether uterine artery embolization (UAE) is a cost-effective alternative to hysterectomy for patients with symptomatic uterine fibroids, the authors performed an economic evaluation alongside the multicenter randomized EMMY (EMbolization versus hysterectoMY) trial. MATERIALS AND METHODS:
Between February 2002 and February 2004, 177 patients were randomized to undergo
UAE (n = 88) or hysterectomy (n = 89) and followed up until 24 months after initial treatment allocation. Conditional on the equivalence of clinical outcome, a cost minimization analysis was performed according to the intention to treat principle. Costs included health care costs inside and outside the hospital as well as costs related to absence from work (societal perspective). Cumulative standardized costs were estimated as volumes multiplied with prices. The nonparametric bootstrap method was used to quantify differences in mean (95% confidence interval [CI]) costs between the strategies. RESULTS: In total, 81 patients underwent UAE and 75 underwent hysterectomy. In the UAE group, 19 patients (23%) underwent secondary hysterectomies. The mean total costs per patient in the UAE group were significantly lower than those in the hysterectomy group ($11,626 vs $18,563; mean difference, -$6,936 [-37%], 95% CI: -$9,548, $4,281). The direct medical in-hospital costs were significantly lower in the UAE group: $6,688 vs $8,313 (mean difference, -$1,624 [-20%], 95% CI: -$2,605, -$586). Direct medical out-of-hospital and direct nonmedical costs were low in both groups (mean cost difference, $156 in favor of hysterectomy). The costs related to absence from work differed significantly between the treatment strategies in favor of UAE (mean difference, -$5,453; 95% CI: -$7,718, -$3,107). **The costs of absence from work accounted for 79% of the difference in total costs. CONCLUSIONS: The 24-month cumulative cost of UAE is lower than that of hysterectomy. From a societal economic perspective, UAE is the superior treatment strategy in women with symptomatic uterine fibroids.**

240. J Vasc Interv Radiol. 2008 May;19(5):657-61. Epub 2008 Mar 17.
Outcomes after uterine artery embolization for pedunculated subserosal leiomyomas.
Margau R, Simons ME, Rajan DK, Hayeems EB, Sniderman KW, Tan K, Beecroft JR, Kachura JR.

PURPOSE: To assess the safety and efficacy of uterine artery embolization (UAE) treatment of pedunculated subserosal leiomyomas. MATERIALS AND METHODS: A review of patients undergoing UAE in a 30-month period (July 2004 to December 2006) was performed. Cases in which a pedunculated subserosal tumor (volume>or=4 cm3) was embolized were analyzed. The preprocedural volumes of the

pedunculated tumor and uterus and the diameter and vascularity of the tumor and stalk were recorded. Post treatment sizes of the pedunculated leiomyoma, stalk, and uterus were recorded, as was the presence or absence of complication(s).
RESULTS: A total of 240 patients underwent embolization. Pedunculated subserosal leiomyomas were treated in 16 women, with a technical success rate of 100%. Preprocedural mean tumor and uterine volumes were 372 cm3 and 789 cm3, respectively. The mean stalk diameter was 2.7 cm (range, 0.8-7.8 cm). All pedunculated leiomyomas exhibited enhancement on contrast agent-enhanced magnetic resonance (MR) imaging (n=13) or vascularity on Doppler ultrasonography (US; n=3). Stalk vascularity was noted on MR imaging in 13 patients and was not assessed in the remaining three, who underwent US imaging. Imaging follow-up (mean, 5.9 months after UAE) demonstrated mean tumor volume reduction of 39.3% (95% confidence interval [CI], 28.2%-50.5%) and mean uterine volume reduction of 37.6% (95% CI, 26%-49.3%). There were no cases of continued tumor perfusion and no major complications. There was one minor complication of prolonged hospital stay (36 hours) for pain control.
CONCLUSION: UAE was successfully and safely performed for pedunculated subserosal leiomyomas, with a tumor volume reduction of 39% and no unique complications related to these lesions.

255. Hum Reprod Update. 2008 May-Jun;14(3):259-74. Epub 2008 Mar 14.
Non-surgical management of uterine fibroids.
Tropeano G, Amoroso S, Scambia G.

BACKGROUND: Efforts to develop alternatives to surgery for management of symptomatic uterine fibroids have provided new techniques and new medications. This review summarizes the existing literature on uterine artery embolization (UAE) and investigational studies on four newer approaches. METHODS: PubMed, Cochrane and Embase were searched up to December 2007. Studies reporting side-effects and complications and presenting numerical data on at least one outcome measure were included. **RESULTS: Case studies report 50-60% reduction in fibroid size and 85-95% relief of symptoms following UAE. The largest of these studies reported an in-hospital complication rate of 2.7% (90 of 3041 patients) and a post-discharge complication rate of 26% (710 of 2729 patients). Eight studies compared UAE with conventional surgery. Best evidence suggested that UAE**
offered shorter hospital stays (1-2 days UAE versus 5-5.8 days surgery, 3 randomized controlled trials (RCTs)) and recovery times (9.5-28 days UAE versus 36.2-63 days surgery, 3 RCTs) and similar major complication rates (2-15% UAE versus 2.7-20% surgery, 3 RCTs). Four studies analysing cost-effectiveness found UAE more cost-effective than surgery. There is insufficient evidence regarding fertility and pregnancy outcome after UAE. Five feasibility studies after transvaginal temporary uterine artery occlusion in 75 women showed a 40-50% reduction in fibroid volume and two early studies using magnetic resonance guided-focused ultrasound showed symptom relief at 6 months in 71% of 109 women. Two small RCTs assessing mifepristone and asoprisnil showed promising results.
CONCLUSIONS: Good quality evidence supports the safety and effectiveness of UAE for women with symptomatic fibroids. The current available data are insufficient

to routinely offer UAE to women who wish to preserve or enhance their fertility. Newer treatments are still investigational.

257. J Vasc Interv Radiol. 2008 Feb;19(2 Pt 1):195-200.
Long-term efficacy and safety of uterine artery embolization in young patients with and without uteroovarian anastomoses.
Kim HS, Paxton BE, Lee JM.

PURPOSE: To assess long-term clinical efficacy of uterine artery embolization (UAE) in young women and the clinical significance of patent anastomoses between uterine and ovarian arteries. MATERIALS AND METHODS: Consecutive women **no older than 39 years of age** treated with UAE for symptomatic uterine leiomyomata with at least 3 years of follow-up were included in the study. Analysis includes angiographic images, pre- and postoperative magnetic resonance (MR) images, and symptom evaluations. Clinical evaluation and symptom severity scores (SSSs) were obtained at 6 months and yearly. Leiomyomata volume change, SSS, and repeat intervention rates were compared for patients with and without anastomoses between uterine and ovarian arteries. RESULTS: The study cohort included 87 patients, including 30 white patients (34.4%), 49 black patients (56.3%), and eight patients of other ethnicities (9.2%). Anastomoses were demonstrated in 41 patients (47.1%). Seventy patients (80.5%) completed the long-term follow-up, of whom 35 had an anastomosis (85.4% of the 41 patients with anastomoses) and 35 did not (76.1% of the 46 patients without anastomoses). Mean leiomyoma volume reduction was 49.1% (P = .018), and reduction of uterine volume was 36.0% (P < .001). Mean clinical follow-up duration was 45 months. Overall, 18 of 70 patients (25.7%) underwent repeat interventions, including 13 (37.1%) with anastomoses and five (14.3%) without anastomoses (P = .029). One patient (1.4%) developed natural amenorrheic change in the long term after UAE. Nineteen patients (27.1%) attempted pregnancy after UAE, and 12 patients had 15 pregnancies, with six pregnancies to full term. **CONCLUSIONS: UAE in young patients achieves significant dominant leiomyoma volume reduction and symptomatic improvements, with overall repeat intervention rates of 25.7% in the long term. Uteroovarian anastomoses in young patients are associated with higher rates of repeat intervention after UAE.**

UAE, particularly regarding fertility. The data suggested that fertility and miscarriage rate are consistent with those of age-matched women with fibroids. UAE is an effective treatment for some women with fibroids and our trial supports the National Institute for Health and Clinical Excellence guidance that it should be made available as one of the options for treatment, with a possible reduction in the need for hysterectomy as the first-line treatment. Further research is needed into which women will be treated most successfully by UAE, the best method of achieving effective embolisation, advice for women who desire future fertility, the role of prophylactic antibiotics in UAE, and the effects of HRT use after UAE on recurrence of fibroid symptoms.

286. Radiology. 2008 Mar;246(3):823-32. Epub 2008 Jan 9.
Symptomatic uterine fibroids: treatment with uterine artery embolization or hysterectomy--results from the randomized clinical Embolisation versus

Hysterectomy (EMMY) Trial.
Hehenkamp WJ, Volkers NA, Birnie E, Reekers JA, Ankum WM.
PURPOSE: To prospectively evaluate health-related quality of life (HRQOL) outcomes for uterine artery embolization (UAE) and hysterectomy up to 24 months after the intervention in terms of mental and physical health, urinary and defecatory function, and overall patient satisfaction. MATERIALS AND METHODS: Ethics committee approval and informed consent were obtained for the Embolisation versus Hysterectomy Trial. Women (n = 177) with uterine fibroids and heavy menstrual bleeding who were scheduled to undergo hysterectomy were randomly assigned to undergo UAE (n = 88) or hysterectomy (n = 89). HRQOL was measured six times during a 24-month follow-up period with the following validated questionnaires: Medical Outcome Study Short Form 36 (SF-36) mental component summary (MCS) and physical component summary (PCS), Health Utilities Index Mark 3, EuroQol 5D, urogenital distress inventory (UDI), incontinence impact questionnaire, and defecation distress inventory (DDI). Satisfaction was assessed with a seven-point Likert scale. Repeated measurement analysis was performed for between-group analysis. Paired t tests were performed for within-group analysis. Satisfaction was analyzed with the Fisher exact test. RESULTS: The SF-36 MCS and PCS, Health Utilities Index Mark 3, EuroQol 5D, and UDI scores were improved significantly in both groups at 6 months and afterward ($P < .05$). **The DDI score was improved significantly in only the UAE group at 6 months and afterward ($P < .05$).** No differences between groups were observed, with the exception of PCS scores at 6-week follow-up: Patients in the UAE group had significantly better scores than did patients in the hysterectomy group ($P < .001$). Improvement in PCS score at 24-month follow-up was significantly higher for patients who were employed at baseline ($P = .035$). At 24-month follow-up, patients in the hysterectomy group were significantly more satisfied than those in the UAE group ($P = .02$). **CONCLUSION: Both UAE and hysterectomy improved HRQOL. No differences were observed between groups regarding HRQOL at 24-month follow-up. On the basis of HRQOL results, the authors determined that UAE is a good alternative to hysterectomy.**

287. Obstet Gynecol. 2008 Jan;111(1):22-33.
Uterine artery embolization for treatment of leiomyomata: long-term outcomes from the FIBROID Registry.
Goodwin SC, Spies JB, Worthington-Kirsch R, Peterson E, Pron G, Li S, Myers ER; Fibroid Registry for Outcomes Data (FIBROID) Registry Steering Committee and Core Site Investigators.
OBJECTIVE: To assess long-term clinical outcomes of uterine artery embolization across a wide variety of practice settings in a large patient cohort. METHODS: The Fibroid Registry for Outcomes Data (FIBROID) for Uterine Embolization was a 3-year, single-arm, prospective, multi-center longitudinal study of the short- and long-term outcomes of uterine artery embolization for leiomyomata. Two thousand one hundred twelve patients with symptomatic leiomyomata were eligible for long-term follow-up at 27 sites representing a geographically diverse set of practices, including academic centers, community hospitals, and closed-panel health maintenance organizations. At 36 months after treatment, 1,916 patients remained in the study, and of these, 1,278 patients completed the survey. The primary measures of outcome were the symptom and health-related quality-of-life

scores from the Uterine Fibroid Symptom and Quality of Life questionnaire. RESULTS: Mean symptom scores improved 41.41 points (P<.001), and the quality of life scores improved 41.47 points (P<.001), both moving into the normal range for this questionnaire. The improvements were independent of practice setting. During the 3 years of the study, Kaplan-Meier estimates of hysterectomy, myomectomy, or repeat uterine artery embolization were 9.79%, 2.82%, and 1.83% of the patients, respectively. **CONCLUSION: Uterine artery embolization results in a durable improvement in quality of life. These results are achievable when the procedure is performed in any experienced community or academic interventional radiology practice. LEVEL OF EVIDENCE: III.**

292. Diagn Interv Radiol. 2007 Dec;13(4):210-2.
Is uterine artery embolization prior to myomectomy for giant fibroids helpful?
Ustünsöz B, Uğurel MS, Bozlar U, Duru NK, Ustünsöz A.
PURPOSE: To determine whether uterine artery embolization (UAE) prior to myomectomy is more effective than myomectomy alone. MATERIALS AND METHODS: The study included 15 consecutive infertile women with uterine fibroids > 10 cm (Group I) that underwent UAE with spherical particles using a microcatheter technique and a unilateral femoral approach between March 2005 and January 2007. The day after embolization all cases underwent myomectomy since the protocol for large fibroids in our hospital is myomectomy only. The control group was composed of 15 patients who underwent myomectomy only (Group II). Group II was established based on fibroid size (14 +/- 3 cm). Operating time, estimated blood loss and transfusion, complications, and hospital stay were calculated by retrospective chart reviews, and comparisons were made between the groups with Student's t-test. RESULTS: Mean operating time was 138 min in Group I and 240 minutes in Group II (P < 0.01). Mean estimated blood loss was 250 ml in Group I and 690 ml in Group II (P < 0.01). There was no need for transfusion in Group I, while transfusion was needed in 2 cases (13%) in Group II. Mean hospital stay in Group I was 5 days versus 8 days in Group II. Complications, including subsequent hysterectomy, were seen in 2 cases and bowel-bladder injuries in 1 case in Group II (a total of 20%), while no complications were observed in Group I. One of the cases in Group I later conceived and gave birth to a healthy child. **CONCLUSION: UAE prior to myomectomy is more effective than myomectomy alone.**

299. Cardiovasc Intervent Radiol. 2008 Mar-Apr;31(2):254-9. Epub 2007 Nov 17.
Outcomes after unilateral uterine artery embolization: a retrospective review.
Bratby MJ, Hussain FF, Walker WJ.
PURPOSE: Bilateral uterine artery embolization (UAE) is considered necessary to provide effective treatment for symptomatic uterine fibroids. Occasionally, only unilateral embolization is performed, and this study evaluates these outcomes. MATERIALS AND METHODS: As part of a prospective observational study of more than
1600 patients treated with UAE since 1996, there have been 48 patients in whom unilateral embolization has been performed. This study retrospectively reviews clinical response as assessed by our standard questionnaire and radiological response assessed by either magnetic resonance imaging or ultrasound. RESULTS: Two principal groups emerged: the largest, where only the dominant unilateral arterial supply was electively embolized (30 patients); and the second, where

there was technical failure to catheterize the second uterine artery as a result of anatomical constraints (12 patients). Favorable clinical response with a reduction in menorrhagia at 1 year was seen in 85.7% (18/21) of those patients with a dominant arterial supply to the fibroid(s). In contrast, in those patients where there was technical failure to embolize one uterine artery, there was a high rate of clinical failure requiring further intervention in 58.3% (7/12). Comparison of the technical failure group with the dominant uterine artery group demonstrated a statistically significant (Fisher's exact test) difference in the proportion of patients with evidence of persistent fibroid vascularity ($p < 0.001$) and requiring repeat intervention ($p < 0.01$). **CONCLUSION: We conclude that unilateral UAE can achieve a positive clinical result in the group of patients where there is a dominant unilateral artery supplying the fibroid(s), in contrast to the poor results seen following technical failure.**

305. BJOG. 2007 Nov;114(11):1352-62.
Uterine artery embolisation or hysterectomy for the treatment of symptomatic uterine fibroids: a cost-utility analysis of the HOPEFUL study.

Wu O, Briggs A, Dutton S, Hirst A, Maresh M, Nicholson A, McPherson K.
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OBJECTIVES: To evaluate the relative cost-effectiveness of uterine artery embolisation (UAE) and hysterectomy in women with symptomatic uterine fibroids from the perspective of the UK NHS. DESIGN: Cost-utility analysis. SETTING: Eighteen UK NHS hospital trusts. POPULATION OR SAMPLE Women who underwent UAE (n= 649; average follow up of 8.6 years) or hysterectomy (n= 459; average follow up of 4.6 years) for the treatments of symptomatic fibroids. METHODS: A probabilistic decision model was carried out based on data from a large comparative cohort and the literature. The two interventions were evaluated over the time horizon from the initial procedure to menopause. Extensive sensitivity analysis was carried out to test model assumptions and parameter uncertainties. MAIN OUTCOME MEASURES: Costs of procedures and complications and quality of life expressed as quality-adjusted life years (QALYs). RESULTS: Overall, UAE was associated with lower mean cost (2536 pounds sterling versus 3282 pounds sterling) and a small reduction in quality of life (8.203 versus 8.241 QALYs) when compared with hysterectomy. However, when the quality of life associated with the conservation of the uterus was incorporated in the model, UAE was shown to be the dominant strategy--lower costs and greater QALYs. **CONCLUSIONS: UAE is a less expensive option to the health service compared with hysterectomy, even when**
the costs of repeat procedures and associated complications are factored in. The quality of life implications in the short term are also predicted to favour UAE; however, this advantage may be eroded over time as women undergo additional procedures to deal with recurrent fibroids. Given the hysterectomy is the current standard treatment for symptomatic fibroids, offering women UAE as an alternativetreatment for fibroids is likely to be highly cost-effective for those women who prefer uterus-conserving treatment.

306. BJOG. 2007 Nov;114(11):1340-51.

A UK multicentre retrospective cohort study comparing hysterectomy and uterine artery embolisation for the treatment of symptomatic uterine fibroids (HOPEFUL study): main results on medium-term safety and efficacy.
Dutton S, Hirst A, McPherson K, Nicholson T, Maresh M.
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OBJECTIVES: Comparison of medium-term safety and efficacy of hysterectomy and uterine artery embolisation (UAE) for symptomatic uterine fibroids. DESIGN: Multicentre retrospective cohort. SETTING: 18 UK NHS hospital trusts. PARTICIPANTS: Four hundred and fifty nine women who had hysterectomy within a national audit during 12 months from October 1994 (VALUE study) (average follow up of 8.6 years) and 649 women receiving UAE from 1996 to 2002 (average follow up of 4.6 years). METHODS: Clinical data from existing hospital records and patient completed postal questionnaires. MAIN OUTCOME MEASURES: Complication rates, side
effects of embolisation, satisfaction with treatment, relief from symptoms and requirement for further fibroid treatment. RESULTS: Fewer complications were experienced by women receiving UAE (19 versus 26% hysterectomy, P = 0.001), the adjusted odds ratio for UAE versus hysterectomy was 0.48 (95% CI 0.26-0.89). One-third of women undergoing UAE experienced anticipated general side effects associated with the procedure. More women in the hysterectomy cohort reported relief from fibroid symptoms (95 versus 85%, P < 0.0001) and feeling better (96 versus 84%, P < 0.0001), but only 85% would recommend the treatment to a friend compared with 91% in the UAE arm (P = 0.007). There was a 23% (95% CI 19-27%) chance of requiring further treatment for fibroids after UAE. Twenty-seven women who had had UAE reported 37 pregnancies after treatment resulting in 19 live births. **CONCLUSIONS: UAE results in fewer complications than hysterectomy. Side effects after embolisation should be anticipated, and almost one-quarter of women having UAE were likely to require further treatment for fibroid symptoms. Both treatments appear to be safe and effective over the medium term, and the choice of treatment may be a matter of personal preference for each individual woman.**

315. Cardiovasc Intervent Radiol. 2007 Nov-Dec;30(6):1139-43. Epub 2007 Sep 14.

Prospective study of elective bilateral versus unilateral femoral arterial puncture for uterine artery embolization.

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The purpose of this study was to assess the effect of elective bilateral femoral arterial punctures for uterine artery embolization (UAE) of symptomatic fibroids on fluoroscopy and procedural time, patient dose, and ease of procedure. We conducted a prospective study of UAE with either the intention to catheterize both uterine arteries using a single femoral puncture (n = 12) or elective bilateral arterial punctures from the outset (n = 12). The same two operators

undertook each case. Main outcome measures were total procedure time, fluoroscopy time, dose-area product (DAP), and total skin dose. A simulation was then performed on an anthropomorphic phantom using the mean in vivo fluoroscopy parameters to estimate the ovarian dose. Bilateral UAE was achieved in all patients. None of the patients with initial unilateral arterial puncture required further contralateral arterial puncture. The mean fluoroscopy time in the group with elective bilateral punctures was 12.8 min, compared with a mean of 16.6 min in patients with unilateral puncture (p = 0.046). There was no significant difference in overall procedure time (p = 0.68). No puncture-site complications were found. Additional catheters were required only following unilateral puncture. The simulated dose was 25% higher with unilateral puncture. Although there was no significant difference in measured in vivo patient dose between the two groups (DAP, p = 0.32), this is likely to reflect the wide variation in other patient characteristics. **Allowing for the small study size, our results show that the use of elective bilateral arterial punctures reduces fluoroscopy time, requires less catheter manipulation, and, according to the simulation model, has the potential to reduce patient dose. The overall procedure time, however, is not significantly reduced.**

329. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):866-75.
Sexuality and body image after uterine artery embolization and hysterectomy in the treatment of uterine fibroids: a randomized comparison.
Hehenkamp WJ, Volkers NA, Bartholomeus W, de Blok S, Birnie E, Reekers JA, Ankum WM.
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In this paper the effect of uterine artery embolization (UAE) on sexual functioning and body image is investigated in a randomized comparison to hysterectomy for symptomatic uterine fibroids. The EMbolization versus hysterectoMY (EMMY) trial is a randomized controlled study, conducted at 28 Dutch hospitals. Patients were allocated hysterectomy (n = 89) or UAE (n = 88). Two validated questionnaires (the Sexual Activity Questionnaire [SAQ] and the Body Image Scale [BIS]) were completed by all patients at baseline, 6 weeks, and 6, 12, 18, and 24 months after treatment. Repeated measurements on SAQ scores revealed no differences between the groups. There was a trend toward improved sexual function in both groups at 2 years, although this failed to reach statistical significance except for the dimensions discomfort and habit in the UAE arm. Overall quality of sexual life deteriorated in a minority of cases at all time points, with no significant differences between the groups (at 24 months: UAE, 29.3%, versus hysterectomy, 23.5%; p = 0.32). **At 24 months the BIS score had improved in both groups compared to baseline, but the change was only significant in the UAE group (p = 0.009). In conclusion, at 24 months no differences in sexuality and body image were observed between the UAE and the hysterectomy group. On average, both after UAE and hysterectomy sexual functioning and body image scores improved, but significantly so only after UAE.**

334. Cardiovasc Intervent Radiol. 2008 May-Jun;31(3):514-20.
Preoperative uterine artery embolization (PUAE) before uterine fibroid myomectomy.

Dumousset E, Chabrot P, Rabischong B, Mazet N, Nasser S, Darcha C, Garcier JM, Mage G, Boyer L.
CHU Clermont Ferrand, Services de Radiologie B et Gynécologie, hôpital G. Montpied, F 63003, Clermont-Ferrand, France.
PURPOSE: To evaluate the potential of uterine artery embolization to minimize blood loss and facilitate easier removal of fibroids during subsequent myomectomy. METHODS: This retrospective study included 22 patients (median age 37 years), of whom at least 15 wished to preserve their fertility. They presented with at least one fibroid (mean diameter 85.6 mm) and had undergone preoperative uterine artery embolization (PUAE) with resorbable gelatin sponge. RESULTS: No complication or technical failure of embolization was identified. Myomectomies were performed during laparoscopy (12 cases) and laparotomy (9 cases). One hysterectomy was performed. The following were noted: easier dissection of fibroids (mean 5.6 per patient, range 1-30); mean intervention time 113 min (range 25-210 min); almost bloodless surgery, with a mean peroperative blood loss of 90 ml (range 0-806 ml); mean hemoglobin pretherapeutically 12.3 g/dl (range 5.9-15.2 g/dl) and post-therapeutically 10.3 g/dl (range 5.6-13.3 g/dl), with no blood transfusion needed. Patients were discharged on day 4 on average and the mean sick leave was 1 month. **CONCLUSION: Preoperative embolization is associated with minimal intraoperative blood loss. It does not increase the complication rate or impair operative dissection, and improves the chances of performing conservative surgery.**

346. Am J Obstet Gynecol. 2007 Jun;196(6):519.e1-11.
Uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids: 2 years' outcome from the randomized EMMY trial.
Volkers NA, Hehenkamp WJ, Birnie E, Ankum WM, Reekers JA.
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OBJECTIVE: The purpose of this study was to compare the 2 years' efficiency of uterine artery embolization (UAE) with hysterectomy in the treatment of menorrhagia caused by uterine fibroids in a randomized controlled trial. STUDY DESIGN: Twenty-eight Dutch hospitals recruited patients with uterine fibroids and menorrhagia, who were eligible for hysterectomy. Patients were randomized to UAE or hysterectomy. The primary endpoint was if UAE could avoid a subsequent hysterectomy in at least 75% of cases. Secondary endpoints were changes in pain, bulk-related complaints, and uterine and dominant fibroid volume reduction. RESULTS: One hundred seventy-seven patients were randomized to UAE (n = 88) or hysterectomy (n = 89). **Two years after treatment 23.5% of UAE patients had undergone a hysterectomy. There were no significant differences in improvement compared to baseline in pain and bulk-related complaints. Uterine and dominant fibroid volume reduction in UAE patients was 48.2% and 60.5%, respectively. CONCLUSION: UAE is a valuable alternative treatment for symptomatic uterine fibroids. Nevertheless, when patients seek for certainty on the cessation of bleeding problems, a hysterectomy remains the treatment of choice.**

380. N Engl J Med. 2007 Jan 25;356(4):360-70.
Uterine-artery embolization versus surgery for symptomatic uterine fibroids.

Edwards RD, Moss JG, Lumsden MA, Wu O, Murray LS, Twaddle S, Murray GD; Committee of the Randomized Trial of Embolization versus Surgical Treatment for Fibroids.
Comment in:
N Engl J Med. 2007 May 24;356(21):2218; author reply 2219.
N Engl J Med. 2007 Jan 25;356(4):411-3.
N Engl J Med. 2007 May 24;356(21):2218-9; author reply 2219.
Natl Med J India. 2007 Mar-Apr;20(2):87-8.

BACKGROUND: The efficacy and safety of uterine-artery embolization, as compared with standard surgical methods, for the treatment of symptomatic uterine fibroids remain uncertain. METHODS: We conducted a randomized trial comparing uterine-artery embolization and surgery in women with symptomatic uterine fibroids. The primary outcome was quality of life at 1 year of follow-up, as measured by the Medical Outcomes Study 36-Item Short-Form General Health Survey (SF-36). RESULTS: Patients were randomly assigned in a 2:1 ratio to undergo either uterine-artery embolization or surgery, with 106 patients undergoing embolization and 51 undergoing surgery (43 hysterectomies and 8 myomectomies). There were no significant differences between groups in any of the eight components of the SF-36 scores at 1 year. The embolization group had a shorter median duration of hospitalization than the surgical group (1 day vs. 5 days, P<0.001) and a shorter time before returning to work (P<0.001). At 1 year, symptom scores were better in the surgical group (P=0.03**). During the first year of follow-up, there were 13 major adverse events in the embolization group (12%) and 10 in the surgical group (20%) (P=0.22), mostly related to the intervention. Ten patients in the embolization group (9%) required repeated embolization or hysterectomy for inadequate symptom control. After the first year of follow-up, 14 women in the embolization group (13%) required hospitalization, 3 of them for major adverse events and 11 for reintervention for treatment failure. CONCLUSIONS: In women with symptomatic fibroids, the faster recovery after embolization must be weighed against the need for further treatment in a minority of patients.**

382. Cardiovasc Intervent Radiol. 2007 Mar-Apr;30(2):268-72.
Use of the 4F Rösch inferior mesenteric catheter in embolization procedures in the pelvis: **a review of 300 cases**.
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The aim of this study is to evaluate the use of a 4F Rösch inferior mesenteric (RIM) catheter for pelvic embolization procedures. **Between October 2000 and January 2006, 364 patients (357 female, 7 male; age: 23-67 years) underwent embolization of various pathologies [uterine fibroids (n = 324), pure adenomyosis of the uterus (n = 19), postpartum hemorrhage (n =1), traumatic or postoperative hemorrhage (n = 9), bleeding related to cervical cancer (n =7), AV malformation of the uterus (n = 2) and high-flow priapism (n = 2)] at a single institution**. In all cases, bilateral catheterization was primarily attempted with the use of a 4F hook-shaped braided endhole catheter (Rösch-Inferior-Mesenteric, RIM-Catheter, Cordis, Miami, FL). Frequency of initial failure to catheterize the vascular

territory of interest and carry out the embolization were recorded and the types of difficulty encountered were noted. **Catheterization of the main stem of the vessel territory of interest with the use of a unilateral femoral approach and the 4F RIM catheter was successful in 334/364 (91.8%) the embolization cases. Bilateral catheterization of the internal iliac arteries using a single common femoral artery access and the 4F RIM catheter was achieved in 322/364 (88.5%) patients. In 12/364 (3.3%) patients, a contralateral puncture was performed and the same 4F catheter was used. In 28/364 (7.7%) cases the 4F RIM catheter was exchanged for a catheter with a cobra-shaped or sidewinder configuration**. The 4F RIM catheter is a simple and valuable alternative to catheters and techniques commonly employed for pelvic artery embolization.

419. J Vasc Interv Radiol. 2006 Aug;17(8):1287-95.
A prospective multicenter comparative study between myomectomy and uterine artery embolization with polyvinyl alcohol microspheres: long-term clinical outcomes in patients with symptomatic uterine fibroids.
Siskin GP, Shlansky-Goldberg RD, Goodwin SC, Sterling K, Lipman JC, Nosher JL, Worthington-Kirsch RL, Chambers TP; UAE versus Myomectomy Study Group.
Department of Radiology, Albany Medical College, 47 New Scotland Ave, MC-113, NY, USA. sisking@mail.amc.edu.
PURPOSE: To prospectively evaluate the safety and effectiveness of polyvinyl alcohol (PVA) microspheres in patients undergoing uterine artery embolization (UAE) to treat uterine fibroid tumors and to compare the long-term changes in health-related quality of life (QOL) after UAE with the changes seen after myomectomy. MATERIALS AND METHODS: One hundred forty-six patients with uterine myomas were enrolled into this multicenter study, with 77 patients undergoing UAE with PVA and 69 patients undergoing myomectomy. Six-month follow-up was completed for the myomectomy, whereas 2-year follow-up was completed for the UAE group.
Outcomes were assessed with the Uterine Fibroid QOL Questionnaire and based on adverse event incidence, time to return to normal activity, and changes in tumor symptom scores, QOL scores, and menorrhagia bleeding scores. For the UAE cohort, changes in total uterine volume and dominant tumor size on magnetic resonance (MR) imaging were assessed. RESULTS: In the UAE cohort, 88.3% of patients experienced a reduction of tumor-related symptoms (increase >or=5 points from baseline measurement) at 6 months, with 75.4% of patients in the myomectomy group experiencing similar improvement. Median QOL questionnaire scores at 6 months were found to be significantly higher in patients treated with UAE (P = .041), with sustained improvement seen at 12 and 24 months. Both procedures resulted in significant reductions in 6-month menorrhagia bleeding scores, with sustained improvement in the UAE cohort at 12 and 24 months. MR imaging at 6 months revealed significant uterine and tumor volume reductions after UAE (P < .05). At least one adverse event occurred in 42% of patients in the myomectomy group, compared with 26% in the UAE group (P < .05). **CONCLUSIONS: UAE performed with PVA microspheres was associated with greater sustained improvements in symptom severity and health-related QOL and with fewer complications compared with myomectomy. Six-month MR imaging data demonstrated significant reductions in uterine and tumor volumes, although the degree of tissue infarction after UAE was not assessed with contrast medium-enhanced MR imaging.**

463. Fertil Steril. 2006 Jan;85(1):14-21.
Uterine artery embolization versus myomectomy: a multicenter comparative study.
Goodwin SC, Bradley LD, Lipman JC, Stewart EA, Nosher JL, Sterling KM, Barth MH, Siskin GP, Shlansky-Goldberg RD; UAE versus Myomectomy Study Group.
Department of Veterans Affairs, The University of California, Los Angeles, California, USA. scott.goodwin@med.va.gov

Comment in:
Fertil Steril. 2006 Jan;85(1):40-3; discussion 48-50.
Fertil Steril. 2006 Jan;85(1):46-7; discussion 48-50.
Fertil Steril. 2006 Oct;86(4):1029; author reply 1029.
Fertil Steril. 2006 Jan;85(1):44-5; discussion 48-50.

OBJECTIVE: To determine whether there is significant quality of life score improvement after uterine artery embolization (UAE) and to compare UAE and myomectomy outcomes. DESIGN: Prospective cohort controlled study. SETTING: Sixteen medical centers in the United States. PATIENT(S): One hundred forty-nine UAE patients and 60 myomectomy patients. Patients were assigned to myomectomy or
UAE on the basis of a best treatment decision made by the patient and her physician. All patients were observed for 6 months. The UAE patients also had follow-up examinations at 1 year. INTERVENTION(S): Myomectomy or UAE. MAIN OUTCOME MEASURE(S): Quality of life score changes, menstrual bleeding score changes, uterine size differences, time off, and adverse events. RESULT(S): **Both groups experienced statistically significant improvements in the uterine fibroid quality of life score, menstrual bleeding, uterine volume, and overall postoperative quality of life**. **The mean hospital stay was 1 day for the UAE patients, compared with 2.5 days for the myomectomy patients. The UAE and myomectomy patients returned to their normal activities in 15 days and 44 days, respectively, and returned to work in 10 days and 37 days, respectively. At least one adverse event occurred in 40.1% of the myomectomy patients, compared with 22.1% in the UAE group. CONCLUSION(S): The uterine fibroid quality of life score was significantly improved in both groups. No significant differences were observed in bleeding improvement, uterine volume reduction, uterine fibroid quality of life score improvement, and overall quality of life score improvement between groups. Patients receiving UAE required fewer days off work, fewer hospital days, and experienced fewer adverse events.**

489. Cardiovasc Intervent Radiol. 2006 Mar-Apr;29(2):188-91.
Mid-term clinical results and patient satisfaction after uterine artery embolization in women with symptomatic uterine fibroids.
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Department of Radiology, St. Elisabeth Ziekenhuis, Tilburg, The Netherlands, radiol@knmg.nl.
PURPOSE: To evaluate the mid-term clinical results and patient satisfaction following uterine artery embolization (UAE) in women with symptomatic fibroids. METHODS: Between August 1998 and December 2002, 135 patients had UAE for symptomatic uterine fibroids. All patients were asked to fill in a questionnaire.

Questions were aimed at changes in bleeding, pain, and bulk-related symptoms. Symptoms after UAE were scored as disappeared, improved, unchanged or worsened. Adverse events were noted, such as vaginal dryness and discharge, menopausal complaints or fibroid expulsion. Patient satisfaction after UAE was assessed. Patient satisfaction of women embolized with polyvinyl alcohol (PVA) particles was compared with satisfaction of women embolized with calibrated microspheres.
RESULTS: The questionnaire was returned by 110 of 135 women (81%) at a median time interval of 14 months following UAE. In 10 women additional embolization or hysterectomy had been performed. **Of the 110 responders, 86 (78%) were satisfied with the result of UAE**. The proportion of satisfied women was higher in the group embolized with calibrated microspheres than in women embolized with PVA, although this difference was not statistically significant (p = 0.053). **CONCLUSION: UAE in women with symptomatic uterine fibroids leads to improvement of symptoms and patient satisfaction is good in the vast majority after a median follow-up period of 14 months.**

490. Ceska Gynekol. 2005 Sep;70(5):383-8.
[Embolization of uterine arteries during myoma treatment from the patient's point of view] [Article in Czech]
Fucíková Z, Mára M, Maskovsá J, Kuzel D, Fencl P, Svárovský J, Drbohlav P, Masata J, Krivánek J.
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OBJECTIVES: To acquire information about the patient's follow-up evaluation of treating fibroids by uterine artery embolization (UAE). DESIGN: A retrospective multicenter clinical trial. SETTING: Department of Obstetrics and Gynaecology, 1st Faculty of Medicine and the General Faculty Hospital, Charles University, Prague. METHODS: 45 women who underwent the UAE due to uterine fibroids from 1999 to 2003 were asked to complete a questionnaire. The questionnaire included 26 questions asking how the women had been informed and what they had expected. Further questions were focused on the course of embolization itself, early post-procedural difficulties (post-embolization syndrome) and patient's overall evaluation of treatment in a longer term. Those women who had completed the questionnaire and had been ready to co-operate were thereafter examined and included in the follow-up monitoring and, if necessary, further treatment was recommended. RESULTS: Thirty one out of 45 patients from 26 to 48 years of age, who had been addressed (68.9%) answered the questionnaire. **UAE was indicated 12 times (38.7%) on account of symptoms, 10 times (32.3%) because of sterility, 5 times (16.1%) as a preventive measure within the framework of family planning and 4 times (12.9%) for an asymptomatic but growing leiomyoma. Twenty seven (87.1%) women were also offered an alternative treatment, which they refused. As far as problems are concerned, 18 (58%) women described the course of treatment as corresponding with what they had expected, 5 times it was less painful, and 8 times it was worse than expected. The long-term results were considered as positive by 87.1% of responders, only 12.9% considered the treatment as failure. 5 in 11 women planning pregnancy became pregnant, 3 of them gave birth in term and 2 miscarried in the 1st trimester**. CONCLUSION: **From the point of view of the patients, the evaluated method proves highly successful, it is well tolerated and it involves a low risk of complications. It is not possible, at this point,**

however, to give an unequivocal answer to the question whether the method should also be routinely offered to women who are planning pregnancy.

4. Safety

32. Int J Gynecol Pathol. 2010 May;29(3):260-8.

Uterine artery embolization with trisacryl gelatin microspheres in women treated for leiomyomas: a clinicopathologic analysis of alterations in gynecologic surgical specimens.

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To characterize the histologic range of alterations due to uterine artery embolization with trisacryl gelatin microspheres in gynecologic specimens containing leiomyomas in detail, we report our clinicopathologic experience with 26 cases (longest postuterine artery embolization interval, 1.9 yr). Microspheres were observed in 85% of cases and could be seen up to 1.9 years after embolization. They were mainly present in leiomyomas and nonneoplastic myometrium but could be found in other nontargeted sites, such as the cervix, endometrium, ovaries, and fallopian tubes; however, infarction (present in 96% of cases) was confined to leiomyomas and did not involve other nonneoplastic tissues. The appearance of the infarcts was correlated with time after embolization, and coagulative necrosis/necrosis of indeterminate type was restricted to the early period after uterine artery embolization (before 10 wk postuterine artery embolization) whereas hyaline necrosis was seen predominantly in the late period (mostly after 10 wk, up to 1.9 yr). Of the 14 hysterectomy specimens with microspheres in extravascular spaces (almost all of which were in close proximity to the arteries), pseudoaneurysms were also focally present in 8 (57%) specimens. Microspheres were usually associated with mild inflammatory reactions, which persisted >1 year after embolization but did not become more severe over time. Morphologic and histochemical features of trisacryl gelatin microspheres were compared with other embolization agents, which can also be encountered in surgical specimens [polyvinyl alcohol (PVA) particles and PVA microspheres]. Trisacryl gelatin microspheres were negative with periodic acid-Schiff and orange-pink with Movat stains whereas PVA was positive with periodic acid-Schiff and black with Movat. Our study, the largest histologic analysis to date, confirms and extends the observations of earlier studies of trisacryl gelatin microspheres. In addition, we conclude that, as expected, the histologic appearance of microsphere-induced infarcts is a function of time, similar to healing of infarcts in nongynecologic sites. Pseudoaneurysms are a likely mechanism for the production of microspheres in extravascular spaces. Inflammation associated with microspheres can persist in gynecologic tissues but does not seem to result in the destruction of nontargeted sites. Finally, trisacryl gelatin microspheres can be distinguished from PVA particles and PVA microspheres based on a combination of morphologic features and histochemical stains.

57. Cardiovasc Intervent Radiol. 2010 Jan 22. [Epub ahead of print]
Uterine Artery Embolization for Leiomyomata: Optimization of the Radiation Dose to the Patient Using a Flat-Panel Detector Angiographic Suite.
Sapoval M, Pellerin O, Rehel JL, Houdoux N, Rahmoune G, Aubert B, Fitton I.

The purpose of this study was to assess the ability of low-dose/low-frame fluoroscopy/angiography with a flat-panel detector angiographic suite to reduce the dose delivered to patients during uterine fibroid embolization (UFE). A two-step prospective dosimetric study was conducted, with a flat-panel detector angiography suite (Siemens Axiom Artis) integrating automatic exposure control (AEC), during 20 consecutive UFEs. Patient dosimetry was performed using calibrated thermoluminescent dosimeters placed on the lower posterior pelvis skin. The first step (10 patients; group A) consisted in UFE (bilateral embolization, calibrated microspheres) performed using the following parameters: standard fluoroscopy (15 pulses/s) and angiography (3 frames/s). The second step (next consecutive 10 patients; group B) used low-dose/low-frame fluoroscopy (7.5 pulses/s for catheterization and 3 pulses/s for embolization) and angiography (1 frame/s). We also recorded the total dose-area product (DAP) delivered to the patient and the fluoroscopy time as reported by the manufacturer's dosimetry report. The mean peak skin dose decreased from 2.4 +/- 1.3 to 0.4 +/- 0.3 Gy (P = 0.001) for groups A and B, respectively. The DAP values decreased from 43,113 +/- 27,207 muGy m(2) for group A to 9,515 +/- 4,520 muGy m(2) for group B (P = 0.003). The dose to ovaries and uterus decreased from 378 +/- 238 mGy (group A) to 83 +/- 41 mGy (group B) and from 388 +/- 246 mGy (group A) to 85 +/- 39 mGy (group B), respectively. Effective doses decreased from 112 +/- 71 mSv (group A) to 24 +/- 12 mSv (group B) (P = 0.003). In conclusion, the use of low-dose/low-frame fluoroscopy/angiography, based on a good understanding of the AEC system and also on the technique during uterine fibroid embolization, **allows a significant decrease in the dose exposure to the patient.**

68. Acta Radiol. 2009 Dec;50(10):1193-7.
Inflammatory response in patients undergoing uterine artery embolization as compared to patients undergoing conventional hysterectomy.
Brøchner AC, Mygil B, Elle B, Toft P.
BACKGROUND: Uterine fibroids are benign tumors seen in 20-40% of women of childbearing age, and these fibroids are usually treated by hysterectomy. During the last decade, embolization of the uterine arteries with polyvinyl alcohol microparticles has become an alternative treatment. PURPOSE: To investigate whether uterine artery embolization generates a reduced inflammatory response as compared with conventional hysterectomy. MATERIAL AND METHODS: 40 women, 20 in each group, entered this prospective, non-randomized study. The two groups were comparable concerning age, comorbidity, and body-mass index (BMI). RESULTS: We found a significant difference between the inflammatory responses in women undergoing embolization compared with the inflammatory response in women having an abdominal hysterectomy. Women undergoing embolization were subjected to a much smaller inflammatory burden, their total morphine consumption was lower, and their return to work was faster than women subjected to conventional hysterectomy. **CONCLUSION: Uterine artery embolization generates a reduced inflammatory response compared with conventional hysterectomy.**

208. Int J Gynaecol Obstet. 2008 Dec;103(3):217-21. Epub 2008 Sep 2.
Amenorrhea and resumption of menstruation after uterine artery embolization for fibroids.
Katsumori T, Kasahara T, Tsuchida Y, Nozaki T.
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OBJECTIVES: To determine whether women will experience permanent amenorrhea following uterine artery embolization for fibroids, and whether rates of onset differ in the long term according to age at the time of the procedure. METHODS: Over 77 months, 211 consecutive eligible women were grouped by age (group A, <40 years [n=39]; group B, 40-44 years [n=98]; and group C, > or =45 years [n=74]) and the cumulative rates of onset of permanent amenorrhea were compared between the groups. RESULTS: The likelihood of incurring permanent amenorrhea was significantly higher in group C. The cumulative rates in groups A, B, and C were 0%, 1.4%, and 19.7% at 3 years and 0%, 11.2%, and 40.4% at 6 years. **CONCLUSION: The rates of onset of permanent amenorrhea changed over time and differed according to age at the time of the procedure, with little likelihood of permanent amenorrhea at 6 years for women younger than 40 years at the time of the procedure.**

234. Am J Obstet Gynecol. 2008 Nov;199(5):482.e1-3. Epub 2008 May 19.
Intraabdominal adhesions after uterine artery embolization.
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Department of Obstetrics and Gynecology, McGill University, Montreal, QC, Canada.
OBJECTIVE: The objective of the study was to evaluate intraabdominal adhesions after uterine artery embolization (UAE). STUDY DESIGN: This was a case-control study of patients who underwent hysterectomy after UAE (UAE group) in the years 2000-2006. The control group consisted of patients who underwent hysterectomy for uterine myoma in the same week. **RESULTS: We encountered 30 patients in the UAE group and 72 in the control group.** The age of patients in the UAE group was 44.9 +/- 0.8 years and 44.6 +/- 0.6 years in the control group. In the UAE group, the diameter of the dominant myoma in patients with adhesions (11.3 +/- 1.9 cm) was larger than in those without adhesions (5.6 +/- 0.6 cm; P = .003; confidence interval, 1.9-8.5). The prevalence of adhesion in the UAE group (20%) was higher than in the control group (1.4%; P = .002; odds ratio, 17.2). **CONCLUSION: UAE is associated with intraabdominal adhesion formation. Large myoma predisposes to adhesion formation.**

246. J Obstet Gynaecol Can. 2008 Apr;30(4):344-6.
Septic uterus after uterine artery embolization for uterine myomas triggered by endometrial biopsy.
Reinblatt SL, Krishnamurthy S, Valenti D, Tulandi T.
BACKGROUND: Women who undergo uterine artery embolization (UAE) and subsequently have heavy vaginal bleeding require assessment to establish the cause. Endometrial sampling in such women should not necessarily carry more than the usual risk. CASES: Two women who had undergone UAE presented with recurrence of heavy vaginal bleeding. In order to rule out possible endometrial malignancy, we

performed an endometrial biopsy. Both patients had large and necrotic intramural myomas adjacent to the endometrium. They developed septic uterus shortly after endometrial biopsy and each required a hysterectomy. The postoperative course in the first case was complicated by deep vein thrombosis and enterovaginal fistula. **CONCLUSION: Because of the high risk of infection, women with a history of UAE and necrotic myoma adjacent to the endometrium should not undergo endometrial biopsy. We recommend evaluation of the relation of myomas to the endometrium.**

336. Acta Radiol. 2007 Jul;48(6):635-42.
Massive postpartum hemorrhage treated with transcatheter arterial embolization: technical aspects and **long-term effects on fertility and menstrual cycle.**
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BACKGROUND: Transcatheter arterial embolization (TAE) is considered a safe, life-saving procedure in postpartum hemorrhage (PPH), but its long-term effect on menstruation and fertility is unclear. PURPOSE: To investigate technical aspects and the evaluation of complications, focused on menstrual cycle and fertility, using TAE in patients with PPH. MATERIAL AND METHODS: A retrospective study including 20 patients (seven with vaginal and 13 with cesarean delivery) with severe PPH treated with bilateral TAE of the uterine artery was carried out. All patients were asked to answer a questionnaire regarding their post-embolization history. In six patients, the radiation dose was measured. RESULTS: All 20 cases underwent bilateral TAE of the uterine artery. Gelfoam was used as the embolic agent. However, after cesarean delivery in six patients who had clear contrast medium extravasation and/or pseudoaneurysm-like lesion, metallic coils had to be used in order to achieve hemostasis. No major short- or long-term complications were registered. Normal menses resumed in all patients. Four patients had a total of five full-term and two preterm pregnancies, and all delivered healthy infants by cesarean section with no recurrence of PPH. The mean radiation dose to the ovaries was 586 mGy (range 204-729 mGy). **CONCLUSION: TAE in patients with PPH is safe and has no major short- or long-term side effects. A patient managed with TAE can expect return of normal menses and preservation of future fertility and successful pregnancies. PPH after cesarean section might need to be embolized with metallic coils in addition to Gelfoam in order to achieve secure hemostasis**.

340. Hum Reprod. 2007 Jul;22(7):1996-2005.
Loss of ovarian reserve after uterine artery embolization: a randomized comparison with hysterectomy.
Hehenkamp WJ, Volkers NA, Broekmans FJ, de Jong FH, Themmen AP, Birnie E, Reekers
JA, Ankum WM.

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BACKGROUND: Ovarian failure as a complication of uterine artery embolization (UAE) for symptomatic uterine fibroids has raised concerns about this new treatment modality. METHODS: We investigated the occurrence of ovarian reserve

reduction in a randomized trial comparing UAE and hysterectomy by measuring follicle stimulating hormone (FSH) and anti-Mullerian hormone (AMH). A total of 177 pre-menopausal women with menorrhagia due to uterine fibroids were included (UAE:n=88; hysterectomy:n=89). FSH and AMH were measured at baseline and at several time-points during the 24 months follow-up period. Follow-up AMH levels were also compared to the expected decrease due to ovarian ageing during the observational period. RESULTS: FSH increased significantly compared to baseline in both groups after 24 months follow-up (within group analysis: UAE:+12.1; P=0.001; hysterectomy:+16.3; P<0.0001). No differences in FSH values between the groups were found (P=0.32). At 24 months after treatment the number of patients with FSH levels>40 IU/l was 14/80 in the UAE group and 17/73 in the hysterectomy group (relative risk=0.75; P=0.37). AMH was measured in 63 patients (UAE: n=30; hysterectomy: n=33). After treatment AMH levels remained significantly decreased during the entire follow-up period only in the UAE group compared to the expected AMH decrease due to ageing. No differences were observed between the groups. **CONCLUSIONS: This study shows that both UAE and hysterectomy affect ovarian reserve. This results in older women becoming menopausal after the intervention. Therefore, the application of UAE in women who still wish to conceive should only be considered after appropriate counselling.**

345. Am J Obstet Gynecol. 2007 Jun;196(6):588.e1-6.
Predictors of hysterectomy after uterine artery embolization for leiomyoma.
Gabriel-Cox K, Jacobson GF, Armstrong MA, Hung YY, Learman LA.
Department of Obstetrics and Gynecology, Kaiser Permanente Northern California, San Francisco, CA, USA.
OBJECTIVE: This study was undertaken to describe long-term outcomes after uterine artery embolization for leiomyoma. STUDY DESIGN: Data from Kaiser Permanente Northern California members undergoing uterine artery embolization for leiomyoma before July 2001 were collected. Survival analysis was performed to describe hysterectomy rates and identify predictors of hysterectomy. RESULTS: Uterine artery embolization was performed in 562 women from 1997-2001. Thirty-three women (5.9%) had unilateral uterine artery embolization. One hundred women (18%) underwent hysterectomy after uterine artery embolization, and 32 (5.7%) had additional uterine sparing procedures. Only unilateral uterine artery embolization predicted subsequent hysterectomy (relative risk = 2.19; 95% CI 1.34-3.57), whereas age, indication, uterine volume, embolizing particle, and radiologist experience did not. **The rate of hysterectomy at 5 years was 19.7%; rates for bilateral and unilateral uterine artery embolizations were 18.5% and 39.2%, respectively. Fifty-four women (9.6%) had emergency room visits and 17 (3%) had unplanned readmissions**. **CONCLUSIONS: Uterine artery embolization for leiomyoma permits uterine conservation in more than 80% of women monitored long-term. When bilateral procedures cannot be performed, failure rates are considerably higher.**

405. J Reprod Med. 2006 Sep;51(9):739-41.
Small bowel volvulus after uterine artery embolization requiring bowel resection: a case report.
Gavrilescu T, Sherer DM, Temkin S, Zinn H, Abulafia O.
Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, State

University of New York, Downstate Medical Center, Brooklyn 11203-2098, USA.
BACKGROUND: Previously described surgical complications following uterine artery embolization for leiomyomata include sequelae of uterine aberrant embolization (buttock and labial necrosis, vesicouterine fistula), prolapsed cervical myoma, uterine necrosis, ischemic uterine rupture and sepsis. CASE: A 43-year-old woman presented with severe abdominal pain, nausea and vomiting 7 days after bilateral uterine artery embolization for symptomatic leiomyomata. Mechanical obstruction of the distal ileum was diagnosed and did not respond to conservative measures. At laparotomy, volvulus of the distal ileum, which adhered to omental and uterine adhesions, required resection and end-to-end anastomosis. CONCLUSION: Volvulus may occur following uterine artery embolization for leiomyomata.

564. Am J Obstet Gynecol. 2004 Nov;191(5):1713-5.
Myoma expulsion after uterine artery embolization: complication or cure?
Hehenkamp WJ, Volkers NA, Van Swijndregt AD, De Blok S, Reekers JA, Ankum WM.
Department of Gynecology and Radiology, Academic Medical Center, Amsterdam, The Netherlands. w.j.hehenkamp@amc.uva.nl
A 54-year-old woman had an expulsed myoma 10 weeks after uterine artery embolization. After treatment with antibiotics and a small surgical intervention, she recovered completely without any sign of myomatous disease afterwards. Patients should be informed about the possibility of expulsion. Expulsion of myomas after uterine artery embolization occurs relatively frequently and may be just one of the ways to attain cure.

FEmISA would support this view as personal experience of explusion of 3 fibroids was seen as a quick way to be rid of them, rather than an adverse event.

APPENDIX 5. PATIENT ACCESS

28. J Vasc Interv Radiol. 2010 Apr 21. [Epub ahead of print]
What do Family Physicians Know about Interventional Radiology? A Survey of Family Physicians at a Large Canadian Annual Scientific Assembly.
Mok PS, Tan EY, Baerlocher MO, Athreya S.
PURPOSE: To quantify the level of background knowledge among family physicians with regard to interventional radiology (IR) procedures, duties, and clinical responsibilities and to develop recommendations on how to further educate family physicians in IR. RESULTS: A total of 213 of 229 (93%) attempted paper surveys were completed. Family physicians rated their knowledge of IR as poor (31%), adequate (53%), good (14%), or excellent (2%). A total of 98%, 71%, 47%, and 38% correctly identified that interventional radiologists performed image-guided biopsies, uterine artery embolization, radiofrequency ablation of tumors, and vascular angioplasties, respectively. Only 7% correctly identified that interventional radiologists are currently not recognized as distinct subspecialists by the Royal College of Physicians and Surgeons of Canada. Approximately 71% would refer patients directly to an interventional radiologist. A total of 96% believed that future education about IR would be "very" or "somewhat" helpful. Approximately 43% selected presentations given by interventional radiologists at family medicine conferences as their preferred method of future education. CONCLUSIONS: **The data quantify and demonstrate the knowledge gap that exists among family physicians in Canada** regarding IR procedures, duties, and responsibilities. Family physicians strongly support future education and collaboration with interventional radiologists. **Eight results-based recommendations are made to further educate family physicians about IR and promote increased collaboration**.

46. J Minim Invasive Gynecol. 2010 Mar-Apr;17(2):214-21.
The effect of a gynecologist-interventional radiologist relationship on selection of treatment modality for the patient with uterine myoma.
Zurawin RK, Fischer JH 2nd, Amir L.

BACKGROUND: On the basis of consistent published scientific evidence, the American College of Obstetricians and Gynecologists has given uterine artery embolization (UAE) a level A recommendation as a viable alternative treatment for uterine myomas, describing it as a safe and effective option for appropriately selected women who wish to retain their uteri. Despite the growth of favorable clinical outcome information, **many gynecologists do not routinely offer UAE as an alternative to abdominal hysterectomy or abdominal myomectomy**. The percentage of laparoscopic hysterectomies in the United States remains less than 20%, reflecting the reluctance or inability of gynecologic surgeons to perform other minimally invasive procedures such as hysteroscopic myomectomy, laparoscopic myomectomy, laparoscopic hysterectomy, or even vaginal hysterectomy. Of great significance, many patients do not wish to have any kind of surgery, no matter how "minimally invasive." As a result, patients seeking less invasive treatments may bypass the gynecologist and be referred directly to an interventional radiologist by their primary care physician, or they may self-refer. Little has been published on the referral relationship between gynecologists and the interventional radiologist who performs uterine artery embolization. The absence

of a structured routine referral relationship causes some women to undergo treatments that potentially are not aligned with all of her treatment desires. This study was undertaken to gain insight into the interventional radiologist-gynecologist dynamic and the benefit to patients who are informed of all of their options for the treatment of myomas. STUDY OBJECTIVES: Investigate the course of myoma treatment in a cohort of patients either self-referred to an interventional radiologist or referred to the interventional radiologist by their gynecologist. Determine the effect of a cooperative referral network of interventional radiologists and gynecologists that informs patients about the options of UAE and minimally invasive surgical alternatives on the choice of myoma treatment. STUDY DESIGN: Prospective data acquisition of patient referral source, UAE evaluation, patient decision on treatment options, and continued follow-up with a network gynecologist. SETTING: Hospital-based interventional radiologist and gynecologist both practicing in a large urban teaching setting. PATIENTS: A total of 226 women, representing 73% of women presenting to an interventional radiologist in 2007 seeking UAE for symptomatic myomas. One hundred thirty-eight of these patients were referred to the interventional radiologist by a gynecologist, and 88 were self-referred. Patient outcome relative to referral was traced with 76 patients in the myoma surgery group treated from 2007-2008 by a gynecologist in the referral network. INTERVENTIONS: Evaluation for suitability for UAE procedure, followed either by UAE procedure with return to referring gynecologist for follow-up, return to referring gynecologist for treatment, or referral to another gynecologist for minimally invasive surgical management when the primary gynecologist is unable to perform alternative treatment. MEASUREMENTS AND MAIN RESULTS: All patients in the study initially evaluated by the interventional radiologist were referred to a gynecologist. Overall, 62% of patients were candidates for UAE, and 38% underwent the procedure during the study period. Patients who did not receive UAE were returned to the referring gynecologist for further evaluation and treatment. Patients who underwent UAE were referred to a gynecologist for ongoing care. In all, 70% of self-referred patients and 92% of gynecologist-referred patients expressed satisfaction with their original gynecologist and were referred back to that physician. Patients who did not have a gynecologist or who were dissatisfied with their original gynecologist were referred to a network gynecologist for continued gynecologic care. In our study 26 self-referred women were sent as new patients to gynecologists in the interventional radiologist's referral network,
resulting in a 119% return on the original 138 gynecologist-to-interventional radiologist-referred patients. Among the 8% of gynecologist-referred women who switched to a different gynecologist within the referral network, the primary reasons for dissatisfaction were the gynecologist's failure to fully disclose treatment options or offer desired minimally invasive procedures. On follow-up with a network gynecologist, 8 newly referred patients underwent myoma surgery, and 8 newly referred patients continued to be seen by that gynecologist. Four patients referred to the gynecologist for treatment were originally referred by the gynecologist to the interventional radiologist for UAE evaluation. Ten patients switched from their named gynecologist to a different gynecologist willing to disclose all treatment options for uterine myomas and able to provide minimally invasive surgical treatment as medically indicated. Of the 10 women who switched to this network gynecologist, 8 underwent myoma surgery. CONCLUSIONS:

Establishing a referral relationship with an interventional radiologist for comprehensive uterine myoma treatment supports a trusting, collaborative, long-term, noncompetitive "win-win" relationship between the gynecologist and radiologist, meets the patient's desire for full disclosure of all myoma treatment options, improves the patient's overall medical care and physician/patient experience, and has been demonstrated to improve patient flow to a gynecologist practice. With the guidelines established in this study, no patients were inappropriately left to the gynecologist for post-UAE care. The authors acknowledge that this dynamic is dependent on the individual interventional radiologist and their relationships and open communication with the gynecologist. Finally, the study revealed **that failure to fully disclose alternative treatment options, or offer minimally invasive surgical techniques may result in a loss of patients due to patient dissatisfaction**.

354. J Vasc Interv Radiol. 2007 May;18(5):633-7.
Awareness of interventional radiology among patients referred to the interventional radiology department: a survey of patients in a large Canadian community hospital.
Baerlocher MO, Asch MR, Puri G, Vellahottam A, Myers A, Andrews K.
Department of Radiology, University of Toronto, Toronto, Canada.
mark.baerlocher@utoronto.ca
PURPOSE: To quantify the level of knowledge about interventional radiology (IR) among patients referred for an IR procedure and to develop recommendations on how to increase public awareness of IR. MATERIALS AND METHODS: Paper surveys were prospectively administered to consecutive patients scheduled to undergo an IR procedure at a community hospital. The study was terminated at the accrual of 100 completed surveys. RESULTS: Totals of 28% and 6% knew generally the job of a diagnostic radiologist and interventional radiologist, respectively, and 6% had heard of the field of IR before their referral (despite 21% having undergone a procedure previously). Before their arrival in the IR department, 87% had not received any information about IR. Three percent, 0%, 4%, 82%, and 82% had heard about uterine artery embolization, radiofrequency ablation, vertebroplasty, biopsy (any type), and angioplasty, respectively. After the procedures, 84% had a clearer view of what interventional radiologists do, but 98% believed that most others did not know what IR was. When asked how best to educate the public about IR, the responses were: unsure (39%), other (19%), pamphlets (12%), information from physicians (9%), television (8%), and Internet (7%). Overall, the mean satisfaction rate was 8.8 (with 0 representing the minimum and 10 representing the maximum), and 97% would choose IR over surgery for future treatments. **CONCLUSIONS: These data quantify and strongly support the views that (1) even among patients specifically referred to IR for a procedure, the majority of people are unaware of what the field is or may offer; and (2) most patients were satisfied with their IR experience. Six results-based recommendations are made to increase public awareness about IR.**

442. J Vasc Interv Radiol. 2006 Mar;17(3):577-81.
The positive effect of targeted marketing on an existing uterine fibroid embolization practice.
Chrisman HB, Basu PA, Omary RA.

Department of Radiology, University of Chicago, Illinois, USA.
PURPOSE: Although uterine fibroid embolization is an effective treatment option for symptomatic women, it is unclear what methods can be used to expand referrals in an already established practice. The authors tested the hypothesis that an advertising strategy focused on a defined target market can expand an existing uterine fibroid embolization practice. MATERIALS AND METHODS: A market-driven planning sequence was employed. This included a determination of goals, an examination of current competition, determination of target market based on local environment and previous consumer use, pretest of product sample, and implementation of advertisement. Based on the analysis the authors determined that the target audience was professional black women aged 35 to 45. A specific weekly magazine was selected due to readership demographics. An advertisement was run for 8 consecutive weeks. The authors prospectively tracked patient inquiries, clinic visits, cases performed, and revenues generated for 3 months following the initial advertisement. All patients were seen in a fully staffed, pre-existing fibroid clinic located within an urban, university-based academic practice performing 250 uterine fibroid embolizations annually. RESULTS: Ninety calls were received directly related to the advertisement. There were 35 clinic visits, which resulted in 17 uterine fibroid embolizations and 52 total MR imaging procedures. Eighteen patients were not considered candidates based on established protocols. The 17 extra cases performed over 3 months represented a 27% increase in case volume. Total professional cash collections for these cases (including MR imaging) were 58,317 US dollars. The cost of advertising was 8,000 US dollars. As a result of existing infrastructure, no additional costs were necessary. This resulted in a net revenue gain 50,317 US dollars and a nonannualized rate of return of approximately 625%. **CONCLUSION: As Interventional Radiologists look to develop and expand existing practices, traditional marketing tools such as those utilized in this study can be used to facilitate practice growth for specific clinical programs, such as uterine artery embolization. Defining a target market can significantly expand an existing uterine fibroid embolization practice. The optimal choice of targeted media awaits verification from future studies.**

520. Acta Obstet Gynecol Scand. 2005 May;84(5):478-82.
Surgical and radiological management of uterine fibroids--a UK survey of current consultant practice.
Taylor A, Sharma M, Tsirkas P, Arora R, Di Spiezio Sardo A, Mastrogamvrakis G, Buck L, Oak M, Magos A.
Minimally Invasive Therapy Unit and Endoscopy Training Centre, University Department of Obstetrics and Gynaecology, Royal Free Hospital, Pond Street, Hampstead, London NW3 2QG, UK.
BACKGROUND: The aim of this study was to determine the current surgical and radiological management of uterine fibroids by consultants working in the UK. METHODS: A structured questionnaire was posted to all 1439 UK consultants. Non-responders were sent one reminder. The main outcome measures were surgical route and technique used for myomectomy, and the use and availability of uterine artery embolization (UAE). RESULTS: Eight hundred fifty-two (59%) consultants replied. Seven hundred thirty-five (86%) admitted to regular sessions of gynecologic surgery, and 75% of this group performed open myomectomy, 16%

laparoscopic myomectomy, and 66% hysteroscopic myomectomy. Open myomectomy:
Forty-one percent of consultants performed open surgery on uteri equivalent to 12-week gestational age or less, 87% prescribed preoperative gonadotrophin-releasing hormone agonists (GnRHa) in order to reduce surgical bleeding, with 35% using myomectomy clamps, 23% tourniquets, and 19% vasoconstrictors. Laparoscopic myomectomy: The largest uterine size the majority would attempt was equivalent to a 12-week gestation, 58.6% used preoperative GnRHa, 21% used intraoperative vasoconstrictors, and 1.4% tourniquets in order to minimize bleeding. Hysteroscopic myomectomy: As with laparoscopic myomectomy, the
largest uterine size the majority would attempt was equivalent to a 12-week pregnancy. Blood transfusion: Twenty per cent, 10%, and 7% reported the need for blood transfusion in up to 10% of patients undergoing open, laparoscopic, or hysteroscopic myomectomy, respectively. UAE: Fifty-one percent have access to UAE and 40% have referred at least one patient in 2001. CONCLUSIONS: Open and hysteroscopic myomectomy are frequently utilized in contrast to laparoscopic myomectomy. The reported rate of blood transfusion appears low. **Although UAE is widely available, the majority of patients are still managed surgically.**

APPENDIX 6.

UFE – Non-Fibroid indications – Post-partum Haemorrhage; Treatment of Cervical Pregnancy; Placenta accrete; Uterine artery pseudoaneurysm rupture; haemorrhage following abortion;

33. J Vasc Interv Radiol. 2010 Jun;21(6):836-41. Epub 2010 Apr 18.

Transcatheter intraarterial methotrexate infusion combined with selective uterine artery embolization as a treatment option for cervical pregnancy.

Xiaolin Z, Ling L, Chengxin Y, Yiqing T, Jun W, Yan C, Guangxi T.

Department of Radiology, First College of Clinical Medical Science of China Three Gorges University and Yichang Central People's Hospital, 183, Yiling Road, Yichang, Hubei 443003, China. zhangxiaolin5800@163.com

PURPOSE: To assess the value of transcatheter intraarterial methotrexate infusion combined with selective uterine artery embolization (UAE) as a treatment option for cervical pregnancy.
MATERIALS AND METHODS: Between January 2004 and June 2009, a prospective study was conducted in 20 consecutive patients with cervical pregnancy. The patients were treated with UAE with gelatin sponge particles (1-2 mm in size) to control active vaginal bleeding. Methotrexate was injected into the arteries before, during, and after UAE. RESULTS: Two of 20 patients (10%) had recurrent vaginal bleeding of approximately 50 mL daily after treatment; the other 18 (90%) had no significant vaginal bleeding after UAE. Fifteen cases (75%) were treated successfully by a single procedure and five (25%) required a subsequent curettage without blood transfusion. The degeneration of placenta was confirmed by light microscopy after curettage. The cervical gestational sac was eliminated at a mean of 41 days (range, 11-83 d). Increased serum beta-human chorionic gonadotrophin levels normalized by an average of 30 days (range, 7-49 d). The uterus was preserved and normal menses resumed within 2-4 months in all 20 women (100%). Of 16 women who attempted another pregnancy, eight (50%) achieved pregnancy: there were six term pregnancies with live births (38%) and two miscarriages (13%). No obvious complications related to treatment occurred, but a few mild side effects were observed in nine cases (45%). CONCLUSIONS: Based on this series of 20 patients, the conservative protocol of transcatheter intraarterial methotrexate infusion combined with UAE may be a feasible, effective, and safe option for cervical pregnancy.

33. J Vasc Interv Radiol. 2010 Jun;21(6):836-41. Epub 2010 Apr 18.

Transcatheter intraarterial methotrexate infusion combined with selective uterine artery embolization as a treatment option for cervical pregnancy.

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35. Acta Obstet Gynecol Scand. 2010 Aug;89(8):1096-9.
Pelvic artery embolization in the management of obstetric hemorrhage.
Sidhu HK, Prasad G, Jain V, Kalra J, Gupta V, Khandelwal N.

Department of Obstetrics and Gynecology, Postgraduate Institute of Medical Education and Research, Chandigarh, India. drharpreet_sidhu@hotmail.com

We studied the role of pelvic artery embolization in management of obstetric hemorrhage by retrospective analysis of 50 cases of obstetric hemorrhage in a tertiary care referral hospital where this procedure was used. Uterine and or internal iliac artery embolization was performed for the management of postpartum hemorrhage (39 cases; 78%), post abortal bleeding (6 cases; 12%) and gestational trophoblastic disease (4 cases; 8%). In one case of postpartum hemorrhage procedure could not be performed due to arterial spasm (2%). Prophylactic embolization was carried out in one case of placenta accreta. The mean age of the women was 27 years and 54% were primiparas. In six women embolization was done after hysterectomy failed to control pelvic hemorrhage. One fourth of women had coagulopathy at the time of presentation. There were five cases of pelvic hematoma and three cases of arteriovenous malformations. The success rate of the procedure was 94% and the procedure was unsuccessful for controlling bleeding in

three women. There were no major procedure related complications. Thus, pelvic artery embolization is an effective alternative to surgery in controlling obstetric hemorrhage and as a fertility and life-saving procedure.

44. J Vasc Interv Radiol. 2010 May;21(5):644-8. Epub 2010 Mar 15.
Placenta accreta: management with uterine artery embolization in 17 cases.
Diop AN, Chabrot P, Bertrand A, Constantin JM, Cassagnes L, Storme B, Gallot D, Boyer L.
Department of Visceral and Vascular Radiology, Centre Hopistalier Universitaire de Clermont-Ferrand, 58 rue Montalembert, Clermont-Ferrand cedex 1, Clermont-Ferrand, France. ndoyediop@yahoo.com

PURPOSE: To report on the management of placenta accreta with uterine artery embolization (UAE) and to analyze the outcomes. MATERIALS AND METHODS: A retrospective study was performed over a 128-month period of all women with placenta accreta who underwent UAE in a single center. Seventeen patients were included, and they were further divided into two groups: a preventive group (diagnosis was made in the prenatal period, n = 6) and a curative group (diagnosis was made during delivery, n = 11). The mean patient age was 34.6 years +/- 5.5 in the preventive group and 31.4 years +/- 4.3 in the curative group. The mean term of pregnancy was 35 weeks +/- 2 of amenorrhea in the preventive group and 38 weeks +/- 2 in the curative group. RESULTS: The primary success of embolization was 100% in both groups. In the preventive group, massive bleeding occurred in a patient 2 days after unsuccessful manual placenta delivery resulted in an hysterectomy; in a second case, delayed bleeding (2 months after the procedure) was controlled with a second embolization. There were no episodes of repeat bleeding in the curative group. In the preventive group, two patients presented with uterine scarring, with synechiae in one and endometrial atrophy in the other. In the curative group, one patient presented with secondary amenorrhea. The delay before embolization was significantly different in the two groups (23.3 minutes +/- 5.1 in the preventive group vs 73 minutes +/- 44.7 in the curative group, P < .01), and total blood loss was 0.7 L +/- 0.8 in the preventive group and 2.6 L +/- 1.2 in the curative group (P < .01). CONCLUSIONS: Prenatal diagnosis of placenta accreta permits its preventive management, which reduces time to embolization and blood loss.

49. Ann Emerg Med. 2010 May;55(5):460-3. Epub 2010 Feb 20.
Uterine artery pseudoaneurysm rupture: a life-threatening presentation of vaginal bleeding.
Bhatt A, Odujebe O, Bhatt S, Houry D.
Uterine artery pseudoaneurysm rupture is a rare, yet life-threatening, cause of postpartum hemorrhage. Prompt recognition and management are critical in severe vaginal bleeding. In this case, diagnosis by bedside ultrasonography and initial management with vaginal packing and fluid resuscitation were performed in the emergency department. Definitive treatment by selective arterial embolization was performed to achieve hemostasis. This article discusses options available in the diagnosis, management, and treatment of uterine artery pseudoaneurysm hemorrhage.

67. Am J Obstet Gynecol. 2010 Jan;202(1):38.e1-9. Epub 2009 Nov 17.
Surgical management of placenta accreta: a cohort series and suggested approach.
Angstmann T, Gard G, Harrington T, Ward E, Thomson A, Giles W.
OBJECTIVE: The purpose of this study was to describe the use of a staged procedure that involved femoral artery catheterization, classic cesarean section delivery, and uterine and placental embolization before hysterectomy for placenta accreta. STUDY DESIGN: We conducted a cohort study of retrospective and prospective data from cases of histologically identified placenta accreta at a tertiary teaching hospital with access to interventional radiology. RESULTS: Twenty-six cases of placenta accreta were identified histologically (7 accretas, 5 incretas, and 14 percretas); 8 cases were successful staged embolization procedures. These cases had significant reductions in blood loss (553 vs 4517 mL; P = .0001), need for transfusion (2 vs 16; P = .001), and units of blood transfused (0.5 vs 7.9; P = .0013). The total operation time was no different between the 2 groups, but there was a longer length of anesthesia (2.7 vs 6.6 hours; P = .0001). There were nonsignificant reductions in admission to the intensive care unit and length of hospital stay**. CONCLUSION: We found that the successful use of a staged embolization hysterectomy procedure for placenta accreta is associated with decreased maternal morbidity.**

81. Diagn Interv Radiol. 2009 Oct 19. doi: 10.4261/1305-3825.DIR.2073-08.1. [Epub ahead of print]
Conservative treatment of a cervical twin pregnancy with uterine artery embolization.
Farhat LB, Salah YB, Askri A, Dali N, Hendaoui L.
Cervical pregnancy is a rare form of ectopic pregnancy. Its treatment has been described by different authors. We report our successful experience of a cervical twin pregnancy that was diagnosed by transabdominal and transvaginal ultrasound and confirmed by magnetic resonance imaging. To preserve fertility, our patient was treated by a bilateral hyperselective uterine artery embolization followed by dilatation and curettage of the cervical canal without ancillary procedures for cervical hemostasis. Arterial embolization by a resorbable agent reduces arterial circulation by providing a temporary occlusion of the vessels in order to decrease the risk of massive hemorrhage.

86. Cardiovasc Intervent Radiol. 2009 Sep;32(5):1075-9. Epub 2009 May 7.
Embolization of uterine arteriovenous malformations associated with cyanotic congenital heart disease.
Wijesekera NT, Padley SP, Kazmi F, Davies CL, McCall JM.

Uterine arteriovenous malformation (AVM) is a rare cause of vaginal bleeding and miscarriage. We report two cases of uterine AVMs in patients with a history of complex congenital heart disease, an association that has not been previously described. Both patients were treated by selective uterine artery embolization, a minimally invasive therapy that has revolutionized the management of uterine AVMs, thus offering an alternative to conventional hysterectomy.

121. Contraception. 2009 Jun;79(6):452-5. Epub 2009 Feb 27.
Uterine artery embolization to treat hemorrhage following second-trimester

abortion by dilatation and surgical evacuation.
Haddad L, Delli-Bovi L.

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02115, USA. lhaddad@partners.org

BACKGROUND: This study was conducted to review cases of second-trimester postabortal hemorrhage (PAH) occurring at a private women's health facility that were treated with uterine artery embolization (UAE). METHODS: A retrospective review was conducted on all second-trimester terminations performed at a private women's health facility between 1999 and 2006. Cases of PAH treated with UAE were reviewed in detail, reviewing progress, operative and discharge notes along with anesthesia records. RESULTS: Fifteen cases of PAH were identified among 3936 second-trimester terminations that were performed. Seven cases were identified in which UAE was used to treat PAH. Etiologies leading to hemorrhage varied in the seven cases as did the presence of coexisting factors such as infection and anatomic lesions. All cases were successfully treated by UAE, requiring no additional surgical intervention. CONCLUSION: Given the success of embolization, we offer this as an alternative to exploratory surgery and hysterectomy and as a first-line approach in cases of PAH after conservative management strategies have failed.

132. Eur J Obstet Gynecol Reprod Biol. 2009 Aug;145(2):129-32. Epub 2009 Apr 23.
Obstetrical prognosis and pregnancy outcome following pelvic arterial embolisation for post-partum hemorrhage.
Delotte J, Novellas S, Koh C, Bongain A, Chevallier P.
University Hospital, Archet II, Nice, France. jdelotte@hotmail.com

Post-partum hemorrhage is an obstetrical emergency. Pelvic artery embolisation offers an alternative to surgical intervention and increases the rate of conservative treatment. The objective of this review was to study the scientific literature on obstetrical outcomes following uterine-sparing arterial embolisation performed for post-partum hemorrhage in a prior pregnancy. A Medline and Sciencedirect search were performed in order to review all the French and English reports about pregnancy following pelvic arteries embolisation for post-partum hemorrhage. Nineteen articles were identified and 13 were selected for inclusion. We have included the fertility follow-up of a total of 168 women who underwent pelvic arteries embolisation for post-partum hemorrhage. We highlight the clinical success of embolisation in 154 of the 168 patients (92%). Following the embolisation procedures, 7 hysterectomies were required and 4 patients died. Two of the 4 deaths occurred in women who were transferred from an outlying institution to a tertiary referral center. In this population, 45 pregnancies were described. Among these pregnancies, 32 resulted in live births (71%), 8 were miscarriages (18%) and 5 patients carried out voluntary termination of pregnancy (11%). The cesarean section rate was 62%. Post-partum hemorrhage occurred in 6 cases leading to 2 hysterectomies. **In conclusion, pelvic arterial embolisation offers a safe and conservative alternative to surgical interventions for post-partum hemorrhage in well-selected patients desiring to preserve future**

fertility.

390. AJR Am J Roentgenol. 2007 Jan;188(1):176-81.

Long-term results of uterine artery embolization for symptomatic adenomyosis.

Kim MD, Kim S, Kim NK, Lee MH, Ahn EH, Kim HJ, Cho JH, Cha SH.

Department of Diagnostic Radiology, Bundang CHA General Hospital, Pochon CHA University, 351 Yatap-dong, Bundang-gu, Sungnam-si, Kyonggi-do, 463-712, Republic of Korea. mdkim@cha.ac.kr

OBJECTIVE: Controversy exists regarding the effectiveness of uterine artery embolization (UAE) in the management of symptomatic adenomyosis. The aim our study was to determine the long-term clinical efficacy of UAE in the management of symptomatic adenomyosis without fibroids. MATERIALS AND METHODS: The cases of
all patients who underwent UAE for adenomyosis without fibroids between 1998 and 2000 were analyzed. This study was a retrospective review of a prospectively collected database. Of the 66 patients, 54 patients with a follow-up period of 3 years or longer were enrolled in the study. Twelve patients were lost to follow-up. The patients' ages ranged from 29 to 49 years (mean, 40.2 years). The mean follow-up period was 4.9 years (range, 3.5-5.8 years). The primary embolic agent was polyvinyl alcohol particles (250-710 microm). All patients underwent MRI before UAE. Long-term follow-up MRI was performed on 29 patients; 22 of these patients had undergone short-term (3.5 months) follow-up MRI. Uterine volume was calculated with MR images. Symptom status in terms of menorrhagia and dysmenorrhea was scored on a scale of 0-10, 0 being no symptoms and 10 being the baseline, or initial symptoms. RESULTS: Thirty-one (57.4%) of the 54 women who underwent follow-up had long-term success. Four had immediate treatment failure, and 19 had relapses. Changes in mean menorrhagia and dysmenorrhea scores at long-term follow-up were -5.3 and -5.1, respectively ($p < 0.001$), representing significant relief of symptoms. The time between UAE and recurrence of symptoms ranged from 4 to 48 months (mean, 17.3 months). Five patients underwent hysterectomy because of symptom recurrence. Mean reduction in volume of the uterus was 26.3% at short-term follow-up and 27.4% at long-term follow-up. CONCLUSION: We found that UAE is effective in the management of symptomatic adenomyosis and has an acceptable long-term success rate. UAE should be considered a primary treatment method for patients with symptomatic adenomyosis. However, all patients should be given an explanation of the possibility of treatment failure, recurrence, and the need for hysterectomy.

APPENDIX 7 – LISTING OF ABSTRACTS OF UFE PAPERS PUBLISHED SINCE MAY 2004

Coding – Pregnancy; Post-partum haemorrhage; Effectivess; Safety; Longer-Term Outcomes

1. Fertil Steril. 2010 Jun 19. [Epub ahead of print]

A case of pregnancy and childbirth after uterine artery embolization with a permanent embolic agent.

Igarashi S, Izuchi S, Ishizuka B, Yoshimatu M, Takizawa K.

St. Marianna University School of Medicine, Obstetrics and Gynecology, Kawasaki, Japan.

OBJECTIVE: To report a case of full-term delivery after uterine artery embolization with N-butyl cyanoacrylate for abruptio placentae. DESIGN: Case report. SETTING: University hospital. PATIENT(S): A 35-year old woman, gravida 2 para 0, at 32 weeks' and 4 days' gestation. INTERVENTION(S): Transcatheter arterial embolization with N-butyl cyanoacrylate (NBCA). RESULT(S): An emergency cesarean section was performed for abruptio placentae. The neonate died on day 0. After the cesarean section, a hematoma was found at the uterine incision that continued to increase. Therefore, pelvic angiography was performed, and extravasation was observed from the uterine arteries. NBCA was used for embolization, and the extravasation stopped rapidly. Total transfusion volume was 10,190 mL. Nine months after the cesarean section, the patient became pregnant naturally and delivered a boy by elective cesarean section. CONCLUSION(S): For treatment of shock caused by perinatal hemorrhage, which is a major cause of perinatal mortality, even if clotting abnormalities are present, transcatheter arterial embolization using NBCA can provide effective hemostasis. Moreover, in patients who would otherwise require a hysterectomy, fertility can be preserved.

PMID: 20646691 [PubMed - as supplied by publisher]

2. Zhonghua Fu Chan Ke Za Zhi. 2010 Apr;45(4):273-7.

[Clinical efficacy and safety of uterine artery chemoembolization in abnormal placental implantation complicated with postpartum hemorrhage.]

[Article in Chinese]

Chen YT, Xu LF, Sun HL, Li HQ, Hu RM, Tan QY.

Department of Interventional Radiology, Second Affiliated Hospital of Sun Yat-sen University, Guangzhou 510120, China.

OBJECTIVE: To investigate the safety and clinical efficacy of uterime artery chemoembolization in postpartum hemorrhage (PPH) caused by abnormal placental implantation. METHODS: Between December 2006 and September 2009, there were 23 cases of abnormal placental implantation with PPH in our hospital, among which 9 presented with continuous small amount of vaginal bleeding and 14 with acute excessive bleeding. The average bleeding time was (8 +/- 6) d and the mean blood loss was (980 +/- 660) ml. Abnormal placental implantation was confirmed by color Doppler ultrasound (CD-US) in all cases, the internal iliac artery angiography was performed to identify the uterine artery and bilateral uterine artery chemoembolization (UACE) with methotrexate (MTX) and gelfoam particles to the distal end of uterine artery was conducted after. CD-US rechecked all patients within 48 h after UACE and those patients with blurred margins between placenta and uterus and abnormal blood flow (> 1 cm x 1 cm) received ultrasonic-guided per vagina MTX multipoint injections. All cases were followed up for 3 - 26 months (average 12 months) to observe vaginal bleeding, placenta tissue discharge, serum human chorionic gonadotropin (hCG), uterine involution, menses, and side-effects or complications. RESULTS: (1) Curative effect: These 23 cases underwent 24 procedures of UACE successfully and vaginal bleeding ceased at an average of (3.5 +/- 1.3) min after UACE. Reduced blood flow in the placental implantation area was detected under CD-US after UACE. Among the 23 patients, uterine curettage was required in 16 cases due to retained placenta tissues with the mean blood loss of (40 +/- 28) ml during the operation, 2 underwent subtotal hysterectomy and confirmed to be placenta percreta by pathology examination, and placenta tissues were spontaneously discharged completely in 5 cases. Totally, 91% of the patients (21/23) reserved their uterus. (2) Follow-up: the serum hCG reduced to normal within 1-13 d after the placenta tissue were evacuated. Regular menstruation returned within 2-3 months in those patients who reserved uterus and normal size uterus was found under sonography at 3 months. No severe complication was reported except for some post embolization syndrome, such as pelvic pain or fever. CONCLUSIONS: UACE, combined with ultrasonic-guided transvaginal MTX injection, is a safe, minimal invasive and quick hemostatic procedure in treatment of abnormal placental implantation with PPH, and allows the preservation of uterus possible. CD-US is helpful in evaluation of the blood flow changes before and after UACE in abnormal placental implantation patients.

PMID: 20646539 [PubMed - in process]

3. Int J Surg Pathol. 2010 Jul 18. [Epub ahead of print]

Histology Changes After Uterine Artery Embolization Using Polyvinyl Alcohol Particles.

Rosa M.

PMID: 20643673 [PubMed - as supplied by publisher]

4. Cardiovasc Intervent Radiol. 2010 Jul 15. [Epub ahead of print]

Porous Gelatin Particles for Uterine Artery Embolization: An Experimental Study of Intra-Arterial Distribution, Uterine Necrosis, and Inflammation in a Porcine Model.

Sone M, Osuga K, Shimazu K, Higashihara H, Nakazawa T, Kato K, Tomabechi M, Ehara S, Nakamura H, Morii E, Aozasa K.

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PURPOSE: We evaluated the location of porous gelatin particles (GP; Gelpart; Nippon Kayaku/Astellas, Tokyo, Japan) within the arterial vasculature and their acute effects on uterine necrosis and inflammation after uterine artery embolization (UAE) in swine. MATERIALS AND METHODS: Adult nonpregnant pigs (n = 6) were allocated to either 1- (n = 3) or 2-mm GP (n = 3). Superselective and bilateral embolization of the uterine arteries was performed. All animals were killed 1 week after UAE. Macroscopic and microscopic findings, including the level of arterial occlusion and their effect on uterine necrosis and inflammation, were analyzed. RESULTS: All UAE procedures were completed without severe complications. The macroscopic necrosis was seen in two animals in the 2-mm group with an extent of <50%. The location of the occluded arteries did not differ significantly between groups. The median diameters of the occluded arteries were 449 mum (95% confidence interval [CI] 417-538 mum) in the 1-mm GP group and 484 mum (95% CI 370-560 mum) in the 2-mm GP group. As for microscopic necrosis, no statistically significant difference was observed. The qualitative inflammatory reaction was significantly greater in the 2-mm GP group than in the 1-mm group (p < 0.001). CONCLUSIONS: Both 1- and 2-mm GP occluded the arteries relevant to the target diameter for UAE in porcine uterus, presumably due to the plastic deformity. Both sizes of GP were associated with limited areas of necrosis; however, evaluation of inflammatory reaction was preliminary. Further study with adequate evaluation of inflammatory reactions is suggested.

PMID: 20632007 [PubMed - as supplied by publisher]

5. Minerva Ginecol. 2010 Jun;62(3):225-36.

The impact of uterine leiomyomas on reproductive outcomes.

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Uterine leiomyomas (fibroids, myomas) are a common benign disease of the uterus with a prevalence of 8-18%. Prevalence rates vary with race, and fibroids are most common in African American women. Uterine leiomyomas can also be present during pregnancy, which may occur more frequently than previously suspected, with prevalence rates reported of up to 10%. Recent evidence has emerged to clarify the relationship of uterine fibroids on fertility and obstetrical outcomes. In this paper we review evidence that uterine fibroids, specifically submucosal and intramural myomas, negatively impact fertility and are associated with adverse obstetrical outcomes such as: pain, preterm labor, placental abruption,malpresentation, postpartum hemorrhage, and cesarean section. Myomectomy performed for submucosal and intramural fibroids significantly improves fertility outcome, and current evidence suggests myomectomy is the treatment of choice in women desiring to conceive. For women that do not desire surgery, medical management of myomas is available. Treatment with GnRH agonists may be considered, however newer medications with fewer side effects give practitioners and patients more options. Progesterone antagonists, selective progesterone receptor modulators, and aromatase inhibitors have all shown promise as effective therapies. Non-pharmacologic treatments such as uterine artery embolization and MRI-guided ultrasound have also emerged as effective treatments for uterine fibroids. With such a wide range of new and emerging treatment options, it is important for providers to understand which fibroids are likely to respond optimally to a specific treatment, in order to individualize appropriate and effective management for patients.

PMID: 20595947 [PubMed - in process]

6. Am J Obstet Gynecol. 2010 Jun 24. [Epub ahead of print]

Uterine artery embolization vs hysterectomy in the treatment of symptomatic uterine fibroids: 5-year outcome from the randomized EMMY trial.

Kooij SM, Hehenkamp WJ, Volkers NA, Birnie E, Ankum WM, Reekers JA.

Department of Radiology, Erasmus Medical Center, Rotterdam, The Netherlands; Department of Gynecology, Academic Medical Center, Amsterdam, The Netherlands.

OBJECTIVE: The purpose of this study was to compare clinical outcome and health related quality of life (HRQOL) 5 years after uterine artery embolization (UAE) or hysterectomy in the treatment of menorrhagia caused by uterine fibroids. STUDY DESIGN: Patients with symptomatic uterine fibroids who were eligible for hysterectomy were assigned randomly 1:1 to hysterectomy or UAE. Endpoints after 5 years were reintervention rates, menorrhagia, and HRQOL measures that were assessed by validated questionnaires. RESULTS: Patients were assigned randomly to UAE (n = 88) or hysterectomy (n = 89). Five years after treatment 23 of 81 UAE patients (28.4%) had undergone a hysterectomy because of insufficient improvement of complaints (24.7% after successful UAE). HRQOL measures

improved significantly and remained stable until the 5-year follow-up evaluation, with no differences between the groups. UAE had a positive effect both on urinary and defecation function. CONCLUSION: UAE is a well-established alternative to hysterectomy about which patients should be counseled.

PMID: 20579960 [PubMed - as supplied by publisher]

7. Cardiovasc Intervent Radiol. 2010 Jun 24. [Epub ahead of print]

Initial Experience of Uterine Fibroid Embolization Using Porous Gelatin Sponge Particles.

Katsumori T, Kasahara T, Oda M, Kotani T.

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The purpose of this study was to prospectively assess the safety and effectiveness of uterine artery embolization (UAE) using porous gelatin particle (PGP; Gelpart; Asuterasu, Tokyo, Japan) for symptomatic uterine fibroids. Twenty-five consecutive premenopausal women underwent UAE with PGP. The angiographic end point of embolization was near stasis of the ascending uterine artery. Pelvic magnetic resonance imaging (MRI) was obtained before and after the procedure. Complications were assessed. The outcomes of technique, infarction rates of all fibroid tissue after UAE with contrast-enhanced MRI, change in symptoms and quality of life using serial Uterine Fibroid Symptom and Quality of Life (UFS-QOL) questionnaires, and additional interventions were evaluated. Bilateral UAE was successfully performed in all patients. Enhanced MRI 1 week after UAE showed that 100% infarction of all fibroid tissue was achieved in 65% (15 of 23) of patients; 90-99% infarction was achieved in 35% (8 of 23) of patients. Mean follow-up was 12 months (range 1-20). Symptom and QOL scores at baseline were 47.2 and 61.7, respectively. Both scores significantly improved to 26.3 ($P < 0.001$) and 82.4 ($P < 0.001$) at 4 months and to 20.4 ($P < 0.001$) and 77.6 ($P < 0.001$) at 1 year, respectively. No additional gynecologic interventions were performed in any patient. There were no major complications. Minor complications occurred in two patients. UAE using PGP is a safe and effective procedure and shows that outcomes after UAE, as measured with enhanced MRI and UFS-QOL questionnaires, seem comparable with those of UAE using other embolic agents. PGP is a promising embolic agent used for UAE to treat symptomatic uterine fibroids. Further comparative study between PGP and other established embolic agents is required.

PMID: 20574795 [PubMed - as supplied by publisher]

8. J Vasc Interv Radiol. 2010 Jul;21(7):1011-7. Epub 2010 May 31.

Uterine artery embolization versus abdominal myomectomy: a long-term clinical outcome comparison.

Narayan A, Lee AS, Kuo GP, Powe N, Kim HS.

Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland, USA.

PURPOSE: To assess long-term clinical effectiveness of uterine artery embolization (UAE) compared with abdominal myomectomy. MATERIALS AND METHODS:
Women who received UAE (n = 87) or abdominal myomectomy (n = 98) for symptomatic uterine leiomyomata between 2000 and 2002 at a single institution were consecutively enrolled in this study. Patients whose procedures were performed within 5 years before the study were included. Symptom evaluations with symptom severity scores, pregnancy rates, and satisfaction with the procedures were obtained via institutional review board-approved questionnaires. Chart reviews were performed to supplement analyses.
RESULTS: The retrospective cohort included 185 patients, of whom long-term follow-up was completed by 89 patients (48.1%), 48 being treated with UAE, and 41 with myomectomy. Follow-up ranged from 50 to 83 months. A higher but not statistically significant number of patients received repeat interventions after abdominal myomectomy (14%) versus UAE (8%; P = .204).
Significantly higher symptom severity score improvements were seen in patients treated with UAE versus abdominal myomectomy (34 vs 31; P = .02). UAE recipients were less likely to attempt to get pregnant (P = .02), but those who did had a 66.7% success rate compared with 58.8% for patients who underwent myomectomy.
Similar numbers of patients between groups were satisfied with the procedure (P = .57), reported effectiveness of symptom relief (P = .43), and would recommend the procedure to others (P = .37). CONCLUSIONS: UAE results in long-term clinical success with outcomes comparable or superior to those of abdominal myomectomy.

PMCID: PMC2900435 [Available on 2011/7/1]
PMID: 20570178 [PubMed - in process]

9. Ceska Gynekol. 2009 Aug;74(4):262-8.

[Methods causing ischemia in uterine fibroids treatment]

[Article in Czech]

Horák P, Mára M, Dundr P, Kubínová K, Haslík L, Kuzel D.

Gynekologicko-porodnická klinika VFN a 1. LF UK, Praha.

OBJECTIVE: To compare principle, advantages, disadvantages, and risks of conservative (i.e. uterus saving) methods of treatment of uterine fibroids, which are focused on elimination or reduction of their perfusion. To contribute to better understanding of this dynamic topic between gynecologists, especially in the field of appropriate indication criteria. DESIGN: Review article. SETTING: Department of Obstetrics and Gynecology, Charles University and General Faculty Hospital, Prague. METHODS: Analysis of literature and our clinical experience. CONCLUSIONS: Within the last decade the spectrum of treatment of uterine fibroids has broaden with methods causing ischemia of fibroids. These include the minimally invasive surgical therapy (laparoscopic occlusion of uterine arteries /LUAO/ and Doppler assisted laparoscopic myolysis) and radiological catheterization treatment (uterine artery embolization, UAE). Compared to foreign countries where UEA is mainly used in perimenopausal women, we focus on the group of patients with further fertility plans. It is necessary to stress that in spite of the number of affirmative experiences with the new techniques of uterine fibroid treatment in both the indication groups (women with or without further fertility plans) these methods still remain an alternative to standard surgical treatment, because both myomectomy and hysterectomy can be performed by minimally invasive techniques in the majority of women. This review is also focused on the specific risks of the particular methods as well as on their mechanism of action which may dramatically differ despite of some analogies.

PMID: 20564979 [PubMed - in process]

10. Rofo. 2010 Jul;182(7):563-4. Epub 2010 Jun 18.

[Uterine myoma embolization in Germany: unknown, unused, unwanted?]

[Article in German]

Kröncke TJ.

Comment on:
Rofo. 2010 Jul;182(7):615-7.

PMID: 20563952 [PubMed - indexed for MEDLINE]

11. J Vasc Interv Radiol. 2010 Jun 15. [Epub ahead of print]

Quality Improvement Guidelines for Uterine Artery Embolization for Symptomatic Leiomyomas.

Stokes LS, Wallace MJ, Godwin RB, Kundu S, Cardella JF.

Department of Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, Tennessee.

PMID: 20558083 [PubMed - as supplied by publisher]

12. Rofo. 2010 Jul;182(7):615-7. Epub 2010 Jun 11.

[Uterine artery embolization (UAE) for myoma treatment--results of the 3rd radiologic gynecologic expert meeting]

[Article in German]

Kröncke T, David M.

Klinik für Strahlenheilkunde und Institut für Radiologie, Charité Universitätsmedizin Berlin, Berlin. thomas.kroencke@charite.de

Comment in:
Rofo. 2010 Jul;182(7):563-4.

PMID: 20544580 [PubMed - indexed for MEDLINE]

13. J Vasc Interv Radiol. 2010 Jul;21(7):1018-23. Epub 2010 May 27.

Transdermal scopolamine patch with odansetron for the control of nausea after uterine artery embolization compared with odansetron alone: results of a randomized placebo-controlled trial.

Lee JS, Costantino M, McCullough MF, Lee JB, Jones MM, Carter EA, Spies JB.

Department of Radiology, Division of Vascular and Interventional Radiology, Georgetown University Hospital, 3800 Reservoir Rd. NW, Washington, DC 20007-2113,
USA. jsl108@gunet.georgetown.edu

PURPOSE: To determine whether the transdermal scopolamine patch in combination with odansetron is more effective than odansetron alone at reducing the nausea that occurs after uterine artery embolization (UAE). MATERIALS AND METHODS:
Patients undergoing UAE at a single university medical center were randomly assigned to receive either a scopolamine patch (containing 1.5 mg of scopolamine) or a placebo. All participants and study personnel were blinded as to group assignment. The primary outcome was the degree of nausea in the first 24 hours after UAE as measured on a visual analog scale from 0 to 10. Nausea and pain at 24 and 72 hours after UAE and medication use were recorded. Baseline characteristics and outcomes were also analyzed. RESULTS: A total of 74 patients were enrolled; 37 were randomly assigned to receive scopolamine, and 37 received placebo. Although the overall level of nausea after UAE was low (mean score of 2.6 out of 10), there was a lower level of nausea with those treated with scopolamine compared with placebo during the first 24 hours after embolization;

the difference was statistically significant (1.8 vs 3.4, P = .03). Adverse events were more common with the patch, with two patients experiencing episodes of profound disorientation and 71% reporting substantial dry mouth. The only predictor of greater nausea was the increasing severity of pain.
CONCLUSIONS: The scopolamine patch provides a moderate reduction in the nausea associated with UAE but is associated with infrequent but notable episodes of patient disorientation.

PMID: 20537558 [PubMed - in process]

14. JSLS. 2010 Jan-Mar;14(1):120-2.

Synchronous uterine artery embolization and laparoscopic myomectomy for massive uterine leiomyomas.

Madhuri TK, Kamran W, Walker W, Butler-Manuel S.

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Uterine leiomyomas remain the commonest cause of menorrhagia and frequently cause pressure symptoms. Management of leiomyomas depends on the presenting symptoms, size, location, number of myomas, and the patient's desire to retain her uterus, fertility, or both. We present the first case of laparoscopic myomectomy for a fibroid measuring 30cm in maximum diameter.

PMID: 20529536 [PubMed - indexed for MEDLINE]

15. Minim Invasive Ther Allied Technol. 2010 Jun 4. [Epub ahead of print]

A case of uterine pseudoaneurysm combined with gestational trophoblastic disease in a 30-year-old woman.

Choi MH, Hong DG, Lee YS, Cho YL, Park IS.

Department of Obstetrics & Gynecology, Kyungpook National University Hospital, Daegu, Republic of Korea.

Abstract Uterine artery pseudoaneurysm is a rare disease and it can be diagnosed using conventional doppler ultrasongraphy. Damaged uterine arteries from cesarean section, myomectomy, dilatation & curettage, etc. are known as causes of the disease. Massive bleeding in the rupture can cause fatal result. We observed an increase in beta-hCG and uterine artery pseudoaneurysm a year after the performance of dilatation & curettage for hydatidiform mole and treated it with arterial embolization and chemotherapy. We report the case and give a brief

review of the literature.

PMID: 20521997 [PubMed - as supplied by publisher]

16. Arch Gynecol Obstet. 2010 May 29. [Epub ahead of print]

Successful conservative management of cervical ectopic pregnancy: a case series.

Taylor JE, Yalcinkaya TM, Akar ME.

Department of Obstetrics and Gynecology, Wake Forest University School of Medicine, Winston-Salem, NC, USA.

OBJECTIVE: To report our experience of conservative treatment in four patients with cervical ectopic pregnancy. DESIGN: Case series. SETTING: Academic medical center. PATIENTS: Four women diagnosed with cervical ectopic pregnancy managed conservatively. INTERVENTION(S): Systemic methotrexate alone or combined with subsequent uterine artery embolization (UAE). MAIN OUTCOME MEASURES: Conservative management with decreased rate of serious complications. RESULTS: No hysterectomies were needed. One patient required subsequent intervention, UAE.
CONCLUSION: Conservative treatment of cervical pregnancy might be successful with careful follow up and subsequent conservative interventions.

PMID: 20512345 [PubMed - as supplied by publisher]

17. J Radiol. 2010 Mar;91(3 Pt 2):431-8; quiz 439-40.

[Diffusion-weighted MR imaging of the female pelvis]

[Article in French]

Thomassin-Naggara I, Fournier LS, Roussel A, Marsault C, Bazot M.

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Due to technical advances (parallel imaging and new phased-array coils), diffusion-weighted MR imaging can be used to image the female pelvis. Diffusion-weighted (b=1000) images are now acquired as a complement to conventional sequences (T2W, dynamic T1W images after intravenous injection of gadolinium). Diffusion weighted imaging improves the detection of small uterine tumors and the visualization of small implants of peritoneal carcinomatosis, which could play a significant role for tumor staging. It is helpful for characterization of complex ovarian tumors: the absence of hyperintensity on b=1000 diffusion-weighted images has an excellent positive predictive value for a benign etiology. It could also be helpful to characterize endometrial lesions, to

differentiate between endometrial polyp and carcinoma when hysteroscopy is not possible, and to differentiate uterine fibroid from sarcoma. Finally, diffusion-weighted imaging could be helpful to assess the response of uterine tumors to therapy and could confirm a good outcome following uterine artery embolization of uterine fibroids.

PMID: 20508577 [PubMed - indexed for MEDLINE]

18. J Reprod Med. 2010 Mar-Apr;55(3-4):179; author reply 179-80.

Advanced ovarian carcinoma following bilateral uterine artery embolization.

Goldberg J.

Comment on:
J Reprod Med. 2009 May;54(5):325-6.

PMID: 20506684 [PubMed - indexed for MEDLINE]

19. J Obstet Gynaecol Can. 2010 May;32(5):460-6.

Fibroids treated with uterine artery embolization: do imaging findings correlate with patient outcomes?

Millo N, Boroditsky R, Lyons EA.

Department of Radiology and Diagnostic Imaging, University of Alberta, Edmonton AB, Canada.

OBJECTIVE: To evaluate whether changes on ultrasound in uterine and fibroid volume and fibroid vascularity correlate with changes in symptom severity and health-related quality of life (HRQL) perceived by patients after uterine artery embolization (UAE).
MATERIALS AND METHODS: Sixty-four women (mean age 45.3) with symptomatic uterine fibroids underwent UAE at the Hysterectomy Alternatives (HAlt) clinic in Winnipeg, Manitoba. They completed a validated questionnaire assessing symptom severity and HRQL at baseline and at three and six months post-embolization, and ultrasound was also performed at these intervals. Changes in uterine and fibroid volume were compared with changes in symptom severity and HRQL. Data from patients with residual fibroid vascularity, extremes of baseline fibroid volume, and concomitant adenomyosis were analyzed to determine whether the outcomes were different in these patient groups. RESULTS: Changes in uterine and fibroid volumes did not correlate with changes in symptom severity or HRQL after UAE ($P > 0.05$). Residual fibroid vascularity was a negative predictor of reduction in uterine and fibroid volume ($P < 0.05$), but did not affect changes in symptom severity or HRQL. Extremes of baseline volume in the dominant fibroid did not affect symptom severity or HRQL. Patients with

concomitant adenomyosis experienced greater improvement in symptoms than those without adenomyosis (P < 0.05).
CONCLUSION: We found poor correlation between imaging findings and patient- perceived outcomes after UAE. Ultrasound cannot be used to predict improvement in symptoms or HRQL after UAE.

PMID: 20500955 [PubMed - indexed for MEDLINE]

20. J Obstet Gynaecol Res. 2010 Apr;36(2):405-10.

Asymptomatic uterine artery pseudoaneurysm after cesarean section.

Kuwata T, Matsubara S, Kaneko Y, Izumi A, Nakata M, Suzuki M.

Department of Obstetrics and Gynecology, Jichi Medical University, Tochigi, Japan.

Uterine artery pseudoaneurysm is a rare but important complication of cesarean section (CS). If treated inadequately, it may cause profuse life-threatening postpartum hemorrhage. We report an asymptomatic postpartum woman with uterine
artery pseudoaneurysm after CS. We also provide a review of published reports of pseudoaneurysm after CS. A 31-year-old Japanese woman underwent CS, in which the
uterine incision was extended laterally. Routine postoperative evaluation with vaginal ultrasound on postpartum day 6 revealed a parauterine mass with a maximum
diameter of 49 mm with swirling flow. Selective angiography confirmed this mass as a uterine artery pseudoaneurysm. Uterine artery embolization was performed with success. Uterine artery pseudoaneurysm should be listed as a differential diagnosis of pelvic mass after CS.

PMID: 20492396 [PubMed - in process]

21. Ann Vasc Surg. 2010 Aug;24(6):827.e9-11. Epub 2010 May 20.

Uterine arteriovenous fistula necessitating hysterectomy after two unsuccessful embolizations in an 18-year-old patient.

Guo N, Liu H, Peng Z.

Department of Obstetrics and Gynecology, West China Second University Hospital, Sichuan University, Chengdu, P.R. China.

Uterine arteriovenous fistula is a rare, but potentially life-threatening condition that should be suspected in women of reproductive age with an unexplained vaginal bleeding. Uterine artery embolization, in contrast, is a safe

and effective treatment for uterine arteriovenous fistula because it preserves the normal function of the uterus and the ovaries. The advantages of avoiding hysterectomy are clear, especially for young patients who want to preserve their reproductive function. Embolization failure is rare. When a uterine arteriovenous fistula reappears, it is necessary to perform subsequent embolization, especially in young patients, to treat the fistula effectively. The patient in this study had two unsuccessful embolizations, resulting in massive vaginal hemorrhage. This endangered the patient's life, and thus, a hysterectomy was performed, although the patient was infertile. Cases of unsuccessful embolizations, such as this, are unusual. Copyright 2010 Annals of Vascular Surgery Inc. Published by Elsevier Inc. All rights reserved.

PMID: 20488655 [PubMed - in process]

22. Radiographics. 2010 May-Jun;30(3):625-42.

Imaging of complications following gynecologic surgery.

Paspulati RM, Dalal TA.

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Despite new nonsurgical treatment methods for gynecologic diseases (eg, endometrial radiofrequency ablation for dysfunctional uterine bleeding, uterine artery embolization for uterine fibroids), surgery continues to be the main treatment modality in this setting. New and improved surgical techniques include laparoscopic hysterectomy, which is performed much more frequently than abdominal hysterectomy because it offers the advantages of speedy postsurgical recovery and a short hospital stay. Nevertheless, a number of early and delayed complications continue to occur following gynecologic surgery. Radiologists with access to multiple imaging modalities play an important role in the diagnosis and management of these postsurgical complications and can assist the surgeon at this critical juncture. Improved computed tomographic and magnetic resonance imaging techniques have made imaging more reliable for early diagnosis. Familiarity with normal postsurgical anatomy, pitfalls in interpretation, and imaging-guided interventional procedures will facilitate the diagnosis and management of complications following gynecologic surgery.

PMID: 20462985 [PubMed - in process]

23. Reprod Sci. 2010 Jul;17(7):679-84. Epub 2010 May 5.

Reproductive ability after uterine artery embolization in a sheep model: observation over 2 seasons.

Yamagami T, Yoshimatsu R, Matsumoto T, Anzai H, Yoshizawa M, Fukui Y, Nishimura T.

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OBJECTIVE: To investigate the mid-term effect of uterine artery embolization (UAE) on fertility after bilateral UAE with either tris-acryl gelatin microspheres (TAGM) or gelatin particles (GP). MATERIALS AND METHODS: Fertility was compared in 6 ewes that underwent UAE with TAGM, 6 ewes that underwent UAE with GP, and 6 control ewes. All ewes were artificially inseminated or naturally bred for 2 consecutive breeding seasons after UAE. Pregnancies in each breeding season were investigated. RESULTS: Overall, 36 lambs, all normal in appearance, were delivered after 2 breeding seasons. All 18 ewes delivered lambs in at least the first or second breeding season, with 13 having lambs in both the first and second breeding seasons. In the first breeding season after UAE, all 12 ewes in the UAE group delivered lambs, while 5 (83.3%) of the 6 ewes in the control group did. In the second breeding season, 9 (90%) of the 10 ewes that were alive in the UAE group delivered lambs, while 5 (83.3%) of 6 ewes in the control group did. There were no significant differences in the rate of ewes delivering in the first and second breeding season between control and UAE groups (P = .3333; first season, P > .9999; second season, Fisher exact probability test). CONCLUSION: The mid-term influence of UAE on reproductive ability in sheep was minimal.

PMID: 20445009 [PubMed - in process]

24. J Vasc Interv Radiol. 2010 Jun;21(6):941-4.

Uterine fundal blood supply from an aberrant left ovarian artery originating from the inferior mesenteric artery: implications for uterine artery embolization.

Smoger DL, Kancherla V, Shlansky-Goldberg RD.

Division of Interventional Radiology, Hospital of the University of Pennsylvania, 3400 Spruce St, Philadelphia, PA 19104, USA.

A 46-year-old Cambodian woman with a history of adenomyosis underwent a uterine artery embolization procedure to control her menorrhagia. Aortography revealed a left ovarian artery originating from the inferior mesenteric artery (IMA) supplying a large portion of uterine vascularity. Based on recognition of this variant, the ovarian artery was embolized without compromising flow to the IMA to achieve the best chance for success.

PMID: 20434364 [PubMed - in process]

25. J Magn Reson Imaging. 2010 May;31(5):1137-43.

Four-dimensional transcatheter intra-arterial perfusion MR imaging before and after uterine artery embolization in the rabbit VX2 tumor model.

Chung JC, Wang D, Lewandowski RJ, Tang R, Chrisman HB, Vogelzang RL, Woloschak GE, Larson AC, Omary RA, Ryu RK.

Department of Radiology, Northwestern University, Chicago, Illinois, USA.

PURPOSE: To test the hypothesis that four-dimensional (4D) transcatheter intra-arterial perfusion (TRIP) MR imaging can measure uterine fibroid perfusion changes immediately before and after uterine artery embolization (UAE) in the rabbit VX2 tumor model. MATERIALS AND METHODS: Eight VX2 uterine tumors were grown in six rabbits. After positioning a catheter within the uterine artery, we performed 4D TRIP-MRI measurements with 3-mL injections of 2.5% gadopentetate dimeglumine. We used a dynamic 3D spoiled-gradient echo sequence with in vivo B(1)-field correction for improved accuracy during perfusion quantification. We performed UAE using 1 mL of gelatin microspheres (2 x 10(6) particles; diameter 40-120 mum). Two regions-of-interest were drawn within each tumor upon perfusion maps. Functional embolic endpoints were reported as the mean percent reduction in fibroid tumor perfusion. Measurements before and after UAE were compared using paired t-tests (alpha = 0.05). RESULTS: VX2 uterine tumor perfusion decreased significantly from 27.1 at baseline to 7.09 after UAE (mL/min/100 mL of tissue, P < 0.0001). Overall perfusion reduction was 76.3% (95% confidence interval: 66.3-86.3%). CONCLUSION: Four-dimensional TRIP MRI can objectively quantify uterine fibroid perfusion reductions during UAE in VX2 rabbits. This technique could be used clinically to potentially determine an optimal embolic endpoint with the long-term goals of improving UAE success rates and minimizing procedure-related ischemic pain. Copyright 2010 Wiley-Liss, Inc.

PMCID: PMC2904956 [Available on 2011/5/1]
PMID: 20432349 [PubMed - in process]

26. J Ultrasound Med. 2010 May;29(5):839-42.

Sonographic features associated with post-uterine artery embolization pyomyoma.

Abulafia O, Shah T, Salame G, Miller MJ, Serur E, Zinn HL, Sokolovski M, Sherer DM.

Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, State University of New York, Downstate Medical Center, Brooklyn, NY 11203, USA. oabulafia@aol.com

PMID: 20427797 [PubMed - in process]

27. Obstet Gynecol. 2010 Feb;115(2 Pt 2):468-70.

Lower extremity claudication resulting from uterine leiomyoma-associated common iliac artery compression.

Zinn HL, Abulafia O, Sherer DM, Sclafani SJ.

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BACKGROUND: Rarely, uterine leiomyomas have been associated with deep venous thrombosis secondary to compression. Affected vessels include the inferior vena cava and the common iliac, iliac, and distal veins. Arterial compression has not been reported previously. Bilateral uterine artery embolization for symptomatic leiomyomata provides relief of bulk-related symptoms and reduction in menstrual flow. CASE: A 42-year-old woman presented with menorrhagia secondary to a myomatous uterus. Claudication of the right lower extremity was attributed to imaging-confirmed leiomyoma pressure-associated compression of the right common iliac artery. Examination disclosed an absent right common femoral artery pulse. Bilateral uterine artery embolization resulted in long-term resolution of the claudication. CONCLUSION: Claudication of the lower extremity may result from pressure-associated compression of the common iliac artery caused by uterine leiomyomas, and may be amenable to bilateral uterine artery embolization.

PMID: 20093883 [PubMed - indexed for MEDLINE]

28. J Vasc Interv Radiol. 2010 Apr 21. [Epub ahead of print]

What do Family Physicians Know about Interventional Radiology? A Survey of Family Physicians at a Large Canadian Annual Scientific Assembly.

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PURPOSE: To quantify the level of background knowledge among family physicians with regard to interventional radiology (IR) procedures, duties, and clinical responsibilities and to develop recommendations on how to further educate family physicians in IR. MATERIALS AND METHODS: Paper surveys were administered to family physicians who attended the Ontario College of Family Physicians' Annual Scientific Assembly. Each survey consisted of 14 questions pertaining to IR procedures, clinical duties, collaboration, and education. RESULTS: A total of 213 of 229 (93%) attempted paper surveys were completed. Family physicians rated their knowledge of IR as poor (31%), adequate (53%), good (14%), or excellent (2%). A total of 98%, 71%, 47%, and 38% correctly identified that interventional

radiologists performed image-guided biopsies, uterine artery embolization, radiofrequency ablation of tumors, and vascular angioplasties, respectively. Only 7% correctly identified that interventional radiologists are currently not recognized as distinct subspecialists by the Royal College of Physicians and Surgeons of Canada. Approximately 71% would refer patients directly to an interventional radiologist. A total of 96% believed that future education about IR would be "very" or "somewhat" helpful. Approximately 43% selected presentations given by interventional radiologists at family medicine conferences as their preferred method of future education. CONCLUSIONS: The data quantify and
demonstrate the knowledge gap that exists among family physicians in Canada regarding IR procedures, duties, and responsibilities. Family physicians strongly support future education and collaboration with interventional radiologists.
Eight results-based recommendations are made to further educate family physicians
about IR and promote increased collaboration.

PMID: 20417116 [PubMed - as supplied by publisher]

29. Fertil Steril. 2010 Apr 21. [Epub ahead of print]

Presenting features of women with uterine arteriovenous malformations.

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OBJECTIVE: To describe the outcome of patients with uterine arteriovenous malformations (AVMs) after uterine artery embolization (UAE). DESIGN: Retrospective case series. SETTING: Tertiary center of a university hospital. PATIENT(S): Thirteen patients were referred to a tertiary medical center from primary care facilities with profuse uterine bleeding. INTERVENTION(S): Uterine artery embolization. MAIN OUTCOME MEASURE(S): Thirteen patients underwent UAE.
Eleven patients had no additional vaginal bleeding, whereas two patients underwent hysterectomy after embolization. RESULT(S): Twelve patients developed AVMs after induced abortions. One patient had a congenital uterine AVM. Based on the transfer notes, eight cases had incomplete abortions, three cases had dysfunctional uterine bleeding, one case had a molar pregnancy, and one case had a uterine AVM. Two cases underwent hysterectomy after UAE. One patient delivered a healthy baby after bilateral UAE. CONCLUSION(S): Uterine AVMs should be suspected in patients with abrupt, profuse vaginal bleeding and a medical history of an induced abortion. Primary physicians should consider uterine AVMs with such a medical history. A prompt diagnosis and therapy are essential for favourable outcomes in patients with uterine AVMs.

PMID: 20416872 [PubMed - as supplied by publisher]

30. Semin Reprod Med. 2010 May;28(3):235-41. Epub 2010 Apr 22.

Uterine artery embolization for fibroids: a review of current outcomes.

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Since its introduction in 1995, uterine artery embolization (UAE) for fibroids has been extensively investigated. Particularly in the last 3 to 4 years, several high-quality studies assessing its outcome have been completed. Randomized trials and long-term observational studies have demonstrated that when successful, UAE can provide symptom control similar to that obtained after surgery. Although hysterectomy remains more effective in symptom control and durability, many women are seeking uterine-sparing alternatives. UAE has emerged as the leading minimally invasive treatment for fibroids: Morbidity is low and recovery rapid; serious complications are quite rare. With a few anatomical exceptions, UAE is appropriate for most patients with symptomatic fibroids who have completed childbearing. Although pregnancy is certainly possible after embolization, existing data suggest better reproductive outcomes for myomectomy in the first 2 years after treatment. The current recommendation is for myomectomy as a first choice for patients seeking to become pregnant. Thieme Medical Publishers.

PMID: 20414846 [PubMed - in process]

31. Semin Reprod Med. 2010 May;28(3):228-34. Epub 2010 Apr 22.

Minimally invasive approach for myomectomy.

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Uterine fibroids are the most common benign tumor of the uterus in women of reproductive age. However, most of them are asymptomatic and do not require any treatment. Menorrhagia and pelvic pain are the most usual symptoms, and some women may present with infertility or pregnancy-related complications. In those with abnormal uterine bleeding, one should exclude other causes of abnormal vaginal bleeding including endometrial cancer. Diagnosis of uterine fibroid is established by pelvic ultrasonography with or without saline infusion hysterosonography. Management options depend on the patient's fertility potential and desire for future pregnancy. Submucous myoma should be treated by

a hysteroscopic approach. Intramural and subserous myomas in women who opt for nonsurgical treatment could be treated with uterine artery embolization (UAE), high-intensity focused ultrasound (HIFU), or medical treatment such as selective gonadotropin-releasing hormone agonists, progesterone receptor modulators, or aromatase inhibitors. All interventions aside from hysterectomy provide temporary relief, although myomectomy, UAE, and HIFU provides more durable symptom relief relative to current medical management. Patients wishing to preserve their fertility are best treated by myomectomy, which can be done by laparoscopy. A laparoscopic approach is more advantageous than laparotomy, but laparoscopic suturing is more demanding. This can be overcome by robotic-assisted laparoscopic myomectomy. Thieme Medical Publishers.

PMID: 20414845 [PubMed - in process]

32. Int J Gynecol Pathol. 2010 May;29(3):260-8.

Uterine artery embolization with trisacryl gelatin microspheres in women treated for leiomyomas: a clinicopathologic analysis of alterations in gynecologic surgical specimens.

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To characterize the histologic range of alterations due to uterine artery embolization with trisacryl gelatin microspheres in gynecologic specimens containing leiomyomas in detail, we report our clinicopathologic experience with 26 cases (longest postuterine artery embolization interval, 1.9 yr). Microspheres were observed in 85% of cases and could be seen up to 1.9 years after embolization. They were mainly present in leiomyomas and nonneoplastic myometrium but could be found in other nontargeted sites, such as the cervix, endometrium, ovaries, and fallopian tubes; however, infarction (present in 96% of cases) was confined to leiomyomas and did not involve other nonneoplastic tissues. The appearance of the infarcts was correlated with time after embolization, and coagulative necrosis/necrosis of indeterminate type was restricted to the early period after uterine artery embolization (before 10 wk postuterine artery embolization) whereas hyaline necrosis was seen predominantly in the late period (mostly after 10 wk, up to 1.9 yr). Of the 14 hysterectomy specimens with microspheres in extravascular spaces (almost all of which were in close proximity to the arteries), pseudoaneurysms were also focally present in 8 (57%) specimens. Microspheres were usually associated with mild inflammatory reactions, which persisted >1 year after embolization but did not become more severe over time. Morphologic and histochemical features of trisacryl gelatin microspheres were compared with other embolization agents, which can also be encountered in surgical specimens [polyvinyl alcohol (PVA) particles and PVA microspheres].

Trisacryl gelatin microspheres were negative with periodic acid-Schiff and orange-pink with Movat stains whereas PVA was positive with periodic acid-Schiff and black with Movat. Our study, the largest histologic analysis to date, confirms and extends the observations of earlier studies of trisacryl gelatin microspheres. In addition, we conclude that, as expected, the histologic appearance of microsphere-induced infarcts is a function of time, similar to healing of infarcts in nongynecologic sites. Pseudoaneurysms are a likely mechanism for the production of microspheres in extravascular spaces. Inflammation associated with microspheres can persist in gynecologic tissues but does not seem to result in the destruction of nontargeted sites. Finally, trisacryl gelatin microspheres can be distinguished from PVA particles and PVA microspheres based on a combination of morphologic features and histochemical stains.

PMID: 20407327 [PubMed - in process]

33. J Vasc Interv Radiol. 2010 Jun;21(6):836-41. Epub 2010 Apr 18.

Transcatheter intraarterial methotrexate infusion combined with selective uterine artery embolization as a treatment option for cervical pregnancy.

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PURPOSE: To assess the value of transcatheter intraarterial methotrexate infusion combined with selective uterine artery embolization (UAE) as a treatment option for cervical pregnancy.
MATERIALS AND METHODS: Between January 2004 and June 2009, a prospective study was conducted in 20 consecutive patients with cervical pregnancy. The patients were treated with UAE with gelatin sponge particles (1-2 mm in size) to control active vaginal bleeding. Methotrexate was injected into the arteries before, during, and after UAE. RESULTS: Two of 20 patients (10%) had recurrent vaginal bleeding of approximately 50 mL daily after treatment; the other 18 (90%) had no significant vaginal bleeding after UAE. Fifteen cases (75%) were treated successfully by a single procedure and five (25%) required a subsequent curettage without blood transfusion. The degeneration of placenta was confirmed by light microscopy after curettage. The cervical gestational sac was eliminated at a mean of 41 days (range, 11-83 d). Increased serum beta-human chorionic gonadotrophin levels normalized by an average of 30 days (range, 7-49 d). The uterus was preserved and normal menses resumed within 2-4 months in all 20 women (100%). Of 16 women who attempted another pregnancy, eight (50%) achieved pregnancy: there were six term pregnancies with live births (38%) and two miscarriages (13%). No obvious complications related to treatment occurred, but a few mild side effects were observed in nine cases (45%). CONCLUSIONS: Based on this series of 20 patients, the conservative protocol of transcatheter

intraarterial methotrexate infusion combined with UAE may be a feasible, effective, and safe option for cervical pregnancy. Copyright (c) 2010 SIR. Published by Elsevier Inc. All rights reserved.

PMID: 20400332 [PubMed - in process]

34. J Vasc Interv Radiol. 2010 Jun;21(6):829-35; quiz 835. Epub 2010 Apr 15.

Bilateral versus unilateral femoral access for uterine artery embolization: results of a randomized comparative trial.

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PURPOSE: To determine if uterine embolization via bilateral femoral puncture reduces fluoroscopy time with a similar frequency of puncture site complications compared with unilateral puncture. MATERIALS AND METHODS: Patients presenting for uterine artery embolization (UAE) for leiomyomata at a single institution were randomly assigned to receive unilateral or bilateral femoral punctures. Procedures were performed in a standardized fashion. Patients were blinded to the puncture site with an opaque dressing. Outcome measures included fluoroscopy time, dose-area product (DAP), procedure time, and puncture site pain after treatment. Baseline characteristics of the two groups and outcome measures were compared with the use of t tests, analyses of variance, Pearson chi(2) tests, and nonparametric tests. RESULTS: Fifty-seven patients consented to participate: 22 received bilateral punctures and 35 received unilateral puncture. Bilateral puncture procedures had less fluoroscopy time (13 minutes vs 16.6 minutes; P = .0033), less procedure time (54.9 min vs 62.9 min; P = .026), and fewer angiographic images (46.5 vs 68.3; P < .001). There was no difference in DAP (12,986 muGy/cm(2)for bilateral vs 16,237 muGy/cm(2)for unilateral; P = .35). Groins that were punctured had greater-although still minor-pain than unpunctured groins at 24 hours (visual analog pain scores, 1.45 for punctured groins vs 0 for unpunctured groins; P = .039) and 48 hours (scores of 1 vs 0; P = .018). There were no complications in either group. CONCLUSIONS: Bilateral femoral puncture during UAE was associated with reduced fluoroscopy time and procedure time, minor puncture site pain, and no increase in complications.

PMID: 20399113 [PubMed - in process]

35. Acta Obstet Gynecol Scand. 2010 Aug;89(8):1096-9.

Pelvic artery embolization in the management of obstetric hemorrhage.

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We studied the role of pelvic artery embolization in management of obstetric hemorrhage by retrospective analysis of 50 cases of obstetric hemorrhage in a tertiary care referral hospital where this procedure was used. Uterine and or internal iliac artery embolization was performed for the management of postpartum hemorrhage (39 cases; 78%), post abortal bleeding (6 cases; 12%) and gestational trophoblastic disease (4 cases; 8%). In one case of postpartum hemorrhage procedure could not be performed due to arterial spasm (2%). Prophylactic embolization was carried out in one case of placenta accreta. The mean age of the women was 27 years and 54% were primiparas. In six women embolization was done after hysterectomy failed to control pelvic hemorrhage. One fourth of women had coagulopathy at the time of presentation. There were five cases of pelvic hematoma and three cases of arteriovenous malformations. The success rate of the procedure was 94% and the procedure was unsuccessful for controlling bleeding in three women. There were no major procedure related complications. Thus, pelvic artery embolization is an effective alternative to surgery in controlling obstetric hemorrhage and as a fertility and life-saving procedure.

PMID: 20397757 [PubMed - in process]

36. J Gynecol Obstet Biol Reprod (Paris). 2010 Jun;39(4):325-30. Epub 2010 Apr 14.

[Ruptured uterine artery pseudo-aneurysm treated by embolization for post-partum bleeding: About 2 cases]

[Article in French]

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Pseudo-aneurysms of uterine arteries are rare causes of post-partum hemorrhage. We report two cases of rupture, revealed in one case by a hemoperitoneum and in a second case by a retroperitoneal hematoma. The treatment consisted of embolization of uterine arteries with immediate clinical success, to avoid surgery.

PMID: 20395073 [PubMed - in process]

37. Radiology. 2010 Jun;255(3):834-41. Epub 2010 Apr 14.

Uterine artery embolization for leiomyomas: percentage of infarction predicts clinical outcome.

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PURPOSE: To determine the effect of partial versus complete leiomyoma infarction on relief of leiomyoma-related symptoms and freedom from invasive reinterventions
and to assess if patient age, location of the dominant leiomyoma, number of leiomyomas, or baseline uterine and dominant leiomyoma volume were associated with clinical failure. MATERIALS AND METHODS: Study protocol was approved by the
institutional review board, and informed consent was obtained. One hundred fifteen consecutive women (median age, 42 years; range, 34-61 years) with symptomatic uterine leiomyomas underwent contrast material-enhanced magnetic resonance (MR) imaging at baseline and 24-72 hours after uterine artery embolization (UAE) to determine the percentage of infarction of leiomyoma tissue (complete = 100%, almost complete = 90%-99%, and partial = 0%-89%). Clinical outcome and frequency of reinterventions were compared for up to 36 months. RESULTS: One hundred thirteen patients completed at least one clinical follow-up. Twenty-four months after UAE, 50% +/- 15.2 (standard error) of the patients with partial infarction and 80% +/- 13.4 (standard error) of patients with almost complete infarction had undergone no reintervention. No patient with complete infarction needed a second treatment (P < .001). The hazard ratios for reintervention between the complete infarction group and the almost complete and
partial infarction groups were 15.88 (95% confidence interval [CI]: 1.22, 2225.54; P = .034) and 73.08 (95% CI: 8.33, 9636.35; P < .001), respectively. There were significant differences in hazard ratios between patients with partial and those with complete infarction for persistence or recurrence of menorrhagia (hazard ratio, 7.45; 95% CI: 2.08, 28.31; P = .002) and bulk-related symptoms (hazard ratio, 5.90; 95% CI: 1.66, 21.92; P = .007). There was no significant correlation between patient age, number of leiomyomas, location of the dominant leiomyoma, or baseline uterine and dominant leiomyoma volume and clinical failure. CONCLUSION: Women with leiomyoma infarction above 90% on contrast-enhanced MR images after UAE show significantly better symptom control and fewer reinterventions than do patients with a lower infarction rate.

PMID: 20392986 [PubMed - indexed for MEDLINE]

38. Curr Opin Obstet Gynecol. 2010 Jun;22(3):242-7. [pregnancy & Effectiveness]

Impact of previous uterine artery embolization on fertility.

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PURPOSE OF REVIEW: To describe data on the effects of uterine artery embolization
(UAE) on fertility. RECENT FINDINGS: UAE is used to treat postpartum hemorrhage (PPH) and fibroids. This effective therapy is replacing surgery in many cases. One of the main goals of UAE is to preserve the uterus and therefore fertility (pregnancies, menses and ovarian reserve). Pregnancies after this technique have been described. The main complications encountered during these pregnancies are not only PPH but also miscarriages and cesarean deliveries after UAE for fibroids. Conflicting results varying from completely well tolerated to serious complications such as definitive negative effect on endometrium and ovary function have been reported. Nevertheless, the series differ in that they included women of different ages and used different material for vessel occlusion (definitive microparticles of varying sizes, temporary pledgets of gelatine sponge, etc.). We discuss the impact of these differences on uterus vascularization and fertility. SUMMARY: UAE is an effective treatment for PPH and fibroids. Pregnancy is possible after UAE. Recurrent PPH is a serious and frequent complication. Synechia is also a potential complication. Desire of childbearing should be considered when choosing embolization or surgery and, in case of embolization, the choice of material used. Further studies on future fertility after UAE are needed as well as information on fertility after surgery.

PMID: 20386442 [PubMed - in process]

39. Reprod Biomed Online. 2010 Jun;20(6):831-835. Epub 2010 Mar 1.

Intramyometrial ectopic pregnancy in an ICSI patient following uterine artery embolization.

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Myometrial pregnancy represents a rare subtype of ectopic pregnancy. A history of uterine artery embolization (UAE) because of symptomatic uterine fibroids, and assisted reproductive treatment may predispose to this unusual implantation site.

A 40-year-old woman with a history of uterine fibroids underwent a transfer of two embryos after intracytoplasmic sperm injection treatment. The combined findings on transvaginal ultrasound scan, pelvic magnetic resonance imaging scan, suction curettage, diagnostic hysteroscopy and laparoscopy were compatible with a diagnosis of ectopic pregnancy within the myometrium, at the site of a necrotized intramyometrial fibroid following UAE. Treatment with systemic methotrexate resulted in successful resolution of this ectopic pregnancy. In conclusion, this study reports a pregnancy within a previously necrotized fibroid. Findings suggest that in patients with a history of UAE for the treatment of uterine fibroids and who subsequently undergo assisted reproductive treatment, the risk of an ectopic pregnancy within the myometrium has to be considered.

PMID: 20382082 [PubMed - as supplied by publisher]

40. J Obstet Gynaecol. 2010 Apr;30(3):310-1.

Internal iliac artery embolisation in the treatment of uncontrolled haemorrhage associated with placenta accreta and partial hydatidiform mole.

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PMID: 20373939 [PubMed - indexed for MEDLINE]

41. Radiology. 2010 May;255(2):467-75. Epub 2010 Mar 23.

Assessment of uterine and ovarian arteries before uterine artery embolization: advantages conferred by unenhanced MR angiography.

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PURPOSE: To clarify the benefits of unenhanced magnetic resonance (MR) angiography in planning uterine artery embolization (UAE). MATERIALS AND METHODS:
This retrospective study was approved by the institutional review board, and the informed consent requirement was waived. Fifty-five consecutive women (mean age,
42 years; age range, 26-52 years) who underwent UAE for symptomatic uterine fibroids were placed chronologically into groups 1, 2, or 3, which were composed of 20, 22, and 13 patients, respectively. Digital subtraction angiography was performed in groups 1 and 2 but not in group 3. In the 35 patients in groups 2

and 3, unenhanced MR angiography was performed before UAE, and two independent
radiologists assessed the results. The parameters indicating performance of UAE were compared among the three groups with the Tukey test. RESULTS: Forty-five patients underwent routine UAE (19, 16, and 10 patients in groups 1, 2, and 3, respectively). Sixty-eight (97%) of 70 uterine artery origins were demonstrated clearly at MR angiography. Among five ovarian arteries detected at MR angiography, collateral supply was confirmed in four (80%). The assessment of MR angiographic results and discontinuation of digital subtraction angiography led to a reduction in the mean performance time (from 96.2 minutes to 51.9 minutes [P = .004]), fluoroscopy time (from 28.5 minutes to 17.8 minutes [P = .036]), dose-area product (from 109.8 Gy.cm(2) to 25.4 Gy.cm(2) [P < .001]), and contrast medium volume (from 103.8 mL to 40.8 mL [P < .001]). CONCLUSION: Unenhanced MR
angiography provides useful information regarding uterine and ovarian arteries before UAE.

PMID: 20332375 [PubMed - indexed for MEDLINE]

42. Obstet Gynecol. 2010 Apr;115(4):857-60.

Fertility and uterine artery embolization.

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PMID: 20308848 [PubMed - indexed for MEDLINE]

43. Cardiovasc Intervent Radiol. 2010 Mar 19. [Epub ahead of print]

Arterial Distribution of Calibrated Tris-Acryl Gelatin and Polyvinyl Alcohol Embolization Microspheres in Sheep Uterus.

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The purpose of this study was to compare, after embolization, the distribution in the uterine arterial vasculature of tris-acryl gelatin microspheres (TGMS) and polyvinyl alcohol microspheres (PVAMS). A limited bilateral uterine artery embolization was performed in six adult sheep under fluoroscopic control by injecting in each uterine artery 0.25 ml of 500- to 700-mum TGMS of PVAMS suspended in 50/50 saline/contrast medium. Sacrifices were performed 1 week after

embolization and uteri were analyzed histologically. The number and size of microspheres and vessels were measured, as well as the histological location according to a classification in four zones of the uterus. One hundred sixty-five vessels (69 vessels occluded with TGMS and 96 vessels occluded with PVAMS) were measured. The size of the occluded vessels decreased significantly from proximal to distal zones of the uterine vasculature (P < 0.0001). The location of TGMS and PVAMS within the vasculature was significantly different (P < 0.0001) since PVAMS blocked significantly more distally than TGMS. Deformation of the microspheres within the tissue was greater for PVAMS (18.0% +/- 12.3%) than for TGMS (8.7% +/- 9.2%) (P < 0.0001). In conclusion, PVAMS have a more distal distribution in the sheep uterine vasculature, compared to TGMS. Such differences in partition, already described in the kidney embolization model, can ultimately explain the different clinical outcome reported with these two types of microspheres in uterine fibroid embolization.

PMID: 20300751 [PubMed - as supplied by publisher]

44. J Vasc Interv Radiol. 2010 May;21(5):644-8. Epub 2010 Mar 15.

Placenta accreta: management with uterine artery embolization in 17 cases.

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PURPOSE: To report on the management of placenta accreta with uterine artery embolization (UAE) and to analyze the outcomes. MATERIALS AND METHODS: A retrospective study was performed over a 128-month period of all women with placenta accreta who underwent UAE in a single center. Seventeen patients were included, and they were further divided into two groups: a preventive group (diagnosis was made in the prenatal period, n = 6) and a curative group (diagnosis was made during delivery, n = 11). The mean patient age was 34.6 years +/- 5.5 in the preventive group and 31.4 years +/- 4.3 in the curative group. The mean term of pregnancy was 35 weeks +/- 2 of amenorrhea in the preventive group and 38 weeks +/- 2 in the curative group. RESULTS: The primary success of embolization was 100% in both groups. In the preventive group, massive bleeding occurred in a patient 2 days after unsuccessful manual placenta delivery resulted in an hysterectomy; in a second case, delayed bleeding (2 months after the procedure) was controlled with a second embolization. There were no episodes of repeat bleeding in the curative group. In the preventive group, two patients presented with uterine scarring, with synechiae in one and endometrial atrophy in the other. In the curative group, one patient presented with secondary amenorrhea. The delay before embolization was significantly different in the two groups (23.3 minutes +/- 5.1 in the preventive group vs 73 minutes +/- 44.7 in the curative group, P < .01), and total blood loss was 0.7 L +/- 0.8 in the

preventive group and 2.6 L +/- 1.2 in the curative group (P < .01). CONCLUSIONS: Prenatal diagnosis of placenta accreta permits its preventive management, which reduces time to embolization and blood loss.

PMID: 20227296 [PubMed - in process]

45. J Minim Invasive Gynecol. 2010 Mar-Apr;17(2):246-51.

Three-dimensional CT angiography is useful for diagnosis of postabortion uterine hemorrhage: 3 case reports and review of the literature.

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Uterine hemorrhage is a major complication associated with abortion. There are various causes of postabortion uterine hemorrhage. The objective of this article is to estimate the efficacy of three-dimensional computed tomography (3D-CT) angiography in the diagnosis of this condition. We present 3 case reports of women with massive genital bleeding after abortion. 3D-CT angiography clearly demonstrated the 3-D features of the feeding artery, the draining vein, and the surrounding normal structures. The diagnosis in patient 1 was a uterine arteriovenous malformation, in patient 2 was a placental polyp mimicking a uterine arteriovenous malformation, and in patient 3 was a placental polyp. Patients were all successfully treated with uterine artery embolization or transcervical resection of the placental polyp. We conclude that 3D-CT angiography is useful for making a differential diagnosis and for preoperative planning in patients with postabortion uterine hemorrhage.

PMID: 20226418 [PubMed - indexed for MEDLINE]

46. J Minim Invasive Gynecol. 2010 Mar-Apr;17(2):214-21.
The effect of a gynecologist-interventional radiologist relationship on selection of treatment modality for the patient with uterine myoma.
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BACKGROUND: On the basis of consistent published scientific evidence, the American College of Obstetricians and Gynecologists has given uterine artery embolization (UAE) a level A recommendation as a viable alternative treatment for uterine myomas, describing it as a safe and effective option for appropriately selected women who wish to retain their uteri. Despite the growth of favorable clinical outcome information, many gynecologists do not routinely offer UAE as an

alternative to abdominal hysterectomy or abdominal myomectomy. The percentage of laparoscopic hysterectomies in the United States remains less than 20%, reflecting the reluctance or inability of gynecologic surgeons to perform other minimally invasive procedures such as hysteroscopic myomectomy, laparoscopic myomectomy, laparoscopic hysterectomy, or even vaginal hysterectomy. Of great significance, many patients do not wish to have any kind of surgery, no matter how "minimally invasive." As a result, patients seeking less invasive treatments may bypass the gynecologist and be referred directly to an interventional radiologist by their primary care physician, or they may self-refer. Little has been published on the referral relationship between gynecologists and the interventional radiologist who performs uterine artery embolization. The absence of a structured routine referral relationship causes some women to undergo treatments that potentially are not aligned with all of her treatment desires. This study was undertaken to gain insight into the interventional radiologist-gynecologist dynamic and the benefit to patients who are informed of all of their options for the treatment of myomas. STUDY OBJECTIVES: Investigate the course of myoma treatment in a cohort of patients either self-referred to an interventional radiologist or referred to the interventional radiologist by their gynecologist. Determine the effect of a cooperative referral network of interventional radiologists and gynecologists that informs patients about the options of UAE and minimally invasive surgical alternatives on the choice of myoma treatment. STUDY DESIGN: Prospective data acquisition of patient referral source, UAE evaluation, patient decision on treatment options, and continued follow-up with a network gynecologist. SETTING: Hospital-based interventional radiologist and gynecologist both practicing in a large urban teaching setting. PATIENTS: A total of 226 women, representing 73% of women presenting to an interventional radiologist in 2007 seeking UAE for symptomatic myomas. One hundred thirty-eight of these patients were referred to the interventional radiologist by a gynecologist, and 88 were self-referred. Patient outcome relative to referral was traced with 76 patients in the myoma surgery group treated from 2007-2008 by a gynecologist in the referral network. INTERVENTIONS: Evaluation for suitability for UAE procedure, followed either by UAE procedure with return to referring gynecologist for follow-up, return to referring gynecologist for treatment, or referral to another gynecologist for minimally invasive surgical management when the primary gynecologist is unable to perform alternative treatment. MEASUREMENTS AND MAIN RESULTS: All patients in the study initially evaluated by the interventional radiologist were referred to a gynecologist. Overall, 62% of patients were candidates for UAE, and 38% underwent the procedure during the study period. Patients who did not receive UAE were returned to the referring gynecologist for further evaluation and treatment. Patients who underwent UAE were referred to a gynecologist for ongoing care. In all, 70% of self-referred patients and 92% of gynecologist-referred patients expressed satisfaction with their original gynecologist and were referred back to that physician. Patients who did not have a gynecologist or who were dissatisfied with their original gynecologist were referred to a network gynecologist for continued gynecologic care. In our study 26 self-referred women were sent as new patients to gynecologists in the interventional radiologist's referral network, resulting in a 119% return on the original 138 gynecologist-to-interventional radiologist-referred patients. Among the 8% of gynecologist-referred women who

switched to a different gynecologist within the referral network, the primary reasons for dissatisfaction were the gynecologist's failure to fully disclose treatment options or offer desired minimally invasive procedures. On follow-up with a network gynecologist, 8 newly referred patients underwent myoma surgery, and 8 newly referred patients continued to be seen by that gynecologist. Four patients referred to the gynecologist for treatment were originally referred by the gynecologist to the interventional radiologist for UAE evaluation. Ten patients switched from their named gynecologist to a different gynecologist willing to disclose all treatment options for uterine myomas and able to provide minimally invasive surgical treatment as medically indicated. Of the 10 women who switched to this network gynecologist, 8 underwent myoma surgery. CONCLUSIONS:
Establishing a referral relationship with an interventional radiologist for comprehensive uterine myoma treatment supports a trusting, collaborative, long-term, noncompetitive "win-win" relationship between the gynecologist and radiologist, meets the patient's desire for full disclosure of all myoma treatment options, improves the patient's overall medical care and physician/patient experience, and has been demonstrated to improve patient flow to a gynecologist practice. With the guidelines established in this study, no patients were inappropriately left to the gynecologist for post-UAE care. The authors acknowledge that this dynamic is dependent on the individual interventional radiologist and their relationships and open communication with the gynecologist. Finally, the study revealed that failure to fully disclose alternative treatment options, or offer minimally invasive surgical techniques may result in a loss of patients due to patient dissatisfaction. Copyright 2010 AAGL. Published by Elsevier Inc. All rights reserved.

PMID: 20226411 [PubMed - indexed for MEDLINE]

47. J Magn Reson Imaging. 2010 Mar;31(3):617-24.

Preinterventional quantitative magnetic resonance imaging predicts uterus and leiomyoma size reduction after uterine artery embolization.

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PURPOSE: To investigate the relationship between magnetic resonance imaging (MRI)
measures and uterus and leiomyoma size reductions after uterine artery embolization (UAE). MATERIALS AND METHODS: Fifty-two women with leiomyomas
underwent selective UAEs. Uterine and dominant leiomyoma sizes were measured with
preinterventional MRI and a 6-month follow-up MRI. Four MRI measures of the

dominant leiomyoma were recorded: T1 time; T2 time; leiomyoma-to-skeletal muscle
T2 SI-ratio; and percentage of contrast enhancement. To evaluate the predictive value of MRI measures we used Spearman rank correlation, area under the receiver operating characteristic (ROC) curve (A(z)), and values for diagnostic
performance. RESULTS: Uterus and dominant leiomyoma size reductions were highly
variable. Leiomyoma size reductions of >or=75% were accurately predicted with leiomyoma-to-skeletal muscle T2 SI-ratio (ROC curve A(z) = 0.930; 95% confidence interval [CI]: 0.853, 1.000). Leiomyoma size reductions >or=75% were predicted by leiomyoma-to-skeletal muscle T2 SI-ratio >or=3.5 and T1-time >or=750 msec with 100% and 86% sensitivities and 67% and 72% specificities, respectively. Uterus
size reduction >or=50% were identified by dominant leiomyoma-to-skeletal muscle T2 SI-ratio >or=2.5. CONCLUSION: Uterus and dominant leiomyoma size reductions after UAE were predicted with preoperative MRI measures of the dominant leiomyoma.

PMID: 20187204 [PubMed - indexed for MEDLINE]

48. J Obstet Gynaecol Can. 2010 Feb;32(2):149-54.

Transvaginal Doppler-guided uterine artery occlusion for the treatment of symptomatic fibroids: summary results from two pilot studies.

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OBJECTIVE: To evaluate the feasibility, safety, and short-term efficacy of bilateral uterine artery occlusion, using a transvaginal Doppler-guided vascular clamp as a minimally invasive therapy for symptomatic uterine leiomyomas. METHODS: We conducted two prospective, non-randomized, phase I pilot studies (Canadian Task Force Classification II-2) at a university-affiliated teaching
hospital. Between June 2004 and May 2005, 30 premenopausal women with symptomatic uterine leiomyomas underwent bilateral uterine artery occlusion using a transvaginal Doppler-guided vascular clamp. Bilateral uterine artery occlusion was performed for 5.8 +/- 1.4 hours in the first 17 patients (Group 1) and from 6 to 9 hours (mean 7.05 +/- 1.0 hours) in the latter 13 patients (Group 2). Outcome measures included dominant fibroid volume (cm(3)), uterine volume (cm(3)), and improvement of menorrhagia at one, three, and six months. RESULTS: Bilateral occlusion of the uterine arteries was achieved in all 30 patients. In Group 1, the Ruta Menorrhagia Severity Scores decreased from baseline by 16%, 22% and 39% at one, three, and six months respectively. The dominant fibroid (DF) and uterine volumes decreased by 24% and 16% respectively at six months. In Group 2, the Ruta scores changed from baseline by +3%, -24%, and -42% at one, three, and six months respectively. The DF and uterine volumes decreased by 29% and 16%, respectively at six months. CONCLUSION: Following bilateral uterine artery occlusion using a transvaginal Doppler clamp, the dominant fibroid volume

decreased by an average of 24%, uterine volume decreased by 12%, and menorrhagia symptoms were reduced by up to 42%. Uterine artery occlusion may provide the gynaecologist with an alternative to uterine artery embolization (UAE). The system is simple, easy to apply, and short-term efficacy may be equivalent to UAE.

PMID: 20181316 [PubMed - indexed for MEDLINE]

49. Ann Emerg Med. 2010 May;55(5):460-3. Epub 2010 Feb 20.

Uterine artery pseudoaneurysm rupture: a life-threatening presentation of vaginal bleeding.

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Uterine artery pseudoaneurysm rupture is a rare, yet life-threatening, cause of postpartum hemorrhage. Prompt recognition and management are critical in severe vaginal bleeding. In this case, diagnosis by bedside ultrasonography and initial management with vaginal packing and fluid resuscitation were performed in the emergency department. Definitive treatment by selective arterial embolization was performed to achieve hemostasis. This article discusses options available in the diagnosis, management, and treatment of uterine artery pseudoaneurysm hemorrhage.

PMID: 20172628 [PubMed - indexed for MEDLINE]

50. Cardiovasc Intervent Radiol. 2010 Feb 12. [Epub ahead of print]

Posterior Reversible Encephalopathy Syndrome Occurring After Uterine Artery Embolization for Uterine Myoma.

Suzuki S, Tanigawa N, Kariya S, Komemushi A, Kojima H, Tokuda T, Kishimoto M, Tomino A, Fujioka M, Kitazawa Y, Sawada S.

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This case report describes posterior reversible encephalopathy syndrome (PRES) occurring after uterine artery embolization (UAE) for uterine myoma. This is the first report of PRES occurring after uterine vascular radiologic intervention. The mechanism by which UAE induced PRES is unclear.

PMID: 20151136 [PubMed - as supplied by publisher]

51. J Vasc Interv Radiol. 2010 Apr;21(4):484-9. Epub 2010 Feb 9.

Prospective evaluation of the embolic agent bead block in the treatment of uterine leiomyomas with uterine artery embolization: a phase II study.

Chrisman HB, Dhand S, Rajeswaran S, Nikolaidis P, Vogelzang RL, Corpuz B, Gilbertson P, Omary RA.

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PURPOSE: To assess symptom reduction and follow-up magnetic resonance (MR) imaging findings in patients who have undergone uterine artery embolization (UAE) for symptomatic leiomyomas with the use of Bead Block. MATERIALS AND METHODS:
Symptomatic patients with uterine leiomyomas were treated with UAE with Bead Block. Degree of tumor infarction was assessed 3 months after treatment with contrast material-enhanced MR imaging. Each case was categorized as showing less than 25% infarction, 25%-89% infarction, or at least 90% infarction.
Imaging-based failure was defined as tumor infarction of less than 90% (12).
Symptom and quality status were determined by scores from symptom and quality of
life (QOL) and health-related QOL questionnaires collected 1 and 3 months after embolization. RESULTS: This prospective trial enrolled 23 patients. Three-month follow-up MR imaging was completed in 22 patients. Tumor necrosis of 90% or greater occurred in 10 of 22 patients (45%), and 12 (54%) had partial necrosis of 25%-89%. The QOL subscale evaluation showed significant reduction of symptom severity from baseline to 1 month after treatment (P < .0001), with no significant difference between 1 and 3 months of follow-up (P = .42). Because of the unacceptably high imaging failure rate of 54%, enrollment was terminated before the anticipated 30-patient goal. CONCLUSIONS: The use of Bead Block in the manner described resulted in significant clinical improvement. However, there was an unacceptably high rate of imaging failure under the existing protocol. Modification of the existing protocol should be considered. Copyright 2010 SIR. Published by Elsevier Inc. All rights reserved.

PMID: 20149690 [PubMed - indexed for MEDLINE]

52. J Vasc Interv Radiol. 2010 Apr;21(4):490-5. Epub 2010 Feb 9.

Leiomyoma volume changes at follow-up after uterine artery embolization: correlation with the initial leiomyoma volume and location.

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PURPOSE: To study the changes in uterine leiomyoma volume after uterine artery embolization (UAE) and to correlate these changes with the initial tumor volume and location within the uterus. MATERIALS AND METHODS: The study was performed retrospectively on 28 consecutive patients (age, 37-57 years; mean, 48 y +/- 4.81) with 84 uterine leiomyomas. UAE was performed between June 2006 and August 2007. All tumors in all patients were evaluated. Magnetic resonance imaging was performed before UAE and 3 months and 1 year after UAE. The volume and location of each tumor were evaluated in consensus by two radiologists. RESULTS: The mean pre-UAE volume of the leiomyomas was 51.6 cm(3) (range, 0.72-371.1 cm(3); SD, 79.3). Seven tumors were submucous, 28 intramural, and 49 subserous. At 3-month follow-up, 83 tumors (98.8%) showed volume reduction (mean, 52.62% +/- 21.85%; range, 12.79%-96.67%) and one (1.2%) increased in volume. At 1-year follow-up, five tumors (6%) were undetectable, 72 (85.7%) showed a further volume reduction of 20.5% +/- 11.92% (range, 2.52%-58.72%) relative to the 3-month volume, and seven (8.3%) increased in volume. A statistically significant difference (P = .026 at 3 months and P = .0046 at 1 year) in percentage of volume change was observed based on tumor location; submucous tumors showed the greatest volume reduction and subserous tumors the least reduction. The initial tumor volume showed a weak negative correlation (Spearman correlation coefficients, -0.35 at 3 months and -0.36 at 1 year) with tumor volume change. CONCLUSIONS: UAE results in leiomyoma volume reduction at 3-month and 1-year follow-up. The tumor location plays an important role in volume changes and the initial tumor volume plays a minor role. Further studies with larger numbers of submucous leiomyomas are needed.

PMID: 20149688 [PubMed - indexed for MEDLINE]

53. Clin Obstet Gynecol. 2010 Mar;53(1):209-18.

Endovascular treatment of postpartum hemorrhage.

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Transcatheter arterial embolization is a minimally invasive intervention developed from diagnostic angiography. The evolution of endovascular techniques, including arterial embolization and the use of occlusion balloons, has established a role for the interventional radiologist in the setting of uncontrolled postpartum hemorrhage. Arterial embolization of the uterine arteries as an alternative to hysterectomy has the advantages of being a minimally

invasive treatment that preserves uterus without eliminating the possibility of future surgical intervention if necessary. Although arterial embolization has progressively become a standard of care over the last 30 years, its impact on future fertility still remains controversial.

PMID: 20142657 [PubMed - indexed for MEDLINE]

54. J Minim Invasive Gynecol. 2010 Jan-Feb;17(1):47-52.

Controlled clinical trial assessing the effect of laparoscopic uterine arterial occlusion on ovarian reserve.

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Department of Obstetrics and Gynecology, Yangpu Central Hospital, Shanghai, China.

STUDY OBJECTIVE: To assess the effect on ovarian reserve function after laparoscopic uterine artery occlusion (LUAO) compared with laparoscopic surgery supracervical hysterectomy (LSH) and laparoscopic myomectomy (LM). DESIGN: Prospective cohort study (Canadian Task Force classification II-1). SETTING: Hospital with experience in gynecologic minimal access surgery. PATIENTS: Ninety patients with uterine myomas operated on from August through December 2007. INTERVENTION: Ninety patients were divided into 3 groups of 30 patients each: the study group underwent LUAO and myomectomy (LUAO-M), control group 1 underwent LSH, and control group 2 underwent LM only. MEASUREMENTS AND MAIN RESULTS: Blood samples were collected before surgery and at 1, 3, and 6 months postoperatively. Concentrations of follicle-stimulating hormone (FSH), leuteinizing hormone (LH), and estradiol (EZ) were determined using an immunoassay, and serum inhibin B (INHB) concentration was evaluated using an enzyme-linked immunosorbent assay. No significant differences in preoperative hormone concentrations between the 3 groups were found (p>.05). In the LSH group, FSH, LH, and E2 concentrations were significantly increased, whereas the INHB concentration was significantly decreased at 1 month postoperatively (p<.05); after 3 months, only the INHB concentration was significantly decreased (p<.05). However, in the LOUA-M and LM groups, there were no significant differences between preoperative and postoperative hormone concentrations (p>.05). Serum concentrations of FSH, LH, and INHB in the LSH group were significantly different from those in the study group at 1 and 3 months postoperatively (p<.05); however, the differences in postoperative hormone concentrations between the study group and the LM group were not significant (p>.05). CONCLUSION: At short-term follow-up, no significant effect on ovarian reserve in patients with myoma who underwent LUAO was found.

PMID: 20129332 [PubMed - indexed for MEDLINE]

55. Fertil Steril. 2010 Mar 1;93(4):1348.e1-4. Epub 2010 Jan 29.

Combined use of uterine artery embolization and local methotrexate injection in interstitial ectopic pregnancies with poor prognosis.

Tamarit G, Lonjedo E, González M, Tamarit S, Domingo S, Pellicer A.

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OBJECTIVE: To report three cases of interstitial pregnancies treated successfully by combining uterine artery embolization (UAE) and ultrasound-guided local administration of methotrexate (MTX); and to assess the effect of UAE on ovarian reserve by prospectively measuring serum antimüllerian hormone (AMH) levels. DESIGN: Case report. SETTING: Departments of obstetrics and gynecology and radiology of a university hospital. PATIENT(S): Three patients with interstitial pregnancy. Treatment with multiple IM injections of MTX had failed in cases 1 and 3. Case 2 presented high initial serum beta-hCG levels (93,563 mIU/mL), suggesting the presence of a substantial amount of trophoblastic tissue. INTERVENTION(S): All three patients underwent UAE and an ultrasound-guided local injection of MTX under spinal anesthesia. MAIN OUTCOME MEASURE(S): Evolution of serum beta-HCG and AMH levels. Resolution of pregnancies. RESULT(S): All three cases presented an appropriate decrease in serum beta-HCG levels, though this reduction was slower in case 2 because of the initial value. Resolution of pregnancy was achieved without complications in all three cases. Levels of AMH were not affected in any of the patients. CONCLUSION(S): Interstitial pregnancies with a poor prognosis can be treated successfully with a combination of UAE and local MTX. This approach seems to be safe and maintains the ovarian reserve.

PMID: 20110090 [PubMed - indexed for MEDLINE]

56. Am J Physiol Heart Circ Physiol. 2010 Apr;298(4):H1229-34. Epub 2010 Jan 22.

Ductus venosus velocimetry in acute fetal acidemia and impending fetal death in a sheep model of increased placental vascular resistance.

Mäkikallio K, Acharya G, Erkinaro T, Kavasmaa T, Haapsamo M, Huhta JC, Räsänen J.

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We investigated whether hypoxemia without acidemia affects ductus venosus (DV)

blood velocity waveform pattern in sheep fetuses with intact placenta and whether worsening acidemia and impending fetal death are related to changes in DV velocimetry in fetuses with increased placental vascular resistance. A total of 34 fetuses were instrumented at 115-136/145 days of gestation. Placental embolization was performed in 22 fetuses on the fourth postoperative day, 24 h before the experiment. The control group was comprised of 12 fetuses with intact placenta. The experimental protocol consisted of fetal hypoxemia that was induced by replacing maternal inhaled oxygen with medical air. To further deteriorate fetal oxygenation and blood-gas status, uterine artery volume blood flow was reduced by maternal hypotension. Fetuses that underwent placental embolization were divided into two groups according to fetal outcome. Group 1 consisted of 12 fetuses that completed the experiment, and group 2 comprised 10 fetuses that died during the experiment. DV pulsatility index for veins (PIV) and fetal cardiac outputs (COs) were calculated. Placental volume blood flow, fetal blood pressures, and acid base and lactate values were monitored invasively. On the experimental day, the mean gestational age did not differ significantly between the groups. In groups 1 and 2, the baseline mean DV PIV and fetal COs were not statistically significantly different from the control group. In the control group, the DV PIV values increased significantly with hypoxemia. In groups 1 and 2, the DV PIV values did not change significantly, even with worsening acidemia and imminent fetal death in group 2. During the experiment, the fetal COs remained unchanged. We conclude that fetal hypoxemia increases the pulsatility of DV blood velocity waveform pattern. In fetuses with elevated placental vascular resistance, DV pulsatility does not increase further in the presence of severe and worsening fetal acidemia and impending fetal death.

PMID: 20097769 [PubMed - indexed for MEDLINE]

57. Cardiovasc Intervent Radiol. 2010 Jan 22. [Epub ahead of print]

Uterine Artery Embolization for Leiomyomata: Optimization of the Radiation Dose to the Patient Using a Flat-Panel Detector Angiographic Suite.

Sapoval M, Pellerin O, Rehel JL, Houdoux N, Rahmoune G, Aubert B, Fitton I.

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The purpose of this study was to assess the ability of low-dose/low-frame fluoroscopy/angiography with a flat-panel detector angiographic suite to reduce the dose delivered to patients during uterine fibroid embolization (UFE). A two-step prospective dosimetric study was conducted, with a flat-panel detector angiography suite (Siemens Axiom Artis) integrating automatic exposure control (AEC), during 20 consecutive UFEs. Patient dosimetry was performed using calibrated thermoluminescent dosimeters placed on the lower posterior pelvis skin. The first step (10 patients; group A) consisted in UFE (bilateral embolization, calibrated microspheres) performed using the following parameters: standard fluoroscopy (15 pulses/s) and angiography (3 frames/s). The second step

(next consecutive 10 patients; group B) used low-dose/low-frame fluoroscopy (7.5 pulses/s for catheterization and 3 pulses/s for embolization) and angiography (1 frame/s). We also recorded the total dose-area product (DAP) delivered to the patient and the fluoroscopy time as reported by the manufacturer's dosimetry report. The mean peak skin dose decreased from 2.4 +/- 1.3 to 0.4 +/- 0.3 Gy (P = 0.001) for groups A and B, respectively. The DAP values decreased from 43,113 +/- 27,207 muGy m(2) for group A to 9,515 +/- 4,520 muGy m(2) for group B (P = 0.003). The dose to ovaries and uterus decreased from 378 +/- 238 mGy (group A) to 83 +/- 41 mGy (group B) and from 388 +/- 246 mGy (group A) to 85 +/- 39 mGy (group B), respectively. Effective doses decreased from 112 +/- 71 mSv (group A) to 24 +/- 12 mSv (group B) (P = 0.003). In conclusion, the use of low-dose/low-frame fluoroscopy/angiography, based on a good understanding of the
AEC system and also on the technique during uterine fibroid embolization, allows a significant decrease in the dose exposure to the patient.

PMID: 20094719 [PubMed - as supplied by publisher]

58. J Obstet Gynaecol Can. 2009 Dec;31(12):1117-8.

Hysteroscopic identification of a uterine arteriovenous malformation.

[Article in English, French]

Taylor E, Hitkari J.

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PMID: 20085673 [PubMed - indexed for MEDLINE]

59. Cardiovasc Intervent Radiol. 2010 Jan 12. [Epub ahead of print]

Uterine Artery Embolization in Patients with a Large Fibroid Burden: Long-Term Clinical and MR Follow-up.

Smeets AJ, Nijenhuis RJ, van Rooij WJ, Weimar EA, Boekkooi PF, Lampmann LE, Vervest HA, Lohle PN.

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Uterine artery embolization (UAE) in patients with a large fibroid burden is controversial. Anecdotal reports describe serious complications and limited clinical results. We report the long-term clinical and magnetic resonance (MR) results in a large series of women with a dominant fibroid of >10 cm and/or an uterine volume of >700 cm(3). Seventy-one consecutive patients (mean age, 42.5 years; median, 40 years; range, 25-52 years) with a large fibroid burden were

treated by UAE between August 2000 and April 2005. Volume reduction and infarction rate of dominant fibroid and uterus were assessed by comparing the baseline and latest follow-up MRIs. Patients were clinically followed at various time intervals after UAE with standardized questionnaires. There were no serious complications of UAE. During a mean follow-up of 48 months (median, 59 months; range, 6-106 months), 10 of 71 patients (14%) had a hysterectomy. Mean volume reduction of the fibroid and uterus was 44 and 43%. Mean infarction rate of the fibroid and overall fibroid infarction rate was 86 and 87%. In the vast majority of patients there was a substantial improvement of symptoms. Clinical results were similar in patients with a dominant fibroid >10 cm and in patients with large uterine volumes by diffuse fibroid disease. In conclusion, our results indicate that the risk of serious complications after UAE in patients with a large fibroid burden is not increased. Moreover, clinical long-term results are as good as in other patients who are treated with UAE. Therefore, a large fibroid burden should not be considered a contraindication for UAE.

PMID: 20066419 [PubMed - as supplied by publisher]

60. J Vasc Interv Radiol. 2010 Feb;21(2):272-4. Epub 2009 Dec 24.

Is an intrauterine device a contraindication for uterine artery embolization? A study of 20 patients.

Smeets AJ, Nijenhuis RJ, Boekkooi PF, Vervest HA, van Rooij WJ, Lohle PN.

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The presence of an intrauterine device (IUD) has been traditionally considered a risk factor for postprocedural infection in patients undergoing uterine artery embolization (UAE). The authors retrospectively evaluated the occurrence of infectious complications following embolization in 20 women with IUDs. After a mean follow-up of 20.5 months, none of the patients developed an infectious complication. One patient required hysterectomy following embolization for persistent pain. Pathologic evaluation of the hysterectomy specimen demonstrated ischemia without evidence of inflammation. This experience suggests that the presence of an IUD might not be considered a contraindication for UAE.

PMID: 20036145 [PubMed - indexed for MEDLINE]

61. J Clin Ultrasound. 2010 May;38(4):205-8.

Sonographic diagnosis of postpartum pseudoaneurysms of the uterine artery: a report of 2 cases.

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Two cases of post-partum uterine artery pseudoaneurysm are described, 1 after normal vaginal delivery and the other after Caesarean section. Both cases were complicated by heavy bleeding and treated with catheter embolization. A turbulent arterial-type velocity waveform with high peak velocity and forward end-diastolic flow was registered in the feeding vessel. The peak blood flow velocity was high in both cases. The resistance index in the uterine artery was lower in the affected side of the uterus. Three-dimensional angiosonography was used to calculate the volume of the lesion, demonstrate its shape, and identify the feeding vessel.

PMID: 20024921 [PubMed - indexed for MEDLINE]

62. J Gynecol Obstet Biol Reprod (Paris). 2010 Feb;39(1):43-9. Epub 2009 Dec 3.

[Hypogastric artery ligation for post-partum hemorrhage]

[Article in French]

Chelli D, Boudaya F, Dimassi K, Gharbi B, Najjar I, Sfar E, Chanoufi MB, Chelli H.

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Post-partum hemorrhage is the leading cause of maternal mortality in Tunisia as in many other countries. In case of failure of medical measures, bilateral ligation of hypogastric arteries (BLHA) represents an interesting alternative to the hemostatic hysterectomy to preserve patients fertility. OBJECTIVE: Report our BLHA experience in the post-partum hemorrhage management. PATIENTS AND METHODS:
Retrospective study conducted between January 2001 and December 2008. We collected all the patients who had undergone a BLHA in case of post-partum haemorrhage. RESULTS: Fifty-seven BLHA were carried out during the study period. The success rate was 82.45%. The procedure failed in 10 patients. Most cases were uterine atony and placenta accreta. We reported one complication: a case of perioperative ligation of the primitive iliac artery. Surgical management was successful. Magnetic resonance imaging performed on average two months after surgery had shown a complete repermeabilization in seven cases among eight. CONCLUSION: BLHA is an interesting and effective option in the management of severe post-partum hemorrhage. Technique learning is recommended especially in case of non availability of uterine artery embolization. Copyright 2009 Elsevier Masson SAS. All rights reserved.

PMID: 19962252 [PubMed - indexed for MEDLINE]

63. J Child Neurol. 2009 Dec;24(12):1557-60.

Ischemic perinatal stroke secondary to chorioamnionitis: a histopathological case presentation.

Dueck CC, Grynspan D, Eisenstat DD, Caces R, Rafay MF.

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Ischemic perinatal stroke is a serious potential complication of delivery. In utero infection may be responsible for an underestimated proportion of perinatal stroke. Limited literature identifies objective evidence of ischemic perinatal stroke as a consequence of uterine infection. The authors report a neonate with ischemic stroke and documented findings of severe chorioamnionitis with umbilical vein thrombosis. A term neonate, after uneventful pregnancy and delivery, presented on the third day of life with seizures. Investigations for metabolic, electrolyte, infectious, and hypercoaguability derangements were normal. Extensive acute infarction in the left middle cerebral artery territory was diagnosed by magnetic resonance imaging (MRI). Placental histopathology confirmed the presence of chorioamnionitis. On follow-up assessments, mild residual neurologic deficits have persisted. Chorioamnionitis has been correlated with ischemic perinatal stroke. In addition to the recognized inflammatory cascade of in utero infection, umbilical vein thrombosis with subsequent ''paradoxical'' embolization may represent one mechanism responsible for this association.

PMID: 19955347 [PubMed - indexed for MEDLINE]

64. Reprod Sci. 2010 Apr;17(4):350-7. Epub 2009 Nov 30.

Fertility after uterine artery embolization: investigation using a sheep model.

Yamagami T, Yoshimatsu R, Matsumoto T, Anzai H, Yoshizawa M, Fukui Y, Nishimura T.

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OBJECTIVE: To investigate the influence of uterine artery embolization (UAE) on fertility after bilateral UAE with either tris-acryl gelatin microspheres (TAGM) or gelatin particles (GP). MATERIALS AND METHODS: Six ewes that underwent UAE with TAGM, 6 ewes that underwent UAE with GP, and 6 control ewes were compared.

After hormonal synchronization of the menstrual cycle, artificial insemination (AI) was performed. When pregnancy did not result, ewes were naturally inseminated. RESULTS: After AI, progesterone concentrations in blood increased and were maintained at >1.0 ng/mL in 9 ewes (3 per group). Three ewes became pregnant after AI. The abortion rate was higher in the UAE group. The remaining 15 sheep were naturally inseminated, with 14 delivering 15 lambs. Mean period of term gestation in UAE group ewes was 155.7 versus 158.6 days in control group ewes. Lambs' body weight, body length, and withers height after birth did not differ between those from UAE group and control group. Lambs from ewes embolized with GP tended to be smaller and had lower body weight than those from other groups. CONCLUSION: Uterine artery embolization influenced reproductive ability in sheep and UAE with GP could lead to intrauterine growth retardation.

PMID: 19949190 [PubMed - indexed for MEDLINE]

65. Int J Gynaecol Obstet. 2010 Mar;108(3):249. Epub 2009 Nov 26.

Fertility after pelvic arterial embolization, stepwise uterine devascularization, hypogastric artery ligation, and B-Lynch suture to control postpartum hemorrhage.

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PMID: 19944415 [PubMed - indexed for MEDLINE]

66. Obstet Gynecol Surv. 2009 Dec;64(12):811-22.

Abnormal placental invasion--a novel approach to treatment case report and review.

Ophir E, Singer-Jordan J, Odeh M, Hirch Y, Maksimovsky O, Shaider O, Yvry S, Solt I, Bornstein J.

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The incidence of abnormal placental invasion has increased 10-fold in the past 50 years, reflecting the increased number of cesarean sections performed. Management relies on accurate early diagnosis with appropriate perioperative multidisciplinary planning to anticipate and avoid massive obstetric hemorrhage at delivery. Women at risk should plan to deliver at an institution with appropriate expertise and resources for managing this condition. We report a case of placenta increta management comprising preoperative placement of a pelvic

artery balloon catheter, prophylactic balloon occlusion after delivery of the fetus, and embolization-assisted resection of the invaded uterine wall. We review incidence, methods of prenatal diagnosis, risk factors, and management of abnormally invasive placenta.

PMID: 19939295 [PubMed - indexed for MEDLINE]

67. Am J Obstet Gynecol. 2010 Jan;202(1):38.e1-9. Epub 2009 Nov 17.

Surgical management of placenta accreta: a cohort series and suggested approach.

Angstmann T, Gard G, Harrington T, Ward E, Thomson A, Giles W.

Royal North Shore Hospital, St. Leonards, NSW, Australia.

OBJECTIVE: The purpose of this study was to describe the use of a staged procedure that involved femoral artery catheterization, classic cesarean section delivery, and uterine and placental embolization before hysterectomy for placenta accreta. STUDY DESIGN: We conducted a cohort study of retrospective and prospective data from cases of histologically identified placenta accreta at a tertiary teaching hospital with access to interventional radiology. RESULTS: Twenty-six cases of placenta accreta were identified histologically (7 accretas, 5 incretas, and 14 percretas); 8 cases were successful staged embolization procedures. These cases had significant reductions in blood loss (553 vs 4517 mL; P = .0001), need for transfusion (2 vs 16; P = .001), and units of blood transfused (0.5 vs 7.9; P = .0013). The total operation time was no different between the 2 groups, but there was a longer length of anesthesia (2.7 vs 6.6 hours; P = .0001). There were nonsignificant reductions in admission to the intensive care unit and length of hospital stay. CONCLUSION: We found that the successful use of a staged embolization hysterectomy procedure for placenta accreta is associated with decreased maternal morbidity. 2010. Published by Mosby, Inc.

PMID: 19922901 [PubMed - indexed for MEDLINE]

68. Acta Radiol. 2009 Dec;50(10):1193-7.

Inflammatory response in patients undergoing uterine artery embolization as compared to patients undergoing conventional hysterectomy.

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BACKGROUND: Uterine fibroids are benign tumors seen in 20-40% of women of childbearing age, and these fibroids are usually treated by hysterectomy. During

the last decade, embolization of the uterine arteries with polyvinyl alcohol microparticles has become an alternative treatment. PURPOSE: To investigate whether uterine artery embolization generates a reduced inflammatory response as compared with conventional hysterectomy. MATERIAL AND METHODS: 40 women, 20 in each group, entered this prospective, non-randomized study. The two groups were comparable concerning age, comorbidity, and body-mass index (BMI). RESULTS: We found a significant difference between the inflammatory responses in women undergoing embolization compared with the inflammatory response in women having an abdominal hysterectomy. Women undergoing embolization were subjected to a much smaller inflammatory burden, their total morphine consumption was lower, and their return to work was faster than women subjected to conventional hysterectomy. CONCLUSION: Uterine artery embolization generates a reduced inflammatory response compared with conventional hysterectomy.

PMID: 19922320 [PubMed - indexed for MEDLINE]

69. Cases J. 2009 Aug 18;2:7794.

Conservative management of a Cesarean scar ectopic pregnancy: a case report.

Tulpin L, Morel O, Malartic C, Barranger E.

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INTRODUCTION: Cesarean scar pregnancy is the rarest kind of ectopic pregnancy. The immediate prognosis depends on the risks associated with uterine rupture and massive bleeding. CASE PRESENTATION: A 32-year-old woman (gravida 2, para 1) presented with massive vaginal bleeding. A Cesarean scar pregnancy was diagnosed.
She was treated by local methotrexate injection, followed by uterine artery embolization. Recurrence of bleeding necessitated two repeat embolizations. Hysteroscopy four months later revealed the presence of a uterine defect within the Cesarean section scar. CONCLUSION: Cesarean scar pregnancy should be diagnosed and treated as soon as possible to prevent severe complications and spare fertility.

PMCID: PMC2769373
PMID: 19918483 [PubMed - in process]

70. J Gynecol Obstet Biol Reprod (Paris). 2010 Feb;39(1):57-60. Epub 2009 Nov 6.

[Buttock necrosis after subtotal hysterectomy, bilateral internal iliac arteries ligature and pelvic embolization for control of severe post-partum haemorrhage]

[Article in French]

Zanati J, Resch B, Roman H, Brabant G, Sentilhes L, Verspyck E, Henriet E, Sergent F, Houzé de L'aulnoit D, Marpeau L, Clavier E.

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Post-partum haemorrhage remains a major cause of maternal mortality. Surgical management may be needed in patients with hemodynamic instability. Arterial embolization may be needed in case of persisting haemorrhage despite initial surgical management. We report a case of buttock necrosis occurring after pelvic embolization to control refractory post-partum haemorrhage and failed subtotal hysterectomy with bilateral internal iliac arteries ligation. To the best of our knowledge, this is the first case of buttock necrosis complicating a severe post-partum haemorrhage reported in the literature.

PMID: 19896781 [PubMed - indexed for MEDLINE]

71. Healthc Financ Manage. 2009 Nov;63(11):104-6, 108, 110 passim.

UFE program: a service line opportunity for U.S. hospitals.

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Uterine fibroid embolization (UFE) is a nonsurgical procedure performed by an interventional radiologist to treat uterine fibroids, the most common solid pelvic, benign tumors occurring in women and one of the most prevalent indications for hysterectomies. Most hospitals already have the resources in place to establish an effective UFE program in collaboration with interventional radiologists. Such collaborations, exploiting existing resources, hold the key to many attractive service-line opportunities that exist for hospitals in today's financially stressed healthcare marketplace.

PMID: 19891405 [PubMed - indexed for MEDLINE]

72. Br J Radiol. 2009 Nov;82(983):e228-30.

Absence of uterine arteries discovered at fibroid embolisation.

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Uterine artery embolisation is an increasingly used modality for the treatment of uterine leiomyomata. A 45-year-old woman with menorrhagia due to fibroids was discovered at uterine artery embolisation to have absent uterine arteries. Knowledge of the potential anatomical variants is important for those carrying out uterine artery embolisation, and further investigation of alternative treatment methods is required.

PMID: 19890116 [PubMed - indexed for MEDLINE]

73. Obstet Gynecol. 2009 Oct;114(4):927; author reply 927.

Factors associated with peripartum hysterectomy.

Sentilhes L, Kayem G, Descamps P.

Comment on:
Obstet Gynecol. 2009 Jul;114(1):115-23.

PMID: 19888055 [PubMed - indexed for MEDLINE]

74. Am J Obstet Gynecol. 2009 Nov;201(5):e7-8.

Placenta percreta: urologic complication after successful conservative management by uterine arterial embolization: a case report.

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We report a case of placenta accreta that was managed conservatively by uterine arterial embolization and subsequently was complicated by hematuria. Ultrasound revealed a calcified mass at the posterior bladder wall. A careful resection under cystoscopy was carried out without hemorrhagic complication. Pathologic examination showed placental tissue that confirmed placenta percreta.

PMID: 19879390 [PubMed - indexed for MEDLINE]

75. Eur J Radiol. 2009 Oct 27. [Epub ahead of print]

Interest of uterine artery embolization with gelatin sponge particles prior to myomectomy for large and/or multiple fibroids.

Butori N, Tixier H, Filipuzzi L, Mutamba W, Guiu B, Cercueil JP, Douvier S, Sagot P, Krausé D, Loffroy R.

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PURPOSE: To evaluate the efficacy of pre-myomectomy uterine artery embolization with gelatin sponge particles to reduce operative blood loss and facilitate removal of fibroids. MATERIALS AND METHODS: This retrospective study included 33 women (mean age, 36 years; range, 24-45 years), of whom at least 18 wished to preserve fertility. They presented with at least one large myoma (mean diameter, 90mm; range, 50-150mm) and had undergone preoperative uterine artery embolization with resorbable gelatin sponge by unilateral femoral approach between December 2001 and November 2008. Clinical, radiological and surgical data were available for all patients. Mean haemoglobin levels before and after surgery were compared with Student's t-test. RESULTS: No complication or technical failure of embolization occurred. The myomectomies were performed during laparotomy (25 cases) or laparoscopy (8 cases). Dissection of fibroids was easier (mean, 3 per patient; range, 1-11), with a mean operating time of 108+/-50min (range, 30-260min). Bloodless surgery was the rule with a mean estimated preoperative blood loss of 147+/-249mL (range, 0-800mL). Mean pre-(12.9+/-1.3g/dL) and post-therapeutic (11.4+/-1.2g/dL) haemoglobin levels were not statistically different (p>0.05). There was no need for blood transfusion. None of the patients required hysterectomy. The mean duration of hospital stay was 7.5+/-1.3 days (range, 3-12 days). CONCLUSION: Preoperative uterine artery embolization is effective in reducing intraoperative blood loss and improves the chances of performing conservative surgery. It should be considered a useful adjunct to myomectomy in women at high hemorrhagic risk or who refuse blood transfusion.

PMID: 19875261 [PubMed - as supplied by publisher]

76. South Med J. 2009 Nov;102(11):1176-8.

Uterine arterial pseudoaneurysm: transcatheter arterial embolization as a rare complication of Caesarean section.

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We describe the case of a 22-year-old female who presented to the emergency department with vaginal bleeding after Caesarean section. A diagnosis of pseudoaneurysm of the uterine artery was established radiologically. Pseudoaneurysm of the uterine artery is an uncommon cause of delayed postpartum

hemorrhage. This condition can be treated with embolization.

PMID: 19864984 [PubMed - indexed for MEDLINE]

77. Masui. 2009 Oct;58(10):1261-5.

[Epidural anesthesia for five caesarian sections in patients with placenta previa percreta combined with placenta accreta]

[Article in Japanese]

Kamiya I, Fukuda I, Kitai Y, Tsujimoto Y, Matsuda H, Kazama T.

Department of Anesthesia, National Defense Medical College Hospital, Tokorozawa 359-8513.

We gave anesthesia for five cases of caesarian section in patients with placenta previa percreta combined with placenta accreta. Five caesarian sections were performed under epidural anesthesia and placentae remained in the uterus. After surgery, they were transferred to the angiography room and received uterine arterial embolization (UAE). They were given the diagnosis of the placenta accreta. However, during anesthesia in patients with placenta accreta, incomplete separation of the placenta causes atonic bleeding. And, uncleanliness of the abrasive degree may lead to difficulty in a prediction of bleeding, and control of hemodynamics is difficult. In the caesarian section of the placenta accreta, UAE prevents excessive bleeding during the operation and FloTrac monitor makes it easy to control hemodynamics.

PMID: 19860229 [PubMed - indexed for MEDLINE]

78. Tech Vasc Interv Radiol. 2009 Jun;12(2):139-47.

Transcatheter endovascular techniques for management of obstetrical and gynecologic emergencies.

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Since the initial description of selective uterine artery embolization for the treatment of postpartum hemorrhage in 1979, transcatheter embolization and other endovascular techniques have become the second-line therapeutic option for the management of intractable obstetrical and gynecologic bleeding. Advances in catheter-based techniques, as well as recognition of the effectiveness of minimally invasive treatment options, have expanded the role of interventional

radiology in the management of hemorrhage for a variety of indications, such as postpartum hemorrhage, menorrhagia, and postmenopausal bleeding. Transcatheter interventions include the following: (1) prophylactic selective catheterization of the internal iliac arteries, with either temporary balloon occlusion or embolotherapy; (2) selective embolization of collateral pelvic vessels in the setting of surgical ligation of the internal iliac arteries and/or delivery-related injuries to the genital tract; (3) transarterial embolization for the management of abnormal placentation; and (4) massive bleeding secondary to uterine leiomyomas (fibroids) and/or arteriovenous malformations. Transcatheter embolization is a fast, safe, and effective minimally invasive alternative to hysterectomy, when medical treatment fails to control uterine bleeding. Moreover, it preserves the uterus with little or no significant impact on future pregnancies and fertility. This article reviews the transcatheter endovascular techniques that are used in a variety of clinical scenarios for the management of obstetrical and gynecologic emergencies.

PMID: 19853231 [PubMed - indexed for MEDLINE]

79. Ultrasound Obstet Gynecol. 2009 Nov;34(5):584-9.

Clinical outcomes of magnetic resonance-guided focused ultrasound surgery for uterine myomas: 24-month follow-up.

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Comment in:
Ultrasound Obstet Gynecol. 2009 Nov;34(5):494-6.

OBJECTIVES: To assess the volume reduction ratio, symptom improvement and reintervention rate following magnetic resonance-guided focused ultrasound surgery (MRgFUS) for uterine myomas. METHODS: A total of 91 Japanese women with symptomatic myomas underwent MRgFUS between June 2004 and June 2008 using the ExAblate 2000 system. The volume change ratio was calculated at 6, 12 and 24 months following MRgFUS based on T2-weighted magnetic resonance images. The symptom severity score (SSS) was examined before and after the treatment (at 3, 6, 12 and 24 months). Additional post-MRgFUS treatments, such as hysterectomy, myomectomy, uterine artery embolization or repeat MRgFUS, were recorded and the reinterventional treatment rates were compared according to the signal intensity of pretreatment T2-weighted magnetic resonance images of the myomas. RESULTS: The mean volume change ratios of low- and intermediate-intensity (Type 1/2) myomas

were -36.5% 6 months post-procedure and -39.5% 24 months post-procedure. The mean
+/- SD SSS value for patients with Type 1/2 myomas before MRgFUS was 35.1 +/- 21.0, and the values diminished significantly during the 24-month follow-up
period to a mean value of around 15.0. High-intensity (Type 3) myomas were not observed to have decreased in size 6 months after MRgFUS. Of the 45 Type 1/2 myoma patients with complete follow-up, seven required reinterventional treatment
within 24 months. The reintervention rates were 14.0% for Type 1/2 patients and 21.6% for Type 3 patients at 24 months post-treatment. CONCLUSIONS: Moderate volume reductions of Type 1/2 myomas were noted following MRgFUS, and the reduction in SSS values and the relatively low reintervention rates observed are encouraging. We found MRgFUS to be an appropriate treatment method for Type 1/2
uterine myomas. Copyright (c) 2009 ISUOG. Published by John Wiley & Sons, Ltd.

PMID: 19852041 [PubMed - in process]

80. Fertil Steril. 2010 Jun;94(1):362-4. Epub 2009 Oct 21.

A novel technique of selective uterine devascularization before myomectomy at the time of cesarean section: a pilot study.

Desai BR, Patted SS, Pujar YV, Sherigar BY, Das SR, Ruge JC.

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Selective uterine devascularization before myomectomy at the time of cesarean section is a novel technique that facilitates myomectomy and is a safe procedure avoiding the need for subsequent surgery.

PMID: 19850290 [PubMed - indexed for MEDLINE]

81. Diagn Interv Radiol. 2009 Oct 19. doi: 10.4261/1305-3825.DIR.2073-08.1. [Epub ahead of print]

Conservative treatment of a cervical twin pregnancy with uterine artery embolization.

Farhat LB, Salah YB, Askri A, Dali N, Hendaoui L.

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Cervical pregnancy is a rare form of ectopic pregnancy. Its treatment has been described by different authors. We report our successful experience of a cervical

twin pregnancy that was diagnosed by transabdominal and transvaginal ultrasound and confirmed by magnetic resonance imaging. To preserve fertility, our patient was treated by a bilateral hyperselective uterine artery embolization followed by dilatation and curettage of the cervical canal without ancillary procedures for cervical hemostasis. Arterial embolization by a resorbable agent reduces arterial circulation by providing a temporary occlusion of the vessels in order to decrease the risk of massive hemorrhage.

PMID: 19838985 [PubMed - as supplied by publisher]

82. Taiwan J Obstet Gynecol. 2009 Sep;48(3):302-4.

Failure of conservative treatment for placenta increta.

Liao CY, Ding DC.

PMID: 19797026 [PubMed - indexed for MEDLINE]

83. Taiwan J Obstet Gynecol. 2009 Sep;48(3):232-8.

Adenomyosis and its variance: adenomyoma and female fertility.

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Extensive adenomyosis (adenomyosis) or its variance, localized adenomyosis (adenomyoma) of the uterus, is often described as scattered, widely-distributed endometrial glands or stromal tissue found throughout the myometrium layer of the
uterus. By definition, adenomyosis consists of epithelial as well as stromal elements, and is situated at least 2.5 mm below the endometrialmyometrial junction. However, the diagnosis and clinical significance of uterine adenomyosis and/or adenomyoma remain somewhat enigmatic. The relationship between infertility
and uterine adenomyosis and/or adenomyoma is still uncertain, but severe endometriosis impairs the chances of successful pregnancy when using artificial reproductive techniques. To date, there is no uniform agreement on the most appropriate therapeutic methods for managing women with uterine adenomyosis and/or adenomyoma who want to preserve their fertility. Fertility has been restored after successful treatment of adenomyosis using multiple modalities, including hormonal therapy and conservative surgical therapy via laparoscopy or exploratory laparotomy, uterine artery embolization, and other methods, including a potential but under-investigated procedure, magnetic resonance-guided focused ultrasound. This review will explore recent publications that have addressed the

use of different approaches in the management of subfertile women with uterine adenomyosis and adenomyoma.

PMID: 19797011 [PubMed - indexed for MEDLINE]

84. J Matern Fetal Neonatal Med. 2010 Jul;23(7):742-6.

Late occurrence of severe hyponatremia followed by extrapontine osmotic demyelination syndrome after successful conservative management of postpartum hemorrhage due to placenta accreta by uterine artery embolization.

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Development of severe hyponatremia followed by extrapontine osmotic demyelination
syndrome was reported as a significant late complication after successful conservative management of postpartum hemorrhage due to placenta accreta by uterine artery embolization.

PMID: 19757336 [PubMed - in process]

85. J Vasc Interv Radiol. 2009 Nov;20(11):1498-9. Epub 2009 Sep 12.

Re: Uterine artery embolization fatality.

Lipman JC.

Comment on:
J Vasc Interv Radiol. 2009 Mar;20(3):419-20.

PMID: 19748797 [PubMed - indexed for MEDLINE]

86. Cardiovasc Intervent Radiol. 2009 Sep;32(5):1075-9. Epub 2009 May 7.

Embolization of uterine arteriovenous malformations associated with cyanotic congenital heart disease.

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Uterine arteriovenous malformation (AVM) is a rare cause of vaginal bleeding and

miscarriage. We report two cases of uterine AVMs in patients with a history of complex congenital heart disease, an association that has not been previously described. Both patients were treated by selective uterine artery embolization, a minimally invasive therapy that has revolutionized the management of uterine AVMs, thus offering an alternative to conventional hysterectomy.

PMID: 19730767 [PubMed - indexed for MEDLINE]

87. J Vasc Interv Radiol. 2009 Oct;20(10):1303-10; quiz 1311. Epub 2009 Aug 26.

Uterine artery embolization versus laparoscopic occlusion of uterine arteries for leiomyomas: long-term results of a randomized comparative trial.

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**PURPOSE: To compare long-term symptom recurrence and 6-month magnetic resonance
(MR) imaging results after two different treatments for uterine leiomyomas.
MATERIALS AND METHODS: Sixty-six women with uterine leiomyomas were randomized to
undergo uterine artery embolization (UAE) or laparoscopic bilateral occlusion of uterine arteries. Contrast-enhanced MR imaging was performed before treatment and
after 6 months. RESULTS: Fifty-eight patients received treatment. Median
follow-up time was 48 months (range, 8-73 months). Clinical failure and symptom recurrence occurred in 14 patients after laparoscopy (48%) and in five after UAE (17%; P = .02, log-rank test). Hysterectomy was performed in two patients after UAE (7%) and in eight after laparoscopy (28%; P = .041). Six-month MR imaging results were available for 26 patients treated with UAE and 22 treated with laparoscopy. The mean uterine volume was reduced by 51% (range, 16%-86%) after UAE treatment, compared with 33% (range, 6%-77%) after laparoscopy (P = .001). Complete leiomyoma infarction was seen in all 26 patients in the UAE group and in only five patients in the laparoscopy group (P < .001). Eleven patients
experienced symptom recurrence later than 6 months. Uterine volume reduction at 6
months was 24% in this group, compared with 48% in the 37 patients with no recurrence (P = .004). Incomplete infarction of leiomyomas was seen in eight of the 11 cases of recurrence (73%) versus nine of 37 cases without recurrence (24%; P = .009). CONCLUSIONS: Recurrence rate was significantly lower after UAE than after laparoscopic treatment. Larger volume reduction and more complete devascularization of leiomyomas were found after UAE treatment and among patients
with no recurrence.**

PMID: 19713130 [PubMed - indexed for MEDLINE]

88. Transfus Med. 2010 Apr;20(2):118-22. Epub 2009 Aug 25.

Underreporting of major obstetric haemorrhage in the Netherlands.

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Major obstetric haemorrhage (MOH) is the main cause of severe maternal morbidity, incidence being estimated at 4.5 per 1000 deliveries. Cases are not routinely registered in the Netherlands. The objective of this study is to quantify the degree of underreporting of MOH in a large nationwide survey of severe acute maternal morbidity in the Netherlands (LEMMoN) and to estimate the true incidence of MOH in the Netherlands. Retrospective cross-match of the LEMMoN-database with the databases of local blood transfusion laboratories in 65 of 98 hospitals in the Netherlands during a 20-month period, using the capture-recapture method was used. From 16 of 65 centres, the reported transfusion data could not be confirmed by a local obstetrician for logistical reasons. These centres were excluded leaving 49 hospitals available for final analysis. In both databases together, 1018 unique cases of MOH were identified. Underreporting to LEMMoN was 35%. Hence, the true incidence of MOH in the Netherlands is at least 6.1 instead of 4.5 per 1000 deliveries. The estimated underreporting of MOH of 35% is considerable. Underreporting is inherent to large observational multicentre studies and should be anticipated and quantified to facilitate fair comparison of epidemiologic data.

PMID: 19708894 [PubMed - indexed for MEDLINE]

89. Eur J Radiol. 2010 Jul;75(1):e57-63. Epub 2009 Aug 18.

Expulsion of dominant submucosal fibroids after uterine artery embolization.

Radeleff B, Eiers M, Bellemann N, Ramsauer S, Rimbach S, Kauczor HU, Richter GM.

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PURPOSE: Purpose of this study was to evaluate the frequency, probability, and factors associated with expulsion of submucosal fibroids after uterine artery embolization (UAE) in addition to the technical and clinical results at 1-year

follow-up. MATERIALS AND METHODS: We determined the preinterventional volume of
each dominant submucosal fibroid using the commonly used ellipsoid formula and a
3D volumetry in the MRI to define a threshold value in milliliters that indicates the probability for a fibroid expulsion. Assessment of fibroid expulsion was done by MRI at 3-month intervals for a year. Assessment of clinical mid term success was achieved by applying questionnaires at 1-year follow-up. RESULTS: Technical success was observed in all 20 patients (mean age of 41.4+/-5.6 years; range: 29.2-51.1 years). Two (10%) minor and one (5%) major complications occurred. 10/20 dominant submucosal fibroids were completely expelled during the follow-up.
Using 3D MRI volumetry the preinterventional mean volume of the later expelled fibroids was 56.8+/-57.0 ml (range 2.3-198.0 ml) and the mean volume of non-expelled fibroids was 123.8+/-147.3 ml (range 24.0-531.8 ml). This difference was statistically significant, but weak (p=0.0494). Fibroids with a volume equal or less than the threshold value (66.0 ml) were 73% likely to be expelled and fibroids larger than 66.0 ml were 78% likely not to be expelled. All 20 patients demonstrated a significant reduction in the fibroid related symptoms. CONCLUSION:
In our study the complication rate was low despite increased rates of fibroid expulsion (50%); simultaneously the rate of treatment satisfaction was very high. Patients with a dominant submucosal fibroid under 66.0 ml should be informed about the probability of fibroid expulsion and the accompanying symptoms.

PMID: 19692192 [PubMed - in process]

90. Am J Obstet Gynecol. 2009 Aug;201(2):127-35.

Uterine fibroid embolization: a viable alternative to hysterectomy.

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Benign uterine fibroids, or leiomyomas, are the most common tumors found in gynecologic practice. Symptomatic fibroids present with menorrhagia, pelvic pain, leukorrhea, pressure and bloating, increased abdominal girth, and severe dysmenorrhea. Traditional treatment has relied on surgery because long-term medical therapies have demonstrated only minimal response. Uterine fibroid embolization (UFE) using particulate emboli to occlude the uterine arteries, thereby disrupting the blood supply to fibroids and leading to devascularization and infarction, has been reported to be effective in alleviating fibroid-related symptoms. UFE is a safe, effective, and durable nonsurgical alternative to hysterectomy.

PMID: 19646564 [PubMed - indexed for MEDLINE]

91. J Vasc Interv Radiol. 2009 Sep;20(9):1172-5. Epub 2009 Jul 29.

Safety and effectiveness of uterine artery embolization in patients with pedunculated fibroids.

Smeets AJ, Nijenhuis RJ, Boekkooi PF, Vervest HA, van Rooij WJ, de Vries J, Lohle PN.

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PURPOSE: To assess complications and outcomes of uterine artery embolization (UAE) in women with pedunculated fibroids in a large single-center patient cohort. MATERIALS AND METHODS: From a database with prospectively collected data from 716 women treated with UAE between 1996 and 2008, 29 women were identified with 31 pedunculated fibroids. Magnetic resonance images obtained before and 3 months after UAE were used to calculate stalk diameter change and volume reduction of both the pedunculated fibroid and uterus. Two observers assessed the overall percentage infarction and infarction of pedunculated fibroid. Complications were recorded and long-term clinical follow-up (mean, 33 months; range, 10-78 months) assessed with use of a questionnaire. RESULTS: The mean reduction in uterine and pedunculated fibroid volume was 37% and 33%, respectively. The mean reduction in stalk diameter was 0.3 cm (95% confidence interval [CI]: 0.18, 0.52 cm) or 13% from initial mean diameter. Stalk enhancement was not affected by UAE. The mean pedunculated fibroid infarction and mean overall infarction rates were 87% and 92%, respectively, for observer 1 and 88% and 92% for observer 2, with good interobserver variability. All women returned the questionnaire and no early or late complications of UAE were reported (0%; 95% CI: 0.0%-13.9%). CONCLUSIONS: In this small series of pedunculated subserosal fibroids treated with UAE, no complications occurred. The findings suggest that the use of UAE to treat pedunculated subserosal fibroids may be safe and effective.

PMID: 19640736 [PubMed - indexed for MEDLINE]

92. BJOG. 2009 Aug;116(9):1278-9.

Thromboembolism of the leg following prophylactic balloon occlusion of the uterine arteries.

Chouliaras S, Hickling DJ, Tuck JS.

Comment on:

BJOG. 2009 Jan;116(1):55-61.

PMID: 19624450 [PubMed - indexed for MEDLINE]

93. BJOG. 2009 Aug;116(9):1276-7; author reply 1277-8.

Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage.

Tixier H, Loffroy R, Guiu B, Coulange L, Butori N, Cercueil JP, Douvier S, Krause D, Sagot P.

Comment on:
BJOG. 2009 Jan;116(1):55-61.

PMID: 19624447 [PubMed - indexed for MEDLINE]

94. BJOG. 2009 Aug;116(9):1275; author reply 1276.

Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage.

Uchil D.

Comment on:
BJOG. 2009 Jan;116(1):55-61.

PMID: 19624446 [PubMed - indexed for MEDLINE]

95. J Gynecol Obstet Biol Reprod (Paris). 2008 Dec;37 Suppl 8:S368-83.

[Methods and efficacy of medical and surgical treatment of non functional menorrhagia]

[Article in French]

Brun JL, André G, Descat E, Creux H, Vigier J, Dallay D.

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**OBJECTIVES: To assess the efficacy of therapies in menorrhagia related to atypical endometrial hyperplasia, polyps, myoma, adenomyosis and arteriovenous malformation of the uterus. MATERIALS AND METHODS: Medline and Cochrane contents
were searched to June 2008. RESULTS: Atypical endometrial hyperplasia is**

classically treated by hysterectomy, but may temporarily regress under hormone therapy (progestins, Gn-RH agonists) in women of childbearing age. Hysteroscopic resection is the standard treatment for endometrial polyps. Recurrence of bleeding is reduced by combining it with endometrial ablation. Myoma-related menorrhagia can be treated by Gn-RH agonists for 3 months or levonorgestrel in utero (LNG-IUS). Hysteroscopic resection is the standard treatment of submucous myomas. Interstitial myomas can be treated by myomectomy, myolysis, uterine artery embolisation or occlusion, or hysterectomy. Laparoscopic myomectomy and uterine artery embolisation are effective, well tolerated, and the best researched. LNG-IUS is effective and well tolerated to treat adenomyosis-related menorrhagia. The effect of other conservative treatments of the uterus (endometrial ablation, uterine artery embolisation or occlusion) is limited, especially in case of deep and extensive adenomyosis. Uterine artery embolisation is the standard treatment for arteriovenous malformation. CONCLUSIONS: Numerous medical and technical innovations have been recently developed as conservative treatments for menorrhagia. However, hysterectomy remains the standard treatment of atypical endometrial hyperplasia and adenomyosis.

PMID: 19268216 [PubMed - indexed for MEDLINE]

96. J Vasc Interv Radiol. 2009 Jul;20(7 Suppl):S307-11.

Patient care and uterine artery embolization for leiomyomata.

Andrews RT, Spies JB, Sacks D, Worthington-Kirsch RL, Niedzwiecki GA, Marx MV, Hovsepian DM, Miller DL, Siskin GP, Raabe RD, Goodwin SC, Min RJ, Bonn J, Cardella JF, Patel NH; Task Force on Uterine Artery Embolization and the Standards Division of the Society of Interventional Radiology.

Department of Vascular and Interventional Radiology, University of Washington Medical Center, Seattle, Washington, USA.

Republished from:
J Vasc Interv Radiol. 2004 Feb;15(2 Pt 1):115-20.

PMID: 19560015 [PubMed]

97. J Vasc Interv Radiol. 2009 Jul;20(7 Suppl):S289-91.

Credentials for uterine artery embolization.

Spies JB, Sacks D.

Department of Radiology, Georgetown University Medical Center, Washington, DC, USA.

Republished from:
J Vasc Interv Radiol. 2004 Feb;15(2 Pt 1):111-3.

PMID: 19560012 [PubMed]

98. J Vasc Interv Radiol. 2009 Jul;20(7 Suppl):S193-9.

Quality improvement guidelines for uterine artery embolization for symptomatic leiomyomata.

Hovsepian DM, Siskin GP, Bonn J, Cardella JF, Clark TW, Lampmann LE, Miller DL, Omary RA, Pelage JP, Rajan D, Schwartzberg MS, Towbin RB, Walker WJ, Sacks D; CIRSE and SIR Standards of Practice Committees.

Collaborators: Cole P, Drescher P, Freeman N, Georgia J, Grassi C, Haskal Z, Malloy P, Martin LG, McCowan T, McGraw JK, Meranze S, Murphy KD, Neithamer C, Oglevie S, Patel N, Ramchandani P, Roberts AC, Sanchez O, Smouse HB, Swan TL, Thorpe PE, Vesely TM, Wiechmann BN, Bakal CW, Lewis CA, Nemcek AA Jr, Rholl KS.

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Republished from:
J Vasc Interv Radiol. 2004 Jun;15(6):535-41.

PMID: 19559999 [PubMed]

99. J Minim Invasive Gynecol. 2009 Jul-Aug;16(4):480-4.

The levonorgestrel intrauterine system is an effective treatment in women with abnormal uterine bleeding and anticoagulant therapy.

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OBJECTIVE: To evaluate the efficacy of levonorgestrel intrauterine systems (LNG-IUS) in obese women with AUB on anticoagulant therapy. DESIGN: Prospective observational case series (Canadian Task Force Classification II-3). SETTING: University affiliated teaching hospital. PATIENTS: Premenopausal women on Warfarin therapy. INTERVENTIONS: From January 2002 through January 2007, 10 women were identified from the senior author's clinical practice (G.A.V.). After

clinical assessment, including Papanicolaou smear, endometrial biopsy, and pelvic sonography, the LNG-IUS was placed to treat their AUB. MEASUREMENTS AND MAIN
RESULTS: The median and range of age, parity, and body mass index were 45 years (34-49), 1 (0-4), and 38 kg/m(2) (26-52), respectively. All women were receiving warfarin therapy (4-12.5 mg/d) for previous venous thromboembolism. Some patients
had additional comorbid conditions and were at high risk for traditional medical or surgical therapies. After placement of the LNG-IUS, all women reported menstrual reduction at 3 and 6 months. By 12 months, 1 woman with large fibroids expelled the LNG-IUS and was treated with transfemoral uterine artery embolization. Two women had amenorrhea, and 7 had hypomenorrhea. At 2 to 5 years,
1 woman expelled the LNG-IUS and hysterectomy indicated extensive adenomyosis in
a 195-g uterus, and 1 woman had hysteroscopic endometrial ablation, 4 were menopausal, 2 had amenorrhea, and 1 had hypomenorrhea. In the 5 women with uterine fibroids measuring 4.2 to 147 cm(3), the fibroids were reduced in volume by approximately 75% in 2, were no longer detectable in 1, were subsequently shown to be adenomyoma in 1, and required uterine artery embolization in 1.
CONCLUSION: In properly assessed and selected obese, premenopausal women with AUB
receiving warfarin therapy and at high risk for traditional therapies, the LNG-IUS was an effective treatment in 70% of patients.

PMID: 19573825 [PubMed - indexed for MEDLINE]

100. J Minim Invasive Gynecol. 2009 Jul-Aug;16(4):432-6.

Hysteroscopic surgery of ectopic pregnancy in the cesarean section scar.

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Comment in:
J Minim Invasive Gynecol. 2010 Jan-Feb;17(1):133; author reply 133.

STUDY OBJECTIVE: To evaluate the effect of hysteroscopy in the treatment of caesarean section scar pregnancy. DESIGN: Retrospective review. PARTICIPANTS: Thirty-nine patients with cesarean scar pregnancy. INTERVENTIONS: Between January
2006 and June 2008, 39 patients with caesarean section scar pregnancy underwent hysteroscopic removal of conceptive tissues in our department. Their medical records were reviewed retrospectively. MEASUREMENTS AND MAIN RESULTS: The diagnosis was confirmed by serum human chorionic gonadotropic concentration and

at ultrasonographic or magnetic resonance imaging. All patients underwent hysteroscopic removal of conceptive tissues under ultrasonographic guidance. Before surgery, 36 patients received 25 mg of oral mifepristone, 25 mg, twice a day for 3 days, and 3 patients received an injection of methotrexate salt, 50 mg, and underwent preoperative bilateral uterine artery embolization. Results were reported as good in 37 patients; only 2 patients required additional surgery. CONCLUSION: Hysteroscopic removal of conceptive tissues implanted in a cesarean section scar seems to be a feasible and safe procedure that might be considered as a treatment option.

PMID: 19573819 [PubMed - indexed for MEDLINE]

101. J Vasc Interv Radiol. 2009 Aug;20(8):1031-5. Epub 2009 Jun 28.

Importance of angiographic visualization of round ligament arteries in women evaluated for intractable vaginal bleeding after uterine artery embolization.

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PURPOSE: To determine the incidence of angiographic visualization and the clinical significance of round ligament arteries in patients who present with intractable vaginal bleeding. MATERIALS AND METHODS: A review of 113 patients (age range, 20-67 years) who underwent pelvic angiography for intractable vaginal bleeding between June 1992 and May 2008 was retrospectively performed. It was recorded whether round ligament artery was visualized on pelvic aortography after uterine artery embolization (UAE). The medical records of the patients were reviewed to analyze the final clinical outcome. The Fisher exact test was used to correlate persistent vaginal bleeding after UAE with visualization of round ligament arteries. RESULTS: Of 111 patients who underwent UAE, 42 patients (postpartum bleeding, n = 40; postabortion bleeding, n = 2) had at least one visible round ligament artery on postembolization pelvic aortography. Ten patients received round ligament artery embolization. Persistent vaginal bleeding after adequate UAE was observed more commonly in patients whose round ligament artery was seen on postembolization pelvic aortography (P = .007). CONCLUSIONS: Round ligament arteries are commonly visualized in patients who present with postpartum bleeding and should be investigated when there is persistent bleeding, even after adequate UAE.

PMID: 19560937 [PubMed - indexed for MEDLINE]

102. J Vasc Interv Radiol. 2009 Jul;20(7):971-6.

**Ovarian artery embolization supplementing hypogastric-uterine artery embolization
for control of severe postpartum hemorrhage: report of eight cases.**

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**Although transcatheter uterine artery embolization has been proved to be a life-saving technique in serious obstetrical hemorrhage, it does not always control bleeding. The causes of treatment failure may be multifactorial and vary in individual cases, but incomplete embolization of the blood supply from other sources may play an important role. Herein, the authors describe eight patients with massive postpartum hemorrhage that was not controlled with conventional hypogastric-uterine artery embolization. Their continued hemorrhage was due to an
additional blood supply arising from ovarian arteries, which was confirmed with selective ovarian artery angiography and subsequently successfully embolized.**

PMID: 19555891 [PubMed - indexed for MEDLINE]

103. J Vasc Interv Radiol. 2009 Jul;20(7):936-45.

Immunohistochemical characterization of specific inflammatory tissue reactions following embolization with four different spherical agents in the minipig kidney model.

Stampfl S, Stampfl U, Bellemann N, Radeleff B, Lopez-Benitez R, Sommer CM, Thierjung H, Berger I, Richter GM.

Department of Diagnostic and Interventional Radiology, University of Heidelberg, INF 110, 69120 Heidelberg, Germany.

**PURPOSE: To evaluate the immunohistochemical inflammatory reaction after porcine
renal embolization with the new spherical embolic agent Embozene and to compare
it with other spherical embolic agents. MATERIALS AND METHODS: After superselective porcine renal embolization (40 pigs) with different sizes of embolic agents (Embozene, Embosphere, Bead Block, Contour SE), tissue arrays were
obtained (size ranges, 40-120 microm, 100-300 microm, 500-700 microm, 700-900 microm). After immunostaining for CD subtyping (CD45 and CD68) and cytokines (C-reactive protein [CRP] and interleukin-1 beta), a semiquantitative immunoreactivity score was calculated for each marker: intensity of staining was scored between 0 (negative) and 3 (intensive) and extent of staining between 0 and 4 (>80%), indicating the percentage of positive staining. The intensity score**

(0-3) was multiplied by the extent of staining score (0-4), resulting in a semiquantitative immunoreactivity score (0-12). RESULTS: Analysis of cellular expression profiles (ie, CD45, CD68) revealed a significantly higher inflammatory score 4 weeks after embolization with Embosphere 100-300 microm particles than after embolization with Embozene, Bead Block, and Contour SE. After 12 weeks, the Embosphere 100-300 microm score decreased. Analysis of CRP expression showed similar results, with a significantly higher score 4 weeks after embolization with Embosphere 100-300 microm. In the size class used most frequently for uterine artery embolization (500-700 microm), all scores were low (<2.5) and there was no significant difference among particle types. CONCLUSIONS: Pronounced immunomarker expression was seen 4 weeks after embolization with small Embosphere particles. However, in general, modern spherical embolic agents cause a fairly low level of inflammatory reaction. In the present experimental setting, which is highly sensitive for specific tissue-to-agent reactivity, Embozene presented with low inflammatory results.

PMID: 19555888 [PubMed - indexed for MEDLINE]

104. J Vasc Interv Radiol. 2009 Jul;20(7):863-70.

Uterine artery embolization under electroacupuncture for uterine leiomyomas.

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PURPOSE: To evaluate whether electroacupuncture is a safe and effective alternative to pharmacologic sedation/analgesia in uterine artery embolization (UAE) for leiomyomas. MATERIALS AND METHODS: A nonrandomized prospective study was undertaken in 70 consecutive patients (mean age, 39.5 years) undergoing UAE with polyvinyl alcohol (PVA) particles between August 2006 and January 2007. Thirty-three patients chose to undergo UAE under electroacupuncture anesthesia (EAA; group A) and 37 were treated under local pharmacologic anesthesia (group B). Pain scores (rated from 0 to 10) in both groups were compared during and after the procedure. The outcome of UAE was evaluated at 6 months. RESULTS: Mean pain scores during embolization were 0.36 in group A and 0.84 in group B; scores after embolization and before discharge were 3.00 in group A and 4.49 in group B; and scores at discharge were 0.97 in group A and 2.11 in group B. These differences were statistically significant after embolization and at hospital discharge (P= .02 and P= .0001, respectively). All patients except one in each group were discharged from the hospital 4-8 hours after UAE; the two who remained longer had severe pain. There were no significant differences in clinical

outcomes, nor in uterine and leiomyoma volumes, at discharge and at 6 months (P > 0.99 and P= .72, respectively). CONCLUSIONS: There was a statistically significant postembolization pain reduction in patients treated under EAA versus local pharmacologic anesthesia and no differences in UAE outcomes between groups at 6 months.

PMID: 19555885 [PubMed - indexed for MEDLINE]

105. Arch Gynecol Obstet. 2010 May;281(5):823-8. Epub 2009 Jun 24.

Computed tomographic angiography in diagnosis and management of placental polyp with neovascularization.

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OBJECTIVE: To evaluate the neovascularization in placental polyp tissue by computed tomographic angiography and to determine the need for uterine artery embolization before hysteroscopic resection. STUDY DESIGN: Seventeen consecutive women with suspected placental polyp were enrolled in this retrospective study. Neovascularization in placental polyp tissue was assessed by computed tomographic angiography. Cases with neovascularization were treated by hysteroscopic resection with preoperative uterine artery embolization, while cases without neovascularization were treated by hysteroscopic resection alone. RESULTS: Of 17 patients with suspected placental polyp after abortion or parturition, nine patients were diagnosed to have placental polyp with prominent neovascularization by computed tomographic angiography, and were treated by uterine artery embolization followed by hysteroscopic resection. Two patients subsequently conceived after conservative management. CONCLUSIONS: After precise evaluation of neovascularization by computed tomographic angiography, hysteroscopic resection with preoperative uterine artery embolization is an effective minimally invasive procedure to conservatively treat placental polyp with prominent neovascularization.

PMID: 19554340 [PubMed - indexed for MEDLINE]

106. AJR Am J Roentgenol. 2009 Jul;193(1):267-71.

Long-term quality of life assessment among patients undergoing uterine fibroid embolization.

Popovic M, Berzaczy D, Puchner S, Zadina A, Lammer J, Bucek RA.

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OBJECTIVE: The purpose of this study was assessment of the long-term outcome of fibroid-associated quality of life among patients treated with uterine fibroid embolization. MATERIALS AND METHODS: A retrospective follow-up cohort study included all patients described in a 2006 publication. Analysis was performed with a questionnaire consisting of 49 questions about six topics. Assessment was focused on comparing symptoms and quality of life in long-term follow-up. RESULTS: The analysis was based on questionnaires completed by 39 patients. The median follow-up period was 7 years (interquartile range, 1.5 years). Uterine fibroid embolization led to a reduction of bleeding symptoms in 89.7% of the patients, pain in 78.9%, bulk-related symptoms in 89.5%, fatigue in 76.9%, limitations of social life in 92.9%, and depression in 78.6%. The median impairment scores for bleeding and pain decreased significantly from 7 to 0 and from 5 to 0 (both $p < 0.001$). The general quality-of-life index increased significantly from 4.5 to 9 ($p < 0.001$). In the long term, there was no significant difference in parameters assessed compared with the midterm follow-up findings. Six patients (15.4%) underwent hysterectomy an average of 32.1 months after intervention. Thirty-two patients (82.1%) continued to be satisfied with the intervention, and 30 patients (76.9%) answered that they would recommend uterine fibroid embolization to other patients. CONCLUSION: Uterine fibroid embolization seems to lead to notable long-term relief of fibroid-associated symptoms. In comparison with the midterm results, long-term outcome shows a clear continuance of improvement in general quality of life.

PMID: 19542423 [PubMed - indexed for MEDLINE]

107. Zhonghua Zhong Liu Za Zhi. 2009 Jan;31(1):62-5.

[Ovarian artery supply is one of the factors affecting the interventional therapeutic efficacy of pelvic tumors]

[Article in Chinese]

Liu FY, Wang MQ, Duan F, Wang ZJ, Song P.

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OBJECTIVE: To evaluate the efficacy and safety of transcatheter arterial embolization (TAE) of the ovarian arteries (OA) additionally supplying the tumor

of pelvic cavity. METHODS: TAE of OA was performed in 63 patients with a pelvic tumor additionally supplied by the OA. The mean age of those patients was 43.6 years (range, 16 - 66 years). In this series, there were 28 cervical carcinomas, 22 uterus fibroids, 6 ovarian cancers, 3 choriocarcinomas, 2 uterine sarcomas, 1 fibrosarcoma, and 1 rectal carcinoma infiltrating the uterus and adnexa. Emergency TAE was performed in 8 patients due to colporrhagia. The embolization materials consisted of polyvinyl alcohol particles (PVA) in 24 patients, gelatin sponge particles in 10 cases, PVA + gelatin sponge particles in 26; and PVA + gelatin sponge particles + microcoils in 3 cases. RESULTS: The OA embolization was successfully performed in all the 63 cases, including bilateral in 19 cases and unilateral in 44 cases (left 27, right 17). No complications related to the procedure were observed. Bleeding from the vagina in 8 patients ceased immediately after supplemental OA embolization, and no re-bleeding occurred in any of them during their hospital stay. CONCLUSION: Pelvic tumors may be supplied additionally by the ovarian arteries. Therefore, routine internal iliac artery/uterine artery chemoembolization or embolization may not effectively cure the tumors. Ovarian artery angiography should be routinely performed before interventional treatment. A supplementary selective ovarian artery chemoembolization or embolization is safe and effective in the management of pelvic tumors with additional blood supply from the ovarian arteries.

PMID: 19538873 [PubMed - in process]

108. Am J Obstet Gynecol. 2009 Aug;201(2):152.e1-3. Epub 2009 Jun 13.

Uterine artery embolization compared with methotrexate for the management of pregnancy implanted within a cesarean scar.

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OBJECTIVE: The objective of the study was to compare the efficacy and safety of uterine artery embolization (UAE) vs systemic methotrexate (MTX) for pregnancy within a cesarean scar. STUDY DESIGN: Seventy-two women with pregnancy within cesarean scar were randomly allocated to a UAE group (37 cases) or an MTX group (35 cases), which all was followed by suction curettage. The primary outpoints include bleeding loss, serum beta-human chorionic gonadotropin level, and side effects. RESULTS: The bleeding volumes were 36.93 +/- 6.01 mL in the UAE group and 415.63 +/- 68.37 mL in the MTX group (P < .001). The hospitalization time was 11.73 +/- 0.80 days in the UAE group and 39.63 +/- 4.57 days in the MTX group (P < .001). There was no severe side effect in both groups. CONCLUSION: For pregnancy within a cesarean scar, UAE followed by suction curettage appears to have more advantage and may be a priority option.

PMID: 19527897 [PubMed - indexed for MEDLINE]

109. J Reprod Med. 2009 May;54(5):333-6.

Arteriovenous malformation of the uterus after a midtrimester loss: a case report.

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BACKGROUND: Arteriovenous malformations (AVMs) of the uterus are rare but potentially life-threatening lesions. The typical presentation includes intermittent, heavy and profuse vaginal bleeding, often refractory to medical therapy. CASE: We present the case of a 25-year-old woman presenting 18 months after a 22-week pregnancy loss complicated by a postpartum curettage for retained placenta. The patient's initial symptoms included irregular and extremely heavy vaginal bleeding. Several transfusions of packed red blood cells were required because of severe anemia. On transfer to our institution, evaluation with ultrasound and hysteroscopy revealed a large AVM in the fundus of the uterus, apparently fed by both the right and left uterine arteries. After 2 embolization procedures of the uterine arteries, the patient experienced a recurrence of her symptoms, requiring definitive treatment with a hysterectomy. CONCLUSION: AVMs of
the uterus are a rare cause of vaginal bleeding. AVMs should be considered in the differential diagnosis for the patient with bleeding refractory to medical management and a history of prior uterine surgery. Although unsuccessful in our case, uterine artery embolization remains a viable treatment option, particularly in patients wishing to retain their reproductive capacity.

PMID: 19517703 [PubMed - indexed for MEDLINE]

110. J Reprod Med. 2009 May;54(5):325-6.

Advanced ovarian carcinoma following bilateral uterine artery embolization: a case report.

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Comment in:
J Reprod Med. 2010 Mar-Apr;55(3-4):179; author reply 179-80.

BACKGROUND: Bilateral uterine artery embolization has become an accepted

therapeutic modality in the management of patients with symptomatic uterine leiomyomata. Complications of bilateral uterine artery embolization, including rare cases of malignancies, have been reported following this procedure. CASE: We present a 46-year-old woman, gravida 3, para 1, who was treated with bilateral uterine artery embolization for symptomatic uterine leiomyomata following pelvic sonography and magnetic resonance imaging, which depicted bilateral normal adnexa. Nine months after the procedure she was diagnosed with stage III ovarian carcinoma. CONCLUSION: Patients undergoing bilateral uterine artery embolization should be informed of the possibility of preexisting or potential subsequent development of ovarian carcinoma, reflecting the lack of an effective screening method for this disease.

PMID: 19517700 [PubMed - indexed for MEDLINE]

111. Am J Perinatol. 2010 Feb;27(2):111-20. Epub 2009 Jun 5.

Cesarean scar ectopic pregnancy: case series and review of the literature.

Sadeghi H, Rutherford T, Rackow BW, Campbell KH, Duzyj CM, Guess MK, Kodaman PH,
Norwitz ER.

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Cesarean scar ectopic pregnancy is becoming increasingly common at tertiary care hospitals around the world. It is a condition in which the embryo implants within the myometrium at the site of a previous cesarean hysterotomy, and it can occur in women with only one prior cesarean delivery. We present four cases of cesarean scar ectopic pregnancy diagnosed within a 6-month period between 2007 and 2008. Their initial presentations and management are discussed, followed by a review of the published literature summarizing both diagnostic and management recommendations. Thieme Medical Publishers.

PMID: 19504427 [PubMed - indexed for MEDLINE]

112. J Vasc Interv Radiol. 2009 Jul;20(7):977-80. Epub 2009 Jun 4.

Effect of postprocedural pelvic MR imaging on medical decision-making in women who have undergone uterine artery embolization.

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The utility of magnetic resonance (MR) imaging in the follow-up of patients who have undergone uterine artery embolization (UAE) for leiomyomas is controversial. The present study was undertaken to determine how follow-up MR imaging affects interventional radiologists' (i) anticipated percentage of tumor necrosis, (ii) projected treatment plans, and (iii) confidence in treatment plans. Interventional radiologists completed questionnaires before and after reviewing MR images of patients treated with UAE to determine how imaging altered projected treatment plans. Follow-up MR imaging was found to significantly alter projected treatment plans, primarily as they relate to follow-up imaging; therefore, follow-up MR imaging should be considered for all patients after UAE.

PMID: 19497764 [PubMed - indexed for MEDLINE]

113. Gynecol Obstet Fertil. 2009 Jun;37(6):476-80. Epub 2009 May 23.

[Internal iliac arteries ligation for intractable obstetrical hemorrhage in Africa]

[Article in French]

Koné M, Konan Blé R, Séni K, Adjoussou S, Fanny M, Touré-Ecra A, Quenum G, Horo A.

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OBJECTIVES: Assess the efficiency of internal iliac arteries ligation in intractable obstetrical hemorrhage and ascertain success or failure factors. PATIENTS AND METHODS: It was a retrospective study which concerned 159 patients who underwent internal iliac arteries ligation for persistent and severe obstetrical hemorrhage from March 1992 to February 2007. Arrest of hemorrhage after ligation with survival of the patient was considered as successful; was considered as failure, persistence of hemorrhage in spite of the ligation or patient death. RESULTS: Internal iliac arteries ligation allowed hemorrhage control in 84.3% of cases. Main etiology of hemorrhage were: uterine atony (42.8%), abruptio placentae (31.4%). Coagulation disorders and hypovolemic shock, consequences of long delay of management were identified as bad prognosis factors. Blood transfusion was also singled out as a factor likely to ameliorate prognosis, especially in hemodynamic precarious situations. Surgical complications incidence was 1.89%, represented by two internal iliac vein lesions and one ureteral section successfully repaired. DISCUSSION AND CONCLUSION: Internal iliac arteries ligation is a prerequisite treatment of severe postpartum hemorrhage. The outcome is better when it is performed precociously (p=0.0000003) before the happening of disseminated intra vascular coagulation (p=0.006),

hemodynamic troubles (p=0.0099) and acute severe anemia (p=0.02). It is a good alternative to arterial embolization in Africa.

PMID: 19482537 [PubMed - indexed for MEDLINE]

114. Eur J Gynaecol Oncol. 2009;30(2):199-202.

Metastatic leiomyosarcoma diagnosed after uterine artery embolization.

Posy HE, Elkas JC, Yemelyanova AV, Diaz-Montes TP, Bristow RE, Giuntoli RL 2nd.

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Uterine artery embolization (UAE) allows treatment of recalcitrant fibroids, but does not provide a surgical specimen. In the rare instance that a uterine mass represents a uterine leiomyosarcoma (LMS), UAE may delay diagnosis. We report a case of a 45-year-old woman who underwent resection of a substernal mass five years after UAE. Pathology demonstrated LMS. She received radiation therapy to the surgical site. Upon recovery, she underwent a hysterectomy and bilateral salpingo-oophorectomy. Pathology demonstrated uterine LMS. She was managed conservatively and is without evidence of disease over two years after excision of her substernal mass. Multiple case reports have described a delay in diagnosis of uterine LMS after UAE. The current case is unique in that it the diagnosis was made based on the presence of a distant metastasis, which occurred years after UAE.

PMID: 19480255 [PubMed - indexed for MEDLINE]

115. J Vasc Interv Radiol. 2009 Jun;20(6):769-81.

Capture and analysis of data from image-guided procedures.

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PURPOSE: Improvement of performance during image-guided procedures begins with close observation of existing systems. Recording of procedures and detailed analysis of those recordings may provide considerable insight into how performance might be improved. MATERIALS AND METHODS: Multiple video and audio recording devices were used to capture the stimulus/response cycles that occur during uterine artery embolization, transjugular intrahepatic portosystemic shunt

creation, and Port-a-Cath placement. These records were compiled, and data regarding radiation use were extracted from each procedure. Recordings from Port-a-Cath placement were also used to assess operator performance during ultrasound (US)-guided venous access and medication handling. RESULTS: The recordings were used to assess how physicians use visual and auditory information to drive decisions during image-guided procedures. Correlating radiation dose with the modality used to acquire the image and the procedure timeline produced a
series of clear patterns. Fluoroscopy was used to guide decisions during the vast majority of each procedure. Acquisition of digital subtraction angiographic images caused a substantial increase in radiation flux. There were clear instances in which the additional information provided by the increased dose was considered essential to the decision-making process, but there were also instances in which it appeared that the additional information did not drive intraprocedural decisions. Analysis of a US-guided procedure demonstrated that the physician would not advance the needle whenever its position relative to the target was uncertain. CONCLUSIONS: Analysis of these detailed recordings provided important insights into how visual information is used during image-guided procedures. The results suggest there would be considerable benefit to matching information-gathering activities to the operators' capacity to analyze information and make decisions.

PMID: 19465307 [PubMed - indexed for MEDLINE]

116. AJR Am J Roentgenol. 2009 Jun;192(6):1601-7.

Uterine artery embolization along with the administration of methotrexate for cervical ectopic pregnancy: technical and clinical outcomes.

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OBJECTIVE: The objective of our study was to evaluate the technical and clinical outcomes of uterine artery embolization (UAE) along with the administration of methotrexate (MTX) for cervical ectopic pregnancy with vaginal bleeding as an alternative nonsurgical treatment to control bleeding and preserve fertility. MATERIALS AND METHODS: Eight patients (age range, 24-37 years; mean age, 30.1 years) with cervical ectopic pregnancy were treated with UAE using gelatin sponge particles to control vaginal bleeding. In seven patients, the administration of MTX was performed before, after, or before and after UAE. The follow-up periods after UAE ranged from 4 to 46 months (median, 8 months). We evaluated the UAE technique, clinical outcomes, complications, and fertility. RESULTS: In all patients, UAE could control active vaginal bleeding on gynecologic examination. In six patients, the cervical ectopic pregnancy was dramatically resolved. In the other two patients presenting with both fetal heartbeat before UAE and persistent

high HCG levels, active vaginal rebleeding was observed. The rebleeding was successfully controlled by a second UAE procedure. No major complication related to UAE was detected. The uterus could be preserved in all patients. In seven patients, normal menses resumed within 2 months after UAE. In only one patient, amenorrhea continued 8 months after UAE. In all three patients who could be followed for 2 years or more, three had subsequent successful natural pregnancies, and two patients had live births. CONCLUSION: UAE along with the administration of MTX is effective in treating cervical ectopic pregnancy with vaginal bleeding while allowing the preservation of fertility.

PMID: 19457824 [PubMed - indexed for MEDLINE]

117. AJR Am J Roentgenol. 2009 Jun;192(6):1593-600.

History of uterine artery occlusion and subsequent pregnancy.

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Comment on:
AJR Am J Roentgenol. 2009 Jun;192(6):1588-92.

OBJECTIVE: During mature placenta formation, select fetal trophoblasts invade maternal decidual arterioles and junctional zone arteries and change them into low-resistance uteroplacental arteries. Consequently, physicians performing vascular procedures that occlude the uterine arteries should understand their effects on miscarriage rates, the various toxemias of pregnancy, gross and microscopic placental anatomy, and invasive placentation. Thus, the objective of this article is to review the effects of vascular occlusion on pregnancy. CONCLUSION: In the long run, placental abnormalities may be the canary in the mine shaft to globally judge the effect of uterine artery embolization on pregnancy.

PMID: 19457823 [PubMed - indexed for MEDLINE]

118. AJR Am J Roentgenol. 2009 Jun;192(6):1588-92.

Pregnancy after uterine artery embolization for symptomatic fibroids: a series of 15 pregnancies.

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Comment in:

AJR Am J Roentgenol. 2009 Jun;192(6):1593-600.

OBJECTIVE: The purpose of this study was to report on pregnancies and their outcome after uterine artery embolization for uterine fibroids. SUBJECTS AND METHODS: From 2001 to 2004, 102 patients (mean age, [+/- SD] 35.7 +/- 6.4 years; range, 20-48 years) with symptomatic uterine fibroids underwent uterine artery embolization with 500- to 710-microm polyvinyl alcohol particles. The mean uterine volume was 552 +/- 649 cm(3) (range, 94-4,656 cm(3)), and the dominant fibroid size was 228 +/- 359 cm(3) (range, 14-2,618 cm(3)) before the procedure. During the 2-year follow-up period, the patients were asked whether they were trying to achieve pregnancy and whether they were successful. We obtained pregnancy and obstetric records of the pregnant women from physicians' offices and hospitals. RESULTS: Among 102 women who underwent bilateral uterine artery embolization, 23 (22.5%) were seeking to become pregnant, and 14 of the 23 (61%) became pregnant, nine having been nulliparous. One patient had two pregnancies. Fourteen pregnancies were spontaneous, and one was achieved by zygote intrafallopian transfer. Two miscarriages occurred, one in the 12th and one in the 16th week of gestation. The other 13 pregnancies went to term, were uncomplicated, and ended in elective cesarean delivery. All of the neonates were healthy with Apgar scores greater than 8. The mean weight of the neonates was 3,274 +/- 514.4 g (range, 2,100-3,950 g). One neonate was small for gestational age (2,100 g). CONCLUSION: Uterine artery embolization can serve as a substitute for invasive operations such as hysterectomy and myomectomy. Additional studies, including prospective, randomized comparisons with myomectomy, should be performed to ascertain whether uterine artery embolization is a safe procedure for women who want to preserve their fertility.

PMID: 19457822 [PubMed - indexed for MEDLINE]

119. Cardiovasc Intervent Radiol. 2009 Sep;32(5):1080-2. Epub 2009 May 16.

Fatal pulmonary embolus after uterine artery fibroid embolisation.

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We report a 44-year-old woman who developed a fatal pulmonary embolus after uterine artery fibroid embolisation (UAE). Bilateral UAE was carried out through a single right-femoral artery puncture. The largest fibroid in the anterior fundal wall measured 4.5 cm, and the largest fibroid in the posterior fundal wall measured 6 cm. The appearances after UAE were satisfactory, and the procedure was apparently uneventful. No immediate complications were noted. The patient developed sudden-onset shortness of breath and went into cardiac arrest 19 h after the procedure. Postmortem autopsy confirmed that the cause of a death was a pulmonary embolism. To our knowledge this is the first reported case in the

United Kingdom in which death occurred from a pulmonary embolus after UAE.

PMCID: PMC2744771
PMID: 19449063 [PubMed - indexed for MEDLINE]

120. Eur J Obstet Gynecol Reprod Biol. 2009 Jul;145(1):113-6. Epub 2009 May 17.

Early-stage morphological observations of myoma and myometrium after laparoscopic uterine artery occlusion treatment.

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OBJECTIVE: Myoma therapy by uterine artery occlusion using laparoscopic ligation (UAOL) has been performed for many years and has proven effective, but limited information is available on its therapeutic mechanism. To examine this issue, we conducted this study to investigate the morphological change and apoptosis occurring in myomal and adjacent myometrial tissues shortly after UAOL. STUDY DESIGN: In total, 16 myomas and adjacent myometrium were obtained from 7 cases before and at various points after artery ligation. The tissues were stained using hematoxylin and eosin for morphological observation. To investigate the existence of apoptosis, in situ immunostaining of Caspase 3 and TUNEL assay were performed. Cytochrome C released from mitochondria was also detected by immunohistochemistry. RESULTS: Microscopic observation found that after UAOL, both myometrial and myomal tissues were edematous and apoptotic cells were widespread in both tissues. TUNEL assays showed that before UAOL, numbers of apoptotic cells in myomal and myometrial tissues had no significant differences (P=0.866). After ischemia of (36.69+/-18.53) min, apoptosis was significantly more elevated in myoma than in myometrium ((6.43+/-4.38)/10 HPF vs. (2.74+/-1.95)/10 HPF, P=0.003). Caspase 3 stain shared similar features with the TUNEL assay. In both groups cytochrome C was released from mitochondria after UAOL, and more was detected in the myoma. CONCLUSION: UAOL is an alternative method to treat symptomatic uterine myomas. Apoptosis via mitochondrial pathways may lead to reduction of the volume of myoma and myometrium and eventual relief of symptoms.

PMID: 19447540 [PubMed - indexed for MEDLINE]

121. Contraception. 2009 Jun;79(6):452-5. Epub 2009 Feb 27.

Uterine artery embolization to treat hemorrhage following second-trimester abortion by dilatation and surgical evacuation.

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BACKGROUND: This study was conducted to review cases of second-trimester postabortal hemorrhage (PAH) occurring at a private women's health facility that were treated with uterine artery embolization (UAE). METHODS: A retrospective review was conducted on all second-trimester terminations performed at a private women's health facility between 1999 and 2006. Cases of PAH treated with UAE were
reviewed in detail, reviewing progress, operative and discharge notes along with anesthesia records. RESULTS: Fifteen cases of PAH were identified among 3936 second-trimester terminations that were performed. Seven cases were identified in which UAE was used to treat PAH. Etiologies leading to hemorrhage varied in the seven cases as did the presence of coexisting factors such as infection and anatomic lesions. All cases were successfully treated by UAE, requiring no additional surgical intervention. CONCLUSION: Given the success of embolization, we offer this as an alternative to exploratory surgery and hysterectomy and as a first-line approach in cases of PAH after conservative management strategies have failed.

PMID: 19442781 [PubMed - indexed for MEDLINE]

122. J Reprod Med. 2009 Apr;54(4):251-4.

Cesarean scar ectopic pregnancy in a patient with multiple prior cesarean sections: a case report.

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BACKGROUND: Cesarean scar pregnancy, an abnormal gestation implanted in the hysterotomy site of a previous cesarean section, is a unique type of ectopic pregnancy. Once uncommon, these life-threatening gestations are increasing in frequency. Outcomes depend on a high index of suspicion and early diagnosis. CASE: A 39-year-old, gravida 9, para 5-0-3-5, with a history of 5 cesarean deliveries, presented with vaginal bleeding secondary to cesarean scar pregnancy at 8 weeks' gestation. The patient, who desired future fertillty, was
successfully treated conservatively with methotrexate and uterine artery embolization. CONCLUSION: Reports of cesarean scar pregnancies are rising in the literature, and we describe a scar pregnancy in a woman with multiple prior cesareans. Although the relationship between cesarean scar pregnancy and the number of previous cesarean deliveries is unclear, rising cesarean section rates worldwide will further increase overall incidence. The optimal treatment modality remains uncertain, but conservative management is appropriate when desired by the patient and administered under close observation.

PMID: 19438168 [PubMed - indexed for MEDLINE]

123. BJOG. 2009 May;116(6):863.

Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage.

Katakam N, Vitthala S, Sasson S, Williams A.

Comment on:
BJOG. 2009 Jan;116(1):55-61.

PMID: 19432577 [PubMed - indexed for MEDLINE]

124. Fertil Steril. 2010 Apr;93(6):2048-9. Epub 2009 May 6.

Secondary postpartum hemorrhage due to a pseudoaneurysm rupture at the fundal area of the uterus: a case treated with selective uterine arterial embolization.

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A 37-year-old woman with secondary postpartum hemorrhage due to a pseudoaneurysm rupture of the uterus was given selective uterine arterial embolization, and she was discharged in stable condition on the fourth postembolization day. Secondary postpartum hemorrhage due to rupture of a pseudoaneurysm is a rare condition, and selective uterine arterial embolization is the treatment of choice in hemodynamically stable patients.

PMID: 19423103 [PubMed - indexed for MEDLINE]

125. Minim Invasive Ther Allied Technol. 2009;18(2):98-102.

Three-dimensional reconstruction of the uterine vascular supply through vascular casting and thin slice computed tomography scanning.

Chun-Lin C, Hong-Xia G, Ping L, Rui H, Zhen-Bo OY, Lei T, Ze-Yu L, Chang L, Kun-Cheng W, Guang-Ming Z, Hui-Wen H, Jie-Wei H, Jian-Yi L, Yan-Hong Y, Shi-Zheng
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Comment in:
Minim Invasive Ther Allied Technol. 2009;18(6):371-2.

It was the objective of this study to construct a model of the uterine vascular supply through vascular casting and thin slice computed tomography scanning. This will provide a teaching aide for the understanding of uterine artery embolization (UAE) procedures, as well as normal uterine and ovarian arterial anatomy. Using 20% chlorinated poly vinyl chloride, we infused and cast a set of a normal uterus, vagina and bilateral adnexa through the uterine artery and ovarian artery. After thin slice CT scanning, we obtained the three-dimensional (3D) reconstruction by maximum intensity projection (MIP) and surface-shaded display (SSD), and then observed its figure and characteristics. A model of the uterine vascular supply can be successfully reconstructed by vascular casting and thin slice CT scanning. The 3D reconstruction offers a clear view of the course of the uterine artery and its blood supply distribution. It has two major branches: The intramuscular uterine branch and the cervicovaginal branch (1). Blood supply is generally unilateral, with communicating branches between the two sides and possible anastomoses between the arterial blood supply of the uterus and the ovaries. The major blood supply of the cervix comes from the cervicovaginal branch of the uterine artery, while the vaginal arterial supply derives directly from the internal iliac artery. The CT technique allows real-time 360 degrees rotation and changes in model for in-depth study of the vascular network and its adjacent tissues. It is possible to construct an in vitro uterine arterial network by vascular casting and CT scanning, which can provide unique insight into the female genitourinary system arterial network. Based on this, we can create reconstructions as well as models for different diseases such as leiomyomata, adenomyosis, and endometrial cancer. These models will provide morphological evidence to the interventional therapy and UAE teaching in Obstetrics and Gynecology.

PMID: 19418349 [PubMed - in process]

126. Minim Invasive Ther Allied Technol. 2009;18(2):78-81.

Repeat uterine artery embolization following technical failure.

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This retrospective chart review was performed to evaluate the success of uterine artery embolization performed in two sessions due to initial technical failure. Patients undergoing embolization for symptomatic uterine myomata between 1997 and

2007 were included in the study. Patients who initially suffered unilateral technical failure were offered repeat embolization. This group was contrasted with patients who underwent bilateral embolization during the initial procedure. Success was defined as relief of symptoms based on pre- and post-procedure questionnaires, and/or > 30% shrinkage of the largest myoma. During the study period, 1078 uterine artery embolization procedures were performed. 1024 (94.9%) were initial bilateral procedures; 34 (3.2%) were unilateral procedures due to technical failure and 20 (1.9%) were unilateral procedures due to anatomical reasons. Twenty-two of the patients who experienced technical failure elected to undergo a repeat procedure. Sixteen patients who underwent repeat embolization were available for review. Eleven patients underwent post-embolization imaging; seven (63.6%) had successful shrinkage of the largest myoma. Three patients underwent post-embolization magnetic resonance imaging evaluation; none demonstrated enhancement of myomata. Fifteen patients completed questionnaires,
fourteen (93.3%) reported symptom relief. Seven hundred and thirty-one of the patients who underwent initial bilateral embolization during the study period were available for review. Of the 582 patients with imaging data, 376 (64.6%) had successful shrinkage of the largest myoma. All 731 patients completed questionnaires. 728 patients (99.6%) reported symptom relief. Two-step bilateral embolization seems to be an effective management option after technical failure.

PMID: 19418348 [PubMed - in process]

127. J Obstet Gynaecol Can. 2009 Mar;31(3):263-6.

Femoral artery puncture site pseudoaneurysm formation following uterine artery embolization for symptomatic fibroids: a case report.

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BACKGROUND: Uterine artery embolization (UAE) is a safe and durable alternative to hysterectomy for the treatment of fibroids. Complications arising in the femoral artery puncture site such as infection, bleeding, and hematoma formation have been reported. This is the first report of pseudoaneurysm formation following UAE. CASE: A 46-year-old primiparous woman with multiple symptomatic fibroids became hypertensive during transfemoral UAE. The vascular sheath removal was delayed until blood pressure had normalized. Manual compression was required to control bleeding from the right groin puncture site. A subcutaneous hematoma developed, extending down to the patient's knee. Doppler ultrasound and CT arteriogram demonstrated a ruptured pseudoaneurysm. It was repaired by a vascular surgeon but became infected with E coli. The wound was healing well at three months after the procedure. CONCLUSION: Complications after UAE may be minimized by appropriate patient selection, proper surgical technique, and appropriate monitoring and follow-up.

PMID: 19416573 [PubMed - indexed for MEDLINE]

128. Ceska Gynekol. 2009 Feb;74(1):22-6.

[News and perspectives in uterine fibroids radiotherapy]

[Article in Czech]

Kubínová K, Mára M, Horák P, Kríz R, Masková J, Kuzel D.

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Uterine artery embolization (UAE) represents radiological treatment of uterine fibroids. It is highly effective and safe mainly in premenopausal patients with symptomatic fibroids and represents an alternative to hysterectomy in a group of women not suitable for minimally invasive surgical treatment (LAVH) and women desiring uterus sparing therapy. The future of UAE lies in optimal selection of patients based on volume-shrinkage prediction and fertility outcome. The second group is represented by methods based on direct fibroid tissue destruction using specific energy under MRI or UZ guidance. The common aim of these two groups is the volume shrinkage as well as the symptomatic relief. The second group is represented by radiofrequency ablation, focused ultrasound surgery, interstitial laser ablation and cryotherapy. Based on their non-surgical, percutaneous approach these can be classified as minimally-invasive methods. The second group of methods is suitable only for patients with the absence of any desire for child bearing due to the absence of their long-term outcome data.

PMID: 19408851 [PubMed - indexed for MEDLINE]

129. Gynecol Obstet Fertil. 2009 May;37(5):459-60. Epub 2009 Apr 28.

[Response of D. Gallot et al to the article of J.-P. Pelage and O. Limot. Role of arterial embolization in the care of serious hemorrhages immediately postpartum. Gynecol Obstet Fertil 2008;36:714-20]

[Article in French]

Gallot D, Chabrot P, Vendittelli F, Cassagnes L, Diop A, Bertrand A, Gaia G, Canis M, Bolandard F, Storme B, Lemery D, Boyer L.

Comment on:
Gynecol Obstet Fertil. 2008 Jul-Aug;36(7-8):714-20.

PMID: 19403321 [PubMed - indexed for MEDLINE]

130. Ultrasound Obstet Gynecol. 2009 May;33(5):614-6.

Three-dimensional power Doppler imaging of uterine artery pseudoaneurysm treated unsuccessfully with selective embolization.

Alboni C, Rosati F, Sansavini S, Bartalena T, Mancini F, De Iaco P, de Aloysio D, Orsini LF.

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PMID: 19402122 [PubMed - indexed for MEDLINE]

131. Clin Exp Obstet Gynecol. 2009;36(1):53-4.

The development of placenta increta following pelvic transcatheter artery embolization for postpartum hemorrhage.

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OBJECTIVE: Pelvic transcatheter artery embolization (TAE) has been widely used for the management of postpartum hemorrhage (PPH). However, the adverse effects of TAE on the subsequent pregnancy remain poorly understood. CASE: A 30-year-old woman, gravida 2, para 1, developed PPH due to atonic bleeding and underwent TAE. Thereafter, her menstrual cycle became irregular with less blood volume. Three years later, she became pregnant despite a thin endometrial thickness of 6 mm during the ovulatory period. She delivered a healthy baby at 39 weeks of gestation. No signs of placental separation were obtained, and an attempt at manual extraction of the placenta failed, followed by massive PPH. She underwent emergent TAE. The placenta was not spontaneously delivered even on day 8 postpartum. A supracervical hysterectomy was performed due to a worsening intrauterine infection. Pathological examination revealed findings compatible with placenta increta. CONCLUSION: A TAE-associated thin endometrium may be attributable to the development of placenta increta. Pregnant women undergoing TAE should be managed carefully because the information about pregnancy outcomes after TAE remains scanty.

PMID: 19400420 [PubMed - indexed for MEDLINE]

132. Eur J Obstet Gynecol Reprod Biol. 2009 Aug;145(2):129-32. Epub 2009 Apr 23.

Obstetrical prognosis and pregnancy outcome following pelvic arterial embolisation for post-partum hemorrhage.

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Post-partum hemorrhage is an obstetrical emergency. Pelvic artery embolisation offers an alternative to surgical intervention and increases the rate of conservative treatment. The objective of this review was to study the scientific literature on obstetrical outcomes following uterine-sparing arterial embolisation performed for post-partum hemorrhage in a prior pregnancy. A Medline and Sciencedirect search were performed in order to review all the French and English reports about pregnancy following pelvic arteries embolisation for post-partum hemorrhage. Nineteen articles were identified and 13 were selected for inclusion. We have included the fertility follow-up of a total of 168 women who underwent pelvic arteries embolisation for post-partum hemorrhage. We highlight the clinical success of embolisation in 154 of the 168 patients (92%). Following the embolisation procedures, 7 hysterectomies were required and 4 patients died. Two of the 4 deaths occurred in women who were transferred from an outlying institution to a tertiary referral center. In this population, 45 pregnancies were described. Among these pregnancies, 32 resulted in live births (71%), 8 were miscarriages (18%) and 5 patients carried out voluntary termination of pregnancy (11%). The cesarean section rate was 62%. Post-partum hemorrhage occurred in 6 cases leading to 2 hysterectomies. In conclusion, pelvic arterial embolisation offers a safe and conservative alternative to surgical interventions for post-partum hemorrhage in well-selected patients desiring to preserve future fertility.

PMID: 19398259 [PubMed - indexed for MEDLINE]

133. J Vasc Interv Radiol. 2009 Jun;20(6):813-8. Epub 2009 Apr 22.

Persistent sciatic artery and successful uterine artery embolization: report of three cases.

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The incidence of persistent sciatic artery (PSA) was evaluated in the setting of uterine artery embolization (UAE) for symptomatic uterine leiomyomata over a 3-year period. PSA was present in 0.83% of patients or 0.69% of limbs undergoing UAE at a single institution. The authors present three cases of PSA in which successful treatment with UAE was performed. Interventionalists should have thorough anatomic knowledge of PSA, and this rare yet important anatomic variant should be included among the pertinent findings during UAE.

PMID: 19395272 [PubMed - indexed for MEDLINE]

134. Obstet Gynecol. 2009 May;113(5):992-9.

Predictors of failed pelvic arterial embolization for severe postpartum hemorrhage.

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OBJECTIVES: To estimate what factors are associated with a failed pelvic arterial embolization for postpartum hemorrhage and to attempt to estimate efficacy of pelvic arterial embolization in rare conditions. METHODS: This was a retrospective cohort study including all consecutive women who underwent pelvic arterial embolization trial for postpartum hemorrhage between 1994 and 2007 at a tertiary care center. Pelvic arterial embolization failure was defined as the requirement for subsequent surgical procedure to control postpartum hemorrhage. RESULTS: Pelvic arterial embolization was attempted in 0.3% of deliveries by the same radiologist in 87% of cases. Failures occurred in 11 of 100 cases (11%) and in 4 of 17 cases (24%) of placenta accreta or percreta. The major complication rate after pelvic arterial embolization was low (3%). Fifty patients (50%) were transferred from nine other institutions. Pelvic arterial embolization was performed in 11 cases (11%) after a failed conservative surgical procedure and in eight cases (8%) for secondary postpartum hemorrhage, with success rates of 91% and 88%, respectively. Pelvic arterial embolization demonstrated a patency throughout one ligated pedicle in 9 of the 11 cases of failed conservative surgical procedure (82%). Twin pregnancy, chorioamnionitis, operative vaginal delivery, hospital-to-hospital transfer, nature of embolizing agent and arteries embolized, failed surgical procedure, secondary postpartum hemorrhage, cause of postpartum hemorrhage, and more than one pelvic arterial embolization were not found to be significantly associated with failed pelvic arterial embolization. CONCLUSION: The only factors significantly associated with failed pelvic arterial embolization were a higher rate of estimated blood loss (more than 1,500 mL) and more than 5 transfused red blood cell units. Attempted pelvic arterial embolization after a failed vessel ligation procedure and for a secondary postpartum hemorrhage is a good option with high success rates.

PMID: 19384113 [PubMed - indexed for MEDLINE]

135. J Control Release. 2009 May 5;135(3):198-202.

Infrared microspectroscopy analysis of ibuprofen release from drug eluting beads in uterine tissue.

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Ibuprofen loaded embolization beads (IBU-BB) have been developed to reduce inflammation and pain following uterine artery embolization for the treatment of uterine fibroids. The present work has investigated the elution properties of IBU-BB in situ after embolization with Fourier Transform Infrared Microspectroscopy (FTIRMS). Twelve sheep underwent uterine artery embolization with IBU-BB (485 mM) or control unloaded beads. IBU concentration was determined
inside the beads and in the tissue surrounding the beads using FTIRMS of uterine tissue sections sampled 24 h or 1 week after embolization. After 24 h, IBU concentration inside the bead was only 18.6 mM out of the 485 mM initially loaded ($p < 0.0001$, univariate sign test). The concentration in the tissue around the beads was 8 mM, which is well above the in vitro therapeutic levels (6 microM). After one week the concentration of IBU had decreased to 4.9 mM in the beads ($p = 0.0502$, Mann Whitney) and no IBU was detected in the surrounding tissue. This work has demonstrated that IBU-BB can provide a sustained release of the anti-inflammatory drug over at least one week. The in vivo elution properties of IBU-BB may be suitable to alleviate pain and inflammation after embolization.

PMID: 19367683 [PubMed - indexed for MEDLINE]

136. Fertil Steril. 2010 Jun;94(1):324-30. Epub 2009 Apr 9.

Uterine artery embolization for fibroids is associated with an increased risk of miscarriage.

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OBJECTIVE: To investigate how uterine artery embolization (UAE) might alter the risk profile for pregnancies complicated by fibroids. DESIGN: Systematic literature review and meta-analysis of existing studies. SETTING: Academic reproductive medicine unit. PATIENT(S): Women with fibroids. INTERVENTION(S): A systematic literature review, raw data extraction, and data analysis. MAIN OUTCOME MEASURE(S): Rates of miscarriage, preterm delivery, malpresentation, intrauterine growth restriction (IUGR), cesarean delivery, and postpartum hemorrhage (PPH). RESULT(S): Two hundred twenty-seven completed pregnancies after UAE were identified. Miscarriage rates were higher in UAE pregnancies (35.2%) compared with fibroid-containing pregnancies matched for age and fibroid location(16.5%) (odds ratio [OR] 2.8; 95% confidence interval [CI] 2.0-3.8). The UAE pregnancies were more likely to be delivered by cesarean section (66% vs. 48.5%; OR 2.1; 95% CI 1.4-2.9) and to experience PPH (13.9% vs. 2.5%; OR 6.4; 95% CI 3.5-11.7). Rates of preterm delivery (14% vs. 16%; OR 0.9; 95% CI 0.5-1.5), IUGR

(7.3% vs. 11.7%; OR 0.6; 95% CI 0.3-1.3), and malpresentation (10.4% vs. 13%; OR 0.8; 95% CI 0.4-1.5) were similar in UAE pregnancies and in control pregnancies with fibroids. CONCLUSION(S): The risk of miscarriage seems to be increased after UAE. In contrast, apart from an increased risk of abdominal delivery and PPH, critical adverse obstetric sequelae of IUGR and prematurity appear no more likely after UAE. Copyright (c) 2010 American Society for Reproductive Medicine. Published by Elsevier Inc. All rights reserved.

PMID: 19361799 [PubMed - indexed for MEDLINE]

137. J Vasc Interv Radiol. 2009 Jun;20(6):730-5. Epub 2009 Mar 31.

Management of uterine artery embolization for fibroids as an outpatient procedure.

Pisco JM, Bilhim T, Duarte M, Santos D.

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PURPOSE: To evaluate whether it is safe to perform uterine artery embolization (UAE) as an outpatient procedure. MATERIALS AND METHODS: This retrospective study was approved by the institutional review board and included 234 patients (age range, 24-58 years; mean age, 40.5 years) who underwent UAE as an outpatient procedure with polyvinyl alcohol particles between January 2007 and March 2008. Patients were given acid-suppressing drugs, nonsteroidal anti-inflammatory drugs, anti-histaminic drugs, and laxatives twice on the day before UAE and once on the morning of UAE. Pain score, rated from 0 to 10, was evaluated by using a numeric pain scale during UAE, after the procedure, at discharge, at the night of discharge, and on the following morning. The outcome of UAE was evaluated at 6 months by means of pelvic magnetic resonance imaging and clinical observation.
RESULTS: The mean pain score was 0.9 during embolization, 2.5 4-8 hours after embolization, 0.9 at discharge, 1.1 the first night after discharge, and 0.7 the next morning. All patients were discharged from the hospital 4-8 hours after the procedure, with no overnight hospital admissions. At 6 months, 146 of 158 patients (92.4%) reported an improvement in menorrhagia, 39 of 44 (88.6%) reported an improvement in bulk symptoms, and 20 of 25 (80%) reported an improvement in pain. The volumes of the uterus and the dominant fibroid decreased 33.7% and 39.3%, respectively. CONCLUSIONS: With acid-suppressing, anti-inflammatory, and anti-histaminic drugs started on the day before UAE, the procedure can be performed safely as an outpatient procedure.

PMID: 19339205 [PubMed - indexed for MEDLINE]

138. Radiology. 2009 Jun;251(3):788-95. Epub 2009 Mar 31.

Uterine artery embolization: optimization with preprocedural prediction of the best tube angle obliquity by using 3D-reconstructed contrast-enhanced MR angiography.

Naguib NN, Nour-Eldin NE, Lehnert T, Hammerstingl RM, Korkusuz H, Eichler K, Zangos S, Vogl TJ.

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PURPOSE: To evaluate the effect of preprocedural prediction of the best tube angle obliquity for visualization of the uterine artery origin by using three-dimensional (3D)-reconstructed contrast material-enhanced magnetic resonance (MR) angiography on the radiation dose, fluoroscopy time, and contrast medium volume during uterine artery embolization (UAE). MATERIALS AND METHODS:
The study was approved by the institutional review board. Informed consent was obtained. The prospective study included 20 consecutive prospective patients (age range, 37-56 years) for whom preprocedural prediction of the best tube angle obliquity was determined by using 3D-reconstructed contrast-enhanced MR angiography; the best tube angle obliquity was provided to the interventionist. Three-dimensional reconstruction was performed by using an application of the angiographic unit. The radiation dose, fluoroscopy time, and contrast medium volume for those patients were compared with those data in 20 retrospectively assessed control patients (age range, 39-56 years) from the prior 20 procedures performed by the same interventionist. RESULTS: Tube angle prediction resulted in a significant reduction in the radiation dose utilized (P < .001), fluoroscopy time (P = .002), and contrast medium volume (P < .001) for the sample patients compared with those for the control patients. Overall radiation dose was reduced from a mean of 11 044 microGy per square meter to a mean of 4172.5 microGy per square meter. Fluoroscopy time was reduced from a mean of 15 minutes 30 seconds to 8 minutes 49 seconds. Contrast medium volume was reduced from a mean of 135 mL to 75 mL. CONCLUSION: Preprocedural prediction of the best tube angle obliquity for visualization of the origin of the uterine artery by using 3D-reconstructed contrast-enhanced MR angiography results in significant reductions in radiation dose, fluoroscopy time, and contrast medium volume during UAE.

PMID: 19336670 [PubMed - indexed for MEDLINE]

139. J Vasc Interv Radiol. 2009 May;20(5):567-70. Epub 2009 Mar 28.

What evidence should we demand before accepting a new embolic material for uterine artery embolization?

Spies JB.

PMID: 19328716 [PubMed - indexed for MEDLINE]

140. Semin Perinatol. 2009 Apr;33(2):109-15.

Surgical intervention in the management of postpartum hemorrhage.

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Obstetric hemorrhage is often a sudden, life-threatening event. Successful management hinges on both preoperative preparation if hemorrhage is anticipated as well as knowledge of interventions. Uterine-sparing techniques, such as aggressive and early use of uterotonics, balloon tamponade, uterine compression sutures, arterial ligation, and selective arterial embolization, may be used to control hemorrhage. If these techniques are not adequate, the decision must be made to proceed with hysterectomy. The type of hysterectomy (subtotal vs. total) must be individualized to each patient. Hemostatic agents may be particularly useful in patients who have excessive blood loss from raw tissue surfaces.

PMID: 19324240 [PubMed - indexed for MEDLINE]

141. Semin Perinatol. 2009 Apr;33(2):88-96.

Abnormal placentation.

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Abnormal placentation poses a diagnostic and treatment challenge for all providers caring for pregnant women. As one of the leading causes of postpartum hemorrhage, abnormal placentation involves the attachment of placental villi directly to the myometrium with potentially deeper invasion into the uterine wall or surrounding organs. Surgical procedures that disrupt the integrity of uterus, including cesarean section, dilatation and curettage, and myomectomy, have been implicated as key risk factors for placenta accreta. The diagnosis is typically made by gray-scale ultrasound and confirmed with magnetic resonance imaging, which may better delineate the extent of placental invasion. It is critical to make the diagnosis before delivery because preoperative planning can significantly decrease blood loss and avoid substantial morbidity associated with placenta accreta. Aggressive management of hemorrhage through the use of uterotonics, fluid resuscitation, blood products, planned hysterectomy, and

surgical hemostatic agents can be life-saving for these patients. Conservative management, including the use of uterine and placental preservation and subsequent methotrexate therapy or pelvic artery embolization, may be considered when a focal accreta is suspected; however, surgical management remains the current standard of care.

PMID: 19324237 [PubMed - indexed for MEDLINE]

142. Arch Gynecol Obstet. 2009 Dec;280(6):1023-4. Epub 2009 Mar 25.

Myoma expulsion after uterine artery embolization.

Redecha M Jr, Holomán K, Javorka V, Mizícková M, Ferianec V, Papcun P, Krizko M Jr, Redecha M Sr.

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Uterine artery embolization (UAE) has become a standard therapy in the treatment of symptomatic uterine myomas. The procedure is associated with a few complications. One of them is myoma expulsion. A 32-year-old woman was sent to our hospital with diagnosed intramural myoma with dysmenorrhea and pressure symptoms. UAE was performed since the patient preferred conservative treatment. The procedure was without any complications. Three weeks after embolization, she was readmitted because of vaginal discharge and minor bleeding. We diagnosed expulsion of necrotic myoma and performed transvaginal resection. Four months later, the patient is symptom free. Expulsion of intramural myoma can be thus considered as definite treatment and not a complication of embolization therapy.

PMID: 19319549 [PubMed - indexed for MEDLINE]

143. Fertil Steril. 2010 Jan;93(1):264-6. Epub 2009 Mar 14.

Unusual complication of excision of pelvic endometriosis: pseudoaneurysm of the left uterine artery.

Ferrero S, Bogliolo S, Rossi UG, Baldi C, Valenzano Menada M, Ragni N, Remorgida V.

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**We report on a patient who had a pseudoaneurysm arising from the left uterine artery after surgical excision of deep endometriosis. The diagnosis was based on contrast-enhanced multidetector computed tomography angiography. Transfemoral
selective catheterization and embolization of the left uterine artery determined**

a quick improvement of the symptoms. Copyright 2010 American Society for Reproductive Medicine. Published by Elsevier Inc. All rights reserved.

PMID: 19285669 [PubMed - indexed for MEDLINE]

144. J Obstet Gynaecol. 2009 Jan;29(1):74-7.

Leiomyosarcoma following uterine artery embolisation.

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PMID: 19280513 [PubMed - indexed for MEDLINE]

145. J Support Oncol. 2009 Jan-Feb;7(1):47-50.

Uterine artery embolization for menorrhagia.

Hardman RL, Forauer AR, Boykin RD, Szczepiorkowski ZM, Hill JM.

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PMID: 19278179 [PubMed - indexed for MEDLINE]

146. JSLS. 2008 Oct-Dec;12(4):426-30.

Myolysis revisited.

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Numerous procedures have been developed in recent decades that claim to provide significant improvement in myoma status without hysterectomy. However, what is the cost in time and money of these procedures? This is a review of the current literature regarding these recent procedures to determine which, if any, is the best treatment for myomas. We conducted a search of PubMed using the terms "bipolar-, cryo-, radiofrequency, laparoscopic-, focused high-energy MRI-guided ultrasound, and MRI-guided laser myolysis" to identify reports of the various procedures. Based on these published reports, we describe the various types of myolysis performed in multiple patients in outpatient facilities including

patient outcomes, complications, cost, and efficiency of the procedures.

PMID: 19275864 [PubMed - indexed for MEDLINE]

147. Rev Med Inst Mex Seguro Soc. 2008 Nov-Dec;46(6):677-80.

[Large uterine leiomyoma in a young patient]

[Article in Spanish]

Montiel-Jarquín AJ, García-Ramírez UN, Morales-Castillo JC, Bobadilla-Valenzuela R, Mendoza-García AV, López-Hernández A.

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**BACKGROUND: Great elements uterine leiomyomas are the most common tumours in the
reproductive life affecting up to 30 % of the women in the United States. Its aetiology remains uncertain; cytogenic studies suggest that 40 to 50% present chromosomic abnormalities. Clinical manifestations are: hypermenorrhea and abdominal pain. In the great element cases, patients suffered intestinal constipation and rectal tenesm. The treatment includes analogous of human chorionic gonadotrophin liberation hormone (GnRH), progesterone, surgical treatment, myomectomy and hysterectomy, uterine artery embolization, high frequency ultrasound, laser, cryotherapy and thermoablation. CLINICAL CASE: An 18
year-old female, menarquia at 12, periods 28/4, nubil. 6 months previous: intestinal constipation, tumour-like mass in hypogastrium, of about 8 cm in diameter, which increased gradually up to 18 cm, smooth, movile and irregular. The pelvic ultrasound showed a tumour of 140 mm dependent of uterus. Myomectomy
was performed. The histopathologic report was a 19.9 cm uterine leiomyoma, weighing 949 g and with hyaline degeneration. The patient was asymptomatic and without relapse a year later. CONCLUSIONS: Myomectomy is the choice treatment for
the large uterine myomatosis when the patient's fertility is to be preserved.**

PMID: 19263675 [PubMed - indexed for MEDLINE]

148. Minim Invasive Ther Allied Technol. 2009;18(2):1-6.

Computed tomography angiogram for failed uterine artery embolization.

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It was the aim of this study to discuss the efficacy of computed tomography angiograpy after failed uterine artery embolization. We performed a review of cases where embolization of myomata failed to relieve symptoms, or shrink myomata. If MRI showed continued uptake, patients were offered CT angiograms to
better direct therapy. Repeat embolization details were compared with findings on CT angiogram. During the study, 675 patients underwent uterine artery embolization. 229 patients underwent follow-up MRI with intravenous contrast, 29 of which showed persistent uptake into myomata. Twelve patients had CT angiogram
of the abdomen following MRI and six elected to undergo repeat UAE after CT angiogram. There was a 75% concurrence between CT angiograms and live studies (angiogram during repeat uterine artery embolization). With CTA, five patients showed a unilateral non-uterine blood supply, one showed a bilateral non-gonadal supply to the uterus, and two showed a normal blood supply, with all but two cases confirmed on live angiogram. Based on post-repeat MRI, one of the six repeat UAE patients shows no continued uptake of intravenous contrast to myomata.
Four show continued uptake, however, one patient did show decreased size of myomata. CT angiography is a valuable tool to identify collateral and persistent uterine artery supply, and offers great potential for accurate identification and evaluation of extra-gonadal supply to the uterus. It will allow for pre-operative planning, as well as discussion of risks and benefits with patients.

PMID: 19259849 [PubMed - in process]

149. Minim Invasive Ther Allied Technol. 2009;18(2):1-5.

The Gandras catheter for uterine artery embolization: The procedure-driven development of a novel medical device.

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Uterine artery embolization (UAE) is a safe and effective therapy for women suffering from symptomatic fibroid tumors of the uterus. In order to complete the procedure, the interventionalist must be able to catheterize both uterine arteries from a single femoral puncture site. The uterine arteries are subsequently embolized, or occluded, to stasis by injecting small particles mixed with radio opaque contrast under fluoroscopic guidance. Historically, it has been necessary to use several different catheters of varying shapes, lengths and materials to accomplish the catheterization of both uterine arteries when performing UAE. Every catheter exchange increases the length and difficulty of

the procedure. The risk and radiation dose of any interventional radiological procedure is directly proportional to its overall duration. Thus if a single catheter could achieve the objective of catheterizing the bilateral uterine arteries for UAE throughout the procedure, its use would decrease the length of the procedure and consequently decrease the overall risk to the patient, thus representing an improvement over the technology currently available. The purpose of this paper is to outline the anatomical and technical considerations that governed the development of an ideal catheter to perform UAE, the Gandras catheter.

PMID: 19255928 [PubMed - in process]

150. Minim Invasive Ther Allied Technol. 2009;18(2):1-9.

Acquisition of endovascular skills for uterine artery embolization using a simulator.

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This study addresses endovascular training using simulators for uterine artery embolization. A review of endovascular skill training for surgeons using simulators was performed. Surgeons possess varying levels of proficiency in endovascular techniques. A simulator will improve endovascular skills in the following areas: C-arm image intensifier use, catheter selection and manipulation, understanding of the pelvic anatomy, and technique of embolization. Surgeons may gain realistic experience on the simulator prior to entry into the cath lab or procedure room. Using a simulator, surgeons can learn valuable endovascular skills necessary for successful performance of uterine artery embolization.

PMID: 19255927 [PubMed - in process]

151. Minim Invasive Ther Allied Technol. 2009;18(2):1-3.

Extra-gonadal collateral supply to uterine leiomyomata: A case report.

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Although the vast majority of uterine leiomyomata are supplied solely by the uterine arteries, myomata have been reported to recruit additional blood supply, especially from the ovarian arteries. This report describes a patient with

vascular supply to uterine leiomyomata from a non-gonadal source. The collateral supply was identified during uterine artery embolization as originating from an aortoiliac hemorrhoidal artery emanating from the inferior mesenteric artery. The aberrant vessel was selectively embolized during a follow-up procedure, which produced successful anatomical and clinical results.

PMID: 19255926 [PubMed - in process]

152. Minim Invasive Ther Allied Technol. 2009;18(2):1-3.

Collateral supply to uterine leiomyomata from an unnamed vessel: a case report.

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Uterine leiomyomata are most often supplied solely by the uterine arteries. However, myomata have been reported to recruit collateral supply, usually from the ovarian arteries, which may contribute to clinical failure of uterine artery embolization. This case report describes a patient in whom a uterine myoma developed collateral supply de novo. The aberrant vessel was identified using computed tomographic angiography (CTA) and was selectively occluded in a successful embolization procedure.

PMID: 19255925 [PubMed - in process]

153. J Minim Invasive Gynecol. 2009 Mar-Apr;16(2):169-73.

Clinical application and midterm results of laparoscopic partial resection of symptomatic adenomyosis combined with uterine artery occlusion.

Kang L, Gong J, Cheng Z, Dai H, Liping H.

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STUDY OBJECTIVE: To examine the clinical application of laparoscopic partial resection of symptomatic adenomyosis combined with uterine artery occlusion (UAO). DESIGN: Retrospective cohort study (Canadian Task Force classification III). SETTING: A district hospital. PATIENTS: A total of 37 patients with symptomatic adenomyosis who had indication for surgical intervention but needed conservative treatment. INTERVENTION: Uterine artery occlusion combined with partial resection of adenomyosis via laparoscopy. MEASUREMENTS AND MAIN RESULTS:
From July 2003 through October 2005, 37 patients with symptomatic adenomyosis were treated by UAO combined with partial resection of adenomyosis via

laparoscopy. All patients were followed up at 1, 6, and 12 months after the operation to estimate the volume of the uterus and changes of symptoms including pelvic pain and abnormal bleeding. Patients also were asked to participate in a clinical interview every year thereafter. No severe complications were noted during the surgical procedure or follow-up. The mean surgical time was 115.7 +/- 27.5 minutes (Mean +/- SD, 61-171 minutes), the mean blood loss was 80.0 +/- 35.2 mL (50-150 mL), and the median highest body temperature after the procedure was 38 degrees C (range 37.4 degrees C-39 degrees C). The postoperative fever morbidity was 10.8% (4/37). Improvement of menorrhagia occurred in all of 37 and 35 of 37 for dysmenorrhea. Hysterectomy was carried out in 2 patients because of persistence of dysmenorrhea. Pictorial blood loss assessment chart was used to measure menstrual blood loss and an 11-point numeric rating scale was used to evaluate the pain intensity during menstruation. The postoperative median scores of menorrhagia were 58, 56, and 59 at 1, 6, and 12 months, respectively, compared with 158 before treatment. Significant improvement occurred (p <.001, p <.001, p <.001), compared with each other, no significant difference existed (1 vs 6 months, p =.720; 6 vs 12 months, p =.992; 1 vs 12 months, p =.709). The postoperative median scores of dysmenorrhea were 7, 5, and 4 at 1, 6, and 12 months. Respectively, compared with 8 before operation; significant symptom lessening occurred (p <.001, p <.001, p <.001). Comparing with each other, significant difference also existed (1 vs 6 months, p <.001; 6 vs 12 months, p <.001; 1 vs 12 months, p =.0018). The volume of the uterus before procedure was 224.6 +/- 48.7 cm(3) (156.0-336.1 cm(3)). At 6 and 12 months it was 169.2 +/- 78.1 cm(3) (118.4-218.2 cm(3)) and 91.6 +/- 28.4 cm(3) (43.1-127.5 cm(3)), respectively. At 6 months after surgery the volume of uterus shrank 24.7% compared with preoperative volume; shrinkage rate was 59.2% at 12 months after surgery. A continuous decrease occurred (p <.001, p <.001, p <.001). CONCLUSION: Laparoscopic partial resection of adenomyosis combined with UAO is an effective treatment modality for symptomatic adenomyosis, but further controlled studies with large samples and long-term follow-up is needed for a decisive conclusion.

PMID: 19249704 [PubMed - indexed for MEDLINE]

154. Int J Gynaecol Obstet. 2009 May;105(2):162-5. Epub 2009 Feb 20.

Uterine artery embolization versus laparoscopic occlusion of uterine vessels for management of symptomatic uterine fibroids.

Ambat S, Mittal S, Srivastava DN, Misra R, Dadhwal V, Ghosh B.

Department of Obstetrics and Gynecology, All India Institute of Medical Sciences, New Delhi, India.

OBJECTIVE: To evaluate the efficacy and complications of uterine artery embolization (UAE) versus laparoscopic occlusion of uterine vessels (LOUV) in the management of symptomatic fibroids. METHODS: A pilot randomized clinical trial in which 20 patients with symptomatic fibroids were randomly allocated into two

groups. Ten women underwent UAE, and 10 women underwent LOUV. Symptomatic improvement in menorrhagia and reduction in the volumes of the uterus and the fibroid were assessed at 3 and 6 months. RESULTS: The patients were comparable with regard to age and parity. At 6 months, there was no significant difference in the mean reduction in menstrual blood loss, uterine volume, and volume of the dominant fibroid between the two groups (P=0.436, P=0.796, P=1.00, respectively). However, higher pain scores were recorded on day 1 in the UAE group compared with the LOUV group (P=0.0002). CONCLUSIONS: The effects of UAE and LOUV in the management of symptomatic fibroids are comparable. The main advantage of LOUV is less postoperative pain compared with UAE.

PMID: 19232612 [PubMed - indexed for MEDLINE]

155. Int J Gynaecol Obstet. 2009 May;105(2):177-8. Epub 2009 Feb 20.

Management of acute deep vein thrombosis due to enlarged symptomatic uterine fibroids.

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PMID: 19232610 [PubMed - indexed for MEDLINE]

156. Best Pract Res Clin Obstet Gynaecol. 2009 Aug;23(4):519-27. Epub 2009 Feb 23.

Surgical treatment of ectopic pregnancy.

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Ectopic pregnancy remains the leading cause of death in the first trimester of pregnancy. Today, serial serum hCG measurements and transvaginal ultrasound examination can provide early detection of most ectopic pregnancies allowing medical treatment with methotrexate. In those who require surgery, the type of procedure depends on the clinical situation and the location of the pregnancy. Most of the cases can and should be performed by laparoscopy. Compared with laparotomy, the laparoscopic approach is associated with many advantages including short hospital stay, low cost and less adhesion formation. In addition, hemoperitoneum is not a contraindication for performing laparoscopy. Linear

salpingostomy is the procedure of choice when unruptured tubal pregnancy is found in women who want to preserve their fertility; otherwise, salpingectomy is performed. Fertility performance after salpingostomy and salpingectomy is comparable. Similar to the case with tubal ectopic pregnancy in general, women with non-tubal ectopic pregnancy such as cervical, interstitial, or Caesarean scar pregnancy should be first treated medically with methotrexate. These types of ectopic pregnancies may be associated with massive bleeding during surgery. Precautionary procedures should be considered and these include the placement of an angiographic catheter for possible uterine artery embolization. These pregnancies can also be treated laparoscopically.

PMID: 19231293 [PubMed - in process]

157. Best Pract Res Clin Obstet Gynaecol. 2009 Jun;23(3):317-26. Epub 2009 Feb 20.

Common errors and remedies in managing postpartum haemorrhage. Lombaard H, Pattinson RC.

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Postpartum haemorrhage (PPH) is a major contributor to maternal morbidity and mortality. By only examining mortality, the full extent of the problem is not revealed and also it is important to evaluate the avoidable factors. This will identify the areas that need attention. The common errors include not treating anaemia in pregnancy, not practicing active management of the third stage of labour, delay in recognition, substandard care and lack of skills. The remedies include the correct medical treatment of PPH and the use of uterine tamponade. Cell savers can help to reduce the need for transfusion and transfusion associated complications. There are new treatment modalities such as embolisation that can be of value in certain settings.

PMID: 19230783 [PubMed - indexed for MEDLINE]

158. Arch Gynecol Obstet. 2009 Oct;280(4):663-7. Epub 2009 Feb 18.

Progressive formation of uterine arteriovenous fistula after laparoscopic-assisted myomectomy.

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INTRODUCTION: Laparoscopic-assisted myomectomy (LAM) is a minimally invasive procedure with many advantages. However, progressive formation of uterine

**arteriovenous fistula (AVF) after LAM is not described as a significant complication. CASE REPORT: A 39-year-old nulligravida underwent LAM for multiple myomas. On ultrasonography obtained 13 days after LAM, a prominent vascular mass
was identified in the post-myomectomy scar. Computed tomographic angiography showed AVF originating from the left uterine artery. Uterine AVF was endovascularly embolized by metallic coils to avoid future hemorrhage. CONCLUSIONS: Development of uterine AVF after LAM is a potentially life-threatening complication. Early diagnosis and endovascular management can provide a significant benefit for a woman wishing uterine preservation.**

PMID: 19224230 [PubMed - indexed for MEDLINE]

159. J Obstet Gynaecol Res. 2009 Feb;35(1):183-8.

Successful management of uterine arteriovenous malformation by ligation of feeding artery after unsuccessful uterine artery embolization.

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Uterine arteriovenous malformation (AVM) is a rare and potentially life-threatening disease. The present report describes a postmenopausal patient with uterine AVM manifesting recurrent, massive genital bleeding. Uterine artery embolization (UAE) was scheduled before hysterectomy, but UAE was unsuccessful due to the dilated, tortuous internal iliac arteries, and extremely rapid arterial blood flow. Hysterectomy appeared to carry a potential risk of massive blood loss due to multiple dilated vessels around the uterine corpus and cervix. Therefore, six arteries feeding the uterus were surgically ligated. At 10 months after the operation there have been no episodes of atypical genital bleeding.

PMID: 19215570 [PubMed - indexed for MEDLINE]

160. J Obstet Gynaecol Can. 2009 Jan;31(1):57-62.

**Imaging in the management of abdominal pregnancy: a case report and review of the
literature.**

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BACKGROUND: Abdominal pregnancy is a rare condition that is potentially life-threatening for the mother. CASE: A 29-year-old woman presented with

abdominal pain at 17 weeks of pregnancy. An ultrasound scan demonstrated an active abdominal pregnancy. MRI was used for placental localization. After discussion with the woman, it was decided to proceed to termination of the pregnancy. A pelvic angiogram was performed to localize placental vascularization. Both uterine arteries were embolized. Catheterization of the ovarian arteries identified that the right ovarian artery was one of the main vessels supplying the placenta. Selective embolization was performed. Laparotomy was then performed with removal of the fetus, but the placenta was left in place. Use of methotrexate was not required in the postoperative period. The patient was discharged on the seventh postoperative day. Serum BhCG became negative within one month. CONCLUSION: In the management of abdominal pregnancy, the use of imaging and radio-interventional techniques is critical in minimizing surgical and post-surgical interventions.

PMID: 19208285 [PubMed - indexed for MEDLINE]

161. Arch Gynecol Obstet. 2009 Oct;280(4):513-20. Epub 2009 Feb 11.

Treatment of fibroids via uterine artery occlusion (uterine artery embolization and Doppler-guided uterine artery occlusion): potential role in today's armamentarium.

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Uterine fibroids, the most common benign tumors of the female reproductive system, are the most common indication for hysterectomy. However, this procedure is not the ideal treatment for many women including those who desire to preserve their fertility or simply do not want to undergo surgery. New technologies and surgical innovation provide treatments that are less associated with morbidity such as uterine artery embolization, magnetic resonance imaging-guided focused ultrasound, and laparoscopic uterine artery occlusion. This manuscript will discuss the putative mechanism of action and clinical application of uterine artery occlusion using Doppler-guided Uterine Artery Occlusion, a new investigational treatment modality for uterine fibroids.

PMID: 19205712 [PubMed - indexed for MEDLINE]

162. Radiology. 2009 Feb;250(2):482-7.

Comparison of four embolic materials at uterine artery embolization by using postprocedural MR imaging enhancement.

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PURPOSE: To test the hypothesis that not all embolic materials are equivalent by using postprocedural magnetic resonance (MR) imaging enhancement of uterine fibroids in patients treated with uterine artery embolization (UAE). MATERIALS AND METHODS: Approval and a waiver of consent from the institutional human investigations committee was received for this study. The study was HIPAA compliant. A total of 84 women who underwent 6-month MR imaging follow-up constituted this retrospective study. Within this group, 25 women were treated with Contour polyvinyl alcohol (PVA) particles, 23 were treated with Contour SE particles, 19 were treated with Embosphere microspheres, and 17 were treated with Bead Block microspheres. Pre- and postprocedural MR imaging results were analyzed for the total number of fibroids present in the uterus of each patient and for the percentage of individual fibroid enhancement. Enhancement of individual fibroids was measured with quartile intervals. Greater than 25% residual enhancement of a fibroid after embolization was considered an incomplete infarction. The overall percentage change in enhancement was calculated for each patient. Bivariate analysis by using generalized linear modeling and one-way analysis of variance was used to assess differences in infarction with different embolic materials. RESULTS: Among patients treated with Contour and Embosphere, there was a mean reduction in enhancement by 76.60% and 83.07%, respectively, compared with a mean reduction of 52.53% and 49.78% in patients treated with Bead Block and Contour SE, respectively. There was a significant difference in postembolization enhancement between Bead Block and Embosphere, Bead Block and Contour, Contour SE and Embosphere, and Contour SE and Contour. CONCLUSION: Patients treated with Bead Block or Contour SE demonstrated a reduced degree of infarction at follow-up MR imaging compared with patients treated with Contour or Embosphere.

PMID: 19188316 [PubMed - indexed for MEDLINE]

163. Trials. 2009 Jan 29;10:8.

A randomized prospective trial of the postoperative quality of life between laparoscopic uterine artery ligation and laparoscopy-assisted vaginal hysterectomy for the treatment of symptomatic uterine fibroids: clinical trial design.

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BACKGROUND: Laparoscopy-assisted vaginal hysterectomy is one of the definite methods for the treatment of symptomatic uterine fibroids with lesser intraoperative bleeding and shorter hospitalization compared with abdominal hysterectomy. However, laparoscopy-assisted vaginal hysterectomy cannot preserve uterus and can show postoperative complications by the change of pelvic structure. Thus, laparoscopic uterine artery ligation has been introduced for relieving the symptoms caused by uterine fibroids in place of hysterectomy. The current study was designed to compare postoperative quality of life between laparoscopic uterine artery ligation and laparoscopy-assisted vaginal hysterectomy, and to evaluate the efficacy of laparoscopic uterine artery ligation which can treat symptomatic uterine fibroids with the preservation of uterus. METHODS AND DESIGN: Patients enrolled the current study are randomized to laparoscopic uterine artery ligation or laparoscopy-assisted vaginal hysterectomy. The primary outcome is to compare postoperative quality of life between laparoscopic uterine artery ligation and laparoscopy-assisted vaginal hysterectomy using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire for Cancer patients version 3.0. Secondary outcomes are to evaluate the volume reduction of uterus, uterine fibroids and ovaries by the 2 treatments, to compare the improvement of subjective symptoms using 11-point symptom score and postoperative clinical outcomes between laparoscopic uterine artery ligation and laparoscopy-assisted vaginal hysterectomy, and to investigate the improvement of postoperative vaginal bleeding by laparoscopic uterine artery ligation. DISCUSSION: Among treatment methods for symptomatic uterine fibroids with the preservation of uterus, laparoscopic uterine artery ligation is expected to have the efficacy like uterine artery embolization, which appeared to be safe for routine use with symptomatic relief. The current study
fully recruited in June 2008 and the results will be available in June 2009. If there is no difference of postoperative QOL between laparoscopic uterine artery ligation and laparoscopy-assisted vaginal hysterectomy for the treatment of symptomatic uterine fibroids, the comparison of quality of life between laparoscopic uterine artery ligation and uterine artery embolization will be also needed as a surgical treatment for preserving uterus. TRIAL REGISTRATION: Current Controlled Trials ISRCTN76790866.

PMCID: PMC2645389
PMID: 19178748 [PubMed - indexed for MEDLINE]

164. Minim Invasive Ther Allied Technol. 2009;18(2):1-5.

Repeat uterine artery embolization following poor results.

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It was the objective of this study to assess the efficacy of repeat uterine artery embolization following lack of symptom relief from initial procedure. We performed a retrospective chart review of patients undergoing embolization for symptomatic uterine myomata between 1994 and 2007. Success was defined based upon responses to symptom-relief questionnaires. Patients who reported no relief or worsening of symptoms were offered repeat embolization as well as surgical intervention. Patients who elected to undergo repeat embolization were evaluated for success following the procedure. During the study period, 1058 patients underwent initial bilateral uterine artery embolization. Forty-two (3.97%) patients reported unsuccessful symptom relief. Thirty-nine patients who reported poor results underwent a second bilateral embolization. Thirty-four of these patients completed symptom-assessment questionnaires; thirty-two patients (94.1%) reported symptom relief lasting at least six months post-procedure. The vast majority of our patients who underwent a second embolization after initial poor results had successful symptom relief. Patients should be offered a second uterine artery embolization after a poor outcome.

PMID: 19177259 [PubMed - in process]

165. Gynecol Endocrinol. 2008 Dec;24(12):724-6.

Elevated level of plasma vascular endothelial growth factor after gonadotropin-releasing hormone agonist treatment for leiomyomata.

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OBJECTIVE: Uterine leiomyomata are the most common gynecological benign tumor and
greatly affect reproductive health and well-being. The pathophysiology and epidemiology of fibroids are poorly understood. Gonadotropin-releasing hormone agonist (GnRH-a) pretreatment is one of the unfavourable factors for leiomyomata treatment with uterine artery embolisation (UAE). In this study, we investigated the plasma level of vascular endothelial growth factor (VEGF) in uterine leiomyoma patients with or without GnRH-a pretreatment. STUDY DESIGN: Thirty-two
women who underwent UAE for symptomatic uterine leiomyoma were analysed. The
plasma level of VEGF was studied before UAE. RESULTS: The level of plasma VEGF was significantly higher in the GnRH-a pretreated group compared with the non-treated group. CONCLUSION: A compensative reaction for vasculature after

GnRH-a treatment is speculated. Higher level of VEGF in GnRH-a pretreatment group
could be one of the unfavourable factors for the treatment of uterine leiomyomata by UAE.

PMID: 19172544 [PubMed - indexed for MEDLINE]

166. J Vasc Interv Radiol. 2009 Mar;20(3):419-20. Epub 2009 Jan 23.

Fatal nontarget embolization via an intrafibroid arterial venous fistula during uterine fibroid embolization.

[No authors listed]

Comment in:
J Vasc Interv Radiol. 2009 Nov;20(11):1498-9.

PMID: 19167246 [PubMed - indexed for MEDLINE]

167. Obstet Gynecol. 2009 Feb;113(2 Pt 2):554-6.

Successful bilateral uterine artery embolization during an ongoing pregnancy.

Rebarber A, Fox NS, Eckstein DA, Lookstein RA, Saltzman DH.

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BACKGROUND: Uterine arteriovenous malformations are rare, potentially life-threatening, vascular anomalies. CASE: We report a case of a large arteriovenous malformation diagnosed during pregnancy that was successfully treated with bilateral uterine artery embolization at 20 weeks of gestation during an ongoing pregnancy. The procedure was uncomplicated, did not result in any fetal heart-rate changes, and, at 35 weeks of gestation, a liveborn male neonate was delivered through repeat cesarean without complications. Both the patient and her son are doing well more than 2 years after the procedure. CONCLUSION: Uterine artery embolization during an ongoing pregnancy did not result in acute complications to the fetus or mother.

PMID: 19155955 [PubMed - indexed for MEDLINE]

168. Obstet Gynecol. 2009 Feb;113(2 Pt 2):540-3.

Pseudoaneurysm of the uterine artery after cesarean delivery: management with superselective arterial embolization.

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BACKGROUND: Uterine artery pseudoaneurysm is a rare but serious complication of
pelvic surgery. Cesarean delivery is the most common cause. CASE: We report a case of postpartum pelvic hemorrhage after cesarean delivery. A false aneurysm of the uterine artery was found by color Doppler ultrasonography and multislice spiral computed tomography. Arteriography confirmed the diagnosis. Superselective
coil embolization of the aneurysm sac was achieved using the packing technique. The main uterine artery was preserved and the postprocedural course was uneventful. CONCLUSION: Color Doppler ultrasonography and computed tomography
were useful for the early diagnosis of uterine artery pseudoaneurysm. Primary transcatheter arterial embolization controlled bleeding without compromising reproductive potential.

PMID: 19155949 [PubMed - indexed for MEDLINE]

169. Obstet Gynecol. 2009 Feb;113(2 Pt 2):489-91.

Uterine arteriovenous fistula as a long-term complication of hysterectomy: presentation and management.

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BACKGROUND: A rare complication of hysterectomy is the formation of a high-flow fistula between the uterine artery and uterine vein. Historically, these lesions were treated surgically. CASE: Two women with histories including hysterectomy presented with symptoms and physical examination signs suggestive of uterine arteriovenous fistulae. After arteriographic diagnostic confirmation, both women were treated successfully with endovascular embolization. CONCLUSION: A palpable,
pulsatile pelvic mass in a patient with a history of hysterectomy should prompt referral for radiographic evaluation of a possible pelvic arteriovenous fistula. Selective arterial embolization may be considered an option for treatment of this entity.

PMID: 19155930 [PubMed - indexed for MEDLINE]

170. Med Arh. 2008;62(4):234-9.

[New options in the diagnosis and management of uterine myoma]

[Article in Bosnian]

Hrgović Z, Kulas T, Habek D, Izetbegović S, Hrgović I.

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Myoma accounts for nearly 95% of all benign tumors of female genital organs and is the most common neoplasm of female genital tract. Along with thorough history and gynecologic examination, ultrasound study is of utmost importance in the diagnosis of myoma; magnetic resonance (MR) study may also be required in rare cases. A number of therapeutic options are available for the management of myoma,
ranging from medicamentous therapy through operative procedures (e.g., total or supracervical hysterectomy or myoma enucleation) and novel non-operative procedures (e.g., embolization of uterine artery (EUA) and magnetic resonance guided focused ultrasound (MRgFUS). Discomforts caused by a myoma are an absolute
indication for treatment. Therapeutic option to be chosen is determined by the number, size and location of myomas, and the patient's preferences. Therapeutic choice should rely on the patient's decision for or against treatment, sparing the uterus. An individualized treatment protocol should be tailored for each patient.

PMID: 19145810 [PubMed - indexed for MEDLINE]

171. Zhonghua Fu Chan Ke Za Zhi. 2008 Dec;43(12):884-7.

[The relevance between the effect on dysmenorrhea and the time of surgery of artery embolization in the treatment of adenomyosis]

[Article in Chinese]

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OBJECTIVE: To analyze the relevance between the effect on dysmenorrhea of uterine
artery embolization (UAE) in treatment of adenomyosis (AM) in different periods of the menstrual cycle and the time of the operation. METHODS: Totally 225 cases with preoperative dysmenorrhea voluntarily chose UAE in treatment of AM. They were divided into two groups according to the different times of menstrual cycle (proliferative phase or secretory phase). We analyzed the relevance between the effect of dysmenorrhea of patients in the two groups with the time of surgery

after 1, 2, 3 and 4 years. RESULTS: (1) The numbers of the cases completely followed up were 142, 128, 119 and 101 each year in the following four years. (2) The effective rate on dysmenorrhea in the two groups of AM patients was 81% (43/53) and 76% (68/89) after 1 year (P > 0.05). (3) The effective rate was 75% (36/48) and 70% (56/80) after 2 years (P > 0.05). (4) The effective rate was 70% (32/46) and 63% (46/73) after 3 years (P > 0.05). (5) The effective rate was 63% (24/38) and 63% (40/63) after 4 years (P > 0.05). CONCLUSION: UAE has a good efficacy in treatment of AM, but the relevance is not significant between the time of surgery and the effectiveness on dysmenorrhea.

PMID: 19134323 [PubMed - in process]

172. Int J Technol Assess Health Care. 2009 Jan;25(1):14-25.

Cost-effectiveness of magnetic resonance guided focused ultrasound for the treatment of uterine fibroids.

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OBJECTIVES: The aim of this study is to evaluate the cost-effectiveness of Magnetic Resonance Guided Focused Ultrasound (MRgFUS) compared with alternative treatments for uterine fibroids in the United States. METHODS: We used techniques of decision analysis and data from secondary sources to develop and estimate an economic model of the management of uterine fibroids among premenopausal women.
Patients in the model receive treatment with MRgFUS, uterine artery embolization (UAE), abdominal myomectomy, hysterectomy, or pharmacotherapy. The model predicts total costs (including subsequent procedures) and quality-adjusted life-years (QALYs) for each treatment strategy over a lifetime horizon, discounted at 3 percent, from a societal perspective. Data on treatment efficacy and safety were obtained from published and unpublished studies. Costs (2005 US$) were obtained from an analysis of a large administrative database and other secondary sources. Lost productivity costs were included in the base-case analysis, but excluded in a sensitivity analysis. RESULTS: UAE was associated with the most QALYs (17.39), followed by MRgFUS (17.36), myomectomy (17.31), hysterectomy (17.18), and pharmacotherapy (16.70). Pharmacotherapy was the least costly strategy ($9,200 per patient), followed by hysterectomy ($19,800), MRgFUS ($27,300), UAE ($28,900), and myomectomy ($35,100). Incremental cost-effectiveness ratios (cost per QALY gained) were $21,800 for hysterectomy, $41,400 for MRgFUS, and $54,200 for UAE; myomectomy was more costly and less effective than both MRgFUS and UAE.
Results were sensitive to MRgFUS recurrence rates, MRgFUS procedure costs, and

assumptions about quality of life following hysterectomy. CONCLUSIONS: Our findings suggest that MRgFUS is in the range of currently accepted criteria for cost-effectiveness, along with hysterectomy and UAE.

PMCID: PMC2811401
PMID: 19126247 [PubMed - indexed for MEDLINE]

173. Nan Fang Yi Ke Da Xue Xue Bao. 2008 Dec;28(12):2174-6.

[Hysterectomy after cardiopulmonary resuscitation in patients with obstetric hemorrhagic shock]

[Article in Chinese]

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**OBJECTIVE: To explore the indication of hysterectomy after successful resuscitation of cardiac arrest due to obstetric hemorrhagic shock. METHODS: A retrospective analysis was conducted in 13 patients with cardiac arrest due to obstetric hemorrhagic shock in 7 hospitals of Guangzhou, including 12 patients undergoing hysterectomy and 1 undergoing uterine artery embolization. RESULTS: s After successful cardiopulmonary resuscitation, only 4 of the 13 patients undergoing hysterectomy or uterine artery embolization for continuing uterus hemorrhage survived. CONCLUSION: Detailed plans and emergency measures should be
formulated in the management of high-risk pregnancies. Early diagnosis and active treatment of obstetric hemorrhagic shock with hysterectomy or uterine artery embolization are critical in preventing cardiac arrest and improving the survival of the patients.**

PMID: 19114349 [PubMed - indexed for MEDLINE]

174. J Minim Invasive Gynecol. 2009 Jan-Feb;16(1):11-21.

Unmet therapeutic needs for uterine myomas.

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Uterine myomas may develop in many women, but only become clinically significant in about one third of the affected population. Although uterine myomas are most often benign, they are associated with debilitating symptoms and

commonly result in hysterectomy. Current treatments for uterine myomas include pharmacologic therapies, delivery of focused energy, alteration of uterine vascular supply, or surgical procedures. Factors such as the woman's desire for future pregnancy, the importance of uterine preservation, symptom severity, and tumor characteristics direct the choice of therapeutic approach. The ideal treatment will have the following characteristics: easy to perform, minimally invasive, cost effective, preserves fertility, preserves the uterus, efficacious, acceptable tolerability and durability, and low incidence of myoma recurrence.

PMID: 19110181 [PubMed - indexed for MEDLINE]

175. Arch Gynecol Obstet. 2009 Aug;280(2):305-8. Epub 2008 Dec 24.

Successful management of interstitial pregnancy with fetal cardiac activity by laparoscopic-assisted cornual resection with preoperative transcatheter uterine artery embolization.

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INTRODUCTION: Interstitial pregnancy is a rare but dangerous form of ectopic pregnancy. Although various forms of minimally invasive management for this disorder have been previously reported, optimal treatment regimen has not been yet unknown due to its rarity. CASE REPORT: A 29-year-old married woman with no previous disease history was referred under suspicion of ectopic pregnancy. Serum hCG value was 95,365 mIU/mL. On ultrasonographic examination, gestational sac with a viable embryo was identified in the left cornual region. Three-dimensional computed tomographic angiography showed prominent vascular mass in the left cornual region. Preoperative transcatheter uterine artery embolization followed by laparoscopic-assisted cornual resection with local methotrexate injection was successfully performed. CONCLUSIONS: Laparoscopic-assisted cornual resection with
preoperative transcatheter uterine artery embolization for interstitial pregnancy with prominent vascular flow is a safe and reliable minimally invasive procedure for woman wishing fertility preservation.

PMID: 19107497 [PubMed - indexed for MEDLINE]

176. J Radiol. 2008 Dec;89(12):1925-9.

[Uterine artery embolization with resorbable material prior to myomectomy]

[Article in French]

Tixier H, Loffroy R, Filipuzzi L, Grevoul J, Mutamba W, Cercueil J, Krausé D,

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PURPOSE: Fibroids are a frequent cause of gynecology referral. Myomectomy is a conservative treatment alternative. The main risk from this procedure is hemorrhage. The main objective of this study was to demonstrate the efficacy of preoperative uterine artery embolization with resorbable agents to reduce blood losses and facilitate myomectomy. Secondary objectives were to evaluate morbidity and subsequent fertility. PATIENTS AND METHODS: Retrospective study of 21 patients with preoperative uterine artery embolization prior to myomectomy at the University Medical Center of Dijon over a 3 year period. RESULTS: Myomectomy after uterine artery embolization with resorbable agents was associated with only minimal blood loss. Mean preoperative and postoperative hemoglobin levels were comparable ($p<0.0001$). Uterine suturing was technically simpler. The number of resected fibroids ($p=0.2824$) and the presence of preoperative anemia ($p=0.474$) had no statistically significant impact on the duration of hospital stay. Uterine synechiae occurred in three patients after the procedure, and were easily treated. Two patients had normal subsequent pregnancies. CONCLUSION: Preoperative uterine artery embolization with resorbable agents was effective in reducing surgical blood losses. This technique reduces the number of hysterectomies and hemorrhagic complications (hematoma, infection, weaker scar tissue). It should be considered in patients wishing uterine preservation when the hemorrhagic risk is high. Its use in patients seeking subsequent pregnancy should be further assessed with larger series.

PMID: 19106850 [PubMed - indexed for MEDLINE]

177. Gynecol Obstet Fertil. 2009 Jan;37(1):70-3. Epub 2008 Dec 17.

[Sciatic paralysis following uterine artery embolization]

[Article in French]

Schmitt C, Cotton F, Gonnaud MP, Berland M, Golfier F, Raudrant D, Dupuis O.

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Early postpartum bleeding remains in France the leading cause of maternal mortality in perinatal period. In association with obstetrical and medical measures to control bleeding, uterine arteries embolization constitutes an efficient non-surgical measure whose potential side effects must be kept in mind. We report the case of a patient that presented a popliteal sciatic paralysis in the hours following the procedure. Through this case, we will review the different types of embolization complications.

PMID: 19095485 [PubMed - indexed for MEDLINE]

178. Acta Obstet Gynecol Scand. 2009;88(2):238-40.

Uterine necrosis following selective embolization for postpartum hemorrhage using absorbable material.

Coulange L, Butori N, Loffroy R, Filipuzzi L, Cercueil JP, Douvier S, Sagot P, Krause D, Tixier H.

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Comment in:
Acta Obstet Gynecol Scand. 2009;88(6):747; author reply 748.

Embolization of the uterine arteries with resorbable material is an effective treatment for postpartum hemorrhage. Cases of uterine necrosis were already described but with non-resorbables particles. We report two exceptional cases of uterine necrosis with failure of conservative treatment following selective embolization with gelatine.

PMID: 19089781 [PubMed - indexed for MEDLINE]

179. Zhonghua Yi Xue Za Zhi. 2008 Aug 26;88(33):2372-4.

[Treatment of pregnancy in a previous caesarean section scar with uterine artery embolization: analysis of 60 cases]

[Article in Chinese]

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OBJECTIVE: To evaluate the security and effectiveness of uterine artery embolization (UAE) in treatment of pregnancy in uterine caesarean scar compared with medicine treatment. METHODS: Sixty patients with pregnancies in uterine caesarean scar were divided into medicine group (n = 31) that received intravenous injection of methotrexate (MTX) 100 mg once or MTX 20 mg once a day for 5 days as the first course, received the second course when the serum beta-human chorionic gonadotropin (HCG) decreased to the level as < 50%, and then underwent uterine curettage; and UAE group (n = 29) that underwent catheterization into the left uterine artery and then uterine curettage 48h after the successful embolization. The bleeding volume during suction curettage, side

effects, admission day, and menstruation recover time were recorded. RESULTS: The hospital stay of the UAE group was (14.4 +/- 1.67) days, significantly shorter than that of the medicine group [(39.3 +/- 4.71) days, P < 0.05]. No patient had to receive hysterectomy in the UAE group but 2 in the medicine group underwent hysterectomy. Seven patients showed liver dysfunction and 8 patients had nausea and slight vomit in the medicine group, and 15 patients with fever and 10 with light post-embolization syndromes were found in the UAE group. Menstruation resumed normal in all patients of the 2 groups one or two months later. CONCLUSION: With the advantage of low risk of heavy bleeding and shorter admission day, UAE is safe and effective in treatment of pregnancy in uterine caesarean scar.

PMID: 19087704 [PubMed - indexed for MEDLINE]

180. Eur J Radiol. 2010 Feb;73(2):339-44. Epub 2008 Dec 11.

Long-term results of symptomatic fibroids treated with uterine artery embolization: in conjunction with MR evaluation.

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OBJECTIVE: The aim of the present study is to determine long-term clinical efficacy of uterine fibroid embolization (UFE) for symptomatic fibroids in conjunction with MR evaluation. MATERIALS AND METHODS: Sixteen patients with a follow-up period of 4 years or longer were analyzed retrospectively. Ages ranged from 27 to 45 (mean 39.5) years. Mean follow-up periods were 5.8 years (range: 4.1-6.9 years). The symptom changes, in terms of menorrhagia and dysmenorrhea and bulk-related symptoms, were assessed. The primary embolic agent was polyvinyl alcohol particle (250-710microm). All patients underwent preprocedural and long-term follow up MR imaging. Uterine volumes were calculated using MRI. RESULTS: Symptom improvements were reported for menorrhagia (8/9, 88.9%), dysmenorrhea (5/5, 100%), and bulk-related symptoms (7/9, 77.8%) at long-term follow up. Two patients (12.5%) had symptom recurrences at long-term follow-up. Tumor regrowth from incomplete infarction was a cause of recurrence in one patient and newly developed leiomyomas in the other one. One patient underwent hysterectomy because endometriosis developed 4 years after UFE. Of the 14 necrotic myomas on short-term follow up MR after UFE, eight (57.1%) demonstrated maintaining necrosis with further shrinkage and six (42.9%) were no longer visualized on long-term follow up MR images. Overall, the mean volume reduction rates of the predominant fibroid and uterus were 80.5%, 36.7% at long-term follow up, respectively. CONCLUSION: UFE is an effective treatment for symptomatic fibroids with an acceptable long-term success rate. Long-term MR imaging after UFE revealed persistent necrotic fibroid, non-visualization of fibroids and tumor regrowth when incompletely infarcted. Copyright (c) 2008 Elsevier Ireland Ltd.

PMID: 19084365 [PubMed - indexed for MEDLINE]

181. Fertil Steril. 2009 Feb;91(2):656-7; author reply 657. Epub 2008 Dec 11.

Value of prophylactic intraoperative uterine artery embolization in abnormal placentation.

Palacios-Jaraquemada JM.

Comment on:
Fertil Steril. 2009 May;91(5):1951-5.

PMID: 19084223 [PubMed - indexed for MEDLINE]

182. J Vasc Interv Radiol. 2009 Feb;20(2):279-81. Epub 2008 Dec 10.

Persistent secondary postpartum hemorrhage after uterine artery embolization.

Biko DM, Spanier JF, Nagamine M, Dwyer-Joyce L, Ball DS.

PMID: 19081738 [PubMed - indexed for MEDLINE]

183. Zhonghua Fu Chan Ke Za Zhi. 2008 Jul;43(7):506-9.

[Clinical analysis of 47 cases of placenta accreta in the second and third trimesters]

[Article in Chinese]

Zhang C, Liu XY, Fan GS, Yang JQ, Liu JT, Bian XM.

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OBJECTIVE: To explore the clinical characters, diagnosis and treatment methods of placenta accreta. METHODS: A retrospective analysis was made of 47 cases of placenta accreta admitted during May 1997 to May 2007 into Peking Union Medical College Hospital. They included 17 cases in the second trimester and 30 cases in the third. RESULTS: Among all the patients, the incidence of placenta accreta was 0.262% (47/17 918). Most of these cases (81%, 38/47) experienced a uterine procedure. 30% (14/47) of the cases were found with placenta previa and 11% (5/47) with myoma in the current pregnancy. 11% (5/47) of all the cases suffered

postpartum hemorrhage. In the 17 cases in the second trimester, 12 were diagnosed
by ultrasonography and 5 by clinical evidence. While in the 30 cases in the third trimester, 8 were diagnosed by biopsy, 2 by ultrasonography, and 20 by clinical evidence. 45 cases were cured by conservative treatment, which included dilatation and curettage, uterine artery embolization (UAE) with or without methotrexate (MTX), tamping B-lynch suture, singly with MTX, and mifepristone. Only 2 cases received cesarean hysterectomy. CONCLUSIONS: The incidence of placenta accreta seems on the rise. The incidence in the second trimester is higher than that in the third. In the second trimester, most cases can be diagnosed by ultrasonography after labor, and presently UAE is the best conservative management. While in the third trimester clinical evidence is the most frequent diagnostic approach. A majority of the cases could be cured by conservative therapies, which help them avoid a hysterectomy.

PMID: 19080513 [PubMed - in process]

184. Hong Kong Med J. 2008 Dec;14(6):479-84.

Conservative management of placenta praevia with accreta.

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It has been advocated that placenta accreta/percreta should be managed conservatively to avoid massive pelvic bleeding and preserve fertility. Diagnosis of this condition with high-resolution imaging investigations performed during the antenatal period facilitates discussion of management plans with other clinical disciplines (eg interventional radiologists), the patient, and her family. Three cases of placenta praevia with accreta are presented. The three cases were managed by leaving the placenta in-utero after caesarean section, using uterine arterial embolisation to control postpartum haemorrhage only when needed. In all these cases, we succeeded in conserving the uterus without major complications. With improved imaging techniques, accurate antenatal diagnosis of placenta praevia with accreta is now possible. This new approach to conservative management can be considered in order to not only conserve the uterus but also to avoid uncontrolled pelvic haemorrhaging.

PMID: 19060348 [PubMed - indexed for MEDLINE]

185. JAMA. 2009 Jan 7;301(1):82-93. Epub 2008 Dec 2.

A 41-year-old woman with menorrhagia, anemia, and fibroids: review of treatment of uterine fibroids.

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Uterine fibroids are common tumors that can cause heavy menstrual bleeding, pelvic pressure symptoms, and reproductive disorders. The incidence of fibroids peaks in the fifth decade of age and they are more common in African American women. Often, fibroids are asymptomatic and require no treatment. However, the case of Ms P, a 41-year-old woman with recurrent uterine fibroids, menorrhagia, anemia, and fatigue who wishes to retain fertility, illustrates the symptoms that require treatment. Evaluation usually begins with a pelvic examination and an ultrasound to determine both the size and location of the fibroids within the uterus. Standard treatment of symptomatic fibroids is surgical removal by myomectomy or hysterectomy, depending in part on the desire for future fertility; new treatment options include uterine artery embolization via interventional radiologic techniques as well as various medical interventions. Several new therapies show promise but are still experimental at this time. The evidence for treatment options for Ms P and symptomatic patients with fibroids in general is discussed.

PMID: 19050179 [PubMed - indexed for MEDLINE]

186. Abdom Imaging. 2010 Feb;35(1):118-28. Epub 2008 Dec 2.

Spectrum of imaging findings on MRI and CT after uterine artery embolization.

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Uterine artery embolization (UAE) is an effective treatment for symptomatic uterine fibroids. Magnetic resonance (MR) imaging is typically employed to evaluate the uterus following UAE for fibroid infarction, size, location change, persistent enhancement, changes in adenomyosis, and uterine necrosis. Variable pattern of calcification on computed tomography (CT) can differentiate embolic particles and fibroid involution. CT following UAE may be requested because of acute pelvic pain or chest discomfort or pyrexia and/or for complications that may require treatment in acute phase. Visualization of gas in uterus and uterine vessels following UAE is an expected finding that should not be misinterpreted as a sign of infection. The MRI and CT appearances vary depending upon the time interval after UAE and success of the procedure. Radiologists should be familiar with the range of post-UAE appearances on MRI and CT to better aid clinicians in correct diagnosis and treatment. The main purpose of this pictorial review is to identify the spectrum of findings on MRI and CT performed after UAE, to

illustrate UAE-associated common and uncommon MRI and CT appearances and discuss post-UAE complications that require urgent medical or surgical intervention.

PMID: 19048334 [PubMed - indexed for MEDLINE]

187. Fertil Steril. 2008 Nov;90(5 Suppl):S125-30.

Myomas and reproductive function.

Practice Committee of American Society for Reproductive Medicine in collaboration with Society of Reproductive Surgeons.

The purpose of this Educational Bulletin is to examine the relationship between myomas and reproductive function and to review current methods for their management.

PMID: 19007608 [PubMed - indexed for MEDLINE]

188. BJOG. 2009 Jan;116(1):55-61. Epub 2008 Nov 11.

Complications and failure of uterine artery embolisation for intractable postpartum haemorrhage.

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Comment in:
- **BJOG. 2009 Aug;116(9):1278-9.**
- **BJOG. 2009 Aug;116(9):1275; author reply 1276.**
- **BJOG. 2009 May;116(6):863.**
- **BJOG. 2009 Aug;116(9):1276-7; author reply 1277-8.**

OBJECTIVE: Primary postpartum haemorrhage (PPH) is a major cause of maternal morbidity and mortality around the world. Most patients can be managed conservatively, but patients with intractable bleeding require more aggressive treatment. In these cases uterine artery embolisation (UAE) has proven to be a useful tool to control PPH. The reported success rate of UAE is over 90% with only minor complications. In this case series we studied the effectiveness and complications of UAE. DESIGN: Retrospective analysis of a case series. SETTING: Case series in a large peripheral hospital in the Netherlands. SAMPLE: Eleven patients who were treated with UAE for intractable PPH from November 2004 to February 2008. METHODS: In this paper we review the results of all patients treated with UAE for intractable PPH in our hospital and focus on the two cases

with adverse outcomes. MAIN OUTCOME MEASURES: Effectiveness, causes of failure of
UAE, complications. RESULTS: Nine out of eleven patients were treated successfully with UAE. One patient needed an emergency hysterectomy for intractable bleeding. In the aftermath she developed a vesicovaginal fistula (VVF). Another patient suffered a major thrombo-embolic event of the right leg, for which she underwent embolectomies and despite fasciotomy a necrotectomy. CONCLUSIONS: UAE is a valuable tool in managing major PPH and in most cases it can replace surgery and thus prevent sacrification of the uterus. However, due to blood supply of the uterus by one of the ovarian or aberrant arteries, UAE might fail to control the bleeding. In addition, serious complications such as a thrombo-embolic event or VVF may occur. We hereby present a case of migration of
an embolus from the site of re-embolisation into the femoral artery requiring immediate intervention to prevent the loss of the lower leg. This complication demonstrates that gelatine sponge particles could migrate from the internal iliac artery into the external iliac artery.

PMID: 19016685 [PubMed - indexed for MEDLINE]

189. Cardiovasc Intervent Radiol. 2009 Mar;32(2):284-8. Epub 2008 Nov 15.

MR venography of deep veins: changes with uterine fibroid embolization.

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Deep veins (DVs) can be compressed by a uterus enlarged with fibroids. The purpose of this study was to assess the degree of luminal narrowing of DVs caused by a myomatous uterus, and the change in DV narrowing in women with symptomatic
fibroids after embolization using time-of-flight (TOF)-magnetic resonance venography (MRV). Twenty-nine consecutive women with symptomatic uterine fibroids
underwent TOF-MRV and pelvic MRI before and 4 months after embolization. Based on
the TOF-MRV, we evaluated the luminal narrowing of three DVs, including the inferior vena cava, and the bilateral common and external iliac veins, and divided the findings into three grades. The scores for each DV were added for each patient (lowest, 0; highest, 6). DV scores and symptom severity (SS) scores were compared between the baseline and 4 months after embolization using the paired t-test. The relationship between DV scores and uterine volume was investigated using Pearson's test. DV scores decreased significantly, from 1.52 +/- 1.70 at baseline to 0.93 +/- 1.56 at 4 months after embolization (p = 0.004). The uterine volume decreased from 948 +/- 647 mL at baseline to 617 +/- 417 mL at 4 months after embolization (p < 0.001). DV score correlated with uterine volume

(r = 0.856, p < 0.001). SS scores decreased from 54.5 +/- 14.6 at baseline to 26.8 +/- 15.4 at 4 months after embolization (p < 0.001). In conclusion, the degree of luminal narrowing of DVs caused by a uterus with fibroids is correlated with the uterine volume. Uterine artery embolization may induce an improvement of
luminal narrowing of DVs due to a reduction of the myomatous uterus volume.

PMID: 19011939 [PubMed - indexed for MEDLINE]

190. J Obstet Gynaecol. 2008 Aug;28(6):573-9.

Transcatheter pelvic arterial embolisation for control of obstetric and gynaecological haemorrhage.

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We present a 5-year experience of pelvic arterial embolisation at two centres in the UK, and emphasise the role of interventional radiology in the treatment of obstetric and gynaecological haemorrhage. A total of 31 women underwent pelvic embolization:19 patients had complete medical records, and of these, two women had antepartum haemorrhage, 12 women had primary postpartum haemorrhage (PPH),
four women had secondary PPH and one woman had a haemorrhage following termination of pregnancy (TOP). The source of the haemorrhage was only identified in four women (21.1%). All patients underwent selective embolisation of the uterine artery or anterior divisional branch of the internal iliac artery with successful haemorrhage control in 17 patients (89.4%) and no immediate complications. Haemorrhage continued despite embolisation in two patients; both proceeded to surgery. Selective pelvic embolisation is a safe and effective treatment for acute obstetric or gynaecological haemorrhage and should be part of the management algorithm for PPH.

PMID: 19003648 [PubMed - indexed for MEDLINE]

191. Am J Obstet Gynecol. 2008 Dec;199(6):671.e1-6. Epub 2008 Nov 4.

Incidence and risk factors for surgical intervention after uterine artery embolization.

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OBJECTIVE: To determine the incidence and risk factors for surgical intervention after uterine artery embolization for symptomatic uterine fibroids. STUDY DESIGN:

Electronic medical records of all patients who underwent uterine artery embolization for symptomatic uterine leiomyomata were reviewed. Logistic regression was used to identify independent risk factors for any surgical intervention and for hysterectomy alone after uterine artery embolization. RESULTS: Uterine artery embolization was performed in 454 patients during the study period, with a median follow-up time (range) of 14 (0-128) months. Overall, 99 patients (22%) underwent any surgical intervention after uterine artery embolization in the operating room. Risk factors for any surgical intervention included younger age (P < .003), bleeding as an indication for uterine artery embolization (P < .01), presence of significant collateral ovarian vessel contribution to the uterus (P < .01), or use of 355-500 mum particles (P < .008). CONCLUSION: Patients undergoing uterine artery embolization have a 22% risk for requiring additional surgical intervention, but overall uterine artery embolization is an effective minimally invasive option.

PMID: 18986639 [PubMed - indexed for MEDLINE]

192. J Minim Invasive Gynecol. 2009 Jan-Feb;16(1):68-71. Epub 2008 Oct 30.

An evaluation of ureteral flow after doppler-guided uterine artery occlusion device placement during organ-preserving gynecologic procedures.

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We studied the use of color Doppler ultrasonography for ureteral patency after placement of a transvaginal Doppler-guided uterine artery occlusion device before organ-preserving surgery for leiomyomata uteri. Our case series involved 7 patients in whom ureteral flow was assessed using color Doppler sonography before
and after placement of a Doppler-guided uterine artery occlusion device. Bilateral ureteral flow was assessed at the trigone using a grading system. Furosemide and additional intravenous hydration were administered if no flow was observed. Color Doppler ultrasonography can quantify ureteral flow before and after Doppler-guided uterine artery occlusion device placement during organ-preserving gynecologic procedures, facilitating safe placement and repositioning of the transvaginal device when necessary.

PMID: 18976967 [PubMed - indexed for MEDLINE]

193. Int Angiol. 2008 Oct;27(5):442-3.

Blind on table internal iliac artery embolization in severe post partum hemorrhage: a case report.

Koutsias S, Lialios G, Kouritas V, Sourlas D, Giannoukas A, Messinis I.

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**A case of a woman that had been transferred to our hospital in hemorrhagic shock secondary to post partum hemorrhage due to uterine atony, automatic abortion and
extended vaginal lacerations has been described. Subtotal hysterectomy had already been performed but failed to control bleeding. The authors performed on table blind embolisation of internal iliac arteries in order to control
hemorrhage as a life-saving procedure that was successful.**

PMID: 18974710 [PubMed - indexed for MEDLINE]

194. J Minim Invasive Gynecol. 2008 Nov-Dec;15(6):758-60.

Exocervical pregnancy in a patient with intrauterine device: a case report.

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Cervical pregnancy (CP) is a rare and life-threatening ectopic pregnancy characterized by implantation of the fertilized ovum into the cervix, whereas exocervical pregnancy is an extremely rare CP with implantation of the fertilized ovum on the exocervix. Possible causative factors of CP such as tubal dysfunction, impaired sperm motility, previous uterine surgery, or the use of intrauterine device were not clearly associated with the development of CP until now. Diagnosis of CP is usually established by ultrasonography and by beta-human chorionic gonadotropin serum tests, but definitive diagnosis is by histologic examination. Current treatment strategies of CP, which were described in some reports, involve: medical treatment with methotrexate, surgical removal of ectopic trophoblastic tissues, cervical cerclage and vaginal packing, ligation of descending branches of uterine arteries or hypogastric arteries, and unilateral internal iliac artery embolization. We report a case of exocervical pregnancy contemporary to intrauterine device normally inserted, diagnosed by colposcopy, beta-human chorionic gonadotropin, and histology, and treated by a local excision without using methotrexate chemotherapy.

PMID: 18971144 [PubMed - indexed for MEDLINE]

195. J Vasc Interv Radiol. 2008 Dec;19(12):1733-9. Epub 2008 Oct 23.

Do microspheres with narrow or standard size distributions localize differently in vasculature? An experimental study in sheep kidney and uterus.

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PURPOSE: To compare standard embolization microspheres (SMS) with microspheres of very narrow size distribution in terms of physical properties and relative distribution within sheep kidney and uterine artery models of embolization. MATERIALS AND METHODS: Standard microspheres (SMS; 500-700 mum and 700-900 mum) were compared with narrow microspheres (NMS) of the same material made with a microfluidic method that produced a much narrower size distribution (600 mum and 800 mum). Characterization of both microspheres was performed in vitro (ie, bead size, water content, and compressive modulus). In the sheep model of kidney and uterus embolization, histopathologic analysis was performed to determine the average vessel size occluded, the number of microspheres per vessel, and the deformation in vivo, with a focus on the localization of the products within the different vascular zones of the organ tissues. RESULTS: In vitro testing showed the physical properties of NMS to be similar to those of SMS. SMS and NMS also possessed the same degree of deformation in vivo. In both embolization models, there were no major differences in the localization of SMS compared with NMS of equivalent mean bead diameters. CONCLUSIONS: Compared with SMS with a normal distribution in size range, NMS with a narrow size distribution did not exhibit a very different distribution within the vasculature of the sheep kidney or uterus.

PMID: 18951045 [PubMed - indexed for MEDLINE]

196. Fertil Steril. 2009 Oct;92(4):1487-91. Epub 2008 Oct 18.

Early diagnosis and endovascular management of uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy.

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OBJECTIVE: To describe the diagnosis and management of uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy. DESIGN: Case reports. SETTING: Departments of Obstetrics and Gynecology and Radiology at General Hospital. PATIENT(S): A 32-year-old woman and a 41-year-old woman each developed uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy. INTERVENTION(S): Uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy was diagnosed on ultrasonography, computerized tomographic angiography, and digital subtraction angiography, and treated by transcatheter

arterial embolization. MAIN OUTCOME MEASURE(S): Uterine conservation. RESULT(S):
Fertility preservation was achieved in both of these women who developed uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy. CONCLUSION(S): Early diagnosis and endovascular management of uterine artery pseudoaneurysm after myomectomy are important to prevent life-threatening hemorrhage caused by
pseudoaneurysmal rupture.

PMID: 18930207 [PubMed - indexed for MEDLINE]

197. Ai Zheng. 2008 Oct;27(10):1094-9.

[Amenorrhea after uterine fibroid embolization: a report of six cases]

[Article in Chinese]

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BACKGROUND & OBJECTIVE: Uterine fibroid embolization is an effective treatment alternative for uterine fibroids. However, amenorrhea after uterine fibroid embolization occurs in some patients. This study was to investigate the causes of amenorrhea after uterine fibroid embolization. METHODS: Bilateral transcatheter uterine artery embolization was performed in 487 patients with uterine fibroids. Pingyangmycin (6-16 mg) dispersed in lipiodol (8-15 mL) was used as embolic agent in 104 patients; polyvinyl alcohol (80-150 mg) was used in 158 patients; absorbable gelatin sponge (1-2 g) was used in 225 patients. All patients had been followed up for 1 year to observe amenorrhea occurrence. RESULTS: Uterine fibroid embolization was effective in 483 (98.97%) patients, but failed in five (1.03%) patients. Amenorrhea after embolization was found in six (1.23%) patients. Of the six patients, three were in lipiodol plus pingyangmycin group with lipiodol deposited in the ovarian region, one was in polyvinyl alcohol group and the other two were in absorbable gelatin group. Except for one patient in absorbable gelatin group, the rest five patients had estradiol (E2) decreasing and follicle stimulating hormone (FSH) rising due to ovarian function failure. In absorbable gelatin group, multiple ultrasonography examinations revealed that the endometrium was only 3 mm thick in one amenorrhea patient who had normal levels
of E2 and FSH, and hysteroscope examination confirmed endometrial atrophy in this
patient. CONCLUSIONS: Routine embolic agents have the chance in inducing amenorrhea after uterine fibroid embolization. The occurrence rate of amenorrhea after uterine fibroid embolization is about 1.23%. Ovarian function failure and endometrial atrophy are the most related factors.

PMID: 18851791 [PubMed - in process]

198. Aust N Z J Obstet Gynaecol. 2008 Aug;48(4):360-8.

What is the place of uterine artery embolisation in the management of symptomatic
uterine fibroids?

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BACKGROUND: Uterine artery embolisation (UAE) is an alternative to surgical management for symptomatic uterine fibroids and is increasingly performed in Australia. AIMS: To review the evidence for the efficacy, safety and acceptability of UAE and to evaluate the place of UAE in Australia. METHODS: The study used literature review. RESULTS: UAE compares favourably to hysterectomy and myomectomy in terms of short-term symptom relief, cost, patient satisfaction and complications. There is a paucity of evidence regarding fertility and pregnancy after UAE. A significant minority of women require re-intervention following UAE. CONCLUSIONS: UAE should be considered as an alternative to surgical management of symptomatic uterine fibroids in carefully selected and informed patients.

PMID: 18837841 [PubMed - indexed for MEDLINE]

199. J Vasc Interv Radiol. 2008 Nov;19(11):1569-75. Epub 2008 Sep 27.

Three-dimensional reconstructed contrast-enhanced MR angiography for internal iliac artery branch visualization before uterine artery embolization.

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PURPOSE: To evaluate the feasibility of three-dimensional (3D) reconstructed contrast-enhanced (CE) magnetic resonance (MR) angiography in mapping the pelvic
arteries in women before uterine artery embolization (UAE). MATERIALS AND METHODS: CE MR angiography studies before UAE in 49 women (age range, 38-57 years; mean, 47.04 y +/- 4.7 [SD]) who underwent UAE for uterine leiomyomas

between February 2005 and February 2007 were retrospectively evaluated by two radiologists in consensus. Studies were performed on a 1.5-T MR unit with a 3D fast low-angle shot sequence in the coronal direction. Reconstruction was performed with 3D computed tomographic angiography reconstruction software. RESULTS: In the current study, 98 internal iliac arteries (IIAs) from 49 women were studied. The superior and inferior gluteal arteries were visualized in all cases (N = 98; 100%), the lateral sacral artery in 86 cases (88%), the iliolumbar artery in 84 (86%), the obturator artery in 81 (83%), the internal pudendal artery in 96 (98%), and the uterine artery in 95 (97%). The superior vesical and middle rectal arteries were seen in 21 (21%) and 11 (11%) cases, respectively. The mean length of the uterine artery was 12.56 cm (range, 4.6-22.2 cm), and it showed the longest traceable length among all branches. The uterine artery showed
five patterns of origin. The superior gluteal artery showed constant origin from the posterior division of the IIA, whereas the iliolumbar and obturator arteries showed the most variations in origin. CONCLUSIONS: Three-dimensional reconstructed CE MR angiography can detect most branches of the IIA in addition to their point of origin. Therefore, it can be used as a mapping tool of the pelvic arterial tree before UAE.

PMID: 18824376 [PubMed - indexed for MEDLINE]

200. Eur J Contracept Reprod Health Care. 2008 Sep;13(3):313-9.

Cervical pregnancy: a case series and a review of current clinical practice.

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Five consecutive cases of cervical pregnancy (CP) are presented. In four cases, the diagnosis was made at routine check-ups and these were all treated conservatively. In the fifth case, an erroneous diagnosis of inevitable abortion was made, in a patient presenting with profuse vaginal bleeding. Persistent bleeding following curettage required an emergency hysterectomy, after failure of compressive methods. From the four cases treated conservatively, three received standard methotrexate i.m. (MTX) in combination with bilateral uterine artery embolization (UAE). In one case MTX was followed by intraamniotic puncture and instillation of KCl due to persistent embryonic heartbeat. A spontaneous evacuation of the cervical pregnancy occurred in all patients treated conservatively. We postulate that the preventive use of uterine artery embolization in combination with standard MTX treatment could contribute to reduce the risk of excessive bleeding and facilitate spontaneous expulsion. Possible detrimental effects of the treatment on subsequent reproductive capacities and obstetrical outcome are also pointed out. The diagnostic methods and therapeutic approaches are discussed and the literature is reviewed. With referral to the first case of our series, which required an emergency

hysterectomy, we want to stress the importance of an early diagnosis for a correct management of this condition.

PMID: 18821465 [PubMed - indexed for MEDLINE]

201. J Vasc Interv Radiol. 2008 Nov;19(11):1537-42. Epub 2008 Sep 25.

Pelvic pain after uterine artery embolization: a prospective randomized study of polyvinyl alcohol particles mixed with ketoprofen versus bland polyvinyl alcohol particles.

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PURPOSE: To evaluate whether pelvic pain following uterine artery embolization (UAE) can be decreased by using ketoprofen mixed with polyvinyl alcohol (PVA). MATERIALS AND METHODS: A randomized prospective study was performed in 80 patients (age range, 25-52 years; mean age, 41 years) undergoing UAE with PVA between March and August 2006. Forty patients received PVA particles mixed with ketoprofen, and 40 received bland PVA particles. Fifty-three patients who were asymptomatic 8 hours after embolization were discharged. Pain scores were compared during the first 8 hours after the procedure, at discharge, and the following day. The results were evaluated after 6 months. RESULTS: Eight hours after UAE, 13 of the 40 patients in the group without ketoprofen (32%) reported severe or very severe pain, whereas none of the patients in the group receiving ketoprofen reported severe or very severe pain, as determined with a numeric pain score scale (P = .0015). Nineteen of the 40 patients without ketoprofen (48%) were treated as inpatients, but only 10 in the ketoprofen group (25%) were treated as inpatients. The differences in the clinical outcome, as well in the uterus and fibroid sizes at discharge and at 6 months, were not statistically significant (P > .05). CONCLUSIONS: The use of PVA particles mixed with ketoprofen resulted in a statistically significant reduction in pelvic pain during the first 8 hours after UAE as compared to the use of PVA alone. However, no significant differences in pain scores were seen after 8 hours. These findings may lead to a reduction in inpatient management for UAE; however, further study of this approach is warranted.

PMID: 18818095 [PubMed - indexed for MEDLINE]

202. Cardiovasc Intervent Radiol. 2008 Nov-Dec;31(6):1100-7. Epub 2008 Sep 17.

Pain levels within 24 hours after UFE: a comparison of morphine and fentanyl patient-controlled analgesia.

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The purpose of this study was to assess the presence and severity of pain levels during 24 h after uterine fibroid embolization (UFE) for symptomatic leiomyomata and compare the effectiveness and adverse effects of morphine patient-controlled analgesia (PCA) versus fentanyl PCA. We carried out a prospective, nonrandomized study of 200 consecutive women who received UFE and morphine or fentanyl PCA after UFE. Pain perception levels were obtained on a 0-10 scale for the 24-h period after UFE. Linear regression methods were used to determine pain trends and differences in pain trends between two groups and the association between pain scores and patient covariates. One hundred eighty-five patients (92.5%) reported greater-than-baseline pain after UFE, and 198 patients (99%) required IV opioid PCA. One hundred thirty-six patients (68.0%) developed nausea during the 24-h period. Seventy-two patients (36%) received morphine PCA and 128 (64%) received fentanyl PCA, without demographic differences. The mean dose of morphine
used was 33.8 +/- 26.7 mg, while the mean dose of fentanyl was 698.7 +/- 537.4 lg. Using this regimen, patients who received morphine PCA had significantly lower pain levels than those who received fentanyl PCA (p \ 0.0001). We conclude that patients develop pain requiring IV opioid PCA within 24 h after UFE. Morphine PCA is more effective in reducing post-uterine artery embolization pain than fentanyl PCA. Nausea is a significant adverse effect from opioid PCA.

PMID: 18797963 [PubMed - indexed for MEDLINE]

203. Arch Gynecol Obstet. 2009 May;279(5):721-4. Epub 2008 Sep 13.

Uterine artery embolization as an adjunctive measure to decrease blood loss prior to evacuating a cervical pregnancy.

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BACKGROUND: Cervical ectopic pregnancy accounts for less than 1% of all ectopic gestations. The most effective, fertility sparing treatment of a cervical ectopic pregnancy is still unclear due to limited reported experience. CASE: The diagnosis and management of a 32-year-old with a cervical ectopic pregnancy after in vitro fertilization and embryo transfer is described. The patient had multiple risk factors, including Asherman's syndrome following an abdominal myomectomy and
three uterine curettages, for a cervical ectopic pregnancy. Due to her desire for future childbearing, conservative management strategies were chosen. This patient was successfully treated with uterine artery embolization followed by immediate

dilation and evacuation of the pregnancy. CONCLUSIONS: This report demonstrates that UAE followed by immediate evacuation of a cervical ectopic pregnancy effectively terminates a viable gestation with minimal blood loss while maintaining fertility capacity.

PMID: 18791728 [PubMed - indexed for MEDLINE]

204. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22(6):1119-32. Epub 2008 Sep 14.

Uterine artery embolization for postpartum hemorrhage.

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A new angiographic approach for the treatment of postpartum hemorrhage has emerged over the last 30 years. Uterine arterial embolization under fluoroscopic guidance is effective but requires that experienced personnel and facilities for interventional vascular radiology are available at the hospital or close by. Interventional radiology can be used as an elective, prophylactic measure in a known or suspected case of placenta accreta for which extirpative management is planned. There are no randomized controlled trials, but several systematic reviews have reported high rates of success in hemostatic control of the pelvis. Embolization was also effective when utilized early as an adjunct in the conservative treatment of placenta accreta, leaving the entire placenta or just the adherent portion in situ as an alternative to radical management. In patients who are hemorrhaging, the initial intervention is resuscitation and stabilization. After vaginal delivery, massage, uterotonic drugs, cavity and soft tissue examination, bimanual compression, and tamponade of the uterus should be tried first. Arterial embolization can be performed before laparotomy if the woman is stable; it can also be performed during a cesarean section procedure, after compressive sutures, and if stepwise uterine devascularization fails.

PMID: 18790676 [PubMed - indexed for MEDLINE]

205. Best Pract Res Clin Obstet Gynaecol. 2008 Dec;22(6):1089-102. Epub 2008 Sep 14.

Surgical aspects of postpartum haemorrhage.

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Postpartum haemorrhage (PPH) refers to excessive bleeding from the genital tract after birth. Failure of medical treatment to control bleeding would necessitate surgical measures to arrest haemorrhage, to save lives. Algorithms such as HAEMOSTASIS have been proposed as aids to the systematic and stepwise management
of primary PPH. Clinicians need to be aware of various surgical techniques that could be employed to arrest haemorrhage, the appropriateness of a chosen surgical intervention to the specific clinical situation and the timing of instituting the intervention. Surgical measures to arrest PPH include repair of genital tract trauma, evacuation of retained products of conception, uterine balloon tamponade,
exploratory laparotomy and uterine compression sutures, systematic pelvic devascularization, uterine artery embolization, subtotal and total abdominal hysterectomy. Consideration should also be given to the experience and the skill of the operator, as well as to the familiarity with the chosen surgical procedure.

PMID: 18790675 [PubMed - indexed for MEDLINE]

206. Arch Gynecol Obstet. 2009 May;279(5):713-5. Epub 2008 Sep 10.

Successful use of uterine artery embolisation to treat placenta increta in the first trimester.

Soleymani Majd H, Srikantha M, Majumdar S, B-Lynch C, Choji K, Canthaboo M, Ismail L.

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A 39-year-old Asian woman was admitted to hospital with persistent, heavy vaginal bleeding following an uncomplicated first trimester surgical termination of pregnancy (STOP). Her heavy bleeding continued after the STOP and she had recurrent hospital admissions which included two procedures to evacuate presumed
retained products of conception. She eventually had a MRI scan performed which suggested placental tissue in the fundal region, extended into the uterine wall. The findings were consistent with placenta increta and the patient had a bilateral uterine artery embolisation (UAE), following which her symptoms rapidly subsided. We describe the first successfully managed case of persistent vaginal bleeding secondary to abnormal placentation. It would seem to substantiate the efficacy of UAE as a therapeutic modality for the conservative management of invasive placentation in the first trimester of pregnancy.

PMID: 18781314 [PubMed - indexed for MEDLINE]

207. Br J Radiol. 2008 Sep;81(969):e221-4.

MRI detection of a female pelvic arteriovenous fistula after hysterectomy: treatment with superselective coil embolisation.

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We present a rare case of acquired pelvic arteriovenous fistula of the uterine vessels in a woman with a remote history of hysterectomy who presented with chronic pelvic and left limb pain. It was successfully treated by coil embolisation of the left uterine artery. The MRI and angiographic features are described, together with the current management and a review of literature.

PMID: 18769008 [PubMed - indexed for MEDLINE]

208. Int J Gynaecol Obstet. 2008 Dec;103(3):217-21. Epub 2008 Sep 2.

Amenorrhea and resumption of menstruation after uterine artery embolization for fibroids.

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OBJECTIVES: To determine whether women will experience permanent amenorrhea following uterine artery embolization for fibroids, and whether rates of onset differ in the long term according to age at the time of the procedure. METHODS: Over 77 months, 211 consecutive eligible women were grouped by age (group A, <40 years [n=39]; group B, 40-44 years [n=98]; and group C, > or =45 years [n=74]) and the cumulative rates of onset of permanent amenorrhea were compared between the groups. RESULTS: The likelihood of incurring permanent amenorrhea was significantly higher in group C. The cumulative rates in groups A, B, and C were 0%, 1.4%, and 19.7% at 3 years and 0%, 11.2%, and 40.4% at 6 years. CONCLUSION: The rates of onset of permanent amenorrhea changed over time and differed according to age at the time of the procedure, with little likelihood of permanent amenorrhea at 6 years for women younger than 40 years at the time of the procedure.

PMID: 18768179 [PubMed - indexed for MEDLINE]

209. Eur Radiol. 2009 Feb;19(2):481-7. Epub 2008 Sep 3.

Menses recovery and fertility after artery embolization for PPH: a single-center retrospective observational study.

Gaia G, Chabrot P, Cassagnes L, Calcagno A, Gallot D, Botchorishvili R, Canis M, Mage G, Boyer L.

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To evaluate long-term effects of arterial embolization (AE) for postpartum hemorrhage (PPH) on menses recovery and subsequent pregnancies. One hundred thirteen consecutive patients, recruited from 1999 to 2006, who had undergone AE for severe PPH were evaluated in a retrospective monocentric study. As embolization agents, pledgets of absorbable gelatine sponge (Curaspon) were used in 106 cases, Curaspon powder in 3 cases, and inert microparticles in 4 cases. In 111/113 cases (98.1%), AE was successful in controlling PPH. In two cases (1.7%), the AE was unsuccessful and required a total abdominal postembolization hysterectomy. Concerning fertility, 6 patients were lost to follow-up and 107 were available. The average time to follow-up was 46.4+/-21.8 months. Of the 107 patients, 99 had recovery of menses (92.5%). Of the 107 (61%) patients, 66 reported regular menstruation with normal delay after the delivery. Thirty-three patients (31%) reported subjective changes in the frequency and amount of menses.
Six patients (5.6%) had documented amenorrhea after AE and developed diffuse uterine synechiae at the hysteroscopic investigation. Out of 29 patients who desired and attempted conception, 18 patients (62%) reported a total of 19 pregnancies at the end of the follow-up. One miscarriage at 12 weeks of gestation was reported. The 18 pregnancies at term were uneventful until delivery, but 3 cases of further PPH (15%) occurred due to abnormal placentation requiring a further AE. All full-term newborns were healthy. AE is a feasible, safe, and reproducible technique to control PPH, allowing a very high resumption of menses and subsequent pregnancies; in these cases, considering the elevated incidence of further PPH due to abnormal placentation, an accurate ultrasonographic monitoring during pregnancy seems appropriate.

PMID: 18766350 [PubMed - indexed for MEDLINE]

210. Ultrasound Obstet Gynecol. 2008 Oct;32(5):711-3.

Ultrasonographic visualization of balloon placement for uterine tamponade in massive primary postpartum hemorrhage.

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This case report is the first documentation of ultrasonographic confirmation of positioning of a Sengstaken-Blakemore balloon catheter (SBEC) in the management of massive postpartum hemorrhage. The sonongraphic position, while incorrect according to conventional use of uterine balloon catheters, raises the possibility of an alternative mechanism of action of the balloon: not uterine cavity tamponade but hydrostatic pressure directly around the uterine arteries, a mechanism akin to mechanical uterine artery embolization or ligation. If this hypothesis is correct, it not only elucidates how balloon tamponade works but also challenges current thinking on how postpartum hemorrhage should be managed effectively. Future studies are required to corroborate this hypothesis and we believe that sonographic confirmation of balloon catheter location should be an integral part of uterine balloon tamponade in women with massive primary postpartum hemorrhage.

PMID: 18729260 [PubMed - indexed for MEDLINE]

211. J Minim Invasive Gynecol. 2008 Sep-Oct;15(5):631-5.

Treatment of uterine myomas with transvaginal uterine artery occlusion: possibilities and limitations.

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The objective of this pilot study was to evaluate the feasibility of a transvaginal clamp prototype used for temporary uterine artery occlusion as a treatment for myomas. In particular, we aimed to evaluate technical aspects of successful occlusion with angiography and magnetic resonance imaging (MRI) and to evaluate possible ureter occlusion with pyelography. Ten premenopausal women aged 34 to 37 years with menorrhagia and myomas were treated with a temporary uterine artery occlusion for 6 hours. Five patients did not complete the clamping procedure because of unsuccessful clamping. While the clamp was in position, angiographic examination of the uterine arteries and pyelography were performed in 8 of the patients. The clamps occluded both uterine arteries in 4 patients and 1 side in another 2. Two procedures occluded the ureter unilaterally. MRI with contrast was done before, the day after, and 3 months after the procedure. Three of 5 patients who completed the clamp treatment had reduced or no contrast enhancement at MRI afterward. Clinical effects were obtained in 3 patients. Difficulties with application of the vaginal clamp were related to initial learning and size of the myomas. Our initial experience shows that the treatment

is feasible in some patients with symptomatic myomas. However, improvement of the technique and equipment is needed. Care with regard to the ureters is required during further studies aimed at evaluating this approach.

PMID: 18722975 [PubMed - indexed for MEDLINE]

212. Haemophilia. 2009 Jan;15(1):357-8. Epub 2008 Aug 21.

Uterine artery embolization: an approach to achieve haemostasis in post hysterectomy haemorrhages.

Agarwal U, Zaid RZ, Kadir RA.

PMID: 18721152 [PubMed - indexed for MEDLINE]

213. Fertil Steril. 2009 Aug;92(2):756-61. Epub 2008 Aug 9.

Sexual functioning and psychological well-being after uterine artery embolization in women with symptomatic uterine fibroids.

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OBJECTIVE: To assess the effects of uterine artery embolization (UAE) on psychological and sexual well-being 3 months after treatment. DESIGN: Prospective study. SETTING: Large teaching hospital in Tilburg, the Netherlands. PATIENT(S): 141 Premenopausal women with symptomatic uterine fibroids. INTERVENTION(S): UAE for symptomatic fibroids. MAIN OUTCOME MEASURE(S): Changes in scores on a questionnaire concerning sexual well-being (ranging from 0 to 32, a higher score indicating better functioning) and a questionnaire concerning psychological well-being (SCL-90, ranging from 0 to 360, a higher score indicating more emotional and somatic concerns). RESULT(S): The total score for sexual functioning showed a statistically significant increase from 20.3 to 22.7, 3 months after UAE, indicating that sexual functioning improved. Thirty-four percent and 37% of women reported an increase in sexual activity and desire. The percentage of women reporting sexual problems of lubrication, orgasm, or pain decreased 7%, 36%, and 14%, respectively. The total SCL-90 score showed a statistically significant decrease from 133 to 116, 3 months after UAE, indicating a decrease in emotional and somatic concerns. CONCLUSION(S): Sexual and psychological well-being improved significantly 3 months after UAE in women with symptomatic uterine fibroids. Sixty-eight percent had an increase in the total score for sexual functioning. Problems with sexual functioning were statistically significantly decreased.

PMID: 18692808 [PubMed - indexed for MEDLINE]

214. Fertil Steril. 2008 Nov;90(5):2007.e5-9. Epub 2008 Aug 9.

Unusual complication after uterine artery embolization and laparoscopic myomectomy in a woman wishing to preserve future fertility.

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OBJECTIVE: To report a case of uterine fistula arising after laparoscopic myomectomy after a uterine artery embolization. DESIGN: Case report. SETTING: A university hospital center. PATIENT(S): A 38-year-old woman with a uteroperitoneal fistula after laparoscopic myomectomy after a uterine artery embolization. INTERVENTION(S): Laparoscopic excision of the fistula and repair of the myometrial defect with laparoscopic suture. MAIN OUTCOME MEASURE(S): Not applicable. RESULT(S): Complete correction of the myometrial defect was observed after laparoscopic surgery. CONCLUSION(S): Uterine artery embolization before myomectomy may interfere with myometrial cicatrization and thus alter the repair.

PMID: 18692795 [PubMed - indexed for MEDLINE]

215. J Womens Health (Larchmt). 2008 Sep;17(7):1119-32.

What are the total costs of surgical treatment for uterine fibroids?

Carls GS, Lee DW, Ozminkowski RJ, Wang S, Gibson TB, Stewart E.

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OBJECTIVE: To investigate the direct and indirect costs of uterine fibroid (UF) surgery. METHODS: Data were obtained from the MarketScan Commercial Claims and
Encounters databases for 1999-2004. Our sample included 22,860 women with insurance coverage who were treated surgically for UF and 14,214 women who were
treated nonsurgically for UF. Medical care costs and missed workdays were divided into baseline (1 year prior to surgery) and postoperative (1 year after surgery) periods. For a subsample of women, we calculated average annual costs 3 years before and after their surgery. RESULTS: Of patients electing surgery, 85.9% underwent hysterectomy, 7.6% myomectomy, 4.9% endometrial ablation, and 1.6% uterine artery embolization (UAE). Women undergoing UAE incurred the highest medical care costs in the operative year ($16,430 unadjusted, $20,634 adjusted for confounders), followed by hysterectomy ($15,180 unadjusted, $17,390

adjusted), myomectomy ($14,726 unadjusted, $18,674 adjusted), and endometrial ablation ($12,096 unadjusted, $13,019 adjusted). Women treated nonsurgically incurred costs of $7,460 unadjusted and $8,257 adjusted during the year after they were diagnosed with UF. Three years after surgery, patients treated with hysterectomy had the lowest annual costs. Missed workdays in the year after surgery were high, resulting in significant losses to employers in the magnitude of $6,670-$25,229, depending on treatment, values assigned to missed workdays, and whether the analyses adjusted for confounders. CONCLUSIONS: UF surgical treatment costs were high. Absenteeism and disability were important components of the cost burden of UF treatment for women, their employers, and the healthcare system.

PMID: 18687032 [PubMed - indexed for MEDLINE]

216. Minim Invasive Ther Allied Technol. 2008;17(3):200-4.

Myoma necrosis following Gelfoam embolization of uterine myomata.

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The aim of this study was to assess the risk and clinical significance of purulent necrosis following Gelfoam uterine artery embolization in the minimally invasive management of uterine leiomyomata. This study compares the incidence of purulent necrosis in leiomyomata affecting women who underwent Gelfoam embolization with those who had embolization with traditional particles. From January 20 to May 26, 2005, 54 patients were embolized for symptomatic fibroids. Forty-three were embolized with traditional particles, 11 with Gelfoam alone. Of the Gelfoam group, four women suffered purulent necrosis of leiomyomata, whereas in the traditional particle group, only one patient experienced this complication (p = 0.005). The women in the Gelfoam group were generally younger than those in the particle group (p = 0.00014). The average gravida and parity of the Gelfoam group were less than for the particle group--(p = 0.221) and (p = 0.041), respectively. The total uterine volume was similar for both groups. Within the Gelfoam 50% shaded block group there was no significant difference in fertility, age, total uterine volume, largest fibroid size, or number of pledglets used (P > 0.05) when comparing women with and without purulent necrosis. The average time from embolization to onset of symptomatic purulent necrosis was 11 days. All four patients with purulent necrosis of leiomyomata were successfully treated with myomectomy (three abdominal, one vaginal). Notwithstanding the small numbers in the series, patients embolized with Gelfoam appear to be at higher risk for

development of post-embolization purulent necrosis of leiomyomata than patients who are embolized with traditional particles.

PMID: 18666018 [PubMed - indexed for MEDLINE]

217. Arch Gynecol Obstet. 2009 Feb;279(2):229-32. Epub 2008 Jul 30.

Embolization of uterine arteriovenous malformation for treatment of menorrhagia.

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BACKGROUND: Uterine arteriovenous malformations are rare but potentially life-threatening conditions that should be suspected in unexplained severe vaginal bleeding. CASE: A 28-year-old gravida 7, para 3 presented to the emergency department with heavy vaginal bleeding and passage of blood clots. In the emergency room, her hemoglobin dropped from 11.2 to 7.4 gm%. Transvaginal ultrasonographic scan showed a large vascular mass in the uterus measuring 2.6 cm in diameter with low resistance of flow within, concerning for arteriovenous malformation or an arteriovenous fistula. Digital subtraction arteriography confirmed the lesion. She underwent angiography and bilateral uterine artery embolization. CONCLUSION: The diagnosis of uterine arteriovenous malformation requires a high index of suspicion in the scenario of unexplained severe vaginal bleeding. Digital subtraction angiography is the gold standard for definitive diagnosis and allows immediate treatment by embolization.

PMID: 18665382 [PubMed - indexed for MEDLINE]

218. Gynecol Obstet Fertil. 2008 Jul-Aug;36(7-8):714-20. Epub 2008 Jul 25.

[Current indications for uterine artery embolization to treat postpartum hemorrhage]

[Article in French]

Pelage JP, Limot O.

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Comment in:
Gynecol Obstet Fertil. 2009 May;37(5):459-60.

Uterine artery embolization is an interventional radiology technique successfully used for more than 30 years in the management of gynecological or obstetrical

hemorrhage. Precise indications for uterine artery embolization to treat postpartum hemorrhage have been recently published. Uterine artery embolization is indicated in case of uterine atony despite medical treatment particularly after vaginal delivery, in case of vaginal thrombus or cervical tear after failed surgical repair. Embolization can also be discussed in case of persistent hemorrhage after arterial ligation or hysterectomy. Finally, arterial embolization can be attempted in case of placenta accreta to avoid hysterectomy. In all situations, pluridisciplinary management of patients with involvement of interventional radiologists, anesthesiologists and obstetricians is mandatory. Early transportation of patients for embolization should be discussed taking into consideration time of onset of hemorrhage, expected transfer time and treatment options available on site. For validated indications, success rates of arterial embolization as high as 80% can be expected in experienced hands.

PMID: 18656414 [PubMed - indexed for MEDLINE]

219. J Gynecol Obstet Biol Reprod (Paris). 2008 Dec;37(8):811-4. Epub 2008 Jul 23.

[Pregnancy after uterine-artery embolization for symptomatic fibroids: a case of placenta accreta with uterine rupture]

[Article in French]

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The evolution of pregnancies following uterine-artery embolisation (UAE) for symptomatic fibroids remains uncertain. We report a case of pregnancy after UAE, complicated of adherent placenta with uterine rupture, in a context of uterine leiomyomata with a prior cesarean delivery. Through a recent review of the literature, we discuss the main obstetrical complications following UAE. Appropriate management of these high-risk pregnancies, notably in case of risk of adherent placenta, seems to be necessary.

PMID: 18653292 [PubMed - indexed for MEDLINE]

220. Eur J Obstet Gynecol Reprod Biol. 2008 Nov;141(1):87-8. Epub 2008 Jul 23.

Uterine artery embolization as treatment for life-threatening haemorrhage from a cervical choriocarcinoma: a case report.

Frati A, Ducarme G, Wernet A, Chuttur A, Vilgrain V, Luton D.

PMID: 18649986 [PubMed - indexed for MEDLINE]

221. Akush Ginekol (Sofiia). 2008;47(1):38-42.

[Treatment of leiomyomas with uterine artery embolization. Review of literature]

[Article in Bulgarian]

Peitsidis P, Chernev A, Peitsidou A, Tsekoura V, Zervoudis S, Navrozoglou I, Tsikouras P.

Embolization of the uterine artery represents a widely accepted invasive method for treatment of fibroids. It is indicated for women in perimenopause with symptomatic leiomyomas who do not require preservation of their fertility functions. The method should be used with caution excluding infectious diseases and malignancies. A experienced interventional radiologist is needed for the completion of the method. Complications are infrequent with rate reaching almost 5%. Few knowledge exists about pregnancy outcomes after uterine artery embolization. For this reason it should be used with caution in young women with symptomatic leiomyomas willing to conceive.

PMID: 18642577 [PubMed - indexed for MEDLINE]

222. Eur Radiol. 2008 Dec;18(12):2997-3006. Epub 2008 Jul 11.

Patient selection guidelines in MR-guided focused ultrasound surgery of uterine fibroids: a pictorial guide to relevant findings in screening pelvic MRI.

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**Uterine leiomyomas (fibroids), the most common benign tumor in women of childbearing age, can cause symptoms including dysmenorrhea, menorrhagia, urinary
symptoms, pain and infertility. Hysterectomy is a common approach to treating uterine fibroids, and less invasive surgical approaches such as myomectomy and uterine artery embolization also have been shown to alleviate symptoms. Magnetic resonance-guided focused ultrasound surgery (MRgFUS) is the only totally non-invasive surgical approved method for treating uterine fibroids. In clinical trials, MRgFUS resulted in significant relief of uterine fibroid symptoms. The safe and effective use of MRgFUS is affected by fibroid type and location, position relative to adjacent anatomical structures and the presence of co-existent pelvic disease. Additionally, successful outcomes with MRgFUS have been correlated with the volume of fibroids ablated during the procedure. Thus, selection of patients in whom sufficient fibroid volumes can be treated safely**

using the MRgFUS system is critical for successful outcomes. The MR images in this pictorial essay provide examples of uterine fibroids for which MRgFUS should be considered and is designed to facilitate the selection of patients for whom MRgFUS is most likely to provide sustained symptom relief.

PMID: 18618119 [PubMed - indexed for MEDLINE]

223. Acta Obstet Gynecol Scand. 2008;87(8):812-23.

Modern management of uterine fibroids.

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**Uterine fibroids are the most common tumor of the reproductive tract in women of reproductive age. Although they are benign tumors that are often asymptomatic, uterine fibroids may cause debilitating symptoms in many women, such as abnormal
uterine bleeding, abdominal pain, increased abdominal girth, urinary frequency, constipation, pregnancy loss, dyspareunia, and in some cases infertility. Several approaches are available for the treatment of uterine fibroids. These include pharmacologic options, such as hormonal therapies and gonadotropin-releasing hormone agonists; surgical approaches, such as hysterectomy, myomectomy, myolysis, laparoscopic uterine artery occlusion, magnetic resonance
imaging-guided focused ultrasound surgery, and uterine artery embolization. The choice of approach may be dictated by factors such as the patient's desire to become pregnant in the future, the importance of uterine preservation, symptom severity, and tumor characteristics. New treatment options for uterine fibroids would be minimally invasive, have long-term data demonstrating efficacy and safety, have minimal or no incidence of fibroid recurrence, be easy to perform, preserve fertility, and be cost effective. New treatment approaches are under investigation, with the goals of being effective, safe, and less invasive.**

PMID: 18607823 [PubMed - indexed for MEDLINE]

224. J Vasc Interv Radiol. 2008 Jul;19(7):1007-16; quiz 1017.

Economic evaluation of uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids: results from the randomized EMMY trial.

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PURPOSE: To investigate whether uterine artery embolization (UAE) is a cost-effective alternative to hysterectomy for patients with symptomatic uterine fibroids, the authors performed an economic evaluation alongside the multicenter randomized EMMY (EMbolization versus hysterectoMY) trial. MATERIALS AND METHODS:
Between February 2002 and February 2004, 177 patients were randomized to undergo
UAE (n = 88) or hysterectomy (n = 89) and followed up until 24 months after initial treatment allocation. Conditional on the equivalence of clinical outcome, a cost minimization analysis was performed according to the intention to treat principle. Costs included health care costs inside and outside the hospital as well as costs related to absence from work (societal perspective). Cumulative standardized costs were estimated as volumes multiplied with prices. The nonparametric bootstrap method was used to quantify differences in mean (95% confidence interval [CI]) costs between the strategies. RESULTS: In total, 81 patients underwent UAE and 75 underwent hysterectomy. In the UAE group, 19 patients (23%) underwent secondary hysterectomies. The mean total costs per patient in the UAE group were significantly lower than those in the hysterectomy group ($11,626 vs $18,563; mean difference, -$6,936 [-37%], 95% CI: -$9,548, $4,281). The direct medical in-hospital costs were significantly lower in the UAE group: $6,688 vs $8,313 (mean difference, -$1,624 [-20%], 95% CI: -$2,605, -$586). Direct medical out-of-hospital and direct nonmedical costs were low in both groups (mean cost difference, $156 in favor of hysterectomy). The costs related to absence from work differed significantly between the treatment strategies in favor of UAE (mean difference, -$5,453; 95% CI: -$7,718, -$3,107). The costs of absence from work accounted for 79% of the difference in total costs. CONCLUSIONS: The 24-month cumulative cost of UAE is lower than that of hysterectomy. From a societal economic perspective, UAE is the superior treatment strategy in women with symptomatic uterine fibroids.

PMID: 18589314 [PubMed - indexed for MEDLINE]

225. Cardiovasc Intervent Radiol. 2008 Nov-Dec;31(6):1094-9. Epub 2008 Jun 24.

Uterine artery embolization for ureteric obstruction secondary to fibroids.

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This case series examines the safety and efficacy of uterine artery embolization (UAE) in the treatment of obstructive nephropathy caused by large fibroids. Between 2004 and 2007, 10 patients referred with symptomatic uterine fibroids that were found to be causing either unilateral (7 patients) or bilateral (3 patients) hydronephrosis were treated by UAE. Presenting complaints included menorrhagia, dysmenorrhea, bulk symptoms, loin pain, postobstructive atrophy, and mild renal impairment. All had posterior intramural dominant fibroids >11 cm

in maximum sagittal diameter and uterine volumes between 3776 and 15,625 ml. Outcome measures at between 12 and 36 months included procedural success, repeat intervention, relief of symptoms, resolution of hydronephrosis, stable renal function and size, and avoidance of hysterectomy. In all cases the cause of renal obstruction was confirmed to be a giant fibroid compressing the ureter at the pelvic brim. In all cases UAE was technically successful, though two patients required a repeat procedure. In eight patients hydronephrosis resolved and the obstruction was relieved, though two still had some bulk symptoms not requiring further treatment. Renal function improved or was stable in all cases. Renal size was stable in all cases. Where menorrhagia was part of the symptom complex it was
relieved in all cases. Two patients diagnosed as having postobstructive atrophy of one kidney underwent retrograde ureteric stenting on the nonatrophied side prior to UAE. This was unsuccessful in one of the cases due to the distortion caused by the fibroid. Despite improvement in hydronephrosis this patient underwent hysterectomy at 7 months after a renogram demonstrated persistent obstruction at the pelvic brim. In the second patient a double pigtail stent was inserted with difficulty and eventually removed at 8 months. This patient has had stable renal function and size for 3 years post-UAE. We conclude that UAE is safe and effective in treating patients with obstructive hydronephrosis caused by large fibroids.

PMID: 18574626 [PubMed - indexed for MEDLINE]

226. Tech Vasc Interv Radiol. 2007 Dec;10(4):257-60.

Gelatine sponge particles: handling characteristics for endovascular use.

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Gelatin sponge particles have been used since the mid 1960's in interventional radiology. It had played an important role as a temporary occlusive agent in the past. Embolization has gained a widespread acceptance in interventional radiology leading to different innovative new agents. This review is aimed to underline the persistent role of Gelfoam along with a better understanding of handling techniques in light of what we have learned from other particles as PVA and Embospheres. The clinical impact of embolization with gelfoam will be also stressed and discussed.

PMID: 18572138 [PubMed - indexed for MEDLINE]

227. Best Pract Res Clin Obstet Gynaecol. 2008 Aug;22(4):749-60. Epub 2008 Jun 10.

Impact of fibroids on reproductive function.

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There is debate regarding whether fibroids cause infertility or if they are simply an association. However, it is possible that fibroids are responsible for 2-3% of cases of infertility. The mechanisms by which these benign tumours could cause impaired reproductive function, both in terms of difficulty conceiving and early pregnancy loss, remain unclear. Myomectomy facilitates removal of a fibroid with preservation of reproductive potential. The procedure is associated with significant risks but, overall, some studies have suggested that this surgical option increases pregnancy rates significantly in women with fibroid-associated infertility. Miscarriage rates in women with fibroids and those who have undergone myomectomy vary considerably. It appears that miscarriage rates fall after myomectomy, although the overall rates of pregnancy loss remain higher than those seen in the general population. Fibroids affect 0.1-3.9% of pregnancies, and a number of complications encountered antenatally and post partum are thought to be directly related to the presence of these benign tumours. A number of contraceptive options exist for women with fibroids, with the choice depending on patient preference and both fibroid and patient characteristics.

PMID: 18547868 [PubMed - indexed for MEDLINE]

228. Eur J Obstet Gynecol Reprod Biol. 2008 Oct;140(2):291-3. Epub 2008 Jun 9.

Failure of conservative management in postpartum haemorrhage: uterine necrosis and hysterectomy after angiographic selective embolization with gelfoam.

Courbiere B, Jauffret C, Provansal M, Agostini A, Bartoli JM, Cravello L, Gamerre M.

PMID: 18541360 [PubMed - indexed for MEDLINE]

229. Radiologe. 2008 Jul;48(7):639-48.

[Imaging before and after uterine artery embolization]

[Article in German]

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Percutaneous catheter-based embolization treatment of symptomatic uterine fibroids has evolved into the most widely used alternative therapeutic approach to surgical treatment worldwide. Uterine artery embolization (UAE) induces infarction of leiomyomas, resulting in ischemic necrosis, hyaline degeneration, and size reduction with resolution of associated symptoms. Published experience suggests that UAE is an effective and reliable option for treating uterine fibroids with high patient satisfaction.Magnetic resonance imaging (MRI) is superior to ultrasonography for determining the site, size and number of fibroids, which is important for establishing the indication for UAE. Other potential advantages of MRI include the option of performing MR angiography (MRA) and obtaining contrast-enhanced images for monitoring the outcome of UAE and assessing possible complications after UAE.

PMID: 18521559 [PubMed - indexed for MEDLINE]

230. J Comput Assist Tomogr. 2008 May-Jun;32(3):356-61.

Comparison of MRI outcomes of uterine artery embolization for uterine leiomyoma using tris-acryl gelatin microspheres, polyvinyl alcohol spheres, and polyvinyl alcohol particles.

Galvez JA, McCarthy S, Weinreb J, Zelterman D, White RI, Pollak J, Tal MG.

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OBJECTIVE: Comparison of recurrence of magnetic resonance imaging (MRI) enhancement of uterine fibroids treated with uterine artery embolization (UAE) among embolic agents: polyvinyl alcohol (PVA), spherical PVA (SPVA), and tris-acryl gelatin microspheres (GM). METHODS: Pre/post-UAE gadolinium-enhanced MRIs were evaluated for residual enhancement of fibroids after UAE. Data were analyzed using 2-tail Fisher exact test to determine the likelihood of recurrence of enhancement post-UAE among embolic agents. RESULTS: One hundred one women underwent UAE. A total of 24 (41%) of 59 embolized with PVA, 18 (75%) of 24 with SPVA, and 4 (22%) of 18 with GM showed residual enhancement in some or all fibroids. Statistically significant differences in presence of residual enhancement on follow-up were found between SPVA and PVA (P = 0.0072), and SPVA and GM (P = 0.0015), but not between PVA and GM (P = 0.1756). CONCLUSIONS: Patients embolized with SPVA have a higher risk of having residual enhancement on follow-up MRI than those embolized with PVA or GM.

PMID: 18520537 [PubMed - indexed for MEDLINE]

231. Fertil Steril. 2009 May;91(5):1951-5. Epub 2008 May 23.

Prophylactic intraoperative uterine artery embolization to control hemorrhage in abnormal placentation during late gestation.

Yu PC, Ou HY, Tsang LL, Kung FT, Hsu TY, Cheng YF.

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Comment in:
Fertil Steril. 2009 Feb;91(2):656-7; author reply 657.

OBJECTIVE: To determine whether prophylactic intraoperative uterine artery embolization (UAE) reduces blood loss and minimizes morbidity and mortality in cases of placenta accreta, increta, and percreta. DESIGN: A prospective, nonrandomized clinical trial. SETTING: A university-based, high-risk pregnancy unit and department of interventional radiology. PATIENT(S): Eleven patients who were diagnosed prenatally with placenta accreta, increta, and percreta. INTERVENTION(S): Patients with suspected placenta accreta were treated with prophylactic, intraoperative UAE immediately after fetal delivery and before removal of the placenta. Patients with suspected placenta increta were treated with UAE; the placenta remained in situ, or a hysterectomy was performed. Patients with suspected placenta percreta were treated with UAE, and the placenta remained in situ. MAIN OUTCOME MEASURE(S): Intraoperative blood loss, maternal mortality, fetal mortality, need for hysterectomy. RESULT(S): Eleven viable fetuses were born with no radiation exposure. There were no maternal or fetal mortalities. Nine of 11 patients had an estimated blood loss between 500 and 2300 mL. Emergency hysterectomy was performed in two patients because of massive bleeding. The complications, including peritonitis and endometritis, occurred in another two patients after embolization. CONCLUSION(S): Prophylactic, intraoperative UAE before placental expulsion appears to reduce the risk of postpartum hemorrhage, decrease morbidity and mortality, and increase the chance of preservation of the uterus in patients with placenta accreta, increta, and percreta.

PMID: 18501901 [PubMed - indexed for MEDLINE]

232. Int J Obstet Anesth. 2008 Jul;17(3):262-6. Epub 2008 May 22.

Multidisciplinary management of placenta percreta complicated by embolic phenomena.

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and Critical Care, Durham, North Carolina, USA.**

Hemorrhage and thrombosis are major causes of maternal mortality. This case discusses the management of a woman with placenta percreta complicated by intraoperative pulmonary embolism. A 39-year-old gravida 3 with two previous cesarean deliveries presented at 34 weeks of gestation with an antepartum hemorrhage. Magnetic resonance imaging confirmed placenta percreta. The multidisciplinary group including obstetricians, gynecological oncologists, interventional radiologists and anesthesiologists developed a delivery plan. Cesarean delivery was performed with internal iliac artery occlusion and embolization catheters in place. After the uterine incision our patient experienced acute hypotension and hypoxia associated with a drop in the end-tidal carbon dioxide and sinus tachycardia. She was resuscitated and the uterus closed with the placenta in situ. Postoperatively, uterine bleeding was arrested by immediate uterine artery embolization. With initiation of embolization, hypotension and hypoxia recurred. Oxygenation and hemodynamics slowly improved, the case continued and the patient was extubated uneventfully at the end of the procedure. Computed tomography revealed multiple pulmonary emboli. The patient was anticoagulated with low-molecular-weight heparin and returned six weeks later for hysterectomy. Placenta percreta with invasion into the bladder can be catastrophic if not recognized before delivery. The chronology of events suggests that this may have been amniotic fluid emboli. An intact placenta with abnormal architecture, such as placenta percreta, may increase the risk of amniotic fluid embolus. The clinical findings and co-existing filling defects on computed tomography may represent a spectrum of amniotic fluid embolism syndrome.

PMID: 18501584 [PubMed - indexed for MEDLINE]

233. Diagn Ther Endosc. 2001;7(2):89-95.

Adenomyosis: difficult to diagnose, and difficult to treat.

Wood C.

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Drug therapy may be effective in controlling symptoms but the frequent coexistence of endometriosis and the lack of controlled studies make their efficacy difficult to quantify. Danazol IUD has been shown to reduce symptoms. Conservative surgery involving endomyometrial ablation, laparoscopic myometrial electrocoagulation or excision has proven to be effective in more than 50% of patients, although follow up has been restricted to three years. Arterial uterine

artery embolization is a new technique which may be tried before considering hysterectomy. Hysterectomy may still be necessary in severe cases of adenomyosis.

PMCID: PMC2362833
PMID: 18493552 [PubMed - in process]

234. Am J Obstet Gynecol. 2008 Nov;199(5):482.e1-3. Epub 2008 May 19.

Intraabdominal adhesions after uterine artery embolization.

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**OBJECTIVE: The objective of the study was to evaluate intraabdominal adhesions after uterine artery embolization (UAE). STUDY DESIGN: This was a case-control study of patients who underwent hysterectomy after UAE (UAE group) in the years 2000-2006. The control group consisted of patients who underwent hysterectomy for
uterine myoma in the same week. RESULTS: We encountered 30 patients in the UAE
group and 72 in the control group. The age of patients in the UAE group was 44.9 +/- 0.8 years and 44.6 +/- 0.6 years in the control group. In the UAE group, the diameter of the dominant myoma in patients with adhesions (11.3 +/- 1.9 cm) was larger than in those without adhesions (5.6 +/- 0.6 cm; P = .003; confidence interval, 1.9-8.5). The prevalence of adhesion in the UAE group (20%) was higher than in the control group (1.4%; P = .002; odds ratio, 17.2). CONCLUSION: UAE is associated with intraabdominal adhesion formation. Large myoma predisposes to adhesion formation.**

PMID: 18486095 [PubMed - indexed for MEDLINE]

235. Fertil Steril. 2008 Nov;90(5):2012.e1-5. Epub 2008 May 7.

Using recombinant activated factor VII, B-Lynch compression, and reversible embolization of the uterine arteries for treatment of severe conservatively intractable postpartum hemorrhage: new method for management of massive hemorrhage in cases of placenta increta.

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Comment in:
Fertil Steril. 2008 Sep;90(3):895-6; author reply 896.

OBJECTIVE: To investigate a new method for management of massive postpartum hemorrhage in cases of abnormal placenta adhesion. DESIGN: Case report. SETTING:
University hospital. PATIENT(S): An 18-year-old nullipara presented with fulminant postpartum bleeding after cesarean section due to placenta increta. The patient developed hemorrhagic and septic shock associated with disseminated intravascular coagulation. INTERVENTION(S): Treatment with uterotonic drugs like oxytocin and prostaglandins and conservative procedures like transfusion of packed red cells and fresh frozen plasma failed to control the diffuse bleeding. Further intervention consisted of B-Lynch sutures, recombinant activated factor VII, and reversible embolization of the uterine arteries. RESULT(S): The bleeding stopped after operative B-Lynch compression and recombinant activated factor VII. In the interval, the bleeding continued under therapeutically resistant disseminated intravascular coagulation, and finally bilateral reversible embolization of the uterine arteries was performed to avoid an emergency hysterectomy to preserve fertility in this young woman. CONCLUSION(S): This is a case of abnormal placenta adhesion with massive postpartum hemorrhage in which different conservative and operative treatments were combined to avoid a hysterectomy with loss of fertility and major psychological impact for the young mother.

PMID: 18462726 [PubMed - indexed for MEDLINE]

236. Radiologe. 2008 Jul;48(7):654-9.

[Interdisciplinary stratification of patients with myoma-related symptoms]

[Article in German]

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With the establishment of uterine artery embolization (UAE), the individualization of treatment of the symptomatic myomatous uterus showed a general progression. The concrete therapy decision is made in an interactive process between doctor and patient. A series of factors influence the choice of a suitable, operative or non-operative, therapeutic procedure. In the weighting of therapeutic options between surgery or UAE, in addition to current results of studies which compare both techniques,recommendations made by expert committees
and guidelines are helpful for a competent counseling of patients and additionally supportive in decision processes such as interdisciplinary stratification.

PMID: 18461296 [PubMed - indexed for MEDLINE]

237. Hum Reprod. 2008 Jul;23(7):1553-9. Epub 2008 May 6.

Serious primary post-partum hemorrhage, arterial embolization and future fertility: a retrospective study of 46 cases.

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BACKGROUND: The guidelines advise arterial embolization in case of post-partum hemorrhage. We evaluated its feasibility and the subsequent fertility. METHODS: A retrospective study has been conducted in our center for the past 10 years (1996-2005). Fifty-two patients experiencing a primary post-partum hemorrhage who
were resistant to medical treatment underwent uterine artery embolization and/or hysterectomy. In case of arterial embolization, a follow-up of all the patients
was realized, focusing on the preservation of fertility. RESULTS: Six (11.5%) patients underwent hysterectomy straightaway and 46 (88.5%) arterial embolization
in the first instance including 35 arterial embolizations after Cesarean section. Embolization was successful among 41 patients (89.1%) and hysterectomy was performed on the 5 (10.9%) others. Overall, 11/24 398 women suffered from a definitive loss of fertility after post-partum hemorrhage. Fertility was studied
at least 1 year after the delivery. All patients had a return of normal menses. Sixteen of 41 women (39%) wanted another child and 100% succeeded. Nineteen pregnancies, including two twin pregnancy and one early spontaneous abortion were
observed. CONCLUSIONS: Embolization is a safe and effective non-surgical method to resolve post-partum hemorrhage and should be regarded as gold standard in a hemodynamically stable patient. Furthermore, subsequent fertility is not impaired by the procedure.

PMID: 18460450 [PubMed - indexed for MEDLINE]

238. Beijing Da Xue Xue Bao. 2008 Apr;40(2):219-20.

[Uterine artery comes directly from ovarine artery: a case report]

[Article in Chinese]

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The patient is a 48-year-old woman. She came to our hospital because of consistent colporrhagia for one month. Her first menstrual came when she was 17 years old, her last menstrual period (LMP) was on March 23, 2005. When she came to our hospital, she looked weak and anemic. Temperature (T): 36.6 degrees C; pulse(P): 80 counts per minute; respire(R): 19 counts per minute; blood pressure (BP): 130/90 mmHg(1 mmHg=0.133 kPa). Physical examination showed that her vagina
was smooth, there was some lifeblood in it; the cervical was hypertrophy; the womb was anteposition; there was no pressure pain; the two side adjuncts were normal. The laboratory examination showed that the white blood cell (WBC) was 3.40 x 10(9)/L the red blood cell (RBC) 3.14 x 10(12)/L the hemoglobin (HGB) 88.0 g/L and the platelet (PLT) 206 x10(9) L. B ultrasound showed that the womb was uniformity aggrandizement. The pathology showed that the endometrium was glandular hyperplasia. The final diagnosis was dysfunction womb hemeorrhage. After the uterine curettage and hormonal regulation, there remained some hemorrhage. The ovarine arterial embolization (OAE) was operated on June 30, 2005. The angiography showed the two side internal lliac arteries had no uterine artery. The two side ovarian arteries were stout. The balance stage showed that the womb's blood supply came from ovarian artery. The consistent colporrhagia stopped after the OAE with gelatin sponge through 3.0F SP microcatheter. After 18 months' follow up survey, the woman's menstrual halted, and she was satisfied with it.

PMID: 18458701 [PubMed - indexed for MEDLINE]

239. J Vasc Interv Radiol. 2008 May;19(5):662-7. Epub 2008 Mar 17.

Clinical failure after uterine artery embolization: evaluation of patient and MR imaging characteristics.

Toor SS, Tan KT, Simons ME, Rajan DK, Beecroft JR, Hayeems E, Sniderman KW.

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PURPOSE: To investigate the patient and magnetic resonance (MR) imaging characteristics associated with clinical failure after uterine artery embolization (UAE). MATERIALS AND METHODS: Seventy-eight consecutive patients who
underwent UAE were examined. Contrast-enhanced MR imaging was performed before
and 4 months after the procedure, and clinical follow-up was performed at 15 months. Patients were divided into success and failure groups strictly on the basis of their clinical outcomes. Clinical follow-up included evaluation of fibroid symptoms and the need for further treatment after UAE. Findings at pre- and postprocedural MR imaging were compared, and data collected included changes

in uterine and fibroid volumes, fibroid location, and fibroid perfusion. RESULTS: Fifty-eight patients were placed into the success group and 20 into the failure group. There were no differences between the baseline characteristics of the two groups. The reduction in uterine and dominant fibroid volumes was greater in the success group compared with the failure group; however, the difference was not statistically significant (success group: [295/845] 34.9% vs [80/282.5] 28.3%, respectively, P=.18; failure group: [317/733] 43.2% vs [114/337.6] 33.9%, P=.32). The reduction in total fibroid volume was greater in the success group than the failure group ([189.6/393.5] 48.2% vs [148.7/439.9] 33.8%, respectively; P=.02) despite the fact that the percentage of fibroids completely infarcted was similar between the two groups ([136/172] 79% vs [41/50] 82%, P=.77). Pedunculated subserosal fibroids were more common in the failure group than in the success group (P<.03) and did not reduce in volume as significantly (53.8% vs 14.7%, respectively; P=.02). CONCLUSIONS: In general, the reduction in total fibroid volume after embolization is smaller in patients with poor clinical improvement. In addition, these patients have a higher number of pedunculated subserosal fibroids, and these fibroids tend to reduce in volume to a lesser extent.

PMID: 18440453 [PubMed - indexed for MEDLINE]

240. J Vasc Interv Radiol. 2008 May;19(5):657-61. Epub 2008 Mar 17.

Outcomes after uterine artery embolization for pedunculated subserosal leiomyomas.

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**PURPOSE: To assess the safety and efficacy of uterine artery embolization (UAE) treatment of pedunculated subserosal leiomyomas. MATERIALS AND METHODS: A review
of patients undergoing UAE in a 30-month period (July 2004 to December 2006) was performed. Cases in which a pedunculated subserosal tumor (volume>or=4 cm3) was
embolized were analyzed. The preprocedural volumes of the pedunculated tumor and
uterus and the diameter and vascularity of the tumor and stalk were recorded. Posttreatment sizes of the pedunculated leiomyoma, stalk, and uterus were recorded, as was the presence or absence of complication(s). RESULTS: A total of 240 patients underwent embolization. Pedunculated subserosal leiomyomas were treated in 16 women, with a technical success rate of 100%. Preprocedural mean tumor and uterine volumes were 372 cm3 and 789 cm3, respectively. The mean stalk
diameter was 2.7 cm (range, 0.8-7.8 cm). All pedunculated leiomyomas exhibited**

enhancement on contrast agent-enhanced magnetic resonance (MR) imaging (n=13) or
vascularity on Doppler ultrasonography (US; n=3). Stalk vascularity was noted on MR imaging in 13 patients and was not assessed in the remaining three, who underwent US imaging. Imaging follow-up (mean, 5.9 months after UAE) demonstrated
mean tumor volume reduction of 39.3% (95% confidence interval [CI], 28.2%-50.5%)
and mean uterine volume reduction of 37.6% (95% CI, 26%-49.3%). There were no cases of continued tumor perfusion and no major complications. There was one minor complication of prolonged hospital stay (36 hours) for pain control.
CONCLUSION: UAE was successfully and safely performed for pedunculated subserosal
leiomyomas, with a tumor volume reduction of 39% and no unique complications related to these lesions.

PMID: 18440452 [PubMed - indexed for MEDLINE]

241. J Minim Invasive Gynecol. 2008 May-Jun;15(3):346-9. Epub 2008 Mar 20.

Laparoscopic uterine artery occlusion combined with myomectomy for uterine myomas.

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We sought to evaluate the clinical feasibility and mid- to long-term effects of laparoscopic uterine artery occlusion before myomectomy in the treatment of uterine myomas. A total of 566 patients with uterine myoma were treated by laparoscopic uterine artery occlusion before myomectomy from October 2001 through
July 2007. Mean blood loss was 88.2 +/- 52.7 mL (95% CI 82.7-93.8). The highest postoperative temperature was 37.8 +/- 0.3 degrees C, and the postoperative morbidity was 5.7% (32/566). Number of days to the return of bowel movement was
1.9 +/- 0.5d and in hospital stay after surgery was 7.7 +/- 2.5d. Complications included 2 instances of subcutaneous emphysema, 1 of vaginal bleeding, and 3 of mild intestinal obstruction. At a median of 26.3 months (range 6-69 months) of follow-up, the rate of myoma recurrence was 3.0% (15/517), uterus volume reduction was 48.9%, and correction of menstruation abnormality was 97.1% (502/517). Laparoscopic uterine artery occlusion before myomectomy can expand myomectomy indications with better results.

PMID: 18439509 [PubMed - indexed for MEDLINE]

242. J Minim Invasive Gynecol. 2008 May-Jun;15(3):301-7. Epub 2008 Mar 20.

Uterine artery embolization versus occlusion for uterine leiomyomas: a pilot randomized clinical trial.

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STUDY OBJECTIVE: To compare perioperative pain and institutional use for women undergoing transcatheter uterine artery embolization (UAE) and transcatheter uterine artery occlusion (UAO) for the treatment of heavy uterine bleeding associated with uterine leiomyomas. DESIGN: A pilot double-blind, randomized clinical trial (Canadian Task Force classification I). SETTING: Large, university-affiliated community hospital with multiple residency programs including obstetrics and gynecolgoy and radiology. PATIENTS: Premenopausal women with heavy uterine bleeding related to uterine leiomyomas were enrolled. INTERVENTIONS: Either a standard UAE with microspheres or UAO using vascular coils was used. The main outcome measures were analgesic use, institutional stay, and postprocedural numeric pain scales. MEASUREMENTS AND MAIN RESULTS: Sixteen women were enrolled and 14 underwent study procedures (UAE n = 8, UAO n = 6). Baseline Aberdeen Menorrhagia Severity Scale scores, also known as the Ruta scores, were similar in each group (UAE = 54, UAO = 53). Median preprocedural uterine volume was similar for each group (UAE = 557 mL, UAO = 612 mL). The median postprocedural pain scale was less for UAO than UAE (UAO 1, UAE 5; p <.05). Six patients with UAE and no patients with UAO required parenteral narcotic analgesia in the recovery room (p <.05) (median UAO 0 and UAE 1). Patients with UAE used 6 hospital nights and patients with UAO used 1 hospital night (p =.09) (median UAO 0 and UAE 1). Three-month Aberdeen Menorrhagia Severity Scale scores were reduced to a similar degree in each group (UAE = 58%, UAO = 63%). CONCLUSION: Transcatheter UAO is a promising alternative transcatheter technique for the treatment of symptoms related to uterine leiomyomas, with less postprocedural pain, reduced requirements for analgesics, and shorter hospital stays than transcatheter UAE. Although the results of the study are promising, larger-scale trials with longer follow-up are needed to both confirm these results and evaluate the long-term efficacy of transcatheter UAO.

PMID: 18439501 [PubMed - indexed for MEDLINE]

243. Ned Tijdschr Geneeskd. 2008 Mar 22;152(12):663-5.

[Uterine artery embolisation in the treatment of uterine fibroids: outcomes of randomised trials]

[Article in Dutch]

Hehenkamp WJ, Volkers NA, Birnie E, Reekers JA, Ankum WM.

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Comment on:
Ned Tijdschr Geneeskd. 2008 Mar 22;152(12):697-700.

In the past so years, uterine artery embolisation has gained popularity in the treatment of uterine fibroids compared with traditional surgical interventions. This was based on promising results from a few non-randomised studies, which reported success rates of 95 to 98%. Were these rates accurate? Two recent randomised studies (the Dutch EMMY trial and the Scottish REST trial) showed that, in patients with symptomatic uterine fibroids, the time to recovery and return to work was significantly shorter after embolisation than after surgery (hysterectomy or myomectomy). However, embolisation was insufficiently effective in approximately 20% of patients, who required further treatment. Despite this, quality of life after one and two years in both treatment arms were identical. Embolisation, therefore, may be a valid treatment alternative in patients with symptomatic fibroids who are candidates for hysterectomy.

PMID: 18438059 [PubMed - indexed for MEDLINE]

244. AJR Am J Roentgenol. 2008 May;190(5):1227-30.

Are fibroids that become endocavitary after uterine artery embolization necessarily a complication?

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Comment on:
AJR Am J Roentgenol. 2008 May;190(5):1220-6.

OBJECTIVE: This commentary deals with the study by Verma et al. discussing submucosal and endocavitary fibroids after uterine artery embolization (UAE). CONCLUSION: UAE can infarct fibroids. Fibroids spontaneously infarct after childbirth. Because the postpartum cervix is patulous, infarcted fibroids that fall into the uterine cavity easily exit the uterus. Each patient contemplating UAE should anticipate that infarcted fibroids bordering on or inside the uterine cavity may require cervical dilatation or hysteroscopic resection for removal. The addition of either of these two gynecology procedures should not necessarily be regarded as a UAE complication or treatment failure.

PMID: 18430836 [PubMed - indexed for MEDLINE]

245. AJR Am J Roentgenol. 2008 May;190(5):1220-6.

Submucosal fibroids becoming endocavitary following uterine artery embolization: risk assessment by MRI.

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Comment in:
AJR Am J Roentgenol. 2008 May;190(5):1227-30.

OBJECTIVE: The purpose of our study was to assess the relationship between the endometrium and submucosal fibroids before and after uterine artery embolization (UAE). MATERIALS AND METHODS: Contrast-enhanced pelvic 1.5-T MRI was performed in
49 women before and after UAE over a 2-year period. Dominant (largest diameter) fibroids in intramural, submucosal, subserosal, pedunculated subserosal, and endocavitary locations were assessed on pre- (baseline) and postembolization MRI. Size, locations of dominant fibroids relative to endometrium and serosa before and after embolization were compared. The ratio between the largest endometrial interface and the maximum dimension of the dominant submucosal fibroid (interface-dimension ratio) was determined on baseline MRI. The infarction rate for dominant fibroids was estimated after UAE. RESULTS: One hundred forty dominant fibroids were identified on baseline MRI. Forty-nine (35%) were intramural, 39 (28%) were submucosal, 34 (24%) were subserosal, eight (6%) were pedunculated subserosal, and 10 (6%) were endocavitary in location on preembolization MRI. After UAE, of 39 dominant submucosal fibroids, 13 (33%) became endocavitary: complete (n = 4), partial (n = 9) on the basis of European Society of Gynaecological Endoscopy (ESGE) classification. The preembolization mean interface-dimension ratio and mean diameters for dominant fibroids that became endocavitary were significantly greater than for those that did not become endocavitary after embolization (0.65 vs 0.32, p < 0.005; 8 vs 5.4 cm, p < 0.05, respectively). All dominant submucosal fibroids showed 100% infarction after UAE. CONCLUSION: Submucosal fibroids with an interface-dimension ratio of greater than
0.55 are more likely to migrate into the endometrial cavity after UAE. The majority of these are expelled spontaneously without significant symptoms. Rarely, submucosal fibroids greater than 6 cm in size that become endocavitary may cause postprocedural complications requiring further intervention and medical treatment.

PMID: 18430835 [PubMed - indexed for MEDLINE]

246. J Obstet Gynaecol Can. 2008 Apr;30(4):344-6.

Septic uterus after uterine artery embolization for uterine myomas triggered by endometrial biopsy.

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**BACKGROUND: Women who undergo uterine artery embolization (UAE) and subsequently
have heavy vaginal bleeding require assessment to establish the cause.
Endometrial sampling in such women should not necessarily carry more than the usual risk. CASES: Two women who had undergone UAE presented with recurrence of
heavy vaginal bleeding. In order to rule out possible endometrial malignancy, we performed an endometrial biopsy. Both patients had large and necrotic intramural myomas adjacent to the endometrium. They developed septic uterus shortly after endometrial biopsy and each required a hysterectomy. The postoperative course in the first case was complicated by deep vein thrombosis and enterovaginal fistula. CONCLUSION: Because of the high risk of infection, women with a history of UAE and necrotic myoma adjacent to the endometrium should not undergo endometrial biopsy. We recommend evaluation of the relation of myomas to the endometrium.**

PMID: 18430385 [PubMed - indexed for MEDLINE]

247. Int J Gynaecol Obstet. 2008 Jul;102(1):55-9. Epub 2008 Apr 16.

**Unequal tissue expression of proteins from the PA/PAI system, myoma necrosis, and
uterus survival after uterine artery occlusion.**

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**OBJECTIVE: To further the understanding of the mechanism behind myoma necrosis and uterus survival after uterine artery occlusion. METHOD: Myomal and myometrial
gene transcription and protein expression of tissue plasminogen activator (tPA), urokinase plasminogen activator (uPA), and plasminogen activator inhibitor type 1 (PAI-1) were investigated in 30 uteri. RESULTS: Compared with myometrial expression, myomal expression was less for uPA mRNA (1.34%+/-2.18% vs 2.84%+/-2.97%; P<0.05) and greater for PAI-1 mRNA (2.67%+/-1.82% vs 1.27%+/-1.99%; P<0.05), but the difference in tPA mRNA expression was not significant. Accordingly, compared with myometrial expression, myomal expression was less for the uPA protein (P<0.05) and greater for the PAI-1 protein (P<0.05), but the difference in tPA protein was not significant. CONCLUSION: The PA/PAI**

system was found to be expressed differently in myomas and the myometrium, which
may play a role in uterus survival and myoma necrosis after uterine artery occlusion.

PMID: 18420206 [PubMed - indexed for MEDLINE]

248. Radiologe. 2008 Jul;48(7):660-5.

[Long-term results after fibroid embolization]

[Article in German]

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Fibroids (leiomyoma) are the most frequent benign tumors of the uterus during female reproductive age. In the case of clinical symptoms, uterine artery embolization (UAE) is a well established treatment option for symptomatic fibroids, resulting in promising long-term results. In order to estimate long-term success after UAE, reduction of fibroids and uterus volume is less important than complete improvement and disappearance of fibroid-related symptoms. In addition to a high technical success rate and a low perioperative complication rate, UAE results in high short-term and long-term patient satisfaction (>87%) and improvement of symptoms (>81%). Candidates for UAE should
be informed about potential reinterventions in terms of repeated UAE (up to 18% of cases) or surgical treatment options.

PMID: 18418568 [PubMed - indexed for MEDLINE]

249. Taiwan J Obstet Gynecol. 2008 Mar;47(1):18-23.

Medical treatment for uterine myomas.

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Uterine myomas are the most common benign tumors in the female reproductive tract. Most women with myomas are asymptomatic. Therefore, expectant observation

and follow-up are often recommended for these myoma patients. However, myomas may cause menstrual symptoms, pelvic pain, pressure complaints, subfertility or pregnancy-related complications, with resultant requests for a definitive treatment. The management of myomas has become multidisciplinary in the past 20 years. Basically, the choice of treatment depends on the patient's age, the reason for treatment, the issue of fertility preservation, and the patient's preference. The treatment spectrum includes an expectant management, medical therapy, surgical intervention, uterine artery embolization or ablative techniques. Medical therapy is an option for women with symptomatic myomas who prefer non-surgical treatment, consider fertility preservation, or expect a less aggressive operation after shrinkage of the uterine volume. This review will summarize the recent well-documented drugs for the management of uterine myomas.

PMID: 18400578 [PubMed - indexed for MEDLINE]

250. Best Pract Res Clin Obstet Gynaecol. 2008 Aug;22(4):677-705. Epub 2008 Apr 18.

Conventional myomectomy.

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In addition to the conventional/older treatments of myomectomy and hysterectomy, the options now available to the woman with symptomatic fibroids, especially if she wishes to conserve her uterus, include medical treatments such as mifepristone, minimally invasive therapies such as uterine artery embolization (UAE) or magnetic-resonance-guided focused ultrasound surgery (MRgFUS), and laparoscopic or vaginal myomectomy. It is generally accepted, and with justification, that conventional myomectomy is associated with significant morbidity, especially excessive peri-operative blood loss, recurrence of the fibroids and adhesion formation, which might compromise the very reason, i.e. fertility, which the operation is performed to preserve. However, the newer treatments have significant limitations: medical treatments are promising but, to date, have been found to be of limited efficacy; UAE is still under evaluation and its impact on fertility has yet to be researched; and MRgFUS is an even newer therapy which is limited to centres with high technology and hugely expensive open magnetic resonance imaging facilities. Both UAE and MRgFUS cause shrinkage rather than removal of the fibroids, and have limited efficacy when used with really large, multiple fibroids. Laparoscopic myomectomy is also limited by the size and number of fibroids that can be treated by this approach, and demands

laparoscopic skills that are still lacking in most institutions; limitations which also apply to vaginal myomectomy. It is therefore evident that conventional abdominal myomectomy still has a major role to play. There are no limitations on size and number of fibroids, and there are good data showing improvement in outcomes of assisted reproduction treatments following myomectomy. The widespread fallacy is probably the assumption that any gynaecological surgeon can perform a myomectomy; good conventional myomectomy demands no less skill than the laparoscopic approach. There is a need to continue to refine and innovate, especially with regard to reducing blood loss during surgery, reducing the risk of adhesion formation, reducing the risk of recurrence, and reconstruction of uteri to approximate anatomical normality and physiological integrity so that they can carry a pregnancy without complications such as scar rupture. This chapter will review the position of conventional myomectomy and describe approaches to optimizing outcomes following myomectomy.

PMID: 18395493 [PubMed - indexed for MEDLINE]

251. J Obstet Gynaecol. 2008 Feb;28(2):246-8.

Can uterine artery embolisation affect endometrial perfusion and function.

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PMID: 18393041 [PubMed - indexed for MEDLINE]

252. Obstet Gynecol. 2008 Apr;111(4):881-9.

Uterine artery embolization in postabortion hemorrhage.

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OBJECTIVE: To summarize the efficacy of postabortion uterine artery embolization in cases of refractory hemorrhage. METHODS: Forty-two women were identified who had postabortion uterine artery embolization at San Francisco General Hospital between January 2000 and August 2007. Seven underwent embolization for hemorrhage caused by abnormal placentation. RESULTS: Embolization was successful in 90% (38 of 42) of cases. All failures (n=4) were in patients who had confirmed abnormal

placentation. However, three of seven women (43%) with probable accreta diagnosed by ultrasonography were treated successfully with uterine artery embolization. Two patients experienced complications of uterine artery embolization. These complications-one contrast reaction and one femoral artery embolus-were treated without further sequelae. CONCLUSION: Uterine artery embolization is an alternative to hysterectomy in patients with postabortion hemorrhage refractory to conservative measures, especially when hemorrhage is caused by uterine atony or cervical laceration.

PMID: 18378747 [PubMed - indexed for MEDLINE]

253. J Obstet Gynaecol Can. 2008 Mar;30(3):239-43.

A rare etiology of delayed postpartum hemorrhage.

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BACKGROUND: Postpartum hemorrhage, immediate or delayed, is a leading cause of maternal death. The most common etiologies are retained products of conception, infection, and subinvolution of the placental implantation site. CASE: A 31-year-old woman, gravida 1, para 0, had an uneventful pregnancy after infertility treatment. She was delivered by intrapartum Caesarean section because of arrest of descent. Twelve days after delivery she had profuse, intermittent vaginal bleeding, but physical examination and pelvic ultrasound failed to reveal the cause. Angiography was performed and showed a left uterine artery pseudoaneurysm that was successfully treated with arterial embolization. CONCLUSION: Use of uterine angiography and embolization at an early stage in the search for the etiology of postpartum hemorrhage helps to decrease morbidity and mortality.

PMID: 18364101 [PubMed - indexed for MEDLINE]

254. Best Pract Res Clin Obstet Gynaecol. 2008 Aug;22(4):717-34. Epub 2008 Mar 18.

Radiological treatment of symptomatic uterine fibroids.

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Uterine artery embolization (UAE) is a relatively new alternative treatment for

symptomatic fibroids. Recent Level 1 evidence from two major randomized controlled trials has established UAE as a safe and effective alternative to hysterectomy. Technical aspects, choice of embolic agent, safety, contra-indications and complications of the procedure will be reviewed. The available data on the effects on ovarian function, fertility and pregnancy outcomes following UAE will be presented.

PMID: 18353729 [PubMed - indexed for MEDLINE]

255. Hum Reprod Update. 2008 May-Jun;14(3):259-74. Epub 2008 Mar 14.

Non-surgical management of uterine fibroids.

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BACKGROUND: Efforts to develop alternatives to surgery for management of symptomatic uterine fibroids have provided new techniques and new medications. This review summarizes the existing literature on uterine artery embolization (UAE) and investigational studies on four newer approaches. METHODS: PubMed, Cochrane and Embase were searched up to December 2007. Studies reporting side-effects and complications and presenting numerical data on at least one outcome measure were included. RESULTS: Case studies report 50-60% reduction in fibroid size and 85-95% relief of symptoms following UAE. The largest of these studies reported an in-hospital complication rate of 2.7% (90 of 3041 patients) and a post-discharge complication rate of 26% (710 of 2729 patients). Eight studies compared UAE with conventional surgery. Best evidence suggested that UAE
offered shorter hospital stays (1-2 days UAE versus 5-5.8 days surgery, 3 randomized controlled trials (RCTs)) and recovery times (9.5-28 days UAE versus 36.2-63 days surgery, 3 RCTs) and similar major complication rates (2-15% UAE versus 2.7-20% surgery, 3 RCTs). Four studies analysing cost-effectiveness found UAE more cost-effective than surgery. There is insufficient evidence regarding fertility and pregnancy outcome after UAE. Five feasibility studies after transvaginal temporary uterine artery occlusion in 75 women showed a 40-50% reduction in fibroid volume and two early studies using magnetic resonance guided-focused ultrasound showed symptom relief at 6 months in 71% of 109 women.
Two small RCTs assessing mifepristone and asoprisnil showed promising results. CONCLUSIONS: Good quality evidence supports the safety and effectiveness of UAE for women with symptomatic fibroids. The current available data are insufficient to routinely offer UAE to women who wish to preserve or enhance their fertility. Newer treatments are still investigational.

PMID: 18344356 [PubMed - indexed for MEDLINE]

256. J Vasc Interv Radiol. 2008 Feb;19(2 Pt 1):279-84.

Uterine artery embolization in patients with symptomatic diffuse leiomyomatosis of the uterus.

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Six patients with symptomatic diffuse uterine leiomyomatosis underwent technically successful uterine artery embolization. After a median follow-up of 16 months, five women presented with permanent alleviation of symptoms and a normalized quality of life according to the Uterine Fibroid Symptom and Quality of Life questionnaire. Magnetic resonance imaging showed impressive recovery of the myometrium, and the infarcted leiomyomas shrank and were partially expelled. No additional treatment was necessary. Failure of therapy occurred in one patient with atypical growth of fibroid tumor tissue shortly after embolization, which was suspicious for malignancy. Hysterectomy was performed and pathologic evaluation revealed benign leiomyomatosis.

PMID: 18341962 [PubMed - indexed for MEDLINE]

257. J Vasc Interv Radiol. 2008 Feb;19(2 Pt 1):195-200.

Long-term efficacy and safety of uterine artery embolization in young patients with and without uteroovarian anastomoses.

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PURPOSE: To assess long-term clinical efficacy of uterine artery embolization (UAE) in young women and the clinical significance of patent anastomoses between uterine and ovarian arteries. MATERIALS AND METHODS: Consecutive women no older than 39 years of age treated with UAE for symptomatic uterine leiomyomata with at least 3 years of follow-up were included in the study. Analysis includes angiographic images, pre- and postoperative magnetic resonance (MR) images, and symptom evaluations. Clinical evaluation and symptom severity scores (SSSs) were obtained at 6 months and yearly. Leiomyomata volume change, SSS, and repeat intervention rates were compared for patients with and without anastomoses between uterine and ovarian arteries. RESULTS: The study cohort included 87 patients, including 30 white patients (34.4%), 49 black patients (56.3%), and eight patients of other ethnicities (9.2%). Anastomoses were demonstrated in 41

patients (47.1%). Seventy patients (80.5%) completed the long-term follow-up, of whom 35 had an anastomosis (85.4% of the 41 patients with anastomoses) and 35 did not (76.1% of the 46 patients without anastomoses). Mean leiomyoma volume reduction was 49.1% (P = .018), and reduction of uterine volume was 36.0% (P < .001). Mean clinical follow-up duration was 45 months. Overall, 18 of 70 patients (25.7%) underwent repeat interventions, including 13 (37.1%) with anastomoses and five (14.3%) without anastomoses (P = .029). One patient (1.4%) developed natural amenorrheic change in the long term after UAE. Nineteen patients (27.1%) attempted pregnancy after UAE, and 12 patients had 15 pregnancies, with six pregnancies to full term. CONCLUSIONS: UAE in young patients achieves significant dominant leiomyoma volume reduction and symptomatic improvements, with overall repeat intervention rates of 25.7% in the long term. Uteroovarian anastomoses in young patients are associated with higher rates of repeat intervention after UAE.

PMID: 18341948 [PubMed - indexed for MEDLINE]

258. Fertil Steril. 2008 Dec;90(6):2356-60. Epub 2008 Mar 12.

Pregnancy after uterine fibroid embolization: follow-up of 100 patients embolized using tris-acryl gelatin microspheres.

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OBJECTIVE: To evaluate pregnancies in women who had previously undergone uterine
fibroid embolization. DESIGN: Prospective study. SETTING: A city hospital in Spain. PATIENT(S): A cohort of 100 uterine fibroid embolization patients, 57 of whom wished to preserve their fertility. INTERVENTION(S): Uterine arteries were embolized by using 500-1,200 microm tris-acryl gelatin microspheres. After intervention, patient follow-up was performed at 1 week, 3 months, 6 months, and yearly. MAIN OUTCOME MEASURE(S): The number of pregnancies and course of pregnancy. RESULT(S): Eleven pregnancies in 10 women (19.2%). The pregnancies resulted in 8 live births, including 4 normal and 4 cesarean deliveries. Early miscarriage occurred in 3 cases (2 patients). None of the 8 newborns was a low-birth weight infant, and gestation lasted >or=37 weeks in all the patients, except for 1 case of a macrosomic fetus delivered at 33 weeks. There were no cases of abnormal placental implantation. CONCLUSION(S): Despite the small sample
size, uterine artery embolization appears to be viable in young women who still want to become pregnant. Larger series and studies comparing uterine fibroid embolization and myomectomy are needed.

PMID: 18339388 [PubMed - indexed for MEDLINE]

259. Acta Anaesthesiol Scand. 2008 Apr;52(4):479-86.

No morphine sparing effect of ketamine added to morphine for patient-controlled intravenous analgesia after uterine artery embolization.

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Comment in:
Acta Anaesthesiol Scand. 2008 Apr;52(4):453-5.

BACKGROUND: Pain following embolization of the uterine arteries (UAEs) is variable and may be very severe requiring large doses of parenteral opioids for relief. The present study tested the hypothesis that the addition of ketamine to i.v. patient-controlled morphine reduces the amount of morphine required for pain-control during the first 24 h after UAE embolization. METHODS: Fifty-six patients undergoing UAE embolization for treatment of symptomatic uterine leiomyomata were randomized to receive either 2 mg/ml of morphine (Control group,
n=30) or 2 mg/ml of both morphine and ketamine (Ketamine group, n=26) by i.v. patient-controlled analgesia (IV-PCA). Pump settings were bolus dose 1 ml, lockout 10 min, no background infusion. In addition, all patients received diclofenac and acetaminophen for pain relief. Pain scores, morphine consumption and adverse events like nausea, vomiting, itching, visual disturbances, anxiety, dreaming and hallucinations, if any, were recorded for 24 h after embolization. RESULTS: The mean +/- SD 24-h consumption of patient-controlled morphine was 38.3
+/- 21.0 mg in the Ketamine group vs. 33.3 +/- 18.3 mg in the Control group (NS). The difference between the means was 5.0 mg (95% confidence interval: -5.7; 15.6). One patient in the Ketamine group vs. none in the Control group experienced auditory hallucinations. CONCLUSION: Studying an unselected group of patients undergoing embolization of the UAEs for treatment of symptomatic uterine
leiomyomata under conditions of basal analgesia with acetaminophen and diclofenac, we failed to demonstrate any morphine-sparing effect of IV-PCA ketamine and morphine compared with IV-PCA morphine alone.

PMID: 18339153 [PubMed - indexed for MEDLINE]

260. Radiat Prot Dosimetry. 2008;128(3):343-50. Epub 2008 Mar 12.

Surface dose measurement in patients and physicians and effective dose estimation in patients during uterine artery embolisation.

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Surface dose monitoring in patients and physicians during 29 uterine artery embolisation (UAE) procedures was performed using photoluminescence dosemeters and thermo-luminescence dosemeters. Organ or tissue doses were measured with an anthropomorphic phantom using UAE exposure conditions averaged from the 29 cases, and effective doses were estimated for the patient. Entrance surface dose of the patients at the maximum dose position ranged from 121.5 to 1650 mGy. Estimated doses ranged from 3.16 to 43 mGy for the ovary and from 3.8 to 51.8 mGy for the uterus. The effective dose was 1.09-14.8 mSv. Monitored doses on the body surface of physicians were relatively high in the upper arm (5.41+/-1.52 to 163+/-17.25 microGy) and the hand and fingers (0.85+/-1.18 to 222+/-16.4 microGy).

PMID: 18337296 [PubMed - indexed for MEDLINE]

261. Int J Gynaecol Obstet. 2008 May;101(2):197-8. Epub 2008 Mar 12.

Cervical leiomyosarcoma diagnosed after uterine artery embolization.

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PMID: 18336821 [PubMed - indexed for MEDLINE]

262. BJOG. 2008 Apr;115(5):653-62.

Cost-effectiveness of magnetic resonance-guided focused ultrasound surgery for treatment of uterine fibroids.

Zowall H, Cairns JA, Brewer C, Lamping DL, Gedroyc WM, Regan L.

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Comment in:
BJOG. 2008 Apr;115(5):551-3.

OBJECTIVE: To estimate the cost-effectiveness of a treatment strategy for

symptomatic uterine fibroids, which starts with Magnetic Resonance-guided Focused Ultrasound Surgery (MRgFUS) as compared with current practice comprising uterine artery embolisation, myomectomy and hysterectomy. DESIGN: Cost-utility analysis based on a Markov model. SETTING: National Health Service (NHS) Trusts in England and Wales. POPULATION: Women for whom surgical treatment for uterine fibroids is being considered. METHODS: The parameters of the Markov model of the treatment of uterine fibroids are drawn from a series of clinical studies of MRgFUS, and from the clinical effectiveness literature. Health-related quality of life is measured using the 6D. Costs are estimated from the perspective of the NHS. The impact of uncertainty is examined using deterministic and probabilistic sensitivity analysis. MAIN OUTCOME MEASURES: Incremental cost-effectiveness measured by cost per quality-adjusted life-year (QALY) gained. RESULTS: The base-case results imply a cost saving and a small QALY gain per woman as a result of an MRgFUS treatment strategy. The cost per QALY gained is sensitive to cost of MRgFUS relative to other treatments, the age of the woman and the nonperfused volume relative to the total fibroids volume. CONCLUSIONS: A treatment strategy for symptomatic uterine fibroids starting with MRgFUS is likely to be cost-effective.

PMCID: PMC2344162
PMID: 18333948 [PubMed - indexed for MEDLINE]

263. Rev Esp Anestesiol Reanim. 2008 Jan;55(1):21-5.

[Experience with uterine artery embolization in the treatment of massive postpartum hemorrhage]

[Article in Spanish]

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OBJECTIVE: To analyze our experience with uterine artery embolization in the management of massive hemorrhage in obstetric patients. PATIENTS AND METHODS: This observational, retrospective study analyzed all deliveries requiring a blood transfusion that were performed in the maternity unit of Hospital Universitario La Paz between January 1, 2000 and December 31, 2005. RESULTS: A total of 57,835 deliveries were performed with an incidence of postpartum hemorrhage of 0.7% (406 episodes). Uterine artery embolization was performed on 51 patients and 45

**patients underwent obstetric hysterectomy. Both procedures were performed on 11
patients. Ten of the patients who underwent obstetric hysterectomy subsequently required uterine artery embolization, whereas only 1 patient required an obstetric hysterectomy following embolization because the hemorrhage was not resolved. The mean consumption of blood products for patients who underwent obstetric hysterectomy was twice that for patients who underwent uterine artery embolization. There were no complications secondary to embolization. CONCLUSIONS:
Uterine artery embolization is a safe and effective procedure for managing massive postpartum hemorrhage.**

PMID: 18333382 [PubMed - indexed for MEDLINE]

264. Health Technol Assess. 2008 Mar;12(5):1-248, iii.

A multi-centre retrospective cohort study comparing the efficacy, safety and cost-effectiveness of hysterectomy and uterine artery embolisation for the treatment of symptomatic uterine fibroids. The HOPEFUL study.

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**OBJECTIVES: To examine and compare the medium-term results of hysterectomy and
uterine artery embolisation (UAE) as a treatment for symptomatic uterine fibroids with regard to safety, efficacy, special issues in the UAE group,
cost-effectiveness, and women's own perspectives on the treatments. DESIGN: Data
were collected locally from patients' hospital records and also from patients themselves by postal questionnaire. Questionnaire data included free-text comments and this qualitative material was analysed using constant comparison. A two-stage probabilistic decision model was designed to estimate UK NHS costs and health outcomes in terms of quality-adjusted life-years (QALYs). SETTING:
Eighteen NHS hospital trusts, 17 in England and one in Scotland. PARTICIPANTS:
Eligible women (972 UAE, 762 hysterectomies) who had received treatment specifically for symptomatic fibroids were identified. INTERVENTIONS: The UAE patients were treated by experienced interventional radiologists and all received their index UAE prior to the end of 2002, ensuring a minimum 2-year follow-up. The average length of follow-up was 8.6 years for the hysterectomy cohort and 4.6 years for the UAE cohort. MAIN OUTCOME MEASURES: Primary outcome measures were
complication rates to assess the comparative safety of the two interventions. Secondary outcome measures related to treatment efficacy including resolution of symptoms and patient-reported satisfaction with treatment. Further efficacy outcome measures obtained in the UAE group included fibroid/uterine size**

shrinkage and further treatments required for unresolved fibroid symptoms. Data were also gathered on pregnancies post-UAE. RESULTS: Data were available for 1108
women (649 UAE and 459 hysterectomy). Fewer complications were experienced by
women in the UAE cohort compared to the hysterectomy cohort: hysterectomy n = 120
(26.1%), UAE n = 114 (17.6%), adjusted odds ratio 0.48 [95% confidence interval (CI) 0.26 to 0.89]. When only the severe/major complications were considered, this odds ratio was reduced to 0.25 (95% CI 0.13 to 0.48). Expected general side-effects of UAE occurred in 32.7% of the UAE cohort, of which 8.9% also experienced complications. Obesity and medical co-morbidity predisposed women to
complications, whereas prophylactic antibiotics appeared to protect against both complications and the expected side-effects of UAE. More women in the hysterectomy cohort reported relief from fibroid symptoms (89% versus 80% UAE, p
less than 0.0001) and feeling better (81% versus 74% UAE, p less than 0.0001), but only 70% (compared with 86% UAE, p = 0.007) would recommend their treatment
to a friend. In the UAE cohort, 18.3% of the women went on to receive one or more further fibroid treatments including hysterectomy (11.2%). After adjusting for differential time of follow-up, the UAE women had up to a 23% (95% CI 19 to 27%) likelihood of requiring further treatment. The free-text data indicated that many women, in both cohorts, felt that their treatment had been a complete success. In the UAE cohort there were several areas where expectations were apparently high and outcome had not fulfilled their expectations. Disappointment was expressed mainly about continuation or return of symptoms or failure to become pregnant. Many continued to have remaining questions about their treatment. The economic analysis indicated that UAE is less expensive than hysterectomy even after further treatments for unresolved or recurrent symptoms are taken into account, with little difference in QALYs between the two treatments. Younger women are exposed to the risk of recurrent fibroids and subsequent additional procedures over a longer period and consequently UAE may no longer be cost-effective. CONCLUSIONS: The study results suggest that both UAE and hysterectomy are safe. No unexpected problems were detected following UAE after a long follow-up period
(average 5 years). Complications are less common for UAE than hysterectomy. The cost-effectiveness analysis favours embolisation even after taking account of complications, expected side-effects associated with the procedure and subsequent re-treatments for women with a preference for uterus preservation. It is important to improve the management of expectations following UAE, particularly regarding fertility. The data suggested that fertility and miscarriage rate are consistent with those of age-matched women with fibroids. UAE is an effective treatment for some women with fibroids and our trial supports the National Institute for Health and Clinical Excellence guidance that it should be made available as one of the options for treatment, with a possible reduction in the need for hysterectomy as the first-line treatment. Further research is needed into which women will be treated most successfully by UAE, the best method of

achieving effective embolisation, advice for women who desire future fertility, the role of prophylactic antibiotics in UAE, and the effects of HRT use after UAE on recurrence of fibroid symptoms.

PMID: 18331704 [PubMed - indexed for MEDLINE]

265. Best Pract Res Clin Obstet Gynaecol. 2008 Aug;22(4):735-47. Epub 2008 Mar 7.

Management of symptomatic fibroids: conservative surgical treatment modalities other than abdominal or laparoscopic myomectomy.

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Approximately 50% of women of reproductive age have fibroids, and at least 50% of
these women have significant symptoms. However, until 15 years ago, the only surgical options available were hysterectomy and myomectomy, and as yet there are
no proven effective long-term medical therapies. Fortunately, the past decade has witnessed the emergence of highly sophisticated diagnostic and therapeutic technologies for fibroids. Magnetic resonance imaging and high-resolution ultrasound are non-invasive, high-quality diagnostic procedures. The new treatment modalities include: laparoscopic and vaginal myomectomy; uterine artery
embolization (UAE); magnetic-resonance-guided focused ultrasound surgery (MRgFUS); hysteroscopic resection where the fibroids are submucous; myolysis by heat, cold coagulation and laser; laparoscopic uterine artery occlusion; and temporary transvaginal uterine artery occlusion. It is, however, abundantly clear that there is no panacea that suits every woman, nor are all treatment types universally available to all women, even in the developed world. Laparoscopic surgery requires skills that are not common place, and there are limitations on the size and number of fibroids that can be treated by this modality. Much the same applies to vaginal myomectomy. UAE is now widely used in the USA and Western
Europe, and has been recommended by the National Institute for Clincial Excellence (NICE) in the UK as an alternative therapy to hysterectomy. However, UAE is still under evaluation in terms of comparison with myomectomy. UAE has a range of complications including premature ovarian failure, chronic vaginal discharge and pelvic sepsis, and may have limited efficacy when the fibroids are large. Although there are a number of reports of successful pregnancy following UAE, the experience is limited and research is required in this area. MRgFUS was approved by the US Food and Drug Administration in 2004, while NICE recommended
that the procedure should be used in an audit and research setting. Preliminary data following laparoscopic uterine artery occlusion suggest that outcomes are

similar to those with UAE, but these data are derived from studies involving relatively small numbers. Temporary uterine artery occlusion is also promising, but has yet to be evaluated robustly. Thus there is no room for complacency; research involving the available treatment modalities is urgently needed, while innovations in search of newer and more effective therapies must continue. This chapter will review surgical treatment modalities other than hysterectomy and abdominal or laparoscopic myomectomy.

PMID: 18328788 [PubMed - indexed for MEDLINE]

266. Best Pract Res Clin Obstet Gynaecol. 2008 Aug;22(4):707-16. Epub 2008 Mar 6.

Endoscopic management of uterine fibroids.

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**Uterine fibroids are the most common benign tumours of the uterus. Management depends on the symptoms, location and size of the fibroids, and the patient's desire to conceive. Surgical management of uterine fibroids has changed from laparotomy to minimally invasive surgery. Uterine fibroids are usually asymptomatic and do not require treatment. Laparoscopic myomectomy is the best treatment option for symptomatic women with uterine fibroids who wish to maintain
their fertility. The authors' criteria for laparoscopic myomectomy are a fibroid of <15 cm in size, and no more than three fibroids with a size of 5 cm. Compared with laparotomy, laparoscopic myomectomy has the advantages of small incisions, short hospital stay, less postoperative pain, rapid recovery and good assessment of other abdominal organs. Due to the concern of decreased ovarian reserve, uterine artery embolization is not advisable for these women. In addition, it is associated with high risks of miscarriages, preterm delivery and postpartum bleeding. Laparoscopic myolysis causes severe adhesion formation. Women with submucous fibroids receive myomectomy by hysteroscopy. For women who have completed their family, laparoscopic hysterectomy could be performed. Most fibroids can be managed endoscopically either by laparoscopy or hysteroscopy. Surgeon expertise, especially laparoscopic suturing, is crucial. Laparoscopic myomectomy is still the best treatment option for symptomatic women with uterine
fibroids who wish to maintain their fertility. Hysteroscopic myomectomy is an established surgical procedure for women with excessive uterine bleeding, infertility or repeated miscarriages.**

PMID: 18325839 [PubMed - indexed for MEDLINE]

267. Fertil Steril. 2009 Mar;91(3):884-92. Epub 2008 Mar 5.

Recanalization and particle exclusion after embolization of uterine arteries in sheep: a long-term study.

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OBJECTIVE: To compare the long-term evolution of uterine arteries after embolization with the two most commonly used embolic agents for fibroid embolization: nonspherical polyvinyl alcohol (PVA) particles and trisacryl gelatin microspheres (TGMS). DESIGN: Prospective study. SETTING: University-based interventional radiology, pathology, and reproductive physiology units. ANIMAL(S): Two groups of 10 sheep embolized in the uterine artery. INTERVENTION(S): Embolization of the uterine artery with either 600-1000 microm nonspherical polyvinyl alcohol (PVA) particles or with 700-900 microm trisacryl gelatin microspheres (TGMS). Animals were synchronized and naturally inseminated. Animals were killed at 26 months. MAIN OUTCOME MEASURE(S): Uteri were examined pathologically for vessel size, site of occlusion, recanalization rate of vessels, and particle location within the vascular wall. RESULT(S): The PVA particles were more numerous in the vessels' lumen than the TGMS particles (13.3 +/- 20.8 vs. 2.5 +/- 2.7), were located more proximally than TGMS (97% vs. 68% in the trunk and first branches of the uterine artery), and were found almost exclusively in the intima (99.2%). In contrast, 54.4% of the TGMS particles were found in the intima, and 45.6% partially or totally excluded. The rate of recanalization was not statistically significantly different for PVA and TGMS (65.2% vs. 60.6%). CONCLUSION(S): The long-term evolution of uterine arteries was different after uterine artery embolization with PVA and TGMS because PVA particles formed large-sized aggregates that occluded proximal vessels and remained in the vessel intima. Microspheres occluded more distal vessels, and about 50% of them were partially or totally excluded from the vessel.

PMID: 18321492 [PubMed - indexed for MEDLINE]

268. Int J Fertil Womens Med. 2007 Mar-Jun;52(2-3):111-20.

Fibroid volume, location and symptoms in women undergoing uterine artery embolization: does size or position matter?

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OBJECTIVE: To investigate the relationship between MRI-determined uterine fibroid size and their location, and fibroid-related symptoms, including quality of life and sexual function, in women with symptomatic fibroids before uterine artery embolization (UAE). MATERIALS AND METHODS: Forty-six women underwent pelvic MRI within four weeks prior to UAE. The MRIs were analyzed and fibroid size and fibroid location were recorded. Women also completed a comprehensive self-report questionnaire within the four weeks prior to the procedure. The questionnaire (Short Form-36 (SF-36) and Female Sexual Function Index (FSFI), respectively, investigated the frequency of fibroid-related symptoms, as well as quality of life and sexual function. Pearson product moment correlation coefficients were used to examine relationships among variables, and ANOVAs were used to determine between-group difference. RESULTS: At baseline, women with symptomatic fibroids had worse quality of life and sexual function scores than healthy controls ($p < .05$). No fibroid-related symptoms, or aspects of quality of life or sexual function, were significantly correlated with either total uterine volume or largest fibroid volume. No significant differences with respect to fibroid-related symptoms were found between patients with or without subserosal or submucosal fibroids. CONCLUSIONS: Women with symptomatic fibroids pre-UAE had impaired quality of life and sexual function, but size and location of fibroids as determined by MRI were not related to fibroid-related symptoms, health-related quality of life, or sexual function.

PMID: 18320870 [PubMed - indexed for MEDLINE]

269. Radiologe. 2008 Jul;48(7):649-53.

[Follow-up in uterine fibroid embolization]

[Article in German]

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Follow-up controls in patients after uterine fibroid embolization (UFE) should monitor clinical improvement of symptoms, document shrinkage of the fibroids, exclude malignancies and detect and treat potential complications of the intervention.A close cooperation with the referring gynecologist, sufficiently and carefully informing the patient about the routine follow-up procedure, potential complications and their clinical signs are necessary to fulfill this goal.Imaging is usually based on ultrasound imaging but may be supplemented by

MRI. There are different complications in the early phase after UFE and in the later postembolization phase.

PMID: 18320162 [PubMed - indexed for MEDLINE]

270. Anesthesiol Clin. 2008 Mar;26(1):53-66, vi.

Major obstetric hemorrhage.

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Major obstetric hemorrhage remains the leading cause of maternal mortality and morbidity worldwide, and is associated with a high rate of substandard care. A well-defined and multidisciplinary approach that aims to act quickly and avoid omissions or conflicting strategies is key. The most common etiologies of hemorrhage are abruptio placenta, placenta previa/accreta, uterine rupture in the antepartum period and retained placenta, uterine atony, and genital-tract trauma in the postpartum period. Basic treatment of postpartum hemorrhage relies on manual removal of the placenta or manual exploration of the uterus plus bladder emptying and oxytocin administration. If this does not arrest bleeding, or if there is any suspicion of genital-tract trauma, examination of the vagina and cervix with appropriate valves and analgesia/anesthesia must follow quickly. Postpartum uterine atony resistant to oxytocin must be treated with prostaglandin within 15 to 30 minutes; uterine balloon tamponade can be also useful at this stage. Aggressive transfusion therapy and resuscitation are mandatory in major obstetric hemorrhage. Specific invasive treatment must be considered within no more than 30 to 60 minutes, if previous measures have failed -- and even earlier in some particular etiologies. The two main options are radiologic embolization and surgical artery ligations. Recombinant factor VIIa may also be considered, but should not delay the performance of a life-saving procedure such as embolization or surgery. Hysterectomy must be implemented when all other interventions have failed.

PMID: 18319179 [PubMed - indexed for MEDLINE]

271. J Minim Invasive Gynecol. 2008 Mar-Apr;15(2):212-6.

Late massive uterine hemorrhage caused by ruptured uterine artery pseudoaneurysm
after laparoscopic-assisted myomectomy.

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Diagnosis and management of ruptured uterine artery pseudoaneurysm after laparoscopic-assisted myomectomy is described.

PMID: 18312994 [PubMed - indexed for MEDLINE]

272. J Magn Reson Imaging. 2008 Mar;27(3):557-62.

Assessment of the uterine artery before uterine arterial embolization: comparison of unenhanced 3D water-excitation sensitivity-encoding time-of-flight (WEST) and gadolinium-enhanced 3D sensitivity-encoding water-excitation multishot echo-planar (SWEEP) MR angiography.

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PURPOSE: To compare unenhanced 3D water-excitation sensitivity-encoding time-of-flight (WEST) and gadolinium-enhanced 3D sensitivity-encoding water-excitation multishot echo-planar (SWEEP) MR angiography (MRA) with regard to conspicuity of uterine arteries in correlation with digital subtraction angiography (DSA). MATERIALS AND METHODS: Eleven consecutive patients with symptomatic uterine fibroids underwent 2 types of MRA before uterine arterial embolization (UAE). From these MRA an interventional radiologist predicted the optimal degrees for oblique DSA projections to reveal uterine arterial origins. Qualitatively, three independent observers reviewed two types of MRA assessing the conspicuity of uterine arterial origins and descending portions using a 3-point scale. Quantitatively, the visualized uterine arteries were measured from their orifice to the end of their descending portions. RESULTS: At UAE, knowing the optimal degrees from MRA, the uterine arterial origins were clearly visualized on all first oblique DSA projections. Mean conspicuity levels of the uterine arterial origins and descending portions were significantly higher and mean length of the visualized uterine arteries was significantly longer for unenhanced WEST MRA than for gadolinium-enhanced SWEEP MRA. CONCLUSION: Unenhanced 3D-WEST MRA was superior to gadolinium-enhanced 3D-SWEEP MRA in demonstrating uterine arteries. The optimal degrees for DSA projections to reveal uterine arterial origins could be accurately predicted using this noninvasive technique.

PMID: 18307198 [PubMed - indexed for MEDLINE]

273. J Vasc Interv Radiol. 2008 Mar;19(3):443-5.

Postembolization syndrome: changes in white blood cell counts immediately after uterine artery embolization.

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Postembolization syndrome (PES) after transcatheter uterine artery embolization (UAE) is classically described as including self-limited pain, nausea, vomiting, and fever. However, the expected components of PES after UAE might also include leukocytosis, the incidence and magnitude of which have not yet been determined. A retrospective review of 78 patients who underwent elective UAE for symptomatic leiomyomas showed an increase in white blood cell (WBC) counts within 24 hours after the procedure in 86% of patients, with clinically defined leukocytosis (WBC count >11,000/microL) present in 21% of patients. Interventional radiologists and other clinicians involved in the care of these patients should expect such changes and not be alarmed regarding early infectious complications.

PMID: 18295706 [PubMed - indexed for MEDLINE]

274. J Vasc Interv Radiol. 2008 Mar;19(3):319-26.

Long-term outcome of uterine artery embolization for symptomatic uterine leiomyomas.

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**PURPOSE: To evaluate long-term outcomes and factors associated with treatment failure after uterine artery embolization (UAE) in women with symptomatic uterine leiomyomas. MATERIALS AND METHODS: One hundred consecutive women treated with UAE
for symptomatic uterine leiomyomas participated. Clinical outcome data (ie, changes in symptoms, menstrual status, subsequent therapies) and satisfaction data were collected. Treatment failure was defined by subsequent major surgery (ie, hysterectomy or myomectomy), a second embolization, or a lack of symptom improvement at the patient's final follow-up interval. Possible predictors of failure were age, clinical baseline characteristics (ie, bleeding, pain, and bulk), and imaging results (eg, percent volume reduction of the dominant tumor). Cox proportional-hazards analysis was used to determine factors associated with failure. RESULTS: Follow-up was available in 93 women (median follow-up, 54 months; range, 45-87 y). Continued symptom relief was observed in 72% of patients (n = 67). Among the 26 women with treatment failure (28%), 11 (42%) underwent**

hysterectomy, four (15%) myomectomy, and eight (31%) repeat embolization. Three
(12%) reported no improvement. In women without any additional surgery (n = 70), heavy menstrual bleeding, pain, and bulk-related symptoms improved in 97%, 93%, and 92%. Ninety percent of all women (n = 93) were satisfied or very satisfied at final follow-up. Predictors of failure were a lack of improvement in bleeding (hazard ratio [HR], 9.0; 95% CI, 3.1-26.3; P < .001) or pain (HR, 7.4; 95% CI, 2.2-24.4; P < .001) at 1 year after UAE and the percent reduction in dominant tumor volume (HR, 0.97; 95% CI, 0.95-0.99; P = .007). CONCLUSIONS: UAE in women with symptomatic leiomyomas leads to long-term symptom improvement. Predictors of
failure were a lack of improvement in bleeding or pain at 1 year and the percent reduction in dominant tumor volume.

PMID: 18295689 [PubMed - indexed for MEDLINE]

275. Fertil Steril. 2009 Feb;91(2):580-8. Epub 2008 Mar 4.

Uterine artery embolization, hysterectomy, or myomectomy for symptomatic uterine fibroids: a cost-utility analysis.

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OBJECTIVE: To compare the cost and quality-adjusted life-years (QALYs) of hysterectomy, myomectomy, and uterine artery embolization (UAE) for symptomatic
control of uterine fibroids. DESIGN: A cost-utility analysis conducted by using Markov modeling. SETTING: The analysis was conducted from the perspective of Hong
Kong society. PATIENT(S): A hypothetical cohort of patients presenting with symptomatic uterine fibroids. INTERVENTION(S): Hysterectomy, myomectomy, or UAE.
MAIN OUTCOME MEASURE(S): Health-care resource use and QALYs over 5 years.
RESULT(S): The base-case analysis showed that hysterectomy was the most effective
treatment (4.368 QALYs), followed by myomectomy (4.273 QALYs) and UAE (4.245 QALYs) over 5 years. Hysterectomy was less costly (USD8418) (1USD = 7.8HKD) than UAE (USD8847) and myomectomy (USD9036). Monte Carlo 10,000 simulations showed
that the hysterectomy group was less costly than the UAE and myomectomy groups 84.1% and 79.1% of the time, and it also gained higher number of QALYs than the UAE and myomectomy groups over 97% of the time. CONCLUSION(S): Hysterectomy

appears to be more cost-effective than myomectomy and UAE for management of symptomatic uterine fibroids over a 5-year period among patients who do not have a preference for uterus-conserving interventions.

PMID: 18295216 [PubMed - indexed for MEDLINE]

276. Evid Rep Technol Assess (Full Rep). 2007 Jul;(154):1-122.

Management of uterine fibroids: an update of the evidence.

Viswanathan M, Hartmann K, McKoy N, Stuart G, Rankins N, Thieda P, Lux LJ, Lohr KN.

OBJECTIVES: The RTI International-University of North Carolina at Chapel Hill Evidence-based Practice Center (RTI-UNC EPC) systematically updated evidence on the management of uterine fibroids, specifically incidence and prevalence of fibroids, treatment outcomes, comparisons of treatment, modifiers of outcomes, and costs. DATA SOURCES: We searched MEDLINE(R), Cochrane Collaboration resources, and Embase. REVIEW METHODS: We included studies published in English from February 2000 through August 2006. We excluded studies with low sample size (based on study design, cases series < 100 and cohorts < 40) or lack of relevance to uterine fibroids. Of 107 included studies, 3 were good quality, 56 fair, and 48 poor. RESULTS: The cumulative incidence by age 50 is 70 percent to 80 percent; black women are more likely to get fibroids at younger ages. Appearance of new fibroids and growth of existing fibroids after treatment are poorly studied. Trials of preoperative medical management indicate that treatment reduces fibroid volume but do not provide sufficient evidence of improvement in important operative outcomes. When women are treated for reasons other than symptom relief, such as when pregnancy is desired, weak evidence supports treating submucous fibroids via hysteroscopy. No well-conducted trials in U.S. populations directly compared treatment options, including the option of expectant management, or followed women to determine whether the intervention met their treatment objectives. Common procedures such as hysterectomy and myomectomy, including choice among types of myomectomy, still cannot be meaningfully compared. Studies comparing uterine artery embolization (UAE) with other procedures reported procedure time and length of stay favoring UAE, but inconsistency of the direction of effect for complications and absence of key information on longer-term outcomes suggest that this evidence base is inadequate to comment on the relative risks and benefits of UAE versus hysterectomy or myomectomy. Costs of fibroid treatment, despite shorter average lengths of stay, are rising. CONCLUSIONS: The dearth of high-quality evidence supporting the effectiveness of most interventions for uterine fibroids is remarkable, given how common this problem is. The current state of the literature does not permit definitive

conclusions about benefit, harm, or relative costs to help guide women's choices. Significant research gaps include well-conducted trials in U.S. populations that directly compare interventions on short- and, especially, long-term outcomes, studies on therapeutics for medical management, and information on treatment decisions for women who desire a pregnancy.

PMID: 18288885 [PubMed - indexed for MEDLINE]

277. Eur J Radiol. 2009 Apr;70(1):128-32. Epub 2008 Feb 15.

Uterine artery embolisation for symptomatic adenomyosis--mid-term results.

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PURPOSE: To evaluate the role of uterine artery embolisation (UAE) in the treatment of adenomyosis. MATERIALS AND METHODS: 27 women with symptomatic adenomyosis diagnosed on magnetic resonance imaging (MRI) underwent UAE between 1998 and 2004. Clinical evaluation using a standardised questionnaire was made at regular intervals after embolisation to assess patient outcome. RESULTS: The diagnosis of adenomyosis was confirmed histologically by transvaginal biopsy in 5 women. There were 14 women with associated uterine fibroids. Diffuse adenomyosis was identified in 18 women. A focal adenomyoma was present in another 8 women. In 1 patient adenomyosis was not classified. All patients except one underwent bilateral uterine artery embolisation. There was an initial favourable clinical response, with improvement of menorrhagia in 79% (13/16) of patients at 12 months. Follow-up data was available on a total of 14 patients at 2 and 3 years after embolisation. 45.5% (5/11) reported a deterioration in menorrhagia symptoms at 2 years. CONCLUSION: UAE for symptomatic adenomyosis is effective in the short-term but there is a high rate of recurrence of clinical symptoms 2 year following treatment.

PMID: 18280686 [PubMed - indexed for MEDLINE]

278. Eur Radiol. 2008 Jun;18(6):1181-7. Epub 2008 Feb 13.

Severe postpartum haemorrhage from ruptured pseudoaneurysm: successful treatment with transcatheter arterial embolization.

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The purpose of this retrospective study was to evaluate the role of transcatheter arterial embolization in the management of severe postpartum haemorrhage due to a ruptured pseudoaneurysm and to analyse the clinical symptoms that may suggest a pseudoaneurysm as a cause of postpartum haemorrhage. A retrospective search of our database disclosed seven women with severe postpartum haemorrhage in whom angiography revealed the presence of a uterine or vaginal artery pseudoaneurysm and who were treated using transcatheter arterial embolization. Clinical files were reviewed for possible clinical findings that could suggest pseudoaneurysm as a cause of bleeding. Angiography revealed extravasation of contrast material in five out of seven patients. Transcatheter arterial embolization allowed to control the bleeding in all patients and subsequently achieve vaginal suture in four patients with vaginal laceration. No complications related to transcatheter arterial embolization were noted. Only two patients had uterine atony, and inefficiency of sulprostone was observed in all patients. Transcatheter arterial embolization is an effective and secure technique for the treatment of severe postpartum haemorrhage due to uterine or vaginal artery pseudoaneurysm. Ineffectiveness of suprostone and absence of uterine atony should raise the possibility of a ruptured pseudoaneurysm.

PMID: 18270711 [PubMed - indexed for MEDLINE]

279. J Obstet Gynaecol. 2008 Jan;28(1):28-31.

Overview of current surgical management of fibroids: 'Organ-preserving modalities'.

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Uterine fibroids are the most common solid tumours occurring in female pelvis and frequently encountered by gynaecologists. Generally about 50% remain asymptomatic and can be monitored through regular follow-up visits but symptomatic fibroids require surgical intervention at some stage. They occur in 25 - 50% of women over the age of 30 years, increasing with age and being more common in certain ethnic populations, especially the Afro-Caribbean. They have a major impact on women's health and were the most common indication for hysterectomy in England in 1993 - 1994.They have significant cost implications, the 72,362 hysterectomies performed

in 1993 - 1994 costing the NHS an estimated pound70 million. Although hysterectomy is the most certain cure for women with symptomatic fibroids who do not wish to preserve fertility, an increasing number of women are choosing and looking for the options of organ-conserving surgery. The surgery can be carried out abdominally, laparoscopically and vaginally although all routes are associated with an appreciable rate of morbidity. The discussion of organ-preserving surgery includes mainly myomectomy, transcervical resection of fibroid, uterine artery embolisation (UAE) and MRI-guided laser ablation. Hysterectomy is associated with a high rate of satisfaction and is likely to relieve menstrual problems in almost all women. Much work has been undertaken on this subject so far, with a view to safe and effective surgical approaches.

PMID: 18259894 [PubMed - indexed for MEDLINE]

280. Obstet Gynecol. 2008 Feb;111(2 Pt 2):573-5.

Late postpartum hemorrhage due to von Willebrand disease managed with uterine artery embolization.

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BACKGROUND: Von Willebrand disease is the most common inherited bleeding disorder caused by quantitative or qualitative defects of von Willebrand factor, which may lead to postpartum bleeding problems. In such patients, resistant postpartum hemorrhage may be treated effectively by using transcatheter arterial embolization. CASE: Life-threatening late postpartum bleeding of a patient with von Willebrand disease type 3 unresponsive to traditional medical approaches was successfully managed with selective uterine artery embolization. CONCLUSION: Selective transcatheter uterine artery embolization may be used to control life-threatening pelvic hemorrhage unresponsive to traditional local measures. Such an intervention may also be used successfully in patients with bleeding disorders as the last chance of uterine preservation.

PMID: 18239026 [PubMed - indexed for MEDLINE]

281. Obstet Gynecol. 2008 Feb;111(2 Pt 2):505-7.

Uterine artery embolization followed by dilation and curettage for cervical pregnancy.

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BACKGROUND: Cervical pregnancy can be a life-threatening condition due to the risk of severe hemorrhage. Progression of ultrasonographic diagnostic technology has allowed the early detection of cervical pregnancy. However, a standard treatment protocol for fertility preservation has not yet been established. CASE: Two women with cervical pregnancy presented with cardiac activity at 6 and 7 weeks of gestation. They were treated with transfemoral uterine artery embolization followed by dilation and curettage with minimal bleeding. One patient gave birth to a healthy neonate 20 months after the procedure. CONCLUSION: Early cervical pregnancies were treated with dilation and curettage after uterine artery embolization. This treatment can be considered as conservative management for patients who desire to preserve their fertility.

PMID: 18239001 [PubMed - indexed for MEDLINE]

282. Cardiovasc Intervent Radiol. 2008 May-Jun;31(3):521-6. Epub 2008 Jan 25.

Uterine artery embolization in 101 cases of uterine fibroids: do size, location, and number of fibroids affect therapeutic success and complications?

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The purpose of this study was to evaluate whether the size, location, or number of fibroids affects therapeutic efficacy or complications of uterine artery embolization (UAE). Patients with symptomatic uterine fibroids (n = 101) were treated by selective bilateral UAE using 500- to 710-mum polyvinyl alcohol (PVA) particles. Baseline measures of clinical symptoms, sonography, and MRI taken before the procedure were compared to those taken 1, 3, 6, and 12 months later. Complications and outcomes were analyzed for associations with fibroid size, location, and number. Reductions in mean fibroid volume were similar in patients with single (66.6 +/- 21.5%) and multiple (67.4 +/- 25.0%) fibroids (p-value = 0.83). Menstrual improvement occurred in patients with single (93.3%) and multiple (72.2%) fibroids (p = 0.18). Changes in submucosal and other fibroids were not significantly different between the two groups (p's > 0.56). Linear regression analysis between primary fibroid volume as independent variable and percentage reduction of fibroid volume after 1 year yielded an R(2) of 0.083 and the model coefficient was not statistically significant (p = 0.072). Multivariate regression models revealed no statistically or clinically significant coefficients or odds ratios for three independent variables (primary fibroid size, total number, and fibroid location) and all outcome variables (percent reduction of uterus and fibroid volumes in 1 year, improvement of clinical symptoms [menstrual, bulk related, and urinary] in 1 year, and complications

after UAE). In conclusion, neither the success rate nor the probability of complications was affected by the primary fibroid size, location, or total number of fibroids.

PMID: 18219521 [PubMed - indexed for MEDLINE]

283. J Vasc Interv Radiol. 2008 Jan;19(1):58-65.

Leiomyoma infarction after uterine artery embolization: a prospective randomized study comparing tris-acryl gelatin microspheres versus polyvinyl alcohol microspheres.

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PURPOSE: To determine the degree of leiomyoma infarction after uterine artery embolization (UAE) performed with tris-acryl gelatin microspheres or polyvinyl alcohol (PVA) microspheres. MATERIALS AND METHODS: Patients determined to be candidates and scheduled for UAE were randomized prospectively to receive tris-acryl gelatin microspheres or PVA microspheres. The manufacturers' recommended technique was used for both products during the UAE procedures (including the recently described refined protocol for PVA microspheres). All patients underwent magnetic resonance (MR) imaging of the pelvis with contrast agent enhancement before and after the UAE procedure. On the postprocedural MR
study, the degree of tumor infarction was assessed on postcontrast images. These findings were classified as follows: 100% infarction, 90%-99% infarction, 50%-89% infarction, and less than 50% infarction. Treatment failure was defined by enhancement of more than 10% of a patient's entire tumor burden. RESULTS: A total
of 53 patients were enrolled in this study. Twenty-seven (mean age, 44.9 years) received PVA microspheres and 26 (mean age, 45.1 years) received tris-acryl gelatin microspheres. There were no significant differences in the preprocedural uterine volume, dominant tumor volume, location of dominant tumor, and presenting
symptoms between populations. In the PVA microsphere group, treatment failure was
seen in eight patients (29.6%). In the tris-acryl gelatin microsphere group, treatment failure was seen in one patient (3.8%), which was a significant difference between groups (P < or = .025). CONCLUSIONS: There was a significantly greater degree of tumor infarction in patients treated with tris-acryl gelatin microspheres during UAE than in patients who received PVA microspheres administered in accordance with a newly refined protocol. Given the known risk of recurrence in patients with persistent tumor enhancement after UAE, it is concluded that tris-acryl gelatin microspheres should be the preferred agent for UAE at this time.

PMID: 18192468 [PubMed - indexed for MEDLINE]

284. J Vasc Interv Radiol. 2008 Jan;19(1):47-57.

Acrylamido polyvinyl alcohol microspheres for uterine artery embolization: 12-month clinical and MR imaging results.

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PURPOSE: To report the 12-month clinical and magnetic resonance (MR) imaging results of an ongoing two-center registry involving acrylamido polyvinyl alcohol (PVA) microspheres for uterine artery embolization (UAE) for leiomyomas. MATERIALS AND METHODS: A total of 69 patients underwent UAE with 500-700-microm, 700-900-microm, and 900-1,200-mum acrylamido PVA microspheres (BeadBlock). Thirty-three patients underwent UAE with a limited embolization (protocol A) and 36 patients underwent UAE with stasis as the angiographic endpoint (protocol B). Primary objectives were clinical efficacy measured by a leiomyoma-specific quality of life (QOL) questionnaire and infarction rate of leiomyomas on early contrast agent-enhanced MR imaging. Secondary objectives were in-hospital complications, patient satisfaction, and frequency of clinical failure. RESULTS: Bilateral embolization was technically successful in 68 of 69 patients. A significant decrease ($P < .001$) in symptom severity and increase in health-related QOL was observed at 3 and 12 months with no significant differences between embolization protocols. However, contrast agent-enhanced MR imaging showed a significantly lower rate of completely infarcted leiomyomas in protocol A compared with protocol B ($P < .05$). Early clinical failures in patients treated according to protocol A were caused by incomplete tumor infarction. Minor complications occurred in five of 69 patients. Patient satisfaction was similar between protocols. CONCLUSIONS: Acrylamido PVA microspheres are a clinically effective and safe embolic agent for UAE. The use of 500-700-microm spheres and a limited embolization results in an unacceptably high rate of failed tumor infarction. Superior imaging results and fewer repeat interventions can be achieved with use of 700-900-microm spheres and stasis as the angiographic endpoint.

PMID: 18192467 [PubMed - indexed for MEDLINE]

285. J Vasc Interv Radiol. 2008 Jan;19(1):42-6.

Spherical versus conventional polyvinyl alcohol particles for uterine artery

embolization.

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PURPOSE: To compare the efficacy of spherical polyvinyl alcohol (PVA) particles versus conventional PVA particles for uterine artery embolization (UAE). MATERIALS AND METHODS: Of 149 patients with 1-year follow-up after UAE, 96 received conventional PVA particles and 53 received spherical PVA particles. Severity of symptoms was ranked on an 11-point numeric rating scale (0-10). The changes in severity of symptoms after embolization, blood hemoglobin level, and the size of the dominant tumor depicted by ultrasonography were used to assess the efficacy of the two types of particles. The number of hysterectomies and myomectomies in each group was also recorded as evidence of UAE failure. RESULTS:
On 1-year follow-up, patients treated with conventional PVA showed average numeric rating scale score improvements of 4.6 in menorrhagia, 2.9 in dysmenorrhea, 3.7 in pressure sensation, and 3.4 in urinary frequency. With spherical PVA, the average improvements were 3.0 in menorrhagia, 2.4 in dysmenorrhea, 3.1 in pressure sensation, and 2.0 in urinary frequency. Except in dysmenorrhea, all differences were significant (P < .001). With conventional PVA, there was an 8-mg/mL increase in blood hemoglobin level versus a 3-mg/mL increase
with spherical PVA (P < .05). With conventional PVA, there was a 28-mm (34%) average reduction in diameter of the dominant tumor versus a 15.7-mm (19%) reduction with spherical PVA (P = .01). Eight of 96 patients (8%) treated with conventional PVA underwent hysterectomy or myomectomy during the entire length of
the study, versus six of 53 patients (11%) treated with spherical PVA (P = .6). No patient underwent multiple embolizations. CONCLUSIONS: In comparison with conventional PVA particles, UAE with the use of spherical PVA particles resulted in less fibroid tumor shrinkage and less improvement in clinical symptoms.

PMID: 18192466 [PubMed - indexed for MEDLINE]

286. Radiology. 2008 Mar;246(3):823-32. Epub 2008 Jan 9.

Symptomatic uterine fibroids: treatment with uterine artery embolization or hysterectomy--results from the randomized clinical Embolisation versus Hysterectomy (EMMY) Trial.

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PURPOSE: To prospectively evaluate health-related quality of life (HRQOL) outcomes for uterine artery embolization (UAE) and hysterectomy up to 24 months after the intervention in terms of mental and physical health, urinary and defecatory function, and overall patient satisfaction. MATERIALS AND METHODS: Ethics committee approval and informed consent were obtained for the Embolisation
versus Hysterectomy Trial. Women (n = 177) with uterine fibroids and heavy menstrual bleeding who were scheduled to undergo hysterectomy were randomly assigned to undergo UAE (n = 88) or hysterectomy (n = 89). HRQOL was measured six
times during a 24-month follow-up period with the following validated questionnaires: Medical Outcome Study Short Form 36 (SF-36) mental component summary (MCS) and physical component summary (PCS), Health Utilities Index Mark
3, EuroQol 5D, urogenital distress inventory (UDI), incontinence impact questionnaire, and defecation distress inventory (DDI). Satisfaction was assessed with a seven-point Likert scale. Repeated measurement analysis was performed for between-group analysis. Paired t tests were performed for within-group analysis. Satisfaction was analyzed with the Fisher exact test. RESULTS: The SF-36 MCS and PCS, Health Utilities Index Mark 3, EuroQol 5D, and UDI scores were improved significantly in both groups at 6 months and afterward (P < .05). The DDI score was improved significantly in only the UAE group at 6 months and afterward (P < .05). No differences between groups were observed, with the exception of PCS scores at 6-week follow-up: Patients in the UAE group had significantly better scores than did patients in the hysterectomy group (P < .001). Improvement in PCS score at 24-month follow-up was significantly higher for patients who were employed at baseline (P = .035). At 24-month follow-up, patients in the hysterectomy group were significantly more satisfied than those in the UAE group (P = .02). CONCLUSION: Both UAE and hysterectomy improved HRQOL. No differences
were observed between groups regarding HRQOL at 24-month follow-up. On the basis
of HRQOL results, the authors determined that UAE is a good alternative to hysterectomy. **(c) RSNA, 2008.**

PMID: 18187401 [PubMed - indexed for MEDLINE]

287. Obstet Gynecol. 2008 Jan;111(1):22-33.

**Uterine artery embolization for treatment of leiomyomata: long-term outcomes from
the FIBROID Registry.**

Goodwin SC, Spies JB, Worthington-Kirsch R, Peterson E, Pron G, Li S, Myers ER; Fibroid Registry for Outcomes Data (FIBROID) Registry Steering Committee and Core

Site Investigators.

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OBJECTIVE: To assess long-term clinical outcomes of uterine artery embolization across a wide variety of practice settings in a large patient cohort. METHODS: The Fibroid Registry for Outcomes Data (FIBROID) for Uterine Embolization was a 3-year, single-arm, prospective, multi-center longitudinal study of the short- and long-term outcomes of uterine artery embolization for leiomyomata. Two thousand one hundred twelve patients with symptomatic leiomyomata were eligible
for long-term follow-up at 27 sites representing a geographically diverse set of practices, including academic centers, community hospitals, and closed-panel health maintenance organizations. At 36 months after treatment, 1,916 patients remained in the study, and of these, 1,278 patients completed the survey. The primary measures of outcome were the symptom and health-related quality-of-life scores from the Uterine Fibroid Symptom and Quality of Life questionnaire. RESULTS: Mean symptom scores improved 41.41 points (P<.001), and the quality of life scores improved 41.47 points (P<.001), both moving into the normal range for this questionnaire. The improvements were independent of practice setting. During the 3 years of the study, Kaplan-Meier estimates of hysterectomy, myomectomy, or repeat uterine artery embolization were 9.79%, 2.82%, and 1.83% of the patients, respectively. CONCLUSION: Uterine artery embolization results in a durable improvement in quality of life. These results are achievable when the procedure is performed in any experienced community or academic interventional radiology practice. LEVEL OF EVIDENCE: III.

PMID: 18165389 [PubMed - indexed for MEDLINE]

288. J Med Life. 2008 Jan-Mar;1(1):60-5.

Combined endovascular and surgical therapy of uterine fibroma.

Grigoriu C, Dumitrascu M, Grigoras M, Horhoianu I, Horhoianu V, Nechifor R, Dorobat B, Pavel A, Lana G.

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Since the first description of uterine artery embolisation for the treatment of symptomatic fibroids of the uterus in 1994, this minimally invasive procedure has been increasingly performed in many countries. Transcatheter embolisation of the uterine arteries feeding large fibroids is a minimally invasive technique. This paper presents the combined endovascular and surgical therapy in the treatment of uterine fibroma. The purpose of this therapy is saving the reproductive function of the uterus even in cases with very large fibromas or located in areas with difficult access, in which hysterectomy would have been needed. The therapy has a

high rate of success, it is accompanied by disappearance of the symptoms and it has a low risk of intra- and postoperatory complications. The first step is the embolisation of uterine arteries--a safe therapy of uterine fibroma. The procedure eliminates the risk of post-miomectomy relapse through the symultaneous
devascularisation of all fibroma nodules, even of the very small ones which are unapparent clinically or imagistically. The post-embolisation surgical intervention is undertaken in conditions of operative comfort, with minimal bleeding; it eliminates the need for blood transfusions and diminishes the duration of intervention. Three representative cases where this therapy has been successfully applied are presented in this article. The embolisation of the uterine arteries represents an efficient therapy of the uterine fibroma, with very good results noted in the speciality literature.

PMID: 20108481 [PubMed - indexed for MEDLINE]

289. J Hum Reprod Sci. 2008 Jan;1(1):33-4.

Angular ectopic pregnancy presenting as rupture of lateral wall of the uterus.

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This is a case report of a 32-year-old woman, being treated for secondary infertility, with history of previous ectopic pregnancy, who presented to the emergency obstetrical room in a state of hypovolemic shock. A diagnosis of ruptured ectopic pregnancy was confirmed in view of history of 14 weeks amenorrhea with a positive urine pregnancy test and positive colpopunture. She was immediately shifted for an emergency exploratory laparotomy. Intraoperatively, the authors were surprised to encounter a right lateral wall rupture uterus and ~14 weeks foetus with the placenta lying freely in the peritoneal cavity. That was suggestive of a right interstitial ectopic which had grown up to 14 weeks, invaded the uterine cavity thus forming an angular ectopic, which ended up as the catastrophic event. The authors here wish to highlight that angular pregnancy is rare but it has catastrophic consequences including maternal mortality. Had the patient presented early, in view of history of previous ectopic, an ultrasonography and color Doppler would have been useful in early detection. And a fertility conserving management in the form of Methotrexate therapy or Selective Uterine artery embolization could have been done.

PMCID: PMC2700674
PMID: 19562062 [PubMed - in process]

290. Fertil Steril. 2008 Nov;90(5):1886-91. Epub 2007 Dec 26.

Pregnancy outcomes after uterine artery occlusion: prospective multicentric study.

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OBJECTIVE: To assess the reproductive outcomes after laparoscopic uterine artery occlusion (LUAO) and uterine artery embolization (UAE) in women with symptomatic fibroids. DESIGN: Prospective, clinical multicentric study. SETTING: Endoscopic center in the department of obstetrics and gynecology at a hospital in the Czech Republic. PATIENT(S): Thirty-eight pregnant women after LUAO and 20 pregnant women after UAE. INTERVENTION(S): Laparoscopic uterine artery occlusion and UAE. MAIN OUTCOME MEASURE(S): Pregnancy, abortion, preterm delivery, and live-birth rates. RESULT(S): Pregnancies after uterine embolization had a statistically significantly higher rate for spontaneous abortion (56%) than did pregnancies after surgical uterine artery occlusion (10.5%). The risk of malpresentation (20%) and the rate for cesarean section (80%) after UAE similarly were higher than was the risk after laparoscopic occlusion; however, these differences were not statistically significant. Also, there were no significant differences between the groups in preterm deliveries (15.3% in the LUAO group vs. 20% in the UAE group). CONCLUSION(S): Pregnancies of women who were treated with uterine embolization were at significantly increased risk for spontaneous abortion when compared with pregnancies of women treated with LUAO.

PMID: 18155701 [PubMed - indexed for MEDLINE]

291. J Biomed Mater Res B Appl Biomater. 2008 Jul;86(1):63-73.

Anti-inflammatory effect of ibuprofen-loaded embolization beads in sheep uterus.

Wassef M, Pelage JP, Velzenberger E, Namur J, Schwartz-Cornil I, Taylor RR, Lewis AL, Laurent A.

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Embolization of blood vessels may result in a variety of side effects which can include pain and inflammation. The objective of this study was to assess the release and effect of ibuprofen (IBU) from Bead Block microspheres (BB) loaded with IBU (IBU-BB) on the foreign body inflammatory reaction in a sheep uterine artery model. Both uterine arteries of 12 hormonally cycled ewes were embolized with 0.5 mL of 500-700 microm BB (n = 6) or IBU-BB (n = 6). Animals were sacrificed at 1 week (1W) or 3 weeks (3W) (n = 3 each group). The gross

examination of the organs was performed and distribution of the beads in the tissue was assessed. Inflammation was estimated histologically by quantitative and semiquantitative classification of inflammatory cells on HES and MGG stains and use of videoanalysis after immunohistolabeling with CD-antibodies to a variety of inflammatory cells. At 1W, a significant decrease of inflammatory response was observed for IBU-BB relative to BB in terms of number of lymphocytes
and of immunohistochemical staining for CD172a, MHC-II, CD3, and CD4. At 3W, the inflammatory response for IBU-BB was similar to that for BB at 1W in terms of cell populations and moderate intensity. There was no or low amounts of staining for CD8 and CD45RA and none for CD21 in all four groups. Immunohistochemical detection of IBU showed that some drug was still present in the beads at 1W but none was detectable at 3W suggesting it had all eluted. These results signify that the inflammatory response is dampened by the action of IBU eluted from the beads and that IBU-BB can delay postembolization inflammatory reaction. 2007 Wiley Periodicals, Inc.

PMID: 18098185 [PubMed - indexed for MEDLINE]

292. Diagn Interv Radiol. 2007 Dec;13(4):210-2.

Is uterine artery embolization prior to myomectomy for giant fibroids helpful?

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PURPOSE: To determine whether uterine artery embolization (UAE) prior to myomectomy is more effective than myomectomy alone. MATERIALS AND METHODS: The
study included 15 consecutive infertile women with uterine fibroids > 10 cm (Group I) that underwent UAE with spherical particles using a microcatheter technique and a unilateral femoral approach between March 2005 and January 2007.
The day after embolization all cases underwent myomectomy since the protocol for large fibroids in our hospital is myomectomy only. The control group was composed of 15 patients who underwent myomectomy only (Group II). Group II was established
based on fibroid size (14 +/- 3 cm). Operating time, estimated blood loss and transfusion, complications, and hospital stay were calculated by retrospective chart reviews, and comparisons were made between the groups with Student's t-test. RESULTS: Mean operating time was 138 min in Group I and 240 minutes in Group II (P < 0.01). Mean estimated blood loss was 250 ml in Group I and 690 ml in Group II (P < 0.01). There was no need for transfusion in Group I, while transfusion was needed in 2 cases (13%) in Group II. Mean hospital stay in Group I was 5 days versus 8 days in Group II. Complications, including subsequent hysterectomy, were seen in 2 cases and bowel-bladder injuries in 1 case in Group

II (a total of 20%), while no complications were observed in Group I. One of the cases in Group I later conceived and gave birth to a healthy child. CONCLUSION: UAE prior to myomectomy is more effective than myomectomy alone.

PMID: 18092295 [PubMed - indexed for MEDLINE]

293. Medicina (Kaunas). 2007;43(11):883-6.

Conservative treatment of cervical pregnancy with selective unilateral uterine artery embolization.

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BACKGROUND: Cervical pregnancy is a rare form of ectopic pregnancy, and the most
effective method of its treatment is still under investigation. We would like to call attention to selective uterine artery embolization as an effective modern treatment method. CASE: A patient with suspected cervical pregnancy and 7-week amenorrhea was admitted to the hospital after unsuccessful use of emergency contraception. Transvaginal ultrasound showed gestational sack located 11 mm from
the external cervical os. Crown-rump length was 11.2 cm, and the fetal heartbeat was present. The level of serum chorionic gonadotropin was 31,930 U/L. Treatment with systemic methotrexate was unsuccessful, and unilateral uterine artery embolization was performed followed by dilatation and curettage of the cervical canal. Three days after the procedure, sonographic examination showed contracted cervical canal. After a period of two months, normal uterine artery flow was registered by Doppler ultrasonography on both sides. CONCLUSION: Uterine artery embolization in case of cervical pregnancy reduces the risk of bleeding and can be the method of choice when treatment with methotrexate fails. Unilateral embolization is effective when angiography shows unequal disposition of the arterial connections supplying the embryo.

PMID: 18084146 [PubMed - indexed for MEDLINE]

294. Masui. 2007 Dec;56(12):1425-8.

[Cesarean section for case with preoperatively-suspected placenta accrete followed by hysterectomy due to uncontrollable massive bleeding]

[Article in Japanese]

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A 42-yr-old pregnant woman highly suspicious of the placenta accreta was scheduled for cesarean section (c-section) under general anesthesia. She had received emergency c-section for the placenta previa at 36 years of age and three episodes of intrauterine curettage for spontaneous abortion. While the possibility of placenta accreta was pointed out and the risks accompanying with it were explained at the 7th week of pregnancy, she insisted on having a baby. C-section was intended at around the 30th week of pregnancy and 1,200 ml of autologus blood was stored for the predictable massive bleeding. Bilateral embolization of the internal iliac artery was also planned. The baby was delivered uneventfully. However, the adherence of the placenta was so tight that the placenta could not be separated from the uterine wall. The arterial embolization immediately after the delivery did not work as effectively as to control massive bleeding. It took about 1 hour to control the massive bleeding of up to 9000 ml by difficult hysterectomy. Since we had prepared for such a situation, we could well catch up with the massive bleeding. The mother and baby were discharged well from the hospital 29th day after the c-section.

PMID: 18078102 [PubMed - indexed for MEDLINE]

295. Cardiovasc Intervent Radiol. 2008 Mar-Apr;31(2):260-8. Epub 2007 Dec 4.

MR reproducibility in the assessment of uterine fibroids for patients scheduled for uterine artery embolization.

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Magnetic resonance imaging (MRI) is increasingly applied in the evaluation of uterine fibroids. However, little is known about the reproducibility of MRI in the assessment of uterine fibroids. This study evaluates the inter- and intraobserver variation in the assessment of the uterine fibroids and concomitant adenomyosis in women scheduled for uterine artery embolization (UAE). Forty patients (mean age: 44.5 years) with symptomatic uterine fibroids who were scheduled for UAE underwent T(1)- and T(2)-weighted MRI. To study inter- and intraobserver agreement 40 MR images were evaluated independently by two observers and reevaluated by both observers 4 months later. Inter- and intraobserver agreement was calculated using Cohen's kappa statistic and intraclass correlation coefficient for categorical and continuous variables, respectively. Inter-observer agreement for uterine volumes (kappa = 0.99, p < 0.0001), dominant fibroid volumes (kappa = 0.98, p <or= 0.0001), and number of fibroids (kappa = 0.88; CI, 0.77-0.93; p < 0.0001) was excellent. For the T(1)-

**and T(2)-weighted signal intensity of the dominant fibroid there was good agreement between the observers (87%; 95% CI, 71.9%-95.6%) and the intraobserver
agreement was good for observer A (95%; 95% CI, 83.1%-99.4%) and moderate for observer B (kappa = 0.47). The interobserver agreement with respect to the presence of adenomyosis was good (kappa = 0.73, p < 0.0001), while both intraobserver agreements were fair to moderate (observer A, kappa = 0.55, p = 0.0003; and observer B, kappa = 0.66, p < 0.0001). In conclusion, MRI criteria used for the selection of suitable UAE patients show good inter- and intraobserver reproducibility.**

PMID: 18057985 [PubMed - indexed for MEDLINE]

296. Obstet Gynecol. 2007 Dec;110(6):1301-3.

Analysis of arterial blood vessels surrounding the myoma: relevance to myomectomy.

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**OBJECTIVE: The optimal direction of myomectomy incision in relation to the blood vessels is unclear. Accordingly, we evaluated the location and course of arterial blood vessels surrounding the myoma. METHODS: This study is a retrospective analysis of 592 arterial blood vessels in 60 patients with symptomatic uterine leiomyomata undergoing uterine artery embolization. RESULTS: We encountered 592
arterial blood vessels surrounding the myoma. The vessels could be seen encircling the surface of the myoma. The dominant myoma was located on anterior (n=30), posterior (n=17), and fundal part of the uterus (n=13). There was no difference in the diameter (6.9+/-2.7 cm, 5.8+/-0.7 cm, and 6.7+/-0.5 cm) and volume of the myoma (268.6+/-52.7 cm(3), 197.0+/-64.5 cm(3), and 199.3+/-40.5 cm(3)) among anterior, posterior, and fundal, respectively. The vessels were graded as coursing with angles of 0-30 degrees, 30-60 degrees, and 60-90 degrees. There were significantly more blood vessels in the 30-60 degree group among anterior myoma (n=88, 42.5%) than in 0-30 degree (n=59, 28.5%, P=.004, 95% confidence interval [CI] 0.36-0.81) and 60-90 degree groups (n=60, 29.0%, 95% CI 1.2-2.7). Similar findings were found among posterior myoma (0-30 degrees n=26, 21.7%; 30-60 degrees n=59, 49.2%; P<.001, 95% CI 0.16-0.50; 60-90 degrees 35 (29.2%), P<.002, 95% CI 1.37-3.9). Among fundal myomas, there was no difference in the number of vessels in the 0-30 degree (n=28, 28.6%), 60-90 degree (n=40, 40.8%), and in 60-90 degree groups (n=30, 30.6%). CONCLUSION: Arterial blood vessels travel mostly diagonally on the surface of anterior and posterior myomas. There was no predominant pattern in the course of the arteries on fundal myomas. These findings suggest that regardless of the direction of the myomectomy incision, arterial blood vessels on myoma surface could be injured. LEVEL OF EVIDENCE: II.**

PMID: 18055724 [PubMed - indexed for MEDLINE]

297. Int J Gynaecol Obstet. 2008 Apr;101(1):81-2. Epub 2007 Nov 28.

Uterine artery embolization for symptomatic uterine fibroids.

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PMID: 18045603 [PubMed - indexed for MEDLINE]

298. Radiol Technol. 2007 Nov-Dec;79(2):157-78; quiz 179-82.

Diagnosis and management of uterine fibroids.

Reynolds A.

Erratum in:
Radiol Technol. 2008 Jan-Feb;79(3):239.

Uterine fibroids are the most common gynecological tumors. Fibroids significantly affect fertility and lead to approximately 200,000 hysterectomies annually in the United States alone. Several effective treatments exist, with varying levels of invasiveness and potential complications for fertility. Although its effects on fertility are still uncertain, uterine artery embolization shows promise as a uterus-sparing treatment for fibroids.

PMID: 18032751 [PubMed - indexed for MEDLINE]

299. Cardiovasc Intervent Radiol. 2008 Mar-Apr;31(2):254-9. Epub 2007 Nov 17.

Outcomes after unilateral uterine artery embolization: a retrospective review.

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PURPOSE: Bilateral uterine artery embolization (UAE) is considered necessary to provide effective treatment for symptomatic uterine fibroids. Occasionally, only unilateral embolization is performed, and this study evaluates these outcomes. MATERIALS AND METHODS: As part of a prospective observational study of more than

1600 patients treated with UAE since 1996, there have been 48 patients in whom unilateral embolization has been performed. This study retrospectively reviews clinical response as assessed by our standard questionnaire and radiological response assessed by either magnetic resonance imaging or ultrasound. RESULTS: Two principal groups emerged: the largest, where only the dominant unilateral arterial supply was electively embolized (30 patients); and the second, where there was technical failure to catheterize the second uterine artery as a result of anatomical constraints (12 patients). Favorable clinical response with a reduction in menorrhagia at 1 year was seen in 85.7% (18/21) of those patients with a dominant arterial supply to the fibroid(s). In contrast, in those patients where there was technical failure to embolize one uterine artery, there was a high rate of clinical failure requiring further intervention in 58.3% (7/12). Comparison of the technical failure group with the dominant uterine artery group demonstrated a statistically significant (Fisher's exact test) difference in the proportion of patients with evidence of persistent fibroid vascularity (p < 0.001) and requiring repeat intervention (p < 0.01). CONCLUSION: We conclude that unilateral UAE can achieve a positive clinical result in the group of patients where there is a dominant unilateral artery supplying the fibroid(s), in contrast to the poor results seen following technical failure.

PMID: 18026794 [PubMed - indexed for MEDLINE]

300. Am J Physiol Heart Circ Physiol. 2008 Jan;294(1):H498-504. Epub 2007 Nov 16.

Metabolic acidosis decreases fetal myocardial isovolumic velocities in a chronic sheep model of increased placental vascular resistance.

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We hypothesized that acute fetal metabolic acidosis decreases fetal myocardial motion in a chronic sheep model of increased placental vascular resistance (R(ua)). Eleven ewes and fetuses were instrumented at 118-122 days of gestation. After 5 days of recovery and 24 h of placental embolization to increase R(ua), longitudinal myocardial velocities of the right and left ventricles and interventricular septum (IVS) were assessed at the level of the atrioventricular valve annuli via tissue Doppler imaging (TDI). Ventricular inflow (E and A waves) and outflow velocities were obtained, and cardiac outputs were calculated. All measurements were performed at baseline and during fetal acidosis caused by epidural anesthesia-induced maternal hypotension, which decreased uterine artery volume blood flow, fetal oxygenation, arterial pH, and base excess and increased lactate. Compared with baseline, the peak isovolumic myocardial contraction and relaxation velocities of the ventricles and IVS, early relaxation velocity (E') of the ventricles, and systolic velocity of the IVS decreased during metabolic

acidosis. The proportion of isovolumic contraction time of the cardiac cycle increased but the isovolumic relaxation and ejection time proportions and the TDI Tei index did not change. The E-to-E' ratio for both ventricles was higher during metabolic acidosis than at baseline. During metabolic acidosis, right and left ventricular cardiac outputs remained unchanged compared with baseline. In sheep fetuses with increased R(ua) and acute metabolic acidosis, global cardiac function was preserved. However, acute metabolic acidosis impaired myocardial contractility during the isovolumic phase and relaxation during the isovolumic and early filling phases of the cardiac cycle.

PMID: 18024549 [PubMed - indexed for MEDLINE]

301. J Vasc Interv Radiol. 2007 Nov;18(11):1362-7.

Use of a combined MR imaging and interventional radiology suite for intraprocedural monitoring of uterine artery embolization.

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**PURPOSE: The optimal embolic endpoint for uterine artery embolization (UAE) is unknown. It is difficult to quantify substasis endpoints with the use of conventional x-ray interventional radiology (IR) guidance. Although magnetic resonance (MR) imaging can detect perfusion changes, intraprocedural perfusion changes within targeted uterine leiomyomas and the remaining uterine wall remain unknown. A hybrid MR/IR unit was used to test the hypothesis that MR imaging can
detect changes in uterine perfusion-dependent signal enhancement immediately after UAE. MATERIALS AND METHODS: In this prospective study, UAE was performed in
a hybrid MR/IR unit in women with symptomatic uterine leiomyomas. This MR/IR unit
contains a wide-bore 1.5-T MR scanner connected by a sliding table to an adjacent x-ray digital subtraction angiography unit. Gadolinium-enhanced MR imaging was performed before and after UAE. Relative signal-to-noise ratio (SNR) was measured within each tumor and the adjacent uterine wall, and mean relative SNR changes were compared before and after UAE with the paired t test (alpha=0.05). RESULTS: UAE was technically successful in all six women, in whom 10 tumors were assessed (seven intramural, two submucosal, one subserosal). Mean relative SNR of the tumors before UAE was 62.2+/-25.0 and was reduced to 41.1+/-17.7 after UAE (P<.01). Mean relative SNR of the adjacent uterine wall was 64.2+/-14.3 before UAE and decreased to 28.8+/-14.9 after UAE (P<.01). CONCLUSIONS: Immediate reductions in perfusion-dependent enhancement in targeted uterine leiomyomas and**

the adjacent uterine wall can be detected during UAE with the use of a hybrid MR/IR unit. Further studies are now warranted to compare long-term clinical outcomes versus immediate changes in perfusion at the time of UAE.

PMID: 18003985 [PubMed - indexed for MEDLINE]

302. Am J Obstet Gynecol. 2008 Mar;198(3):270.e1-6. Epub 2007 Nov 12.

Analysis of prognostic factors for patients with leiomyoma treated with uterine arterial embolization.

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OBJECTIVE: The objective of the study was to describe a clinically useful factors index predicting long-term efficacy of uterine artery embolization (UAE). STUDY DESIGN: Newly diagnosed patients with uterine leiomyoma wishing to retain their uterus underwent UAE at our institution. Clinical demographics and 4 prognostic factors were recovered from the medical record. A regrowth-free interval (RFI) was calculated for all patients based on leiomyoma regrowth or recurrence of any previously reported symptoms. RFI by prognostic factor was analyzed by the Kaplan-Meier method. RESULTS: Forty-three patients were identified. Two prognostic factors were identified by multivariate analysis: vascularity (dichotomized as hypervascular vs hypovascular; RFI at 2 years, 80% vs 20%, P = .001) and number of nodules (solitary vs multiple; RFI at 2 years, 72% vs 25% at 2 years, P = .001) CONCLUSION: UAE success may be predicted by 2 preoperative parameters. Further investigation is warranted.

PMID: 17997392 [PubMed - indexed for MEDLINE]

303. J Minim Invasive Gynecol. 2007 Nov-Dec;14(6):758-63.

Is uterine artery embolization for cervical ectopic pregnancy always safe?

Martinelli P, Maruotti GM, Oppedisano R, Agangi A, Mazzarelli LL, Votino C, Quarantelli M, Iaccarino V.

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The study objective was to assess the feasibility and the efficacy of bilateral uterine artery embolization (BUAE) for the treatment of cervical pregnancy. The design was a series of 3 cases of viable cervical pregnancy diagnosed by transvaginal ultrasonography and treated by means of BUAE and subsequent uterine

curettage. Three women with viable cervical pregnancy underwent BUAE and subsequent uterine curettage in the department of obstetrics and gynecology, High Risk Pregnancy Center, University "Federico II" of Naples. Measurements included surgical outcomes and preservation of fertility. The treatment was effective in all cases. Two patients resumed normal menstruation about 1 month after the procedure, whereas 1 patient underwent a hysterectomy 2 weeks after embolization
because of acute ischemic degeneration of a concomitant myoma. The conservative management of cervical pregnancy with angiographic BUAE is a feasible and effective option, even if subsequent hysterectomy may be required. Counseling is necessary.

PMID: 17980340 [PubMed - indexed for MEDLINE]

304. Gynecol Oncol. 2008 Jan;108(1):244-7. Epub 2007 Oct 22.

Sarcoma post-embolization for presumed uterine fibroids.

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BACKGROUND: Uterine artery embolization has increasingly been used in the last decade as a conservative treatment approach for uterine fibroids. Rarely sarcomas have been diagnosed shortly after uterine artery embolization. It remains unclear whether a change in diagnostic work-up is required prior to uterine artery embolization in order to avoid missing sarcomas and delaying definitive treatment. CASE: A 45 year old underwent uterine artery embolization for symptomatic uterine fibroids. Six months later, following progressive symptoms, she underwent surgery which revealed an endometrial stromal sarcoma. This manuscript raises the issue and reviews the existing literature concerning the need of tissue diagnosis prior to uterine artery embolization. CONCLUSION: Assessing the risk of malignancy by taking into account the clinical symptoms, physical exam, and imaging findings is essential prior to uterine artery embolization.

PMID: 17950451 [PubMed - indexed for MEDLINE]

305. BJOG. 2007 Nov;114(11):1352-62.

Uterine artery embolisation or hysterectomy for the treatment of symptomatic uterine fibroids: a cost-utility analysis of the HOPEFUL study.

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OBJECTIVES: To evaluate the relative cost-effectiveness of uterine artery embolisation (UAE) and hysterectomy in women with symptomatic uterine fibroids from the perspective of the UK NHS. DESIGN: Cost-utility analysis. SETTING: Eighteen UK NHS hospital trusts. POPULATION OR SAMPLE Women who underwent UAE (n=
649; average follow up of 8.6 years) or hysterectomy (n= 459; average follow up of 4.6 years) for the treatments of symptomatic fibroids. METHODS: A probabilistic decision model was carried out based on data from a large comparative cohort and the literature. The two interventions were evaluated over the time horizon from the initial procedure to menopause. Extensive sensitivity analysis was carried out to test model assumptions and parameter uncertainties. MAIN OUTCOME MEASURES: Costs of procedures and complications and quality of life
expressed as quality-adjusted life years (QALYs). RESULTS: Overall, UAE was associated with lower mean cost (2536 pounds sterling versus 3282 pounds sterling) and a small reduction in quality of life (8.203 versus 8.241 QALYs) when compared with hysterectomy. However, when the quality of life associated with the conservation of the uterus was incorporated in the model, UAE was shown to be the dominant strategy--lower costs and greater QALYs. CONCLUSIONS: UAE is a
less expensive option to the health service compared with hysterectomy, even when
the costs of repeat procedures and associated complications are factored in. The quality of life implications in the short term are also predicted to favour UAE; however, this advantage may be eroded over time as women undergo additional procedures to deal with recurrent fibroids. Given the hysterectomy is the current standard treatment for symptomatic fibroids, offering women UAE as an alternative
treatment for fibroids is likely to be highly cost-effective for those women who prefer uterus-conserving treatment.

PMID: 17949377 [PubMed - indexed for MEDLINE]

306. BJOG. 2007 Nov;114(11):1340-51.

A UK multicentre retrospective cohort study comparing hysterectomy and uterine artery embolisation for the treatment of symptomatic uterine fibroids (HOPEFUL study): main results on medium-term safety and efficacy.

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OBJECTIVES: Comparison of medium-term safety and efficacy of hysterectomy and uterine artery embolisation (UAE) for symptomatic uterine fibroids. DESIGN: Multicentre retrospective cohort. SETTING: 18 UK NHS hospital trusts. PARTICIPANTS: Four hundred and fifty nine women who had hysterectomy within a national audit during 12 months from October 1994 (VALUE study) (average follow up of 8.6 years) and 649 women receiving UAE from 1996 to 2002 (average follow up
of 4.6 years). METHODS: Clinical data from existing hospital records and patient completed postal questionnaires. MAIN OUTCOME MEASURES: Complication rates, side
effects of embolisation, satisfaction with treatment, relief from symptoms and requirement for further fibroid treatment. RESULTS: Fewer complications were experienced by women receiving UAE (19 versus 26% hysterectomy, P = 0.001), the adjusted odds ratio for UAE versus hysterectomy was 0.48 (95% CI 0.26-0.89). One-third of women undergoing UAE experienced anticipated general side effects associated with the procedure. More women in the hysterectomy cohort reported relief from fibroid symptoms (95 versus 85%, P < 0.0001) and feeling better (96 versus 84%, P < 0.0001), but only 85% would recommend the treatment to a friend compared with 91% in the UAE arm (P = 0.007). There was a 23% (95% CI 19-27%) chance of requiring further treatment for fibroids after UAE. Twenty-seven women who had had UAE reported 37 pregnancies after treatment resulting in 19 live births. CONCLUSIONS: UAE results in fewer complications than hysterectomy. Side effects after embolisation should be anticipated, and almost one-quarter of women having UAE were likely to require further treatment for fibroid symptoms. Both treatments appear to be safe and effective over the medium term, and the choice of treatment may be a matter of personal preference for each individual woman.

PMID: 17949376 [PubMed - indexed for MEDLINE]

307. Cardiovasc Intervent Radiol. 2008 Jan-Feb;31(1):73-85. Epub 2007 Oct 18.

Midterm clinical and first reproductive results of a randomized controlled trial comparing uterine fibroid embolization and myomectomy.

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The purpose of this study was to compare the midterm results of a radiological and surgical approach to uterine fibroids. One hundred twenty-one women with reproductive plans who presented with an intramural fibroid(s) larger than 4 cm were randomly selected for either uterine artery embolization (UAE) or myomectomy. We compared the efficacy and safety of the two procedures and their
impact on patient fertility. Fifty-eight embolizations and 63 myomectomies (42

laparoscopic, 21 open) were performed. One hundred eighteen patients have finished at least a 12-month follow-up; the mean follow-up in the entire study population was 24.9 months. Embolized patients underwent a significantly shorter procedure and required a shorter hospital stay and recovery period. They also presented with a lower CRP concentration on the second day after the procedure ($p < 0.0001$ for all parameters). There were no significant differences between the two groups in the rate of technical success, symptomatic effectiveness, postprocedural follicle stimulating hormone levels, number of reinterventions for fibroid recurrence or regrowth, or complication rates. Forty women after myomectomy and 26 after UAE have tried to conceive, and of these we registered 50
gestations in 45 women. There were more pregnancies (33) and labors (19) and fewer abortions (6) after surgery than after embolization (17 pregnancies, 5 labors, 9 abortions) ($p < 0.05$). Obstetrical and perinatal results were similar in both groups, possibly due to the low number of labors after UAE to date. We conclude that UAE is less invasive and as symptomatically effective and safe as myomectomy, but myomectomy appears to have superior reproductive outcomes in the
first 2 years after treatment.

PMCID: PMC2700241
PMID: 17943348 [PubMed - indexed for MEDLINE]

308. JSLS. 2007 Jul-Sep;11(3):309-14.

Effects of selective blockage of utero-ovarian anastomoses on clinical results of uterine artery occlusion.

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BACKGROUND: We assessed the results and impact of blockage of utero-ovarian anastomoses (UOA) on clinical outcome in women treated by laparoscopic uterine artery occlusion for uterine fibroids. METHODS: Between 2004 and 2005, we prospectively analyzed the clinical data for 23 laparoscopic uterine artery occlusion cases combined with blockage of utero-ovarian anastomoses (Group A) and
67 laparoscopic uterine artery occlusion cases alone (Group B). RESULTS: Of these 23 patients with UOA (mean age, 36.7+/-2.8 years), 10 patients (43.4%) had anastomoses bilaterally and 13 patients (56.6%) had unilateral anastomoses. Mean fibroid size reduction after LUAO and anastomoses blockage was 32.5% from baseline ($P<0.001$). In patients with LUAO, the mean DF size after surgery was estimated at 38.7+/-19.2 mm, which translated to a mean fibroid size reduction of 30.6% from baseline ($P<0.001$). No case of clinical failure or recurrence was found in Group A patients with UOA (mean follow-up, 15.6 months), who were

treated with combined surgery. At a mean clinical follow-up of 18.2 months (Group B), 6 patients (8.9%) elected to undergo further surgical intervention for clinical failure and recurrence, including 4 myomectomies and 2 hysterectomies. The statistical difference between groups was not significant (P=0.33). CONCLUSION: Laparoscopic blockage of utero-ovarian anastomoses combined with uterine artery occlusion is a safe, feasible surgical procedure in women with symptomatic fibroids. Combining the uterine artery occlusion and blockage of UO anastomoses may be a useful procedure for the decreasing rate of clinical failure and recurrence. This premise should be confirmed in a larger prospective multicenter study.

PMID: 17931512 [PubMed - indexed for MEDLINE]

309. Minerva Ginecol. 2007 Aug;59(4):427-39.

[Treatment of uterine fibromyoma with bilateral uterine artery embolization: state of the art]

[Article in Italian]

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Uterine fibroids are common tumors of the female pelvis. Uterine artery embolization (UAE) is a minimally invasive alternative procedure in appropriate candidates to conventional myomectomy and hysterectomy for symptomatic uterine leiomyoma, reducing or eliminating leiomyoma-related symptoms of bleeding, bulk, and/or pain. In order to completely block the arterial blood supply to the fibroid, UAE is typically performed in both uterine arteries. At 1 year follow-up, the uterus may shrink by up to 55%, however, a re-growth of the fibroid may occur. The rate of major complications and amenorrhea following this procedure is low, ranging in most series from 1% to 3.5% and 1% to 7%, respectively. Nevertheless, the rate of amenorrhea in women over 45 seems to be higher. Women who wish to become pregnant should be cautioned about potential complications during pregnancy. Despite the lack of controlled studies that compared UAE with conventional surgery, and despite limited extended outcome data, UAE has gained rapid acceptance, primarily because this procedure preserves the uterus, is less invasive, and has less short-term morbidity than most surgical options. This review focuses on recent publications evaluating UAE and concludes that it is a safe treatment option, providing substantial improvement in both health-related quality of life and symptom control for most patients, with a very low rate of major complications. Any centre that offers UAE should adhere to published clinical guidelines, maintain ongoing assessment of quality

improvement measures, and observe strict criteria to obtain procedural privileges. The gynecologist is likely to be the primary initial consultant to patients who present with myomas symptoms. Therefore, they must be familiar with the indications, exclusions, outcome expectations, and complications of UAE. When hysterectomy is the only option, UAE should be seriously taken into consideration. At this particular moment in time, data are needed from randomized controlled trials comparing UAE with surgical procedures. Current efforts to provide prospective objective assessment of treatment outcomes and complications after UAE will help to optimize women options and clinical guidelines.

PMID: 17923833 [PubMed - indexed for MEDLINE]

310. BMJ. 2007 Oct 6;335(7622):720-2.

Uterine artery embolisation to treat symptomatic uterine fibroids.

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PMID: 17916857 [PubMed - indexed for MEDLINE]

311. J Vasc Interv Radiol. 2007 Oct;18(10):1207-13.

Payer costs in patients undergoing uterine artery embolization, hysterectomy, or myomectomy for treatment of uterine fibroids.

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PURPOSE: To compare health resource use and medical costs in patients with uterine leiomyomas treated with hysterectomy, myomectomy, or uterine artery embolization (UAE). MATERIALS AND METHODS: Patients who underwent hysterectomy, myomectomy, or UAE for leiomyomas were identified from a nationally representative private payer claims database based on their diagnosis and procedure codes. The study included patients with no prior hysterectomy, myomectomy, or UAE and no previous diagnosis of gynecologic cancer. Health resource use and medical costs were evaluated over a period of 12 months. RESULTS: The study included 2,836 hysterectomy, 704 myomectomy, and 125 UAE patients. Average patient ages were 46 years for hysterectomy, 38 years for myomectomy, and 45 years for UAE (P < .001). Median UAE procedure costs were $5,968, compared with $7,299 for myomectomy (P = .031) and $7,707 for

hysterectomy (P < .001). Median total 12-month payer costs were not significantly different among the three procedures ($10,519 for UAE vs $9,652 for myomectomy [P = .372] and $10,044 for hysterectomy [P = .813]). There were no differences in overall hospital admissions or emergency room visits after the procedures. Patients who underwent UAE had greater fibroid-related hospital and physician office use beyond 30 days after treatment (P < .001). During this period, 65.6% of patients treated with UAE had at least one imaging study, versus 37.1% of those treated with myomectomy (P < .001) and 14.1% of those treated with hysterectomy (P < .001). CONCLUSIONS: Procedure costs were significantly lower for UAE versus myomectomy and hysterectomy, but there was no difference in total 12-month payer costs. Postprocedural imaging appears to be a factor in total UAE costs. Further research is needed to better understand the role of imaging studies after UAE.

PMID: 17911509 [PubMed - indexed for MEDLINE]

312. Int Urogynecol J Pelvic Floor Dysfunct. 2008 Jan;19(1):161-5. Epub 2007 Oct 2.

Fibroid-induced acute urinary retention: treatment by uterine artery embolization.

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A 39-year-old gravida 2 para 2 woman presented to our Hospital's Emergency Department with complaints of difficulty voiding. She had an enlarged leiomyomatous uterus, for which she was not receiving any current treatment. A Foley catheter placed yielded 1,500 cc of clear yellow urine; however, the patient remained Foley-dependent for 2 weeks until she underwent uterine artery embolization (UAE). Twenty-four hours afterwards, the Foley catheter was removed and the patient spontaneously voided with negligible post-void residual. There was no recurrence of urinary retention or development of any other urinary symptoms during the outpatient follow-up period. Repeat pelvic magnetic resonance imaging (MRI) 1 week after UAE showed negligible reduction in the size of the fibroids and uterus in comparison with a pre-procedure MRI. The Vascular Steal Theory, first presented in this paper, discusses this improvement in symptoms without significant change in size.

PMID: 17909691 [PubMed - indexed for MEDLINE]

313. Ultrasound Obstet Gynecol. 2007 Oct;30(5):783-5.

Pelvic arterial pseudoaneurysm-a rare complication of Cesarean section: diagnosis and novel treatment.

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An uncommon cause of delayed postpartum hemorrhage is a pseudoaneurysm of the
uterine artery. Pelvic arterial pseudoaneurysm is generally treated by laparotomy and hemostatic sutures or by uterine artery embolization. We describe two cases of late postpartum hemorrhage following Cesarean section, attributed to pelvic arterial pseudoaneurysm, that were successfully treated by direct thrombin injection under ultrasound guidance. Percutaneous or transvaginal ultrasound-guided direct thrombin injection is a simple procedure that does not require any sophisticated surgical or radiological equipment. Copyright (c) 2007 ISUOG

PMID: 17899575 [PubMed - indexed for MEDLINE]

314. Fertil Steril. 2008 Sep;90(3):849.e11-4. Epub 2007 Sep 19.

Uterine artery pseudoaneurysm manifesting delayed postabortal bleeding.

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OBJECTIVE: To study a case of a huge pseudoaneurysm of the uterine artery presenting with vaginal bleeding 2 years after termination of pregnancy in a 23-year-old woman. DESIGN: Retrospective clinical case. SETTING: Academic-based gynecology center of university hospital. PATIENT(S): A 23-year-old women, 2 years after termination of pregnancy, presenting with vaginal bleeding. INTERVENTION(S): The diagnosis of uterine artery pseudoaneurysm was made by color
and duplex Doppler ultrasonography and confirmed by arteriography. The angiographic study showed a pseudoaneurysm arising from the right uterine artery. MAIN OUTCOME MEASURE(S): Clinical response to treatment. RESULT(S): The uterine
artery pseudoaneurysm was successfully treated by embolization. The vaginal bleeding subsided immediately after embolization. The patient was monitored monthly for 12 months, during which she had normal menstruation period and no further vaginal bleeding. CONCLUSION(S): Although likely not a common complication of abortion, the diagnosis should be considered in those patients with postabortive bleeding and cystic lesion in the pelvis on ultrasonography.

PMID: 17880959 [PubMed - indexed for MEDLINE]

315. Cardiovasc Intervent Radiol. 2007 Nov-Dec;30(6):1139-43. Epub 2007 Sep 14.

Prospective study of elective bilateral versus unilateral femoral arterial puncture for uterine artery embolization.

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The purpose of this study was to assess the effect of elective bilateral femoral arterial punctures for uterine artery embolization (UAE) of symptomatic fibroids on fluoroscopy and procedural time, patient dose, and ease of procedure. We conducted a prospective study of UAE with either the intention to catheterize both uterine arteries using a single femoral puncture (n = 12) or elective bilateral arterial punctures from the outset (n = 12). The same two operators undertook each case. Main outcome measures were total procedure time, fluoroscopy time, dose-area product (DAP), and total skin dose. A simulation was then performed on an anthropomorphic phantom using the mean in vivo fluoroscopy parameters to estimate the ovarian dose. Bilateral UAE was achieved in all patients. None of the patients with initial unilateral arterial puncture required further contralateral arterial puncture. The mean fluoroscopy time in the group with elective bilateral punctures was 12.8 min, compared with a mean of 16.6 min in patients with unilateral puncture (p = 0.046). There was no significant difference in overall procedure time (p = 0.68). No puncture-site complications were found. Additional catheters were required only following unilateral puncture. The simulated dose was 25% higher with unilateral puncture. Although there was no significant difference in measured in vivo patient dose between the two groups (DAP, p = 0.32), this is likely to reflect the wide variation in other patient characteristics. Allowing for the small study size, our results show that the use of elective bilateral arterial punctures reduces fluoroscopy time, requires less catheter manipulation, and, according to the simulation model, has the potential to reduce patient dose. The overall procedure time, however, is not significantly reduced.

PMID: 17874163 [PubMed - indexed for MEDLINE]

316. Can Fam Physician. 2007 Feb;53(2):293-5.

Pregnancy after uterine artery embolization for fibroids.

Singh SS, Bordman R, Leyland N.

Centre for Advanced Reproductive Endosurgery, Sydney, Australia.

Comment on:
Obstet Gynecol. 2005 Jan;105(1):67-76.

PMCID: PMC1949129
PMID: 17872647 [PubMed]

317. J Obstet Gynaecol Res. 2007 Oct;33(5):624-30.

Results of endovascular treatment in cases of abnormal placentation with post-partum hemorrhage.

La Folie T, Vidal V, Mehanna M, Capelle M, Jaquier A, Moulin G, Bartoli JM.

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AIM: The purpose of this study was to evaluate the clinical success of selective arterial embolization in cases of post-partum hemorrhage due to abnormal placentation. METHODS: Six patients with persistent hemorrhage and abnormal placental implantation underwent uterine artery embolization over a period of three years. RESULTS: In four patients, the placenta was left in place after a gentle attempt at removal and post-partum hemorrhage was controlled during or shortly after the procedure. In all cases, embolization was possible even when there was previous arterial ligation (two cases). In one case, a hysterectomy was required at 21 d later due to uterus and bladder necrosis. Arterial embolization in cases of abnormal placental implantation remains an uncommon treatment and is
less efficient in these cases than in normal placental implantation. CONCLUSION: Our results confirmed that even in cases of moderate bleeding, conservation treatment and embolization are possible, but that complications may be more common than in normal placentation.

PMID: 17845319 [PubMed - indexed for MEDLINE]

318. J Vasc Interv Radiol. 2007 Sep;18(9):1193-4.

Use of a 5-F tight curve catheter to facilitate uterine artery embolization.

Silberzweig JE, Zidon M.

PMID: 17804785 [PubMed - indexed for MEDLINE]

319. Pathol Int. 2007 Oct;57(10):681-7.

Leiomyosarcoma with dedifferentiation in a premenopausal patient discovered after uterine artery embolization.

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Although a hysterectomy is the most common treatment for relieving the symptoms
attributable to uterine leiomyomas, uterine artery embolization (UAE) is now being used more frequently as an alternative to a hysterectomy. However, it is difficult to differentiate a leiomyoma from a leiomyosarcoma without performing a pathological examination. Reported herein is a rare case of leiomyosarcoma that showed dedifferentiation of the tumor cells after UAE. A premenopausal 48-year-old woman had been suffering from hypermenorrhea for 4 years before visiting the clinic. She underwent UAE for suspected symptomatic leiomyoma. Two months later, dilatation and curettage was performed because of genital bleeding and a necrotic mass was submitted for pathological examination. Three months after curettage, with renewed symptoms, endometrial biopsy was done, which confirmed pleomorphic sarcoma. Metastatic nodes to the lung were also found at that time. Multiple leiomyosarcomas and a leiomyosarcoma showing dedifferentiation of the uterine body were found on pathological examination. The patient had metastatic nodes to the brain later and died of metastatic disease 20 months in total after UAE. This is a rare case of leiomyosarcoma with dedifferentiation and multiple metastases occurring after UAE, suggesting that dedifferentiation could be derived from ordinary leiomyosarcoma and that the traumatic effect of curettage might cause early metastasis. The present case is a warning that careful and detailed evaluation of the uterine tumor are needed before UEA.

PMID: 17803657 [PubMed - indexed for MEDLINE]

320. Natl Med J India. 2007 Mar-Apr;20(2):87-8.

Symptomatic uterine fibroids: is uterine artery embolization better than surgery?

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Comment on:
N Engl J Med. 2007 Jan 25;356(4):360-70.

PMID: 17802988 [PubMed]

321. J Clin Ultrasound. 2008 Feb;36(2):123-7.

Ectopic pregnancy in a cesarean section scar treated with intramuscular methotrexate and bilateral uterine artery embolization.

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We report a case of an ectopic pregnancy implanted in the myometrium at the site of a scar from a previous cesarean section that presented with vaginal bleeding and was successfully treated with bilateral uterine artery embolization and intramuscular administration of methotrexate. The combination of minimally invasive interventional techniques and medical therapies can preserve fertility.

PMID: 17763455 [PubMed - indexed for MEDLINE]

322. J Clin Ultrasound. 2008 Mar-Apr;36(3):189-91.

Uterine artery pseudoaneurysm: unusual cause of delayed postpartum hemorrhage.

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We describe a case of uterine artery pseudoaneurysm in a 21-year-old woman with postpartum hemorrhage. This condition is easily diagnosed with duplex Doppler sonography and can be treated with embolization, but only if delayed postpartum hemorrhage is considered in the differential diagnosis. (Copyright) 2007 Wiley Periodicals, Inc.

PMID: 17722017 [PubMed - indexed for MEDLINE]

323. J Reprod Med. 2007 Jun;52(6):563-6.

Spontaneous vaginal expulsion of an infected necrotic cervical fibroid through a cervical fistula after uterine artery embolization: a case report.

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BACKGROUND: Uterine artery embolization (UAE) is promising, minimally invasive therapy being offered to women for treatment of fibroids. Although it seems to be safe and effective, major complications and adverse outcomes have been reported.

CASE: A patient treated with UAE for a huge cervical fibroid presented with an infected, necrotic cervical mass lesion 4 weeks after the procedure. Spontaneous vaginal expulsion of the infected cervical fibroid from the left lateral cervical fistula tract occurred 3 weeks later while the patient was receiving antibiotic therapy. After 6 months of intervention, an approximately 99% regression rate in the fibroid volume was achieved. The patient gave birth to a healthy, female infant following a spontaneous, uneventful pregnancy and vaginal delivery. CONCLUSION: UAE appears to be associated with a significant reduction in fibroid volume. Expulsion of the infected, necrotic parts of the fibroid after UAE may be accepted as a natural process. Warning the patient about this potential risk, early recognition of infective complications and lose follow up seem to be crucial to avoiding potentially fatal septic shock.

PMID: 17694986 [PubMed - indexed for MEDLINE]

324. J Reprod Med. 2007 Jun;52(6):548-50.

Endometrial ablation in a woman with a persistent uterine hemorrhage due to acute promyelocytic leukemia: a case report.

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**BACKGROUND: Life-threatening uterine hemorrhage can be a presenting symptom in
patients with acute promyelocytic leukemia (APML), of which one of the complications is disseminated intravascular coagulopathy. CASE: A 44-year-old, previously healthy woman, gravida 3, para 3, presented with a life-threatening uterine hemorrhage. She was subsequently diagnosed with APML by bone marrow biopsy. The uterine hemorrhage was treated with hormonal therapy and uterine artery embolization (UAE), which failed to control the bleeding. Radiofrequency, impedance-controlled endometrial ablation was successfully utilized. CONCLUSION: Endometrial ablation can be used to effectively treat a life-threatening uterine hemorrhage in patients with APML after failed medical therapy and UAE.**

PMID: 17694980 [PubMed - indexed for MEDLINE]

325. An R Acad Nac Med (Madr). 2006;123(4):841-62; discussion 862-5.

[Up date of the conservative management of the uterine leiomyomata]

[Article in Spanish] Ruiz Velasco V.

**The management of the leiomyomata uteri, the most common of the uterine tumors,
has changed a lot in the lasa years. The tendency for women to postpone a first pregnancy until later years, when there is a more frequent occurrence of myomata and the fertility desire persist. In that way there is an increasing consideration of the conservative therapy. The epidemiological data are exposed, as the main symptoms and the diagnostic procedures. We refer the nowadays conservative treatments, since the surgical ones (myomectomies, abdominal, laparoscopic and histeroscopio, embolization, uterine artery occlusion); including the myolysis, and termoablative techniques; until the pharmacological therapy (Gn-RH(a)) gestrinone medroxiprogesterone, mifepristone, etc. In each of the several treatments we refer its indications, the main steps of the technique; its advantages and disadvantages; and results. Finally we discuss how select the use of each of the procedures and set when and how it must be done.**

PMID: 17691197 [PubMed - indexed for MEDLINE]

326. J Obstet Gynaecol Res. 2007 Aug;33(4):506-11.

Uterine artery embolization should not be recommended without careful consideration in the treatment of symptomatic uterine fibroids.

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**AIM: To evaluate convalescence and the incidence of adverse symptoms associated with uterine artery embolization (UAE) in the treatment of uterine fibroids, several parameters after UAE were compared with those after laparoscopic surgery.
METHODS: For the treatment of uterine fibroids, 78 patients underwent UAE and 58 received laparoscopic surgery (31 were laparoscopic myomectomy [LM] and 27 were laparoscopy-assisted myomectomy [LAM]) during the period July 2001 to July 2004. The length of hospitalization, and the periods until the beginning of a normal daily life, work and exercise, long-term follow up data in the UAE and laparoscopy groups were compared, and the incidence of adverse symptoms after each procedure was compared. RESULTS: The length of hospitalization for the UAE group 2.1 +/- 0.1 (mean +/- S.E) was significantly shorter than those for the LM and LAM groups (2.6 +/- 0.1 and 3.8 +/- 0.2 days, respectively; P < 0.0001 and P < 0.0001). The period until beginning of normal daily life and work were similar between the UAE and LM groups. The degree of improved symptoms after each procedure were similar among the three groups, but the incidence of adverse symptoms after UAE was significantly higher than after laparoscopic surgery. CONCLUSIONS: The UAE group showed a significantly shorter period of hospitalization, but the convalescence of the UAE group was similar to the LA group, with a higher incidence of adverse symptoms than laparoscopic surgeries.**

Therefore, UAE should not be recommended without careful consideration, in the treatment of symptomatic uterine fibroids.

PMID: 17688619 [PubMed - indexed for MEDLINE]

327. J Vasc Interv Radiol. 2007 Aug;18(8):1021-7.

Safety and utility of uterine artery embolization with CO2 and a gadolinium-based contrast medium.

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The authors evaluated the safety and clinical outcomes of uterine artery embolization (UAE) without the use of conventional iodinated contrast media for symptomatic uterine leiomyomata. Patients underwent UAE with use of CO(2) gas and
a gadolinium-based contrast medium. The safety and feasibility of the technique were assessed. Patients were followed up at 24 hours, 1 month, and 6 months after UAE and yearly thereafter. UAE without iodinated contrast medium was attempted in
eight patients (mean age, 42.7 years +/- 4.1), and bilateral UAE was successful in all patients. The mean fluoroscopy time was 14.9 minutes. The mean amount of gadolinium-based contrast medium used was 30.6 mL or 0.181 mmol/kg. No major complications were noted. The mean improvement in the symptom severity score was
53.8. The mean reduction in leiomyoma volume was 42%. To date, no repeat interventions have been performed. UAE with CO(2) and a gadolinium-based contrast
medium is a viable treatment option for patients with a severe allergy to iodinated contrast media or renal insufficiency.

PMID: 17675621 [PubMed - indexed for MEDLINE]

328. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):876-81.

Magnetic resonance imaging (MRI) analysis of fibroid location in women achieving pregnancy after uterine artery embolization.

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The purpose of this study was to evaluate the fibroid morphology in a cohort of women achieving pregnancy following treatment with uterine artery embolization (UAE) for symptomatic uterine fibroids. A retrospective review of magnetic resonance imaging (MRI) of the uterus was performed to assess pre-embolization fibroid morphology. Data were collected on fibroid size, type, and number and included analysis of follow-up imaging to assess response. There have been 67 pregnancies in 51 women, with 40 live births. Intramural fibroids were seen in 62.7% of the women (32/48). Of these the fibroids were multiple in 16. A further 12 women had submucosal fibroids, with equal numbers of types 1 and 2. Two of these women had coexistent intramural fibroids. In six women the fibroids could not be individually delineated and formed a complex mass. All subtypes of fibroid were represented in those subgroups of women achieving a live birth versus those who did not. These results demonstrate that the location of uterine fibroids did not adversely affect subsequent pregnancy in the patient population investigated. Although this is only a small qualitative study, it does suggest that all types of fibroids treated with UAE have the potential for future fertility.

PMID: 17671810 [PubMed - indexed for MEDLINE]

329. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):866-75.

Sexuality and body image after uterine artery embolization and hysterectomy in the treatment of uterine fibroids: a randomized comparison.

Hehenkamp WJ, Volkers NA, Bartholomeus W, de Blok S, Birnie E, Reekers JA, Ankum
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In this paper the effect of uterine artery embolization (UAE) on sexual functioning and body image is investigated in a randomized comparison to hysterectomy for symptomatic uterine fibroids. The EMbolization versus hysterectoMY (EMMY) trial is a randomized controlled study, conducted at 28 Dutch
hospitals. Patients were allocated hysterectomy (n = 89) or UAE (n = 88). Two validated questionnaires (the Sexual Activity Questionnaire [SAQ] and the Body Image Scale [BIS]) were completed by all patients at baseline, 6 weeks, and 6, 12, 18, and 24 months after treatment. Repeated measurements on SAQ scores revealed no differences between the groups. There was a trend toward improved sexual function in both groups at 2 years, although this failed to reach statistical significance except for the dimensions discomfort and habit in the UAE arm. Overall quality of sexual life deteriorated in a minority of cases at all time points, with no significant differences between the groups (at 24 months: UAE, 29.3%, versus hysterectomy, 23.5%; p = 0.32). At 24 months the BIS

score had improved in both groups compared to baseline, but the change was only significant in the UAE group (p = 0.009). In conclusion, at 24 months no differences in sexuality and body image were observed between the UAE and the hysterectomy group. On average, both after UAE and hysterectomy sexual functioning and body image scores improved, but significantly so only after UAE.

PMCID: PMC2039794
PMID: 17671809 [PubMed - indexed for MEDLINE]

330. Fertil Steril. 2007 Nov;88(5):1438.e11-3. Epub 2007 Jul 31.

Combined treatment with temporary intraoperative balloon occlusion of common iliac arteries and hysteroscopic endocervical resection with postoperative cervical balloon for intractable cervical pregnancy in an infertile woman.

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OBJECTIVE: To describe treatment of an intractable cervical pregnancy that failed intracervical Foley catheter tamponade and uterine artery embolization followed by curettage of gestational tissue. DESIGN: Case report. SETTING: Tertiary-care university hospital. PATIENT(S): A 37-year-old infertile woman who achieved an 8-week cervical pregnancy after IVF-ET. INTERVENTION(S): Temporary intraoperative
balloon occlusion of bilateral common iliac arteries in combination with hysteroscopic endocervical resection of the gestational tissue, followed by postoperative intracervical balloon compression for 3 days. MAIN OUTCOME MEASURE(S): Serial serum beta-hCG concentrations. RESULT(S): Complete removal of
gestational products with preservation of fertility. CONCLUSION(S): Temporary balloon occlusion of bilateral common iliac arteries in combination with hysteroscopic endocervical resection of cervical pregnancy was effective in the treatment of intractable cervical pregnancy and preserved the woman's future fertility.

PMID: 17669404 [PubMed - indexed for MEDLINE]

331. Fertil Steril. 2007 Aug;88(2):255-71. Epub 2007 Jul 20.

Uterine myomas: management.

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OBJECTIVE: To review the currently available literature regarding the current management alternatives available to women with uterine myomas. DESIGN: Literature review of 198 articles pertaining to uterine myomas. RESULT(S): Many advances have been made in the management of uterine myomas. Watchful waiting;
medical therapy; hysteroscopic myomectomy; endometrial ablation; laparoscopic myomectomy; abdominal myomectomy; abdominal, vaginal, and laparoscopic hysterectomy; uterine artery embolization; uterine artery occlusion; and focused ultrasound are now available. CONCLUSION(S): Many options are now available to women with uterine myomas. The presently available literature regarding the treatment of myomas is summarized.

PMID: 17658523 [PubMed - indexed for MEDLINE]

332. Obstet Gynecol Surv. 2007 Aug;62(8):540-7.

Systematic review of conservative management of postpartum hemorrhage: what to do when medical treatment fails.

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We performed a systematic review to identify all studies evaluating the success rates of treatment of major postpartum hemorrhage by uterine balloon tamponade,
uterine compression sutures, pelvic devascularization, and arterial embolization. We included studies reporting on at least 5 cases. All searches were performed independently by 2 researchers and updated in June 2006. Failure of management was defined as the need to proceed to subsequent or repeat surgical or radiological therapy or hysterectomy, or death. As the search identified no randomized controlled trials, we proceeded to search for observational studies. This identified 396 publications, and after exclusions, 46 studies were included in the systematic review. The cumulative outcomes showed success rates of 90.7% (95% confidence interval [CI], 85.7%-94.0%) for arterial embolization, 84.0% (95% CI, 77.5%-88.8%) for balloon tamponade, 91.7% (95% CI, 84.9%-95.5%) for uterine compression sutures, and 84.6% (81.2%-87.5%) for iliac artery ligation or uterine devascularization (P = 0.06). At present there is no evidence to suggest that any one method is better for the management of severe postpartum hemorrhage. Randomized controlled trials of the various treatment options may be difficult to perform in practice. As balloon tamponade is the least invasive and most rapid approach, it would be logical to use this as the first step in the management.

PMID: 17634155 [PubMed - indexed for MEDLINE]

333. J Minim Invasive Gynecol. 2007 Jul-Aug;14(4):481-4.

Cervical pregnancy: the importance of early diagnosis and treatment.

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STUDY OBJECTIVE: To report the evolution and outcome of 12 cases of cervical pregnancy. DESIGN: Retrospective study (Canadian Task Force classification II-3). SETTING: University teaching hospitals. PATIENTS: Twelve women with cervical pregnancy. INTERVENTIONS: Methotrexate, uterine artery embolization, curettage, ligation of the descending branch of uterine vessels, or hysterectomy. MEASUREMENTS AND MAIN RESULTS: The main outcome measure was success of conservative management. From January 1985 through December 2005, we encountered
12 cases of cervical pregnancy. The final diagnosis was established by ultrasound, operative findings, and histopathology. We obtained information from the medical records of the patients regarding when and how the diagnosis was made, the characteristics of the pregnancy, and treatment modalities. The prevalence of cervical pregnancy was 1:10,000 deliveries. The patients' history revealed previous curettage in 6 (50%) and cesarean delivery in 2 others (16.7%). Four patients (33.3%) initially not diagnosed to have cervical pregnancy required a hysterectomy. Initial diagnosis of cervical pregnancy was correct in 5 patients. They were treated with methotrexate, uterine artery embolization, curettage, or ligation of the descending branch of uterine vessels. None of these patients required blood transfusion or hysterectomy. CONCLUSION: The success of conservative treatment for cervical pregnancy depends on the diagnostic accuracy of the initial ultrasound. Correct diagnosis would reduce the chance of hysterectomy or blood transfusion.

PMID: 17630167 [PubMed - indexed for MEDLINE]

334. Cardiovasc Intervent Radiol. 2008 May-Jun;31(3):514-20.

Preoperative uterine artery embolization (PUAE) before uterine fibroid myomectomy.

Dumousset E, Chabrot P, Rabischong B, Mazet N, Nasser S, Darcha C, Garcier JM, Mage G, Boyer L.

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PURPOSE: To evaluate the potential of uterine artery embolization to minimize blood loss and facilitate easier removal of fibroids during subsequent

myomectomy. METHODS: This retrospective study included 22 patients (median age 37
years), of whom at least 15 wished to preserve their fertility. They presented with at least one fibroid (mean diameter 85.6 mm) and had undergone preoperative
uterine artery embolization (PUAE) with resorbable gelatin sponge. RESULTS: No complication or technical failure of embolization was identified. Myomectomies were performed during laparoscopy (12 cases) and laparotomy (9 cases). One hysterectomy was performed. The following were noted: easier dissection of fibroids (mean 5.6 per patient, range 1-30); mean intervention time 113 min (range 25-210 min); almost bloodless surgery, with a mean peroperative blood loss of 90 ml (range 0-806 ml); mean hemoglobin pretherapeutically 12.3 g/dl (range 5.9-15.2 g/dl) and post-therapeutically 10.3 g/dl (range 5.6-13.3 g/dl), with no blood transfusion needed. Patients were discharged on day 4 on average and the mean sick leave was 1 month. CONCLUSION: Preoperative embolization is associated
with minimal intraoperative blood loss. It does not increase the complication rate or impair operative dissection, and improves the chances of performing conservative surgery.

PMID: 17624572 [PubMed - indexed for MEDLINE]

335. Cardiovasc Intervent Radiol. 2007 Nov-Dec;30(6):1263-6.

Patient presentation and management of labial ulceration following uterine artery embolization.

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Uterine artery embolization is a safe and effective procedure for the treatment of symptomatic uterine fibroids. Nontarget embolization of adjacent internal iliac artery branches is a reported complication of uterine artery embolization. The following report describes the presentation and management of ulcerations of the labium minora due to nontarget embolization of the internal pudendal artery.

PMID: 17624571 [PubMed - indexed for MEDLINE]

336. Acta Radiol. 2007 Jul;48(6):635-42.

Massive postpartum hemorrhage treated with transcatheter arterial embolization: technical aspects and long-term effects on fertility and menstrual cycle.

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BACKGROUND: Transcatheter arterial embolization (TAE) is considered a safe, life-saving procedure in postpartum hemorrhage (PPH), but its long-term effect on menstruation and fertility is unclear. PURPOSE: To investigate technical aspects and the evaluation of complications, focused on menstrual cycle and fertility, using TAE in patients with PPH. MATERIAL AND METHODS: A retrospective study including 20 patients (seven with vaginal and 13 with cesarean delivery) with severe PPH treated with bilateral TAE of the uterine artery was carried out. All patients were asked to answer a questionnaire regarding their post-embolization history. In six patients, the radiation dose was measured. RESULTS: All 20 cases underwent bilateral TAE of the uterine artery. Gelfoam was used as the embolic agent. However, after cesarean delivery in six patients who had clear contrast medium extravasation and/or pseudoaneurysm-like lesion, metallic coils had to be used in order to achieve hemostasis. No major short- or long-term complications were registered. Normal menses resumed in all patients. Four patients had a total of five full-term and two preterm pregnancies, and all delivered healthy infants by cesarean section with no recurrence of PPH. The mean radiation dose to the ovaries was 586 mGy (range 204-729 mGy). CONCLUSION: TAE in patients with PPH is
safe and has no major short- or long-term side effects. A patient managed with TAE can expect return of normal menses and preservation of future fertility and successful pregnancies. PPH after cesarean section might need to be embolized with metallic coils in addition to Gelfoam in order to achieve secure hemostasis.

PMID: 17611871 [PubMed - indexed for MEDLINE]

337. J Vasc Interv Radiol. 2007 Jul;18(7):835-41.

Uterine artery embolization for symptomatic adenomyosis with or without uterine leiomyomas with the use of calibrated tris-acryl gelatin microspheres: midterm clinical and MR imaging follow-up.

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**PURPOSE: To evaluate clinical and magnetic resonance (MR) imaging results after uterine artery embolization (UAE) in women with symptomatic adenomyosis with or
without uterine leiomyomas. MATERIALS AND METHODS: Thirty-eight women with symptomatic adenomyosis with or without uterine leiomyomas were treated with UAE
with calibrated tris-acryl gelatin microspheres. Based on MR findings, women were categorized as having pure adenomyosis (group A; n = 15), adenomyosis dominance**

with fibroid tumors (group B; n = 14), or fibroid tumor dominance with adenomyosis (group C; n = 9). RESULTS: Heavy menstrual bleeding, pain, and bulk-related symptoms at last follow-up at a median of 16.5 months (range, 3-38 months) were compared with baseline symptoms. With follow-up MR imaging at a median of 12 months (range, 3-36 months), changes in uterine volume, leiomyoma volume, junctional zone thickness, and contrast enhancement of adenomyosis were assessed. After embolization, adenomyosis infarction could be depicted on contrast medium-enhanced MR in 44.1% of cases. Median reductions of uterine volume, fibroid tumor volume, and junctional zone thickness were 44.8%, 77.1%, and 23.9%, respectively. In group A, three patients needed additional surgery after UAE, in addition to two in group B and one in group C. In the remaining 32 patients, except for one patient in group C, all preexisting symptoms (eg, bleeding, pain, bulk-related symptoms) improved or resolved after UAE. Overall, 84.2% of women were satisfied with the results of UAE. CONCLUSION: In this study, midterm results (at a median of 16.5 months) showed that UAE in symptomatic adenomyosis with or without uterine leiomyomas is effective. Hysterectomy was avoided in the vast majority of patients. MR imaging showed reduction of uterine volume and junctional zone thickness.

PMID: 17609441 [PubMed - indexed for MEDLINE]

338. Womens Health (Lond Engl). 2007 Jul;3(4):449-53.

Uterine artery embolization and future fertility potential.

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The growing body of evidence concerning the safety and efficacy of uterine artery embolization (UAE) has led to increasing confidence amongst gynecologists and interventional radiologists that UAE can be used safely to treat women with symptomatic fibroids. UAE is clearly preferable for certain subgroups of patients, for example those with increased risks of complications of general anesthesia, those with religious objection to blood transfusion and those wishing to avoid surgical risk. This review of the available literature demonstrates the paucity of information concerning safety and efficacy of UAE for those wishing to conceive. Case reports and series are largely positive. However, there are continuing concerns over the effects of UAE on ovarian and uterine function, and on subsequent pregnancy outcome. More long-term data and randomized controlled trials are required to address these issues. Women who undergo embolization should be told that the effects on pregnancy and the resulting child are uncertain and that there may be long-term implications for the health and development of the offspring. Hence, it is inadvisable to try to conceive following the procedure. Given the available evidence, concern must remain that UAE may lead to significant damage to fertility, with higher risk of miscarriage

and adverse pregnancy outcome when compared with open or laparoscopic myomectomy.

PMID: 19804021 [PubMed - in process]

339. Ultrasound Obstet Gynecol. 2007 Aug;30(2):227-8.

Placenta previa percreta managed conservatively with methotrexate and multiple bilateral uterine artery embolizations.

Sherer DM, Gorelick C, Zigalo A, Sclafani S, Zinn HL, Abulafia O.

PMID: 17590876 [PubMed - indexed for MEDLINE]

340. Hum Reprod. 2007 Jul;22(7):1996-2005.

Loss of ovarian reserve after uterine artery embolization: a randomized comparison with hysterectomy.

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BACKGROUND: Ovarian failure as a complication of uterine artery embolization (UAE) for symptomatic uterine fibroids has raised concerns about this new treatment modality. METHODS: We investigated the occurrence of ovarian reserve reduction in a randomized trial comparing UAE and hysterectomy by measuring follicle stimulating hormone (FSH) and anti-Mullerian hormone (AMH). A total of 177 pre-menopausal women with menorrhagia due to uterine fibroids were included
(UAE:n=88; hysterectomy:n=89). FSH and AMH were measured at baseline and at several time-points during the 24 months follow-up period. Follow-up AMH levels were also compared to the expected decrease due to ovarian ageing during the observational period. RESULTS: FSH increased significantly compared to baseline in both groups after 24 months follow-up (within group analysis: UAE:+12.1; P=0.001; hysterectomy:+16.3; P<0.0001). No differences in FSH values between the groups were found (P=0.32). At 24 months after treatment the number of patients with FSH levels>40 IU/l was 14/80 in the UAE group and 17/73 in the hysterectomy group (relative risk=0.75; P=0.37). AMH was measured in 63 patients (UAE: n=30; hysterectomy: n=33). After treatment AMH levels remained significantly decreased during the entire follow-up period only in the UAE group compared to the expected AMH decrease due to ageing. No differences were observed between the groups. CONCLUSIONS: This study shows that both UAE and hysterectomy affect ovarian reserve. This results in older women becoming menopausal after the intervention.

Therefore, the application of UAE in women who still wish to conceive should only be considered after appropriate counselling.

PMID: 17582145 [PubMed - indexed for MEDLINE]

341. Radiology. 2007 Jul;244(1):291-8.

Uterine fibroid embolization: the utility of aortography in detecting ovarian artery collateral supply.

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201, Washington, DC 20007-2113, USA.

PURPOSE: To retrospectively determine the sensitivity of ovarian artery (OA) visualization at aortography performed after uterine fibroid embolization (UFE) and, using OA arteriography as the reference standard, compare the extent of arterial flow to the uterus at aortography with selective ovarian arteriography, to establish the utility of aortography and ovarian arteriography in the routine practice of UFE. MATERIALS AND METHODS: This study received institutional review
board approval with waiver of informed consent and was HIPAA compliant. Retrospective review of 1129 consecutive UFE patients (1072 with aortograms, 57 excluded; mean age, 44 years; range, 21-60 years) was performed to identify all visible OAs. Visible OAs were independently graded by two interventional radiologists according to extent of pelvic arterial flow. If selective arteriography was performed, a second grade was assigned based on assessment of the selective study. Descriptive and summary statistics were used for assessment by the senior observer, and interobserver variability was determined. RESULTS: Of 1072 UFE patients, 184 (17.2%) had at least one visible OA. Ten (0.8%) patients were identified at aortography with collateral OA supply to more than 10% of the uterus. In total, 251 OAs were visualized, and 157 of these were further evaluated with selective study. Sixty-two (5.8%) patients were identified at selective arteriography as having collateral OA supply. The sensitivity of aortography was approximately 18%. Interobserver concordance was high (kappa values of 0.81 and 0.90 for aortography and selective study, respectively), but not perfect. CONCLUSION: Aortography rarely helps identify patients with substantial residual OA supply to the uterus and is a poor predictor of the extent of that supply, and thus may be of limited utility in routine UFE. (c) RSNA, 2007.

PMID: 17581907 [PubMed - indexed for MEDLINE]

342. J Obstet Gynaecol Res. 2007 Jun;33(3):316-24.

Hysteroscopy after uterine fibroid embolization in women of fertile age.

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AIM: Uterine artery embolization for fibroids is a controversial issue for women with incomplete reproductive plans. Ovarian failure and uterine infection are the most dreaded complications of this procedure. The purpose of the present study was to assess the types and the frequency of intrauterine abnormalities and the histological features of the endometrium after embolization. METHODS: Uterine artery embolization was performed on 51 women (average age 34.5 years) with intramural fibroid/s larger than 4 cm. Hysteroscopy and endometrial biopsy was performed from 3 to 9 months later in the luteal phase of the cycle. RESULTS: Despite all women having no major symptoms prior to hysteroscopy, only 19 (37%) had completely normal hysteroscopic findings. There was intrauterine protrusion of fibroid/s in 19 cases (37%), yellowish coloration of the endometrium in 14 (28%), intrauterine or cervical adhesions in seven (14%), and communication between the myoma and the uterine cavity in five cases (10%). A normal, functional endometrium was histologically verified in 44 women of 49 (90%) who could be evaluated. Regressive changes (necrosis or hyalinization) of leiomyoma or of indefinite origin were found in 17 patients and embolization particles in five, including one patient with microspheres inside the endometrial vessel. No case of Asherman syndrome or endometrial atrophy was observed. CONCLUSION: The frequency of abnormal hysteroscopic findings after embolization is surprisingly high. The clinical significance, reversibility, and impact on fertility of abnormal hysteroscopic findings after embolization remain unclear. Regardless, hysteroscopy should be strongly recommended to all patients after uterine fibroid embolization, prior to conception.

PMID: 17578361 [PubMed - indexed for MEDLINE]

343. Am Fam Physician. 2007 May 15;75(10):1503-8.

Uterine fibroid tumors: diagnosis and treatment.

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Comment in:
Am Fam Physician. 2007 May 15;75(10):1452-3.

The incidence of uterine fibroid tumors increases as women grow older, and they may occur in more than 30 percent of women 40 to 60 years of age. Risk factors

include nulliparity, obesity, family history, black race, and hypertension. Many tumors are asymptomatic and may be diagnosed incidentally. Although a causal relationship has not been established, fibroid tumors are associated with menorrhagia, pelvic pain, pelvic or urinary obstructive symptoms, infertility, and pregnancy loss. Transvaginal ultrasonography, magnetic resonance imaging, sonohysterography, and hysteroscopy are available to evaluate the size and position of tumors. Ultrasonography should be used initially because it is the least invasive and most cost-effective investigation. Treatment options include hysterectomy, myomectomy, uterine artery embolization, myolysis, and medical therapy. Treatment must be individualized based on such considerations as the presence and severity of symptoms, the patient's desire for definitive treatment, the desire to preserve childbearing capacity, the importance of uterine preservation, infertility related to uterine cavity distortions, and previous pregnancy complications related to fibroid tumors.

PMID: 17555142 [PubMed - indexed for MEDLINE]

344. Am J Obstet Gynecol. 2007 Jun;196(6):601.e1-5; discussion 601.e5-6.

Changes in rates of hysterectomy and uterine conserving procedures for treatment of uterine leiomyoma.

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OBJECTIVE: The purpose of this study was to investigate treatment of uterine leiomyoma by hysterectomy and uterine conserving procedures (UCPs). STUDY DESIGN:
Data from Kaiser Permanente Northern California members undergoing hysterectomy,
myomectomy, uterine artery embolization (UAE) and endometrial ablation (EA) for uterine leiomyoma from 1997-2003 were collected. Statistical analysis included trend tests and survival analysis. RESULTS: Hysterectomy rates for leiomyoma decreased significantly from 2.13 per 1000 to 1.91 (P < .0001). Rates for myomectomy (.4-.37) and EA (.26-.27) remained stable (P = .17 and .26, respectively), whereas rates for UAE increased significantly from < .01-.24 (P < .0001). The combined rates for hysterectomy and UCPs remained stable at 2.79 (P = .95). Rate of hysterectomy after UCP increased over time, and at 6 years reached 11.5%, 17.7%, and 7.9% for EA, UAE, and myomectomy, respectively. CONCLUSION: Whereas rate of hysterectomy for leiomyoma decreased, total rate of invasive treatment remained stable. Increase in rate of UAE had the greatest impact on treatment, possibly replacing hysterectomy.

PMID: 17547914 [PubMed - indexed for MEDLINE]

345. Am J Obstet Gynecol. 2007 Jun;196(6):588.e1-6.

Predictors of hysterectomy after uterine artery embolization for leiomyoma.

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OBJECTIVE: This study was undertaken to describe long-term outcomes after uterine
artery embolization for leiomyoma. STUDY DESIGN: Data from Kaiser Permanente Northern California members undergoing uterine artery embolization for leiomyoma
before July 2001 were collected. Survival analysis was performed to describe hysterectomy rates and identify predictors of hysterectomy. RESULTS: Uterine artery embolization was performed in 562 women from 1997-2001. Thirty-three women
(5.9%) had unilateral uterine artery embolization. One hundred women (18%) underwent hysterectomy after uterine artery embolization, and 32 (5.7%) had additional uterine sparing procedures. Only unilateral uterine artery embolization predicted subsequent hysterectomy (relative risk = 2.19; 95% CI 1.34-3.57), whereas age, indication, uterine volume, embolizing particle, and radiologist experience did not. The rate of hysterectomy at 5 years was 19.7%; rates for bilateral and unilateral uterine artery embolizations were 18.5% and 39.2%, respectively. Fifty-four women (9.6%) had emergency room visits and 17 (3%) had unplanned readmissions. CONCLUSIONS: Uterine artery embolization for leiomyoma permits uterine conservation in more than 80% of women monitored long-term. When bilateral procedures cannot be performed, failure rates are considerably higher.

PMID: 17547908 [PubMed - indexed for MEDLINE]

346. Am J Obstet Gynecol. 2007 Jun;196(6):519.e1-11.

Uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids: 2 years' outcome from the randomized EMMY trial.

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OBJECTIVE: The purpose of this study was to compare the 2 years' efficiency of uterine artery embolization (UAE) with hysterectomy in the treatment of menorrhagia caused by uterine fibroids in a randomized controlled trial. STUDY DESIGN: Twenty-eight Dutch hospitals recruited patients with uterine fibroids and

menorrhagia, who were eligible for hysterectomy. Patients were randomized to UAE
or hysterectomy. The primary endpoint was if UAE could avoid a subsequent hysterectomy in at least 75% of cases. Secondary endpoints were changes in pain, bulk-related complaints, and uterine and dominant fibroid volume reduction. RESULTS: One hundred seventy-seven patients were randomized to UAE (n = 88) or hysterectomy (n = 89). Two years after treatment 23.5% of UAE patients had undergone a hysterectomy. There were no significant differences in improvement compared to baseline in pain and bulk-related complaints. Uterine and dominant fibroid volume reduction in UAE patients was 48.2% and 60.5%, respectively. CONCLUSION: UAE is a valuable alternative treatment for symptomatic uterine fibroids. Nevertheless, when patients seek for certainty on the cessation of bleeding problems, a hysterectomy remains the treatment of choice.

PMID: 17547877 [PubMed - indexed for MEDLINE]

347. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):1033-6. Epub 2007 Jun 2.

Development of a hypertrophic ovarian artery after uterine artery embolization with polyvinyl alcohol particles.

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Uterine artery embolization (UAE) for the treatment of symptomatic leiomyomata has shown excellent short-term clinical efficacy and minimal complications, yet recurrences after successful treatments at mid- and long-term follow-up have been reported. Exact etiologies for such recurrences have not been fully understood. We present a case of symptom recurrence with the development of a hypertrophic ovarian artery after successful UAE with polyvinyl alcohol particles, successfully treated with ovarian and repeat UAEs.

PMID: 17546401 [PubMed - indexed for MEDLINE]

348. J Vasc Interv Radiol. 2007 Jun;18(6):789-91.

Focal myometrial defect and partial placenta accreta in a pregnancy following bilateral uterine artery embolization.

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A 29-year-old nulliparous patient was treated with uterine artery embolization (UAE) for a large symptomatic uterine fibroid, resulting in a marked reduction of the tumor volume. She subsequently conceived and progressed through pregnancy uneventfully. At cesarean section for breech presentation at term, a large fundal myometrial defect was encountered. In addition, the patient presented with unexpected partial placenta accreta, which resulted in massive atonic uterine bleeding. It is suggested that UAE was implicated in the pathogenesis of myometrial damage and abnormal placentation. It is proposed that the antenatal care of pregnancies after UAE include careful imaging of the placenta, its vasculature, and the thickness of overlying uterine wall so peripartum management can be appropriately planned.

PMID: 17538144 [PubMed - indexed for MEDLINE]

349. Cardiovasc Intervent Radiol. 2007 Jul-Aug;30(4):809-11. Epub 2007 May 29.

Pain management during uterine artery embolization for symptomatic uterine fibroids.

Lampmann LE, Lohle PN, Smeets A, Boekkooi PF, Vervest H, van Oirschot CM, Bremer RC.

Comment on:
Cardiovasc Intervent Radiol. 2006 Mar-Apr;29(2):179-87.

PMCID: PMC2700250
PMID: 17533543 [PubMed - indexed for MEDLINE]

350. Fertil Steril. 2008 May;89(5 Suppl):1371-83. Epub 2007 May 25.

Fertility after bilateral uterine artery embolization in a sheep model.

Laurent A, Pelage JP, Wassef M, Martal J.

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OBJECTIVE: To evaluate the impact of bilateral uterine artery embolization (UAE) upon fertility in sheep. DESIGN: Prospective study. SETTING: University-based interventional radiology, pathology, and reproductive physiology units. ANIMAL(S): Nineteen control ewes, 10 ewes embolized with polyvinyl alcohol particles (PVA group), and 10 ewes embolized with Tris-acryl gelatin microspheres (TGMS group). INTERVENTION(S): Bilateral UAE was performed with 600- to 1,000-mum PVA particles or 700- to 900-mum TGMS particles. Animals of three groups were

synchronized and naturally inseminated. MAIN OUTCOME MEASURE(S): For each ewe, a hormonal follow-up was performed throughout the gestation. Gestation duration, number and weight of newborns, and fertility and gestation rates were recorded. RESULT(S): Mean number of estrus before insemination and gestation duration were not different between groups. There were 47 living newborns: 26 control, 9 PVA, and 12 TGMS. Overall birth weight of newborns was 3.7 +/- 0.9 kg for controls, 3.6 +/- 1.1 kg for TGMS, and 2.2 +/- 0.7 kg for PVA (which was statistically significant vs. control). In the PVA group, there was a statistically significant decrease of fertility rate and gestation rate vs. controls, but this was not the case in the TGMS group. CONCLUSION(S): Particles of PVA decrease fertility in sheep and lead to intrauterine growth retardation.

PMID: 17531994 [PubMed - indexed for MEDLINE]

351. AJR Am J Roentgenol. 2007 Jun;188(6):1558-63.

Frequency and extent of uterine perfusion via ovarian arteries observed during uterine artery embolization for leiomyomas.

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OBJECTIVE: The objective of our study was to evaluate the frequency and extent of residual uterine perfusion via the ovarian arteries after bilateral uterine artery embolization (UAE) for the treatment of symptomatic uterine leiomyomas. MATERIALS AND METHODS: One hundred forty-five consecutive patients who underwent UAE were retrospectively evaluated for blood supply to the uterus via the ovarian arteries after UAE. After completion of UAE, uterine supply from the ovarian arteries was assessed by performing abdominal aortography in all patients. Selective ovarian arteriography, in addition, was performed in some patients. The criteria used to characterize ovarian artery perfusion as seen on the aortograms were vessel size compared with a 5-French catheter and visualization and extent of flow. When the ovarian arteries visibly supplied uterine tissue, a quantification system was applied as follows: the uterus was divided in 24 segments on the basis of a clock model that was superimposed over the uterine territory in the anteroposterior projection. Depending on its distance from the midpoint of the clock, perfusion segments were labeled as central, middle, distal, or peripheral for each hour of the clock resulting in a total of 24 (12 x 2) potential segments of residually perfused uterine tissue via the ovarian arteries. RESULTS: Two hundred ninety ovarian arteries were evaluated on aortography; of these, 202 (70%) were not seen during aortography. Of the visualized ovarian arteries (n = 88), 52% (46/88) were smaller than, 25% (22/88) were equal to, and 23% (20/88) were larger than the diameter of a 5-French

catheter. The aortogram revealed that 61% (54/88) of the ovarian arteries extended into the pelvis, whereas 38% (33/88 [one missing data point]) did not. Selective injections were performed in 54 ovarian arteries. Of these, 69% (37/54) of the ovarian arteries had residual fibroid perfusion from the ovarian arteries after UAE (10 left-sided, 15 right-sided, six bilateral = 37 ovarian arteries). Residual fibroid perfusion was more likely in large ovarian arteries, particularly those with rapid flow visualized extending into the pelvis. The perfusion scores ranged from one to 18 segments (< 6 segments, n = 21 ovarian arteries; 6-12 segments, n = 12; > 12 segments, n = 4). Direct communication with the uterine arteries was seen in 20 ovarian arteries, 40% (8/20) of which did not show any uterine or fibroid perfusion, suggesting that fibroid flow had been occluded by UAE. CONCLUSION: Based on aortography, the presence of residual fibroid perfusion is more likely if the ovarian arteries are large, have rapid flow, or have flow that extends into the pelvis. Selective ovarian artery evaluation may be indicated in these cases to determine the extent of residual fibroid perfusion.

PMID: 17515376 [PubMed - indexed for MEDLINE]

352. Australas Radiol. 2007 Jun;51(3):246-52.

Uterine artery embolization for symptomatic fibroids with imaging follow up.

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The aim of this study was to determine the effectiveness of uterine artery embolization (UAE) as a primary treatment method in treatment of symptomatic fibroids, whether there are any preembolization MRI characteristics of fibroid predictive of reduction in volume and assess reduction in uterine and dominant fibroid volumes using ultrasound (US) and MRI. Study was carried out in total of 32 patients aged 25-49 years (mean 40.9 years). Uterine and dominant fibroid volume were determined using US and MRI before UAE, MRI and US at 3 months and US alone at 6 and 12 months post-UAE, supplemented by clinical evaluation at interval of 3, 6 and 12 months. Procedure was carried out through unilateral femoral puncture using poly vinyl alcohol (PVA) particles 355-500 microm in size. All 32 patients had successful procedures. Overall, 25 patients responded, giving a clinical success rate of 78.12%. Mean reduction in volume of uterus and fibroid was 33 and 59.7% and 48.9 and 75.5% on US at 3 and 12 months respectively, and 33.3 and 58.6% on MRI at 3 months. Volume reduction on US and MRI at 3 months was highly correlative. There was no statistical difference in size reduction in volume of fibroids, which were hypointense or hyperintense on T2-weighted image (T2WI) on pre-UAE MRI. Uterine artery embolization leads to good technical success and fibroid volume reduction. Ultrasound alone may be used for follow up

of patients post-UAE. Preprocedure signal characteristics on T2WI are not predictors of volume reduction after UAE.

PMID: 17504316 [PubMed - indexed for MEDLINE]

353. Curr Opin Obstet Gynecol. 2007 Jun;19(3):279-83.

The impact of uterine artery embolization on fertility and pregnancy outcome.

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PURPOSE OF REVIEW: Uterine artery embolization for management of symptomatic fibroids is an effective and increasingly popular treatment option. There are several studies evaluating the effects of uterine artery embolization on later pregnancies; however, the effects on fertility are still largely uncertain. This paper reviews the current literature on the effects of this technique on fertility and pregnancy outcome. RECENT FINDINGS: Two recent studies have reported pregnancy rates following uterine artery embolization in women seeking pregnancy. A small, third study reported preliminary results in a randomized controlled trial comparing uterine artery embolization with myomectomy in women wishing to preserve fertility. SUMMARY: The body of medical literature supports use of uterine artery embolization as an effective treatment for symptoms of vaginal bleeding and pelvic pressure from uterine fibroids. Patient selection is critical in determining the appropriateness of this treatment option. Myomectomy remains the standard of care for women with symptomatic fibroids seeking fertility preservation.

PMID: 17495646 [PubMed - indexed for MEDLINE]

354. J Vasc Interv Radiol. 2007 May;18(5):633-7.

Awareness of interventional radiology among patients referred to the interventional radiology department: a survey of patients in a large Canadian community hospital.

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PURPOSE: To quantify the level of knowledge about interventional radiology (IR) among patients referred for an IR procedure and to develop recommendations on how

to increase public awareness of IR. MATERIALS AND METHODS: Paper surveys were prospectively administered to consecutive patients scheduled to undergo an IR procedure at a community hospital. The study was terminated at the accrual of 100 completed surveys. RESULTS: Totals of 28% and 6% knew generally the job of a diagnostic radiologist and interventional radiologist, respectively, and 6% had heard of the field of IR before their referral (despite 21% having undergone a procedure previously). Before their arrival in the IR department, 87% had not received any information about IR. Three percent, 0%, 4%, 82%, and 82% had heard about uterine artery embolization, radiofrequency ablation, vertebroplasty, biopsy (any type), and angioplasty, respectively. After the procedures, 84% had a clearer view of what interventional radiologists do, but 98% believed that most others did not know what IR was. When asked how best to educate the public about
IR, the responses were: unsure (39%), other (19%), pamphlets (12%), information from physicians (9%), television (8%), and Internet (7%). Overall, the mean satisfaction rate was 8.8 (with 0 representing the minimum and 10 representing the maximum), and 97% would choose IR over surgery for future treatments. CONCLUSIONS: These data quantify and strongly support the views that (1) even among patients specifically referred to IR for a procedure, the majority of people are unaware of what the field is or may offer; and (2) most patients were satisfied with their IR experience. Six results-based recommendations are made to increase public awareness about IR.

PMID: 17494845 [PubMed - indexed for MEDLINE]

355. Rofo. 2007 Jun;179(6):593-600. Epub 2007 May 9.

[Clinical 3-year follow-up of uterine fibroid embolization]

[Article in German]

Radeleff BA, Satzl S, Eiers M, Fechtner K, Hakim A, Rimbach S, Kauffmann GW, Richter GM.

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**PURPOSE: The purpose of this study was to evaluate the clinical long-term success of uterine artery embolization (UAE) in patients with symptomatic fibroids using spherical particles (Embosphere). MATERIALS AND METHODS: 34 consecutive patients
treated with UAE were initially enrolled in the study which had the following study goals 1) 1-year follow-up MRI evaluation of the fibroid behavior and 2) clinical long-term success due to standardized assessment of the main fibroid-related symptoms (hypermenorrhoea, dysmenorrhoea and dysuria) of the patients' individual overall health status and their therapy satisfaction at
1-year, 2- year and 3-year intervals after UAE. RESULTS: Technical success was achieved in all procedures. Four patients had to be excluded from the long-term**

evaluation schedule: one because of a hysterectomy due to bleeding after 6 weeks, 3 patients were not available for the designated minimum follow-up interval. The preinterventional severe hypermenorrhoea (n = 27) with a score of 4.4 +/- 0.7 (5 = extreme menstrual bleeding) decreased after one year to 2.1 +/- 0.5 (p = 0.0001), after two years to 1.7 +/- 0.5 (p = 0.0042) and after three years to 1.3 +/- 0.6 (p = 0.0001). The preinterventional dysmenorrhoea (n = 15) with a score of 3.1 +/- 1.5 (3 = distinctly increased dysmenorrhoea) decreased after one year to 1.1 +/- 0.3 (p = 0.0001), after two years to 1.2 +/- 0.2 and after three years to 1.2 +/- 0.4 (p = 0.148). The pretreatment dysuria (n = 12) with a preinterventional score of 3.1 +/- 1.5 (3 = distinctly increased dysuria) decreased after one year to 1.1 +/- 0.3 (p = 0.0069) and remained after two years at 1.1 +/- 0.2 and after three years at 1.2 +/- 0.4 (p = 0.905). The initial overall health status was 54.7 +/- 20.1 (maximal value 100). After one year it rised to 90.5 +/- 15.4 (p = 0.0001), was 91.8 +/- 5.6 after two years and was 91.3 +/- 8.5 (p = 0.8578) after three years. The satisfaction with the therapy was 2.9 +/- 0.2 after one year, 2.6 +/- 0.3 after two years and 2.7 +/- 0.5 (3 = extremely satisfied) after three years. We observed 12 minor and 3 major complications (one hysterectomy, one fibroid expulsion associated with a short bleeding episode and one transient amenorrhoea for three months). All patients benefited clinically from the procedure and a clinical benefit was achieved in all cases. CONCLUSION: Under controlled study conditions, flow-guided UAE with spherical embolization particles achieves high clinical success for all relevant clinical symptoms without negative changes during follow-up after at least 3 years. Accordingly, patient therapy satisfaction remained extraordinarily high even 3 years after UAE.

PMID: 17492540 [PubMed - indexed for MEDLINE]

356. Fertil Steril. 2007 Dec;88(6):1676.e15-7. Epub 2007 May 7.

Successful pregnancy following both endometrial ablation and uterine artery embolization.

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OBJECTIVE: To present a description of the management of a pregnancy in a woman who had undergone endometrial ablation and uterine artery embolization for fibroids. DESIGN: Case report. SETTING: Division of Maternal Fetal Medicine within a tertiary community-based teaching hospital. PATIENT(S): A 43-year-old G2P1 woman who had undergone a hydrothermal ballon ablatation and a bilateral, nonselective embolization. INTERVENTION(S): Management of a high-risk pregnancy.
MAIN OUTCOME MEASURE(S): Successful pregnancy. RESULT(S): The patient was prophylactically treated with 250 mg of 17 alpha-hydroxyprogesterone intramuscularly weekly, beginning at 16 weeks gestation, received a rescue

McDonald cerclage at 22 weeks and 4 days, and remained on modified bed rest at home. Ultrasonically estimated fetal weights were in the 30th to 40th percentile. At 35 4/7th weeks she presented with uterine pain. Ultrasound revealed fundal elevation of the amniotic membranes, estimated fetal weight had decreased to the 20th percentile and a biophysical profile score of 4/10 was obtained. A cesarean resulted in the delivery of a vigorous infant weighing 2466 g. CONCLUSION(S): With aggressive therapy, successful pregnancy is possible in similar patients.

PMID: 17482597 [PubMed - indexed for MEDLINE]

357. Best Pract Res Clin Obstet Gynaecol. 2007 Dec;21(6):995-1005. Epub 2007 May 2.

Treatment of uterine fibroids for abnormal uterine bleeding: myomectomy and uterine artery embolization.

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Uterine myoma is a common benign tumour in women and most cases do not require treatment. Excessive uterine bleeding is usually due to a submucous myoma or an intramural myoma that is encroaching into the uterine cavity. After eliminating
endometrial malignancy, perimenopausal women could be managed expectantly or with
gonadotrophin-releasing hormone agonist until menopause. Hysteroscopic myomectomy
is highly effective in controlling menorrhagia that is related to submucous myoma. Concomitant endometrial ablation improves menorrhagia; however, the subsequent hysterectomy rate remains the same. For those with an intramural myoma, abdominal myomectomy results in good bleeding control. It could also be done by laparoscopic approach; however, the surgeon should have expertise in laparoscopic suturing and the uterine incision should be properly sutured. In women who have completed their family, hysterectomy remains the most effective treatment for excessive uterine bleeding. Compared with uterine artery embolization (UAE), it is associated with better improvement in pelvic pain. Nevertheless, UAE is a good alternative to hysterectomy.

PMID: 17478123 [PubMed - indexed for MEDLINE]

358. J Obstet Gynaecol. 2007 Feb;27(2):205-7.

Delayed presentation of vesicouterine fistula 12 months after uterine artery embolisation for uterine fibroids.

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PMID: 17454485 [PubMed - indexed for MEDLINE]

359. J Obstet Gynaecol. 2007 Feb;27(2):195.

Uterine artery embolisation as an interval adjunct to conservative management of placenta praevia increta.

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PMID: 17454478 [PubMed - indexed for MEDLINE]

360. Cardiovasc Intervent Radiol. 2007 Sep-Oct;30(5):882-7.

The feasibility of contrast-enhanced ultrasound during uterine artery embolization: a pilot study.

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**PURPOSE: To evaluate the feasibility of using contrast-enhanced ultrasound (CEUS) during uterine artery embolization (UAE) in order to define the correct end-point of embolization with complete devascularization of all fibroids. METHODS: In this prospective study of 10 consecutive women undergoing UAE, CEUS was performed in
the angiographic suite during embolization. When the angiographic end-point, defined as the "pruned-tree" appearance of the uterine arteries was reached, CEUS was performed while the angiographic catheters to both uterine arteries were kept in place. The decision whether or not to continue the embolization was based on the findings at CEUS. The results of CEUS were compared with those of contrast-enhanced magnetic resonance imaging (MRI) 1 day as well as 3 months following UAE. RESULTS: CEUS was successfully performed in all women. In 4 cases injection of particles was continued based on the findings at CEUS despite angiographically complete embolization. CEUS imaging at completion of UAE correlated well with the findings at MRI. CONCLUSION: The use of CEUS during UAE is feasible and may increase the quality of UAE.**

PMID: 17450399 [PubMed - indexed for MEDLINE]

361. J Vasc Interv Radiol. 2007 Apr;18(4):573-6.

Patient radiation exposure during uterine fibroid embolization and the dose attributable to aortography.

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The techniques used for uterine fibroid embolization (UFE) have rapidly evolved during the past decade. One source of uncertainty in the UFE technique has been the importance of the contribution of the ovarian artery to the blood supply of the uterus and fibroids. Although conventional aortography is often used after embolization to assess for collateral arterial supply, few patients are identified with sufficient collateral vessels to warrant supplemental embolization. One potential downside of routine aortography is the additional radiation dose. In this study, the radiation dose associated with UFE and the contribution of each component of the procedure to this dose were evaluated, with the specific goal of identifying the contribution from aortography. Although the overall radiation dose associated with UFE is moderate, aortography contributes a substantial amount of additional radiation, more than 20% of the total, which, coupled with its low clinical utility, suggests that the routine use of aortography at the conclusion of UFE should be reconsidered.

PMID: 17446550 [PubMed - indexed for MEDLINE]

362. J Obstet Gynaecol Res. 2007 Apr;33(2):190-4.

Angiographic uterine artery embolization followed by immediate curettage: an efficient treatment for controlling heavy bleeding and avoiding recurrent bleeding in cervical pregnancy.

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Two cases of cervical pregnancy with heavy bleeding successfully treated by uterine artery embolization (UAE) followed by immediate curettage are described in this report. Case 1 demonstrated intermittent bleeding after serious bleeding was successfully controlled by UAE. Serum beta human chorionic gonadotropin (beta-hCG) level rose remarkably after a short time decline. Transvaginal sonography consistently revealed a heterogeneous mass in the cervix. Repeated UAE
followed by immediate curettage was performed and complete resolution was

achieved. Case 2 was also successfully managed by UAE followed by immediate curettage after failure of medical treatment. This report suggests that UAE followed by immediate curettage is a safe and efficient procedure for controlling heavy bleeding and avoiding recurrent bleeding when fertility capacity is desired in cases of cervical pregnancy with fetal cardiac activity and high beta-hCG concentration.

PMID: 17441894 [PubMed - indexed for MEDLINE]

363. Korean J Radiol. 2007 Mar-Apr;8(2):176-9.

Selective uterine artery embolization for management of interstitial ectopic pregnancy.

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**Interstitial ectopic pregnancy is a rare condition of pregnancy and may be very dangerous if not identified and treated urgently. We report a case of successful treatment of an interstitial pregnancy using selective uterine artery embolization. A 27-year-old woman with interstitial pregnancy was treated by uterine artery embolization after failure of systemic methotrexate treatment. Her serum beta-human chorionic gonadotropin (beta-hCG) was undetectable one month
after the therapeutic embolization and transvaginal sonography 31 days after embolization showed normal endometrium and cornu. The patient achieved a normal
pregnancy eight months after embolization.**

**PMCID: PMC2626783
PMID: 17420637 [PubMed - indexed for MEDLINE]**

364. Taiwan J Obstet Gynecol. 2007 Mar;46(1):85-7.

Uterine fibroid with calcified rim formation mimicking a fetal head after uterine artery embolization.

Ho SY, Huang KG, Yeow KM, Horng SG.

PMID: 17389200 [PubMed - indexed for MEDLINE]

365. J BUON. 2004 Jan-Mar;9(1):63-6.

Endovascular interventions in advanced cancer of the uterus.

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PURPOSE: The primary endpoint of this study was to estimate the efficacy of endovascular interventions -EVI- (occlusion and chemoinfusion of the internal iliac arteries- IIA) in the control of bleeding of patients with advanced cervical and endometrial cancer. Tumor response and survival were also estimated. PATIENTS AND METHODS: EVI were carried out in 95 patients with advanced uterine carcinoma (study group). In 82 (86%) of them EVI preceded primary radiotherapy. Autoclots, Ivalon, and Gelfoam were used for arterial occlusion. In 43 patients intraarterial chemotherapy was followed by occlusion of the internal iliac arteries (IIA). For chemoinfusion, cisplatin (120 mg/m(2)), and later the combination of cisplatin, doxorubicin and cyclophosphamide (CAP) were administered into the femoral artery using the Seldinger method. These patients were compared with a similar group of 143 patients treated with radiotherapy alone (control group). RESULTS: Bleeding was controlled by embolization in all 95 patients with EVI and in 122 (85.3%) patients of the control group (p <0.01). Repeat angiographic studies in patients undergoing chemoembolization showed complete remission (CR) in 7%, partial remission (PR) in 63% and disease stabilization (SD) in 30% of the patients. The corresponding figures for the control group were 5%, 54% and 23%, while progressive disease (PD) was observed in 18% of the patients of this group. The 3-year overall survival was 47% versus 36% in the study and control groups, respectively (p <0.01). CONCLUSION: EVI is a method effective in stopping bleeding in patients with advanced uterine carcinoma. Chemoembolization of the IIA increases the efficacy of subsequent radiotherapy in patients with advanced uterine carcinoma.

PMID: 17385830 [PubMed - in process]

366. J Gynecol Obstet Biol Reprod (Paris). 2007 Sep;36(5):500-2. Epub 2007 Mar 23.

[Uterine artery embolisation to treat severe haemorrhage following legal abortion]

[Article in French]

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The aim of this paper is to present a case of hemorrhagic complication following a legal abortion treated with uterine embolisation. A 45-year-old woman, with a

history of one caesarean section and seven legal induced abortions, requested legal induced abortion at 12 weeks of amenorrhea. Legal induced abortion was performed as a day case using vacuum aspiration with a plastic cannula under general anaesthesia. Severe haemorrhage, with an estimated blood loss of 800 ml, occurred during the procedure. Bleeding was not related to cervical laceration, incomplete abortion, or uterine perforation. Surgical conservative procedures and intravenous use of sulprostone (Nalador) failed to control haemorrhage. The patient underwent uterine artery embolisation with Curaspon, a porcine-derived gelfoam, used for the temporary occlusion of the visceral arteries. Successful hemostasis was obtained. The patient presented no complication related to the procedure. Severe haemorrhage following legal induced procedure is rarely reported. Emergency arterial embolisation may offer an effective modality of treatment.

PMID: 17383112 [PubMed - indexed for MEDLINE]

367. J Vasc Interv Radiol. 2007 Mar;18(3):451-4.

Uterine artery embolization: a treatment option for symptomatic fibroids in postmenopausal women.

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The authors tested the hypothesis that UAE is an effective treatment option in postmenopausal women with fibroid-related bulk symptoms. The authors retrospectively reviewed a prospectively acquired HI-IQ database. Between 2001 and 2004, 24 women with an average age of 52 years meeting the Stages of Reproductive Aging Workshop criteria for menopause underwent UAE for fibroid-related bulk symptoms. All patients underwent preprocedural gadolinium-enhanced magnetic resonance (MR) imaging to confirm the presence of fibroid disease and exclude other pathology. These patients were followed at 1-, 3-, 6-, 12-, and 24-month intervals to assess their clinical response to therapy. Clinical success was defined as a qualitative reduction in bulk symptoms. Postprocedural gadolinium-enhanced MR imaging was performed routinely between 3
and 6 months and at 12 or 24 months, if indicated. Technical success was achieved in 24 of 24 (100%) patients. The follow-up period ranged from 1 to 24 months with an average of 9 months. Clinical success was achieved in 22 of 24 (92%) women. There were no major complications in any of the patients. Mean uterine volume was
reduced by 564 cc (P < .0001). Mean dominant uterine fibroid volume was reduced by 180 cm(3) (P = .0015). Uterine artery embolization is a viable treatment option in carefully selected postmenopausal women with fibroid-related bulk symptoms.

PMID: 17377194 [PubMed - indexed for MEDLINE]

368. J Vasc Interv Radiol. 2007 Mar;18(3):411-8.

Rabbit VX2 tumors as an animal model of uterine fibroids and for uterine artery embolization.

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**PURPOSE: To determine the suitability of the rabbit VX2 tumor animal model for uterine fibroids and uterine artery embolization (UAE). MATERIALS AND METHODS: The authors implanted and grew one uterine VX2 tumor per rabbit in six rabbits. UAE was performed by using 100-300 microm embolic particles and confirmed with x-ray digital subtraction angiography, magnetic resonance (MR) imaging, and necropsy. Unenhanced and contrast medium-enhanced MR images of VX2 tumors were
obtained before and after UAE. Relative MR signal-to noise-ratio (SNR) was measured in the uterine VX2 tumor and in normal uterine tissue before and after UAE and compared by using a paired t-test (P = .05). RESULTS: VX2 uterine tumors were successfully grown, and both VX2 tumor presence in the uterus and UAE were seen angiographically and confirmed with necropsy in all six rabbits.
Statistically significant reductions in relative SNRs were measured in tumors (SNR before UAE, 15.3 +/- 5.15; SNR after UAE, 3.84 +/- 3.94; P < .0001). No statistically significant decrease in SNR was measured in normal uterine tissue before and after UAE (P = .63 for the right uterine horn and P = .93 for the left uterine horn). CONCLUSION: Rabbit VX2 uterine tumors may be a suitable animal model of uterine fibroids and UAE.**

PMID: 17377188 [PubMed - indexed for MEDLINE]

369. Ceska Gynekol. 2007 Jan;72(1):58-64.

[Remarks on embolization of uterine fibroids]

[Article in Czech]

Mára M, Masková J, Fucíková Z, Kríz P, Kuzel D, Dundr P.

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OBJECTIVE: To give a systematic comment on uterine artery embolization for the

treatment of uterine fibroids. DESIGN: Expert comment. SETTING: Department of Obstetrics and Gynecology, 1st Faculty of Medicine and General Faculty Hospital, Charles University, Prague. METHODS: The analysis of results of the group of patients treated with uterine fibroid embolization in our facility in the years 2001-2005. RESULTS: Opinions of the multidisciplinary team, specialized in complex therapy of uterine fibroids were summarized. On the base of experience with more than 110 patients treated with uterine fibroid embolization we worked up practical comments on indications, cover and implementation of the procedure, and on suggested studies pre and post-procedurally with regard to expected effect and possible complications. CONCLUSION: Uterine artery embolization is a minimally invasive procedure with large symptomatic potential in therapy of post-fertile females with leiomyomas. The indication of such therapy for pregnancy planning women is controversial and needs thorough individual consideration about benefits and risks of embolization and its comparison with standard therapy (myomectomy). Organizing of the whole procedure (preoperative studies, equipment and experience of interventional radiologist, pain management, handling with complications) is challenging and should be performed by specialized teams and centers.

PMID: 17357352 [PubMed - indexed for MEDLINE]

370. Fertil Steril. 2007 Sep;88(3):706.e1-3. Epub 2007 Mar 8.

Combined intrauterine and twin cervical pregnancy managed by a new conservative modality.

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OBJECTIVE: To describe a rare case of a heterotopic pregnancy with two gestational sacs in the cervix and one in the uterine cavity. DESIGN: Case report. SETTING: Tertiary university hospital. PATIENT(S): A 45-year-old woman was diagnosed with a triplet gestation 7 weeks following IVF treatment for primary infertility of 5 years' duration. Transvaginal ultrasound scan revealed three gestational sacs: one sac inside the uterine cavity containing a live fetus, and two sacs in the uterine cervix, one containing a live fetus and a second empty sac. INTERVENTION(S): Pregnancy termination was performed by selective intraarterial catheterization of the uterine artery, intraarterial administration of methotrexate, and uterine artery embolization with Gelfoam. MAIN OUTCOME MEASURE(S): Intra- or postprocedural complications and fertility preservation. RESULT(S): The pregnancy termination was successfully performed without intra- or postprocedural complications, with preservation of the patient's fertility. CONCLUSION(S): Intraarterial methotrexate with uterine vessel embolization is an effective conservative approach to heterotopic cervical

pregnancy.

PMID: 17349638 [PubMed - indexed for MEDLINE]

371. Am J Obstet Gynecol. 2007 Mar;196(3):213.e1-5.

Markers of muscle ischemia, necrosis, and inflammation following uterine artery embolization in the treatment of symptomatic uterine fibroids.

Banu NS, Gaze DC, Bruce H, Collinson PO, Belli AM, Manyonda IT.

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OBJECTIVE: The objective of the study was to quantify markers of myometrial ischemia, necrosis, and inflammation in women undergoing uterine artery embolization (UAE). STUDY DESIGN: Women with symptomatic fibroids were randomized
to treatment with UAE (n = 14) or abdominal myomectomy (n = 11). Peripheral venous blood samples were taken before and after the procedure, at 24 hours and 6
weeks. Creatine kinase (CK) and ischemia-modified albumin (IMA) were measured as
markers of necrosis and ischemia. Inflammation was assessed by measurement of C-reactive protein (CRP). OUTCOME MEASURES: Changes in the markers following UAE
and myomectomy were measured. RESULTS: Following UAE, no change was seen in CK or
IMA, but CRP was raised only at 6 weeks. At 24 hours after myomectomy, there were
significant rises in all 3 markers, with a return to normal by 6 weeks.
CONCLUSION: No significant ischemia or necrosis occurs in the myometrium following UAE, whereas the delayed rise in CRP is likely to reflect necrosis in fibroids.

PMID: 17346524 [PubMed - indexed for MEDLINE]

372. J Vasc Interv Radiol. 2007 Jan;18(1 Pt 1):127-31.

Uterine artery embolization for control of life-threatening hemorrhage at menarche: brief report.

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Uncontrolled acute menorrhagia resulting in hemodynamic instability in the adolescent is uncommon. We report a case of life-threatening menorrhagia upon first menses in a 12-year-old girl who was successfully treated with uterine artery embolization after failure of standard gynecologic and medical measures. Testing eventually revealed a coagulopathy that resulted from decreased plasminogen activator inhibitor-1 activity in combination with an immature hypothalamic-pituitary-ovarian axis. Coagulation disorders are more common in patients presenting with severe menorrhagia upon menarche. Interventional radiologists should be aware of such coagulation abnormalities and the differences between adults and adolescents when contemplating uterine artery embolization for adolescent patients.

PMID: 17296713 [PubMed - indexed for MEDLINE]

373. J Vasc Interv Radiol. 2007 Jan;18(1 Pt 1):41-8.

Percutaneous image-guided radiofrequency thermal ablation for large symptomatic uterine leiomyomata after uterine artery embolization: a feasibility and safety study.

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**PURPOSE: To evaluate the feasibility and safety of percutaneous image-guided radiofrequency ablation (RFA) performed with moderate sedation for large symptomatic uterine leiomyomata. MATERIALS AND METHODS: Women with large (>5 cm
in diameter) symptomatic subserosal and/or intramural uterine leiomyoma were recruited for a prospective study. Patients underwent percutaneous RFA following UAE. RFA using 5 cm treatment diameter expandable needle electrodes connected to
a 460 kHz monopolar RF generator, which was performed with a target temperature
and power set at 85 degrees C and 150 watts respectively, with a target temperature ablation time of 10 minutes. Patients were assessed for complications in perioperative and post-procedure periods at 24 hours and 1 month, and for symptom improvements at 6 months. RESULTS: Thirty-five patients (mean 43.8 years
+/- 6.2) were recruited. RFA targeting ablation size and temperature was achieved in 97% of the patients (34/35). There were no immediate percutaneous RFA-related complications. There was a self-limiting delayed drainage via the transabdominal RFA access track in one patient (2.9%), a urinary tract infection in one patient (2.9%) and post-embolization/post-ablation symptoms in three patients (8.6%). The mean transformed symptom severity score (SSS) as a part of the uterine fibroid**

**symptom and quality of life (UFS-QOL) assessment shows that the improvements at 1
month were 24.3 points (P < 0.001) and at 6 months were 40.4 points (P < 0.001). Mean volume reduction of leiomyomata was 286.8 cm(3) or 56.5% (P = 0.0015). CONCLUSIONS: Percutaneous image-guided RFA as adjunctive to UAE under
moderate sedation is feasible, and appears safe without significant morbidity in the treatment of large uterine leiomyomata.**

PMID: 17296703 [PubMed - indexed for MEDLINE]

374. J Vasc Interv Radiol. 2007 Jan;18(1 Pt 1):31-9.

Utero-ovarian anastomosis: histopathologic correlation after uterine artery embolization with or without ovarian artery embolization.

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**PURPOSE: To study utero-ovarian anastomosis at angiography and its histologic effect on patients who were treated with uterine artery embolization (UAE) with or without ovarian artery embolization (OAE) for symptomatic uterine leiomyomata.
MATERIALS AND METHODS: Four hundred patients (mean age, 43.6 years +/- 6.34) underwent UAE at the authors' institution from June 1998 to May 2005. Eight of the 400 patients underwent hysterectomy with removal of at least one adnexae after UAE. Five patients received tris-acryl gelatin microspheres and three received polyvinyl alcohol particles. Two patients also underwent OAE with gelatin sponges. Specimens from 16 fallopian tubes and 12 ovaries were reviewed. Histologic slides were prepared and reviewed by two pathologists who were blinded
to the angiographic findings. The presence of utero-ovarian anastomoses at angiography, the histologic features of adnexa, the presence of particles in the adnexa, and the size and location of the particles were studied. RESULTS: Utero-ovarian anastomosis was present at angiography in three of the eight patients (38%) and five of the 16 adnexa (31%). Particles were present within the fallopian tube or ovary in all patients who demonstrated utero-ovarian anastomoses at angiography. When utero-ovarian anastomoses were identified bilaterally, particles were found in both adnexae. In cases with particles in the adnexa, the adnexal tissues were histologically viable without evidence of ischemic changes or infarction. Particles were not present in the ovary of patients without utero-ovarian anastomosis at angiography. CONCLUSION: The angiographic finding of a utero-ovarian anastomosis during UAE appears to correlate with particle embolization in the fallopian tube or ovary. Histologically normal fallopian tubes and ovaries can be expected after UAE with microsphere particles with and without OAE with gelatin sponges.**

PMID: 17296702 [PubMed - indexed for MEDLINE]

375. Int J Gynaecol Obstet. 2007 Mar;96(3):181-5. Epub 2007 Feb 6.

Uterine artery embolization in the treatment and prevention of postpartum hemorrhage.

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OBJECTIVES: The study was conducted to evaluate the efficacy of superselective transcatheter uterine artery embolization for control of obstetric hemorrhage. METHODS: Between January 2002 and December 2005, 14 consecutive patients underwent uterine artery embolization to control postpartum hemorrhage, and two to prevent hemorrhage before second-trimester therapeutic abortion. RESULTS: Embolization was performed by transfemoral arterial catheterization. Pieces of absorbable gelatin sponge were used in all cases, with the addition of platinum coils in two cases for complete vessel occlusion. Optimal bleeding control was achieved in all cases but one--a patient who underwent hysterectomy due to embolization failure. No severe complications were observed. CONCLUSIONS: The high success rate, low morbidity rate, and possibility of preserving reproductive function have made superselective uterine artery embolization the technique of choice to control life-threatening, intractable postpartum hemorrhage in hemodynamically stable patients, provided multidisciplinary medical teams are promptly available.

PMID: 17286979 [PubMed - indexed for MEDLINE]

376. Abdom Imaging. 2008 Jan-Feb;33(1):104-11.

Update on uterine artery embolization for symptomatic fibroid disease (uterine artery embolization).

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Transcatheter embolization of the uterine arteries for symptomatic fibroid disease has become an increasingly important alternative treatment. It is highly effective and well tolerated by most patients. Most notably, uterine artery embolization is associated with a short recovery period and is uterine sparing.

To ensure the best chance for a safe and successful procedure, Interventional Radiologists should have familiarity with uterine artery anatomy, state of the art embolization techniques, and optimal patient selection and post procedure management.

PMID: 17285399 [PubMed - indexed for MEDLINE]

377. Fertil Steril. 2007 Feb;87(2):417.e5-8.

Hemorrhage after myomectomy resulting from pseudoaneurysm of the uterine artery.

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**OBJECTIVE: To study a case of uterine artery hemorrhage after laparotomic myomectomy in a 40-year-old woman. DESIGN: Retrospective clinical case. SETTING:
Tertiary clinical care university hospital. PATIENT(S): A 40-year-old woman, 1 month after a laparotomic myomectomy presenting sudden metrorrhagia.
INTERVENTION(S): The diagnosis of uterine artery pseudoaneurysm was made by color
and duplex Doppler ultrasonography (CDDUS) and confirmed by arteriography. The angiographic study showed an intramyometrial uterine artery pseudoaneurysm. MAIN
OUTCOME MEASURE(S): Clinical response to treatment. RESULT(S): The uterine arterypseudoaneurysm was successfully treated by embolization. The patient's recovery
was extraordinary, and now she has normal menses. CONCLUSION(S): CDDUS is a useful imaging technique in the diagnosis of arterial pseodoaneurysms. Transcatheter arterial embolization is a good alternative for management. It has the advantage that it is a less invasive technique and also is able to preserve the reproductive function.**

PMID: 17276153 [PubMed - indexed for MEDLINE]

378. Ultrasound Obstet Gynecol. 2007 Mar;29(3):352-5.

The use of 3D rendering, VCI-C, 3D power Doppler and B-flow in the evaluation of interstitial pregnancy with arteriovenous malformation treated by selective uterine artery embolization.

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**Cornual pregnancy is a rare form of ectopic pregnancy. We describe a case of cornual pregnancy suspected by two-dimensional ultrasonography (2DUS) and confirmed by three-dimensional volume contrast imaging in the C-plane. Three-dimensional power Doppler showed a particularly rich blood supply and two-dimensional color Doppler mapping demonstrated arteriovenous malformation
(AVM). The feeding vessel originating from the right uterine artery and AVM were demonstrated with B-flow spatio-temporal image correlation (STIC) modality. Conservative management was chosen to preserve the uterus. Angiography confirmed
the diagnosis of AVM; embolization with polyvinyl alcohol particles and embolization coils was performed through the right uterine artery until occlusion of the AVM and feeding vessels had occurred. Postprocedure color Doppler mapping
and B-flow STIC modalities demonstrated absence of flow in the AVM. Serum human
chorionic gonadotropin (hCG) levels gradually fell to non-pregnant levels during the ensuing 5 weeks. To the best of our knowledge this is the first report of cornual pregnancy with AVM. We demonstrate here the value of new three-dimensional ultrasound modalities in the diagnosis of cornual pregnancy and the use of embolization as an effective therapeutic option when conservative treatment with uterine preservation is desired.**

PMID: 17274103 [PubMed - indexed for MEDLINE]

379. J Gynecol Obstet Biol Reprod (Paris). 2007 Apr;36(2):179-85. Epub 2007 Jan 30.

[Adenomyosis]

[Article in French]

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Diagnostic adenomyosis is done by pathologist (grade A). Adenomyosis is usually asymptomatic (grade C). Symptomatic adenomyosis gives pains and/or bleedings (grade C). Hysterosalpingography is not included in diagnostic strategy (grade B). Sonography has a good sensitivity and can be exclusively used for therapeutic strategy (grade B). MRI is pertinent but only useful in case of associated lesions (grade B). Hysterectomy is the gold standard for symptomatic patients

without desire of pregnancy (grade B). Medical treatments are: IUD with levonorgestrel, Gn-RH analog, antigonadotrope progestin (grade C). Uterine artery embolisation is not recommended (professional agreement). Endometrial resection/destruction are indicated in case of menorraghia (grade C).

PMID: 17267139 [PubMed - indexed for MEDLINE]

380. N Engl J Med. 2007 Jan 25;356(4):360-70.

Uterine-artery embolization versus surgery for symptomatic uterine fibroids.

Edwards RD, Moss JG, Lumsden MA, Wu O, Murray LS, Twaddle S, Murray GD; Committee of the Randomized Trial of Embolization versus Surgical Treatment for Fibroids.

Comment in:
N Engl J Med. 2007 May 24;356(21):2218; author reply 2219.
N Engl J Med. 2007 Jan 25;356(4):411-3.
N Engl J Med. 2007 May 24;356(21):2218-9; author reply 2219.
Natl Med J India. 2007 Mar-Apr;20(2):87-8.

**BACKGROUND: The efficacy and safety of uterine-artery embolization, as compared with standard surgical methods, for the treatment of symptomatic uterine fibroids remain uncertain. METHODS: We conducted a randomized trial comparing uterine-artery embolization and surgery in women with symptomatic uterine fibroids. The primary outcome was quality of life at 1 year of follow-up, as measured by the Medical Outcomes Study 36-Item Short-Form General Health Survey
(SF-36). RESULTS: Patients were randomly assigned in a 2:1 ratio to undergo either uterine-artery embolization or surgery, with 106 patients undergoing embolization and 51 undergoing surgery (43 hysterectomies and 8 myomectomies). There were no significant differences between groups in any of the eight components of the SF-36 scores at 1 year. The embolization group had a shorter median duration of hospitalization than the surgical group (1 day vs. 5 days, P<0.001) and a shorter time before returning to work (P<0.001). At 1 year, symptom scores were better in the surgical group (P=0.03). During the first year of follow-up, there were 13 major adverse events in the embolization group (12%) and 10 in the surgical group (20%) (P=0.22), mostly related to the intervention. Ten patients in the embolization group (9%) required repeated embolization or hysterectomy for inadequate symptom control. After the first year of follow-up, 14 women in the embolization group (13%) required hospitalization, 3 of them for major adverse events and 11 for reintervention for treatment failure. CONCLUSIONS: In women with symptomatic fibroids, the faster recovery after embolization must be weighed against the need for further treatment in a minority of patients. (ISRCTN.org number, ISRCTN23023665 [controlled-trials.com].)**

PMID: 17251532 [PubMed - indexed for MEDLINE]

381. Cardiovasc Intervent Radiol. 2007 May-Jun;30(3):398-404.

Magnetic resonance angiography of uterine artery: changes with embolization using
gelatin sponge particles alone for fibroids.

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PURPOSE: To assess uterine artery recanalization, together with tumor devascularization, after embolization using gelatin sponge particles alone for fibroids. METHODS: Twenty-seven patients underwent uterine artery embolization (UAE) for fibroids using only gelatin sponge particles. The angiographic endpoint of embolization was defined as near stasis of contrast medium in the ascending segment of the uterine artery. All patients underwent contrast-enhanced magnetic resonance angiography (MRA) before and 4 months after UAE, and contrast-enhanced
magnetic resonance imaging (CE-MRI) before, 1 week after, and 4 months after UAE.
The visualization of the uterine arteries before and 4 months after UAE was assessed using MRA. The infarction rates of the largest tumor were assessed using CE-MRI 1 week after UAE. RESULTS: MRA 4 months after UAE showed 100% (53/53) of
the descending and transverse segments, and 88% (43/49) of the ascending segments
that had been noted on baseline MRA. The visualization of the ascending segments on MRA 4 months after UAE was identical to that on baseline MRA in 20 of 27 patients (74%). CE-MRI showed complete infarction of the largest tumor in 22 of 27 patients (81%), and 90-99% infarction of the largest tumor in the remaining 5 of 27 patients (19%). CONCLUSION: Based on the MR study, in most cases uterine artery recanalization occurred, together with sufficient devascularization of fibroids, after UAE using gelatin sponge particles alone.

PMID: 17225969 [PubMed - indexed for MEDLINE]

382. Cardiovasc Intervent Radiol. 2007 Mar-Apr;30(2):268-72.

Use of the 4F Rösch inferior mesenteric catheter in embolization procedures in the pelvis: a review of 300 cases.

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The aim of this study is to evaluate the use of a 4F Rösch inferior mesenteric (RIM) catheter for pelvic embolization procedures. Between October 2000 and January 2006, 364 patients (357 female, 7 male; age: 23-67 years) underwent embolization of various pathologies [uterine fibroids (n = 324), pure adenomyosis of the uterus (n = 19), postpartum hemorrhage (n =1), traumatic or postoperative hemorrhage (n = 9), bleeding related to cervical cancer (n =7), AV malformation of the uterus (n = 2) and high-flow priapism (n = 2)] at a single institution. In all cases, bilateral catheterization was primarily attempted with the use of a 4F hook-shaped braided endhole catheter (Rösch-Inferior-Mesenteric, RIM-Catheter, Cordis, Miami, FL). Frequency of initial failure to catheterize the vascular territory of interest and carry out the embolization were recorded and the types of difficulty encountered were noted. Catheterization of the main stem of the vessel territory of interest with the use of a unilateral femoral approach and the 4F RIM catheter was successful in 334/364 (91.8%) the embolization cases. Bilateral catheterization of the internal iliac arteries using a single common femoral artery access and the 4F RIM catheter was achieved in 322/364 (88.5%) patients. In 12/364 (3.3%) patients, a contralateral puncture was performed and the same 4F catheter was used. In 28/364 (7.7%) cases the 4F RIM catheter was exchanged for a catheter with a cobra-shaped or sidewinder configuration. The 4F RIM catheter is a simple and valuable alternative to catheters and techniques commonly employed for pelvic artery embolization.

PMID: 17200899 [PubMed - indexed for MEDLINE]

383. Obstet Gynecol. 2007 Jan;109(1):20-7.

Laparoscopic occlusion compared with embolization of uterine vessels: a randomized controlled trial.

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OBJECTIVE: To compare clinical outcome 6 months after treatment with bilateral laparoscopic occlusion of the uterine artery versus uterine leiomyoma embolization. METHODS: Sixty-six premenopausal women with symptomatic uterine
leiomyomata were randomized to treatment with either laparoscopic occlusion of uterine arteries or uterine leiomyoma embolization. The primary outcome was reduction of blood loss from pretreatment to 6 months postoperatively, measured by a Pictorial Bleeding Assessment Chart. Secondary outcomes included patients' own assessment of symptom reduction, postoperative pain assessed using visual analog scales, ketobemidone used postoperatively, complications, secondary interventions, and failures. RESULTS: Fifty-eight women were included; 6-month follow-up data were available for 28 participants in each group. The percentage reduction in Pictorial Bleeding Assessment Chart scores did not differ between

the treatment groups (52% after uterine leiomyoma embolization and 53% after laparoscopy, P=.96). The study had 52% power to detect a 20% difference on the Pictorial Bleeding Assessment Chart. Fewer participants in the group treated with uterine leiomyoma embolization complained of heavy bleeding after 6 months (4% compared with 21%, P=.044). The postoperative use of ketobemidone was higher after uterine leiomyoma embolization (46 mg compared with 12 mg, P<.001). CONCLUSION: Both laparoscopic occlusion of uterine vessels and embolizaton of uterine leiomyoma improved clinical symptoms in the majority of patients. Participants with the laparoscopic procedure had less postoperative pain but heavier menstrual bleeding 6 months after treatment. A larger study and longer follow-up is necessary before a definite conclusion can be made regarding the most effective treatment. CLINICAL TRIAL REGISTRATION: (www.ClinicalTrials.gov), NCT00277680 LEVEL OF EVIDENCE: I.

PMID: 17197583 [PubMed - indexed for MEDLINE]

384. Taiwan J Obstet Gynecol. 2006 Jun;45(2):150-4.

Experience with conservative strategy of uterine artery embolization in the treatment of placenta percreta in the first trimester of pregnancy.

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OBJECTIVE: There is little prospective experience in the conservative treatment of placenta percreta during the first trimester in order to preserve uterine fertility. We describe herein our experience with uterine artery embolization (UAE) in the management of placenta percreta at 9 weeks of gestation. CASE REPORT: A 36-year-old woman, gravida 3, para 1, was referred for ultrasonographic evaluation because of suspected molar pregnancy due to persistent vaginal spotting at 9 weeks of gestation. A Grade 3+ lacunar flow pattern with multiple bizarre and large irregular sonolucent spaces were observed. Color Doppler imaging revealed extensive turbulent lacunar blood flow perfusing throughout the whole surrounding uteroplacental tissues and fetus. The patient was informed of the situation and she had a strong desire to avoid surgery. Conservative management with bilateral UAE was performed using polyvinyl alcohol particles to promote involution and shedding of the abnormally adherent placenta. However, an unsatisfactory vessel-occluding effect caused by extensive collateral supply was still detected after repeated UAE. We, therefore, performed hysterectomy, and the patient had an uneventful postoperative course. CONCLUSION: The efficacy and complications of UAE as a therapeutic modality for the conservative management of invasive placentation in the first trimester of pregnancy are not clear, as this is the first report of its kind. However, although UAE had failed in this case, it may still be a useful procedure as a prophylactic measure before surgical

intervention, and hysterectomy can also be performed for better control of operative hemorrhage.

PMID: 17197357 [PubMed - indexed for MEDLINE]

385. Int J Gynaecol Obstet. 2007 Jan;96(1):44-5. Epub 2006 Dec 22.

Laparoscopic uterine artery occlusion versus uterine fibroid embolization.

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PMID: 17188272 [PubMed - indexed for MEDLINE]

386. Arch Gynecol Obstet. 2007 Jul;276(1):1-15. Epub 2006 Dec 22.

Therapeutic options for adenomyosis: a review.

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BACKGROUND: To review the literature on various therapeutic modalities for uterine adenomyosis. METHODS: Reviews, case-controlled studies and reports from November 1949 until August 2006 written in English or summarized in English abstracts retrieved from Medline and Pubmed using the key words: adenomyosis and adenomyosis therapy. RESULTS: Symptoms of adenomyosis may be alleviated by antiprostaglandins, sex hormones, danazol and GnRH analogs. Minor surgical procedures for therapy include endomyometrial ablation, laparoscopic myometrial electrocoagulation and adenomyoma excision. Patient's age and symptoms, desired fertility, site and extent of lesion and surgeon's skills should be considered in choosing the appropriate procedure. Endomyometrial ablation is effective for lesions deeper than the endometrial-myometrial junction whereas the efficacy of hysteroscopic ablation is limited to foci 2-3 mm deep. Focal and diffuse disease may be managed by laparoscopic electrocoagulation or myometrial excision with preservation of fertility but risk of recurrence exists. Uterine artery embolization assumingly invokes infarction and necrosis. Encouraging results reported in some cases warrant expanding its use for more experience. Hysterectomy is the ultimate solution for women with deep myometrial involvement or if future fertility is not desired. CONCLUSIONS: Various therapeutic options for adenomyosis, including few minimally invasive procedures became available in the last two decades but need evaluation and improvement.

PMID: 17186255 [PubMed - indexed for MEDLINE]

387. J Vasc Interv Radiol. 2006 Dec;17(12):1947-50.

Treatment of intrauterine and large pedunculated subserosal leiomyomata with sequential uterine artery embolization and myomectomy.

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**Successful clinical outcomes were obtained after a combined therapy of uterine artery embolization (UAE) and subsequent myomectomy for gigantic subserosal leiomyoma exceeding 1,000 cm3 in volume on a short stalk and multiple intrauterine leiomyomata in young patients who desired fertility and uterine preservation. UAE effectively treated symptomatic multiple intramural and submucosal leiomyomata for menorrhagia symptoms, which also facilitated uncomplicated subsequent myomectomy with devascularized gigantic leiomyoma for
the treatment of bulk symptoms.**

PMID: 17185691 [PubMed - indexed for MEDLINE]

388. J Vasc Interv Radiol. 2006 Dec;17(12):1923-9.

Repeat uterine artery embolization: indications and technical findings.

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PURPOSE: To determine the indications and technical aspects of procedures in patients undergoing repeat uterine artery embolization (UAE). MATERIALS AND METHODS: At a single center, 24 patients underwent repeat embolization for recurrent or persistent symptoms. The magnetic resonance (MR) imaging findings before repeat embolization were compared with those of earlier studies. The extent of tumor infarction after the first procedure was determined, and the status of existing or new tumors before the second procedure was assessed. The angiographic studies from the initial and repeat embolization studies were reviewed and summarized. These findings were assessed with the use of summary statistics. RESULTS: Twenty-four patients underwent repeat embolization 6-66 months after the initial embolization. The most common symptom at representation

was pressure and/or bulk symptoms (n=15), followed by recurrent heavy bleeding (n=12) and pelvic pain or cramping (n=7). MR imaging studies before repeat embolization revealed incomplete infarction of tumors present before the first embolization in 22 of 24 patients. New tumors were identified in 12 patients, two of whom had new tumors only. During repeat embolization, nine patients (37%) required ovarian artery embolization to occlude ovarian supply to the uterus. Among 21 women with clinical follow-up after the second embolization, 19 (90%) had symptom control. CONCLUSIONS: Repeat embolization prompted by recurrent uterine leiomyomas usually occurs in the setting of regrowth of incompletely infarcted tumors. Although ovarian embolization was often needed, on the basis of this limited experience, symptoms appear to respond well to repeat embolization.

PMID: 17185687 [PubMed - indexed for MEDLINE]

389. J Vasc Interv Radiol. 2006 Dec;17(12):1871-9.

Development of a research agenda for uterine artery embolization: proceedings from a multidisciplinary research consensus panel.

Spies JB, Rundback JH, Ascher S, Bradley L, Goodwin SC, Hovsepian DM, Myers ER, Pelage JP, Pron G, Siskin GP, Stewart EA, Worthington-Kirsch R, Hume KM, Strain C, Gomolka B; SIR Foundation.

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PMID: 17185681 [PubMed - indexed for MEDLINE]

390. AJR Am J Roentgenol. 2007 Jan;188(1):176-81.

Long-term results of uterine artery embolization for symptomatic adenomyosis.

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OBJECTIVE: Controversy exists regarding the effectiveness of uterine artery embolization (UAE) in the management of symptomatic adenomyosis. The aim our study was to determine the long-term clinical efficacy of UAE in the management of symptomatic adenomyosis without fibroids. MATERIALS AND METHODS: The cases of
all patients who underwent UAE for adenomyosis without fibroids between 1998 and
2000 were analyzed. This study was a retrospective review of a prospectively

collected database. Of the 66 patients, 54 patients with a follow-up period of 3 years or longer were enrolled in the study. Twelve patients were lost to follow-up. The patients' ages ranged from 29 to 49 years (mean, 40.2 years). The mean follow-up period was 4.9 years (range, 3.5-5.8 years). The primary embolic agent was polyvinyl alcohol particles (250-710 microm). All patients underwent MRI before UAE. Long-term follow-up MRI was performed on 29 patients; 22 of these patients had undergone short-term (3.5 months) follow-up MRI. Uterine volume was calculated with MR images. Symptom status in terms of menorrhagia and dysmenorrhea was scored on a scale of 0-10, 0 being no symptoms and 10 being the baseline, or initial symptoms. RESULTS: Thirty-one (57.4%) of the 54 women who underwent follow-up had long-term success. Four had immediate treatment failure, and 19 had relapses. Changes in mean menorrhagia and dysmenorrhea scores at long-term follow-up were -5.3 and -5.1, respectively ($p < 0.001$), representing significant relief of symptoms. The time between UAE and recurrence of symptoms ranged from 4 to 48 months (mean, 17.3 months). Five patients underwent hysterectomy because of symptom recurrence. Mean reduction in volume of the uterus was 26.3% at short-term follow-up and 27.4% at long-term follow-up. CONCLUSION: We found that UAE is effective in the management of symptomatic adenomyosis and has an acceptable long-term success rate. UAE should be considered a primary treatment method for patients with symptomatic adenomyosis. However, all patients should be given an explanation of the possibility of treatment failure, recurrence, and the need for hysterectomy.

PMID: 17179361 [PubMed - indexed for MEDLINE]

391. Tech Vasc Interv Radiol. 2006 Mar;9(1):12-8.

New treatments for uterine fibroids.

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Since the introduction of uterine artery embolization as a minimally invasive treatment option for uterine fibroids, there has been a great deal of effort made toward developing other options for these patients. These options approach the problem differently, either with direct targeting of individual fibroids, organ-wide targeting of multiple fibroids, and systemic therapy to address the problem of fibroids using a hormonal approach. This review will focus on the different techniques and different philosophies that have been applied to the treatment of fibroids during the past decade.

PMID: 17145480 [PubMed - indexed for MEDLINE]

392. Tech Vasc Interv Radiol. 2006 Mar;9(1):7-11.

Uterine artery embolization and infertility.

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As the acceptance of uterine artery embolization as a treatment option for uterine fibroids grows among patients and physicians, it appears that new questions are being asked about the patient selection criteria used for this procedure. In particular, patients with infertility issues or concerns about preserving fertility after fibroid treatment are often being evaluated for uterine artery embolization. This article was prepared to summarize the available literature regarding fertility preservation after both myomectomy and uterine artery embolization and to provide the reader with an algorithm for evaluating these patients and making literature-based treatment decisions.

PMID: 17145479 [PubMed - indexed for MEDLINE]

393. Acta Radiol. 2006 Dec;47(10):1105-14.

Role of magnetic resonance imaging in patient selection for uterine artery embolization.

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**Uterine fibroids are common tumors of the female pelvis. Uterine artery embolization (UAE) is an effective treatment of symptomatic uterine leiomyoma in the appropriate candidates, reducing or eliminating leiomyoma-related symptoms of
bleeding, bulk, and/or pain. Magnetic resonance imaging (MRI) can be used to assess women with symptoms potentially attributable to uterine leiomyomas, and help to determine who is an appropriate candidate for UAE. Because of soft tissue characterization, multiplanar imaging capabilities, and enhancement, MR imaging not only accurately detects and characterizes uterine leiomyomas but also may predict who will benefit from the embolization. MRI ability to detect coexistent uterine or pelvic pathology may change the diagnosis and treatment management of
patients being evaluated for UAE.**

PMID: 17135018 [PubMed - indexed for MEDLINE]

394. Gynecol Obstet Fertil. 2006 Dec;34(12):1111-7. Epub 2006 Nov 22.

[Is tubal and uterine surgery deleterious to ovarian reserve?]

[Article in French]

Belaisch-Allart J, Mayenga JM, Castaing N, Allart JP.

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Changes in menstrual pattern after tubal sterilisation have been reported for more than 50 years. Hence all tubal surgeries have been suspected of altering the ovarian reserve, by damage to the ovarian blood vessels. Recent studies showed that tubal surgery has no significant adverse effect on doppler flow indice and hormonal markers. Hysterectomy and uterine artery embolization seem to decrease ovarian reserve in perimenopausal women. Uterine artery embolization does not seem to have adverse effects on normally functioning ovaries.

PMID: 17118690 [PubMed - indexed for MEDLINE]

395. AJR Am J Roentgenol. 2006 Dec;187(6):1499-504.

Comparison of MRI and sonography in the preliminary evaluation for fibroid embolization.

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OBJECTIVE: The purpose of our study was to evaluate whether pelvic MRI provides additional clinically relevant information after sonography in the preprocedure evaluation of uterine artery embolization of fibroids. MATERIALS AND METHODS: Forty-nine women who presented for consultation for uterine artery embolization were retrospectively reviewed. The MRI and sonography scans were independently evaluated and compared for uterine size, fibroid size and location (categorized as paraendometrial, intramural, subserosal, or pedunculated) of the four largest fibroids in each patient, and the total number of fibroids present. RESULTS: One hundred twenty-two fibroids were measured. The uterine volume was significantly smaller as measured on MRI compared with sonography (p = 0.01). We found good MRI and sonography correlation of the volume of the single largest fibroid in each patient (R = 0.87) but poor correlation of fibroid location (R = 0.17). MRI detected 31 paraendometrial fibroids and three pedunculated fibroids that were thought to be intramural fibroids on sonography. Five fibroids thought to be

paraendometrial on sonography were confirmed to be subserosal or intramural on MRI. Discrepancy in the total number of fibroids was noted, with additional fibroids found on MRI in 31 of 49 patients and erroneously suspected on sonography in five of 49 patients. Pelvic MRI affected management in 11 of 49 patients, leading to cancellation of uterine artery embolization in four patients. In another seven patients who were originally thought to be poor candidates on the basis of sonographic findings, uterine artery embolization was performed. MRI did not alter the management plan in 38 patients. CONCLUSION: MRI provided considerable additional information compared with sonography and affected clinical decision making in a substantial number of patients. MRI should be considered in all patients being evaluated for uterine artery embolization.

PMID: 17114543 [PubMed - indexed for MEDLINE]

396. Cardiovasc Intervent Radiol. 2007 Mar-Apr;30(2):310-2.

Intractable postpartum hemorrhage resulting from uterine artery pseudoaneurysm: superselective arteriographic embolization via the collateral route.

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We present a patient with intractable postpartum hemorrhage resulting from uterine artery pseudoaneurysm despite bilateral hypogastric artery ligation who was successfully treated by an endovascular approach via the collateral route. Although there is a good argument for postponing surgery until transcatheter embolization has been attempted, this case shows that embolization can still be successful even if the iliac vessels have been ligated.

PMID: 17103107 [PubMed - indexed for MEDLINE]

397. J Gynecol Obstet Biol Reprod (Paris). 2006 Nov;35(7):725-8.

[Late post-conization hemorrhage and false aneurysm of the uterine pedicle]

[Article in French]

Zanati J, Sergent F, Clavier E, Marpeau L.

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We report a case of delayed post-conization hemorrhage induced by the rupture of a uterine artery false aneurysm. Cold knife conization of the cervix was the main

cause of the false aneurysm. To our knowledge, this is the first case reported. Angiography enabled the diagnosis and the treatment by embolization of the lesion. A less aggressive technique than a scalpel, perhaps with a diathermic loop, could help to prevent this type of complication.

PMID: 17088775 [PubMed - indexed for MEDLINE]

398. J Reprod Med. 2006 Oct;51(10):773-6.

Role of surgery in the management of high-risk gestational trophoblastic neoplasia.

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OBJECTIVE: To evaluate the role of surgery in the management of high-risk gestational trophoblastic neoplasia. STUDY DESIGN: Twenty-four (48%) of 50 patients treated with etoposide, methotrexate, actinomycin D, cyclophosphamide and vincristine (EMA-CO) regimen as primary or secondary chemotherapy for high-risk gestational trophoblastic neoplasia between 1986 and 2005 underwent 28 adjuvant surgical procedures. The procedures included hysterectomy (17), lung resection (5), salpingectomy (1), uterine wedge resection (1), small bowel resection (1), suturing of the liver or uterus for bleeding (2) and uterine artery embolization (1). RESULTS: Twenty-one (87.5%) of 24 patients who had surgical procedures as part of their treatment for high-risk disease survived. Fifteen (88%) of 17 patients undergoing hysterectomy were cured. Four (80%) of 5 patients who had resistant foci of choriocarcinoma in the lung were cured by pulmonary resection. The patients who had suturing of the uterus, uterine artery embolization, small bowel resection and salpingectomy for bleeding as well as the patient who had uterine wedge resection of resistant choriocarcinoma survived. CONCLUSION: Adjuvant surgical procedures, especially hysterectomy and pulmonary resection for chemotherapy-resistant disease as well as procedures to control hemorrhage, are important components in the management of high-risk gestational trophoblastic neoplasia. Twenty-four (48%) of 50 patients with high-risk gestational trophoblastic neoplasia in this series underwent surgical procedures, and 21 (87.5%) were cured.

PMID: 17086805 [PubMed - indexed for MEDLINE]

399. Gynecol Oncol. 2007 Jan;104(1):260-3. Epub 2006 Nov 1.

Uterine sarcoma occurring in a premenopausal patient after uterine artery

embolization: a case report and review of the literature.

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OBJECTIVE: We report a case of uterine leiomyosarcoma occurring after uterine artery embolization and review the previously published cases. We estimate the incidence of sarcoma after UAE, the mean diagnostic delay in young women undergoing this procedure and review the potential and limits of preoperative procedures in diagnosing uterine sarcomas. CASE REPORT: A 35-year-old woman had
an early failure after UAE. She underwent surgery 13 months after the procedure. Final pathologic report was consistent with uterine leiomyosarcoma. CONCLUSION: Incidence of uterine sarcomas after UAE is low, probably similar to that of misdiagnosed leiomyosarcomas in women undergoing surgery for presumed symptomatic
leiomyomas. Therefore a relation between the procedure and the malignancy seems
to be very unlikely. Diagnostic delay in menstruated women younger than 50 undergoing UAE for presumed symptomatic leiomyoma ranges between 13 and 15 months. The safest procedure for women who fail the conservative management of leiomyoma with UAE is surgical, allowing for definitive pathologic exclusion of malignancy.

PMID: 17083970 [PubMed - indexed for MEDLINE]

400. Clin Obstet Gynecol. 2006 Dec;49(4):821-33.

Myolysis of uterine fibroids: is there a role?

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Myolysis is among the new procedures under development for the treatment of symptoms related to uterine leiomyoma. The procedure targets the destruction of fibroids using one of a number of focused energy delivery systems including those based upon radiofrequency electricity, supercooled cryoprobes, and, most recently, focused ultrasound monitored by real time magnetic resonance imaging. For thermomyolysis and cryomyolysis, delivery of the energy requires access to the tissue by laparoscopy, and, in some instances, hysteroscopy. For focused ultrasound, the patient is detached from the energy source, which is delivered by an array of external beams. Clinical evaluation has been confined to case series, but it is evident that the approach results in a variable degree of reduction of the total uterine mass, and, usually, a reduction in uterine bleeding. Clearly, longer term appropriately designed comparative trials are required that evaluate

and compare myolysis with myomectomy, uterine artery embolization, and hysterectomy, to name a few.

PMID: 17082676 [PubMed - indexed for MEDLINE]

401. Clin Obstet Gynecol. 2006 Dec;49(4):798-810.

Uterine artery occlusion: what is the evidence?

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Symptomatic uterine fibroids are a relatively common gynecologic condition. In the past, fibroids were exclusively treated by myomectomy and/or hysterectomy. With the advent of uterine artery embolization or uterine artery occlusion, there now exist minimally invasive approaches to fibroid therapy especially for women in whom surgery is contraindicated or for those who wish to retain their uterus and possibly fertility. Fertility and pregnancy outcomes after these minimally invasive therapies are currently being evaluated.

PMID: 17082674 [PubMed - indexed for MEDLINE]

402. Clin Obstet Gynecol. 2006 Dec;49(4):789-97.

Laparoscopic myomectomy and abdominal myomectomy.

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Most women develop myomas during their lifetimes; however, 80% are asymptomatic.
When symptoms are determined to be caused by myomas, a number of management
options exist that include "watchful waiting," medical therapy, surgery, or more recently uterine artery embolization and focused ultrasound. Myomectomy, either abdominal or laparoscopic, is an approach particularly suited for those women who wish future fertility. It seems clear that, in well trained and experienced hands, well-selected patients can have myomectomy performed under laparoscopic direction. Very large myomas are not as suitable for the laparoscopic approach, but are amenable to a uterine conserving procedure via laparotomy that is facilitated by a number of preoperative and intraoperative measures aimed to minimize or replace operative blood loss. These techniques should provide

selected women a uterine conserving procedure with reduced morbidity.

PMID: 17082673 [PubMed - indexed for MEDLINE]

403. Angiol Sosud Khir. 2006;12(2):51-6.

[Effect of technical and anatomical factors on efficacy of embolization of uterine arteries]

[Article in Russian]

Kapranov SA, Bobrov BIu.

The article deals with analysis of technical and anatomical factors influencing the efficacy of uterine arteries embolization (UAE) in treatment of patients with uterine myoma. Based on experience gained in 420 interventions, the authors revealed that inefficiency of UAE may be attributed to the following causes: 1) a technical failure associated with anatomical peculiarities of the uterine artery or a spasm thereof; 2) incomplete embolization apparently attributable to both technical and anatomical factors; 3) an adventitious restoration of blood supply to the uterine myoma. We also determined the significance of utero-ovarian arterial anastomoses in blood supply of the myomatous nodes, suggesting technical manipulations making it possible to attain adequate embolization thereof, if such. Technical and anatomical factors play a decisive role in successful outcomes of UAE, which, if failed due to restoration or preservation of blood supply of the myomatous nodes, should be followed by a repeat intervention.

PMID: 17053762 [PubMed - indexed for MEDLINE]

404. J Control Release. 2006 Oct 27;115(3):266-74. Epub 2006 Aug 17.

Release of ibuprofen from beads for embolization: in vitro and in vivo studies.

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Ibuprofen (IBU) loaded polyvinyl alcohol-based hydrogel beads (IBU-BB) were designed to alleviate side effects such as inflammation and pain following uterine artery embolization for the treatment of leiomyomata. The present in vitro and in vivo study examines whether IBU-BB provide a sustained-release of the drug. In vitro release studies of IBU from IBU-BB (10, 50, 100 mg/mL), IBU solution (PEDEA) and IBU powder were compared using the T apparatus and the beaker method. The pharmacokinetic profile of IBU release was examined in vivo, following sheep uterine artery embolization with 100 mg/mL IBU-BB or after intra-arterial injection of IBU solution. IBU-BB can deliver high concentrations

of the drug over time. The in vitro release from IBU-BB was markedly slower compared to IBU solution. Increasing the concentration of loaded IBU from 10 to 100 mg/mL decreased the rate of release. IBU release from the T apparatus was slower than the release in the beaker. In vivo, the release of the drug was progressive, without the early peak observed with IBU solution. A high level of correlation was obtained between in vivo and in vitro (T apparatus) results. Theoretically, IBU-BB could sustainably release high concentrations of IBU at the site of the uterine fibroids, which makes it a promising approach for the control of post-embolization pain.

PMID: 17045356 [PubMed - indexed for MEDLINE]

405. J Reprod Med. 2006 Sep;51(9):739-41.

Small bowel volvulus after uterine artery embolization requiring bowel resection: a case report.

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BACKGROUND: Previously described surgical complications following uterine artery embolization for leiomyomata include sequelae of uterine aberrant embolization (buttock and labial necrosis, vesicouterine fistula), prolapsed cervical myoma, uterine necrosis, ischemic uterine rupture and sepsis. CASE: A 43-year-old woman presented with severe abdominal pain, nausea and vomiting 7 days after bilateral uterine artery embolization for symptomatic leiomyomata. Mechanical obstruction of the distal ileum was diagnosed and did not respond to conservative measures. At laparotomy, volvulus of the distal ileum, which adhered to omental and uterine adhesions, required resection and end-to-end anastomosis. CONCLUSION: Volvulus may occur following uterine artery embolization for leiomyomata.

PMID: 17039708 [PubMed - indexed for MEDLINE]

406. Int Urogynecol J Pelvic Floor Dysfunct. 2007 Jul;18(7):813-5. Epub 2006 Oct 5.

Pelvic arterial embolization in the setting of acute hemorrhage as a result of the anterior Prolift procedure.

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Acute hemorrhage following pelvic reconstructive surgery is a complication

requiring immediate evaluation and treatment. Therapeutic options include fluid resuscitation, tamponade techniques, exploratory surgical intervention, and, more recently, pelvic vessel embolization. New approaches to pelvic organ prolapse have been evolving rapidly with little reported on safety and efficacy. We present a 77-year-old female who had a life-threatening acute pelvic hemorrhage from an anterior Prolift procedure successfully treated with pelvic artery embolization.

PMID: 17021672 [PubMed - indexed for MEDLINE]

407. Obstet Gynecol. 2006 Sep;108(3 Pt 2):751-3.

Effect of gonadotropin-releasing hormone agonist on a uterine arteriovenous malformation.

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BACKGROUND: The effect of gonadotropin-releasing hormone agonist (GnRHa) on uterine arteriovenous malformations (AVM) is not well known. CASE: A 37-year-old woman with a previous cesarean was diagnosed as having a uterine AVM after a spontaneous abortion with massive vaginal bleeding. The AVM decreased in size from 5.1 x 3.8 cm to 1.4 x 1.0 cm after 6 months of therapy with a GnRHa. Uterine artery embolization conducted after the GnRH therapy resulted in complete disappearance of the AVM. The patient's menstrual cycles and ovulation resumed 3 months after uterine artery embolization. CONCLUSION: Gonadotropin-releasing hormone agonist therapy reduced the size of the uterine AVM. Thus, GnRHa therapy
may be useful for uterine AVM in situations where uterine artery embolization must be postponed.

PMID: 17018490 [PubMed - indexed for MEDLINE]

408. Obstet Gynecol. 2006 Oct;108(4):990-1003.

Assessment of new technology in the treatment of idiopathic menorrhagia and uterine leiomyomata.

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New technologies available for the treatment of idiopathic menorrhagia include five global endometrial ablation devices that use differing ablative methods,

including thermal balloon, circulated hot fluid, cryotherapy, radiofrequency electrosurgery, and microwave energy. All have been compared with rollerball endometrial ablation by way of randomized clinical trials and are associated with high patient satisfaction rates, regardless of method, but a wide range of amenorrhea rates (13.9-55.3%). They are associated with low complication rates when performed by well-trained physicians following protocols in Food and Drug Administration trials. Some serious complications have been reported subsequently. Strict adherence to patient selection criteria and manufacturer protocols is strongly recommended. New technologies for the treatment of uterine leiomyomata include uterine artery embolization, magnetic resonance-guided focused ultrasonography, laparoscopic uterine artery occlusion, and cryomyolysis. There is sound evidence for shorter hospital stay, quicker return to work, and a similar major complication rate compared with hysterectomy. Uterine artery embolization appears to be effective for up to 5 years in reducing bulk symptoms and menorrhagia associated with leiomyomata. The chance of reoperation for leiomyoma-related symptoms within 5 years is 20-29%. Women who wish to become pregnant should be cautioned about potential complications during pregnancy. There is insufficient evidence to recommend uterine artery embolization in postmenopausal women. With regard to magnetic resonance-guided focused ultrasonography, cryomyolysis, and laparoscopic uterine artery occlusion, although the initial symptom reduction outcomes have been reported as favorable, more data are needed to better understand the durability of these results.

PMID: 17012464 [PubMed - indexed for MEDLINE]

409. Fertil Steril. 2006 Nov;86(5):1514.e3-7. Epub 2006 Sep 27.

Conservative management of placenta increta with selective arterial embolization preserves future fertility and results in a favorable outcome in subsequent pregnancies.

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OBJECTIVE: To present a case of selective arterial embolization for the treatment of placenta increta in a patient with subsequent pregnancy. DESIGN: Case report and literature review. SETTING: Community-based hospital. PATIENT(S): A 31-year-old G2P1 woman with placenta increta presenting with delayed postpartum hemorrhage. INTERVENTION(S): Selective uterine artery embolization. MAIN OUTCOME MEASURE(S): Cessation of uterine hemorrhage, future pregnancy. RESULT(S): The patient's uterine bleeding immediately resolved. She subsequently delivered a healthy neonate at term without recurrence of abnormal placentation. CONCLUSION(S): Arterial embolization is effective for treating placenta increta

in women who wish to preserve fertility. A review of the literature demonstrates a 76.9% success rate and an 11% complication rate.

PMID: 17007851 [PubMed - indexed for MEDLINE]

410. Am J Obstet Gynecol. 2006 Oct;195(4):1190; author reply 1191. Epub 2006 Apr 21.

Uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids (EMMY trial).

Katsumori T, Kasahara T.

Comment on:
Am J Obstet Gynecol. 2005 Nov;193(5):1618-29.

PMID: 17000261 [PubMed - indexed for MEDLINE]

411. J Vasc Interv Radiol. 2006 Sep;17(9):1535-8.

MR imaging evidence of reversal of uterine ischemia after uterine artery embolization for leiomyomata.

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PMID: 16990475 [PubMed - indexed for MEDLINE]

412. Gynecol Obstet Fertil. 2006 Oct;34(10):914-6. Epub 2006 Sep 18.

[Subsequent pregnancy following uterine artery embolization for interstitial pregnancy]

[Article in French]

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Subsequent pregnancy following an interstitial pregnancy is rare. The risk of

uterine rupture may be increased in this situation. Uterine selective embolization has been proposed as an effective treatment. However, no further pregnancy has ever been described after this method of management. We are reporting a case of subsequent pregnancy following interstitial pregnancy managed by embolization. The pregnancy was uneventful. A healthy male infant was delivered by C-section. This case supports the hypothesis that selective embolization for interstitial pregnancy may respect fertility. However, as actual risk of uterine rupture in subsequent pregnancies remains unknown, a C-section is advised.

PMID: 16979367 [PubMed - indexed for MEDLINE]

413. J Minim Invasive Gynecol. 2006 Sep-Oct;13(5):398-402.

Fertility after treatment of Asherman's syndrome stage 3 and 4.

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STUDY OBJECTIVE: To evaluate the efficacy of hysteroscopic adhesiolysis and subsequent fertility in patients with adhesions stage 3 and 4. DESIGN: A retrospective cohort study (Canadian Task Force classification II-2). SETTING: A tertiary referral center for hysteroscopic surgery. PATIENTS: Seventy-one patients with intrauterine permanent adhesions. INTERVENTIONS: Hysteroscopic surgery with monopolar energy (n=31) or bipolar energy (n=40). Uterine cavity with at least one free ostial area was restored after one (n=31), two (n=20), three (n=15), or four or more (n=5) surgical procedures RESULTS: Sixty-four patients were followed. Evaluation of the uterine cavity after surgery has been performed by hysteroscopy for all the patients. All patients had resumption of menses, except for two patients with a history of uterine artery embolization. Pregnancy index rate after the procedure was 28 (43.8%) of 64, and the live birth rate was 21 (32.8%) of 64. In patients 35 years of age or younger, 20 of 30 (66.6%) conceived compared with 8 of 34 (23.5%) in patients older than 35 years (p=.01). Three patients had either hysterectomy (n=2) or hypogastric arteries ligation for placenta accreta with uneventful postoperative course. CONCLUSIONS: Hysteroscopic adhesiolysis can be performed for severe adhesions stage 3 and 4 with safety and efficacy. Age is the main predictive factors of success: the pregnancies were at risk of abnormal placentation.

PMID: 16962521 [PubMed - indexed for MEDLINE]

414. Pathol Res Pract. 2006;202(10):721-9. Epub 2006 Sep 7.

Pathological findings of uterine leiomyomas and adenomyosis following uterine artery embolization.

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**Uterine artery embolization (UAE) is an effective and accepted treatment option for symptomatic uterine leiomyoma. Between 2000 and 2005, 91 women were treated
using this method, and were prospectively followed at our institution. Twenty of them subsequently underwent surgery. One of these patients was subjected to four surgical procedures. We describe the pathological findings of 23 surgical specimens obtained from these 20 patients. The embolic material used consisted of tris-acryl gelatin microspheres (TGMS) in 15 patients (18 surgical specimens), polyvinyl alcohol particles (PVA) in three patients, and a combination of PVA and TGMS in two patients. Histologically, of the 23 specimens examined, 20 were diagnosed as leiomyomas, and three as adenomyosis. Particles used for embolization were found in all but three specimens. Necrosis was present in 15 of 20 leiomyoma specimens. Hyaline necrosis was found in 12 specimens, coagulative necrosis in one case, and a combination of hyaline and coagulative or suppurative necrosis in two cases. The foci of adenomyosis remained unaltered.**

PMID: 16959435 [PubMed - indexed for MEDLINE]

415. Can Assoc Radiol J. 2006 Apr;57(2):95-105.

Uterine artery embolization--inpatient and outpatient therapy: a comparison of cost, safety, and patient satisfaction.

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**Erratum in:
Can Assoc Radiol J. 2006 Jun;57(3):135. Hayeems, Eran Z [corrected to Hayeems, Eran B].**

OBJECTIVES: To determine whether uterine artery embolization (UAE) can be safely performed as an outpatient procedure without increased complications and readmission rates or decreased patient satisfaction rates and to determine the Canadian cost difference between performing UAE as an outpatient, compared with inpatient, procedure. METHODS: We performed a retrospective chart review and patient survey of 2 groups of patients, 132 patients who underwent inpatient UAE and 20 patients who underwent outpatient UAE. Of these, 82 and 18, respectively, were successfully surveyed by telephone. Variables examined included presenting complaints, postprocedural symptoms, patient satisfaction, and readmission or complication rates. We also performed a detailed Canadian cost analysis comparing

inpatient with outpatient UAE. RESULTS: We did not find any statistically significant difference between inpatient and outpatient UAE on any of the patient variables measured, including presenting complaints, postprocedural symptoms, patient satisfaction, and readmission or complication rates. We also found that outpatient UAE costs significantly less than inpatient UAE, primarily owing to decreased hospital overhead costs for overnight admission. In Ontario, inpatient UAE costs per patient totalled dollars 3216.22, whereas outpatient costs totalled dollars 2194.53--a saving of dollars 1021.69, which represents a 31.8% cost reduction. CONCLUSION: Given these results, we recommend that centres consider performing UAE as an outpatient procedure. A key enabling factor is the ability to have several hours of close nursing supervision of the patient postprocedure, prior to discharge.

PMID: 16944683 [PubMed - indexed for MEDLINE]

416. J Clin Ultrasound. 2006 Oct;34(8):407-11.

Avoidable morbidity in a patient with pseudoaneurysm of the uterine artery after cesarean section.

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We report the case of a 25-year-old female who presented to the emergency department with vaginal bleeding after a cesarean section. A diagnosis of pseudoaneurysm of the uterine artery was established radiologically; however, failure to consider this potentially life-threatening complication of cesarean section resulted in unnecessary morbidity. Doppler sonography and CT have been shown to be excellent tools for accurate diagnosis of uterine artery pseudoaneurysms, and selective arterial embolization remains the intervention of choice.

PMID: 16944487 [PubMed - indexed for MEDLINE]

417. Best Pract Res Clin Obstet Gynaecol. 2006 Aug;20(4):617-36. Epub 2006 Aug 24.

New interventional techniques for adenomyosis.

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This chapter demonstrates that new interventional techniques have been introduced
over recent years in order to find an adequate non-invasive therapy for adenomyosis. There is no evidence-based medicine to guide us in the treatment of adenomyosis with minimally invasive therapy. In fact, most data regarding adenomyosis and these evolving therapies comes from the inadvertent treatment of
adenomyosis in studies designed to treat uterine leiomyomas. Essentially, all data are from case reports or small case series. The problem is compounded by the fact that there is no agreed imaging definition of adenomyosis, and so therapies that do not excise the uterus have no 'gold standard' for comparison. Nonetheless, there are some reports suggesting that there may be efficacy in techniques such as medicated intrauterine devices, uterine artery embolization, and MRI-guided focused ultrasound surgery. Larger studies specifically treating adenomyosis are clearly required. As with every new approach, the widespread success of these techniques will depend on the general adoption of adequate diagnostic solutions and improvements in the technical parameters of these new regimens. Since the techniques presented in this chapter are new, they have not yet undergone the necessary thorough scientific scrutiny and discussion that is needed for their general acceptance. In the past, adenomyosis was mainly a 'post-factum' pathological diagnosis after extensive surgery. Based on the evidence presented in this chapter it seems that adenomyosis has become an entity that might be treatable by new, minimally invasive or non-invasive treatments.

PMID: 16934530 [PubMed - indexed for MEDLINE]

418. Fertil Steril. 2006 Oct;86(4):1029; author reply 1029. Epub 2006 Aug 22.

Follow-up after uterine artery embolization versus myomectomy.

Marik JJ.

Comment on:
Fertil Steril. 2006 Jan;85(1):14-21.

PMID: 16926012 [PubMed - indexed for MEDLINE]

419. J Vasc Interv Radiol. 2006 Aug;17(8):1287-95.

A prospective multicenter comparative study between myomectomy and uterine artery embolization with polyvinyl alcohol microspheres: long-term clinical outcomes in patients with symptomatic uterine fibroids.

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PURPOSE: To prospectively evaluate the safety and effectiveness of polyvinyl alcohol (PVA) microspheres in patients undergoing uterine artery embolization (UAE) to treat uterine fibroid tumors and to compare the long-term changes in health-related quality of life (QOL) after UAE with the changes seen after myomectomy. MATERIALS AND METHODS: One hundred forty-six patients with uterine myomas were enrolled into this multicenter study, with 77 patients undergoing UAE with PVA and 69 patients undergoing myomectomy. Six-month follow-up was completed for the myomectomy, whereas 2-year follow-up was completed for the UAE group.
Outcomes were assessed with the Uterine Fibroid QOL Questionnaire and based on adverse event incidence, time to return to normal activity, and changes in tumor symptom scores, QOL scores, and menorrhagia bleeding scores. For the UAE cohort, changes in total uterine volume and dominant tumor size on magnetic resonance (MR) imaging were assessed. RESULTS: In the UAE cohort, 88.3% of patients experienced a reduction of tumor-related symptoms (increase >or=5 points from baseline measurement) at 6 months, with 75.4% of patients in the myomectomy group
experiencing similar improvement. Median QOL questionnaire scores at 6 months were found to be significantly higher in patients treated with UAE (P = .041),
with sustained improvement seen at 12 and 24 months. Both procedures resulted in
significant reductions in 6-month menorrhagia bleeding scores, with sustained improvement in the UAE cohort at 12 and 24 months. MR imaging at 6 months revealed significant uterine and tumor volume reductions after UAE (P < .05). At least one adverse event occurred in 42% of patients in the myomectomy group, compared with 26% in the UAE group (P < .05). CONCLUSIONS: UAE performed with PVA microspheres was associated with greater sustained improvements in symptom severity and health-related QOL and with fewer complications compared with myomectomy. Six-month MR imaging data demonstrated significant reductions in uterine and tumor volumes, although the degree of tissue infarction after UAE was not assessed with contrast medium-enhanced MR imaging.

PMID: 16923975 [PubMed - indexed for MEDLINE]

420. Radiology. 2006 Oct;241(1):181-9. Epub 2006 Aug 14.

Uterine fibroids: contrast-enhanced MR angiography to predict ovarian artery supply--initial experience.

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PURPOSE: To prospectively evaluate the diagnostic performance of contrast material-enhanced magnetic resonance (MR) angiography in helping predict ovarian artery supply of uterine fibroids by using postembolization conventional aortography as the reference standard. MATERIALS AND METHODS: The protocol for the study was approved by the institutional review board, and each patient gave informed consent. Ninety consecutive women (mean age, 42.5 years; range, 33-63 years) underwent MR angiography before uterine artery embolization (UAE). The number and origin of the ovarian arteries were determined. Ovarian artery supply of fibroids was graded as very unlikely, possible, or very likely by using a scoring system based on a combination of MR angiographic findings. MR angiographic results were compared with those of conventional aortography performed after UAE in all patients and followed by selective angiography in case of a suspected ovarian artery supply of fibroids. Analysis of the association between MR angiographic grading and conventional angiography as the standard of reference was performed with a chi(2) trend test. Sensitivity and specificity, including exact 95% confidence intervals (CIs), of MR angiography were determined. RESULTS: MR angiography depicted 18 ovarian arteries (four bilateral, 10 unilateral), one with an atypical origin. Five ovarian arteries were classified as very likely; three, as possible; and 10, as very unlikely sources of arterial fibroid supply. Seven (39%) of 18 ovarian arteries detected at MR angiography were visible at conventional aortography. Fibroid supply was verified at selective angiography in five ovarian arteries in five (6%) of 90 patients. There was a strong association between MR angiographic grading and the results of conventional angiography (P = .002). Sensitivity of MR angiography in depicting ovarian artery supply (grade, possible or very likely) was 100% (five of five, 95% CI: 48%; 100%) and specificity was 77% (10 of 13, 95% CI: 46%; 95%). CONCLUSION: Contrast-enhanced MR angiography can help predict ovarian artery supply of uterine fibroids. (c) RSNA, 2006.

PMID: 16908679 [PubMed - indexed for MEDLINE]

421. J Am Acad Nurse Pract. 2006 Aug;18(8):361-7.

Uterine artery embolization as a treatment for symptomatic uterine fibroids: a review of literature and case report.

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PURPOSE: To provide a case presentation and review of the literature on uterine artery embolization (UAE) as a treatment alternative for symptomatic uterine fibroids and to guide the nurse practitioner (NP) in patient selection, education, and periprocedural management of patients undergoing this procedure. DATA SOURCES: Research articles, clinical articles, and case studies pertaining

to UAE. CONCLUSIONS: UAE is a safe, well tolerated, and effective nonsurgical treatment option for symptomatic uterine fibroids. This uterus-sparing procedure has low complication rates with excellent clinical outcomes and high patient satisfaction rates. The majority of women who undergo UAE report marked reduction
in the severity of fibroid specific symptoms and significant improvement in their quality of life. Uterine fibroids are common in women and often produce symptoms that have a negative impact on quality of life. IMPLICATIONS FOR PRACTICE: The NP is instrumental in identifying which patients may be appropriate candidates for UAE, educating them about the risks and benefits of the procedure, and managing these patients before and after the procedure.

PMID: 16907697 [PubMed - indexed for MEDLINE]

422. Hum Reprod. 2006 Dec;21(12):3270-7. Epub 2006 Jul 27.

Uterine artery embolization for symptomatic fibroids: short-term versus mid-term changes in disease-specific symptoms, quality of life and magnetic resonance imaging results.

Scheurig C, Gauruder-Burmester A, Kluner C, Kurzeja R, Lembcke A, Zimmermann E, Hamm B, Kroencke T.

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BACKGROUND: Prospective study to evaluate changes in symptom severity, health-related quality of life (HRQOL) and uterine and leiomyoma volume after uterine artery embolization (UAE). METHODS: Eighty-two women completed a validated uterine fibroid symptom and quality of life (UFS-QOL) questionnaire and underwent magnetic resonance imaging (MRI) before and 3-20 months after UAE. Primary outcome measures were changes in symptom severity and QOL at short-term
follow-up [median 5 (range 3-7) months] and mid-term follow-up [median 14 (8-20) months]. Secondary outcome measures included the frequency of additional procedures to control persistent symptoms and changes in dominant fibroid volume
(DFV) and uterine volume (UV). RESULTS: Of 82 patients, 71 (86.6%) patients completed follow-up, 7 (8.5%) patients had a second procedure and 4 (4.9%) were lost to follow-up. Symptom severity scores decreased from a median of 43.75 to 21.88 (P < 0.001) in the short-term follow-up group and from a median of 43.75 to 9.38 (P < 0.001) in the mid-term follow-up group. QOL scores increased from a median of 56.90 to 87.93 (P < 0.001) and 66.81 to 96.12 (P < 0.001),
respectively. During short-term follow-up, median UV decreased by 27% (95% CI 20.25-33.81, P < 0.001) and median DFV by 62% (95% CI 47.81-71.55, P < 0.001), whereas UV decreased by 36% (95% CI 23.34-55.02, P < 0.001) and DFV by 66% (95%
CI 54.28-71.92, P < 0.001) for the mid-term follow-up group. A decrease in UV

correlated with change in symptom severity (P < 0.005). CONCLUSIONS: Women report
significant improvements in fibroid-specific symptoms and QOL at short- and mid-term follow-ups after UAE.

PMID: 16877371 [PubMed - indexed for MEDLINE]

423. J Vasc Interv Radiol. 2006 Jul;17(7):1111-5.

A prospective comparison of the impact of uterine artery embolization, myomectomy, and hysterectomy on ovarian function.

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PURPOSE: To prospectively compare uterine artery embolization (UAE) versus myomectomy and hysterectomy with regard to ovarian function as measured by postprocedure follicle-stimulating hormone (FSH) levels and symptoms. MATERIALS AND METHODS: Fifty-five patients were prospectively enrolled in the study: 33 patients who underwent UAE, seven who underwent myomectomy, and 15 who underwent
hysterectomy. Patients had serum FSH and estradiol levels measured on the third day of the menstrual cycle before their procedure and at regular follow-up visits for as long as 6 months. At these intervals, patients were also surveyed regarding menopausal symptoms. RESULTS: Although a mild transient increase in mean FSH level after UAE was noted at 3 months, there were no statistically significant differences among the three groups in mean FSH levels at 1 month, 3 months, or 6 months of follow-up. Menopausal symptoms arose in the UAE and hysterectomy groups, but there was no statistically significant difference or permanent effect in either group. CONCLUSION: There is no significant difference in impact on ovarian function after UAE, hysterectomy, or myomectomy at follow-up
for a maximum of 6 months.

PMID: 16868163 [PubMed - indexed for MEDLINE]

424. Mayo Clin Proc. 2006 Jul;81(7):936-42.

Noninvasive treatment of uterine fibroids: early Mayo Clinic experience with magnetic resonance imaging-guided focused ultrasound.

Hesley GK, Felmlee JP, Gebhart JB, Dunagan KT, Gorny KR, Kesler JB, Brandt KR, Glantz JN, Gostout BS.

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**Uterine fibroids often cause symptoms of pelvic pain, pressure, and bleeding. Traditional therapies have included medical (eg, hormonal therapy) and surgical (eg, myomectomy, hysterectomy) options. Recently, uterine artery embolization was
added to the treatment armamentarium. We describe an exciting new non-invasive treatment option using focused ultrasound with magnetic resonance imaging and summarize the early experience at the Mayo Clinic in Rochester, Minn, during the initial research studies of this new technology.**

PMID: 16835973 [PubMed - indexed for MEDLINE]

425. Zentralbl Gynakol. 2006 Aug;128(4):196-201.

[Management of abnormal uterine bleeding]

[Article in German]

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Bleeding disorders are one of the most frequent gynecological problems. The causes of bleeding disorders, and their frequency in particular, vary depending on the age of the woman affected. In premenopause and perimenopause, the most frequent causes are hormonal, in up to 90 % of cases, as well as organic changes in the uterus such as myomas, adenomyosis uteri, or endometrial polyps, in up to 70 % of cases. Coagulation defects cause increased bleeding, particularly in girls and young women, with no other recognizable cause. The treatment of bleeding disorders is causally based, although if the woman does not wish to have children, the therapeutic algorithm in many cases leads to similar symptomatic measures. The following therapeutic approaches, listed in order of increasing efficacy, are mainly used in the treatment of increased bleeding: gestagen, estrogen-gestagen combination, levonorgestrel (Mirena) and endometrial ablation or myoma enucleation, with comparable success rates, and finally hysterectomy. Embolization of the uterine artery in myomas or adenomyosis uteri, nonsteroidal anti-inflammatory drugs, and antifibrinolytic agents represent alternatives that may be useful in individual cases. The paper provides an overview of the various causes, useful diagnostic measures, and treatment options in uterine bleeding disorders.

PMID: 16835813 [PubMed - indexed for MEDLINE]

426. J Minim Invasive Gynecol. 2006 Jul-Aug;13(4):342-4.

Uterine artery embolization and hysteroscopic resection to treat retained placenta accreta: A case report.

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Retained placenta is a serious cause of postpartum hemorrhage. Compounding this problem is the rare finding of a retained placenta accreta. Different authors have presented management options for retained placenta accreta that include methotrexate, uterine artery embolization, dilation and curettage, hysteroscopic loop resection, and hysterectomy. We report here on a patient who was diagnosed with a retained placenta accreta and underwent successful conservative treatment with uterine artery embolization followed by hysteroscopic morcellation. Whereas other methods have failed due to bleeding and/or infection, this case illustrates a potential new means of addressing this challenging obstetrical complication.

PMID: 16825079 [PubMed - indexed for MEDLINE]

427. Am J Obstet Gynecol. 2006 Jul;195(1):314-5.

Selective uterine artery embolization: a new therapeutic approach in a patient with low-risk gestational trophoblastic disease.

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We report a case of persistent gestational trophoblastic disease (GTD) in which a selective uterine artery embolization instead of invasive surgery achieved both the control of pelvic hemorrhage and of disease.

PMID: 16813760 [PubMed - indexed for MEDLINE]

428. Hum Reprod. 2006 Oct;21(10):2669-78. Epub 2006 Jun 28.

The normal human myometrium has a vascular spatial gradient absent in small fibroids.

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BACKGROUND: The human uterine vasculature is highly structured, exhibiting

circumferential and radial branching. Previously published angiograms of the arterial network describe a system of regular coils. Uterine fibroids lack this structured vasculature. In this study, we make a comparison between the vasculature in normal myometrium and in fibroids using robust stereological methods thus far lacking in the literature. METHODS: Stereological and morphometric analysis of the vascular system was carried out on 15 normal and 27 small fibroid (5-40 mm) uteri taken from women suffering menorrhagia. Projected images of published angiograms were also re-examined, measuring tortuosity. RESULTS: A decreasing gradient of vascular smooth muscle from outer to inner myometrium was found in normal uteri, with no corresponding gradient in capillary tissue fraction. An association between vascular luminal size, amplitude and frequency of vessel bending was also established. Conversely, fibroids were found to lack structured or muscularized vasculature. CONCLUSIONS: A quantitative gradient within the myometrial vascular system, which is absent in fibroids, has been demonstrated. These structural differences between diseased and healthy tissues are probably because of differing expression of angiogenic growth factors and may explain the distribution of particles seen after uterine artery embolization.

PMID: 16807279 [PubMed - indexed for MEDLINE]

429. Am J Obstet Gynecol. 2006 Nov;195(5):1266-71. Epub 2006 Jun 21.

Pregnancy after uterine artery embolization for leiomyomata: a series of 56 completed pregnancies.

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OBJECTIVE: This study was undertaken to evaluate the incidence and outcome of pregnancies after uterine artery embolization (UAE) for symptomatic uterine fibroids. STUDY DESIGN: A retrospective analysis of all pregnancies after UAE by a single interventional radiologist. RESULTS: Fifty-six completed pregnancies were identified in approximately 1200 women after UAE. One hundred eight patients were attempting to become pregnant and 33 of these became pregnant. Thirty-three (58.9%) of the 56 pregnancies had successful outcomes. Six (18.2%) of these were premature. Seventeen (30.4%) pregnancies miscarried. There were 3 terminations, 2 stillbirths, and 1 ectopic pregnancy. Of the 33 deliveries, 24 (72.7%) were delivered by cesarean section. There were 13 elective sections and the indication for 9 was fibroids. There were 6 cases of postpartum hemorrhage (18.2%). CONCLUSION: Compared with the general obstetric population, there is a significant increase in delivery by cesarean section and an increase in preterm delivery, postpartum hemorrhage, miscarriage, and lower pregnancy rates. When

taking into account the demographics of the study population, these results can be partly explained. There were no other obstetric risk identified.

PMID: 16796984 [PubMed - indexed for MEDLINE]

430. Curr Opin Obstet Gynecol. 2006 Aug;18(4):402-6.

Pregnancy outcomes following treatment for fibroids: uterine fibroid embolization versus laparoscopic myomectomy.

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PURPOSE OF REVIEW: The management of uterine fibroids in patients requiring treatment who desire future fertility remains controversial. Myomectomy has been the most common operative procedure to improve pregnancy rates and outcomes. Uterine fibroid embolization is an increasingly popular, minimally invasive treatment for fibroids. This review aims to provide critical analysis of available data on pregnancy following myomectomy and uterine artery embolization.
RECENT FINDINGS: Patients with distorted uterine cavities due to submucosal fibroids of more than 2 cm have higher pregnancy rates following hysteroscopic resection. Pregnancy rates following myomectomy, both via laparoscopy and laparotomy, are in the 50-60% range, with most having good outcomes. Pregnancy rates following uterine artery embolization have not been established. Pregnancies following uterine artery embolization had higher rates of preterm delivery (odds ratio 6.2, 95% confidence interval 1.4-27.7) and malpresentation (odds ratio 4.3, 95% confidence interval 1.0-20.5) than pregnancies following laparoscopic myomectomy. SUMMARY: Both myomectomy and uterine artery embolization are safe and effective fibroid treatments, which should be discussed with appropriate candidates. Pregnancy complications, most importantly preterm delivery, spontaneous abortion, abnormal placentation and postpartum hemorrhage, are increased following uterine artery embolization compared to myomectomy. Although most pregnancies following uterine artery embolization have good outcomes, myomectomy should be recommended as the treatment of choice over uterine artery embolization in most patients desiring future fertility.

PMID: 16794420 [PubMed - indexed for MEDLINE]

431. Curr Opin Obstet Gynecol. 2006 Aug;18(4):394-401.

Surgical and radiological management of uterine fibroids in the UK.

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PURPOSE OF REVIEW: Uterine fibroids remain the most common benign gynaecological pathology and a frequent reason for gynaecological referral and treatment. The range of available treatments is currently undergoing a minor revolution with the introduction of nonsurgical therapies, but their role remains to be established. RECENT FINDINGS: Arguably the most significant change in recent years has been the availability of uterine artery embolization as a form of nonsurgical management. A survey of UK gynaecologists, however, has shown that the option of embolization is only utilized by just over half the respondents. Instead, conventional surgery such as hysterectomy and myomectomy remain the mainstay of nonsymptomatic treatment. In the absence of gross uterine enlargement, vaginal hysterectomy is feasible and safe. Fewer hysterectomies, however, are being done and more women are undergoing myomectomy, with almost 50% of UK consultant gynaecologists carrying out hysteroscopic myomectomy and just over 10% laparoscopic myomectomy. SUMMARY: Greater utilization of less invasive endoscopic or vaginal procedures for the management of uterine fibroids seems a reasonable target. In the longer term, it is likely that the various nonsurgical techniques which shrink fibroids and thereby reduce symptoms will have an increasingly important role in the treatment of this common condition.

PMID: 16794419 [PubMed - indexed for MEDLINE]

432. J Vasc Interv Radiol. 2006 Jun;17(6):1064-5.

Uterine artery embolization and future fertility.

Kim HS, Patra A.

PMID: 16778245 [PubMed - indexed for MEDLINE]

433. J Vasc Interv Radiol. 2006 Jun;17(6):965-71.

Effects of utero-ovarian anastomoses on basal follicle-stimulating hormone level change after uterine artery embolization with tris-acryl gelatin microspheres.

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PURPOSE: To assess the prevalence of anastomoses between uterine and ovarian arteries on angiography and their impact on changes in basal follicle-stimulating hormone (FSH) level after uterine artery embolization (UAE). MATERIALS AND METHODS: Consecutive premenopausal women who underwent UAE for symptomatic
uterine leiomyomata according to a uniform embolization technique with tris-acryl gelatin microspheres at a single institution were included in the study. Basal
FSH levels before UAE and 6 months after UAE were compared for patients with and
without anastomoses between uterine and ovarian arteries on angiography. RESULTS:
Among 124 patients included in the study (mean age, 43.1+/-5.7 years), patent anastomoses between the uterine and ovarian arteries were detected by angiography
in 55 patients (44.4%). Overall, 11.3% of 124 patients showed an increase in basal serum FSH level of greater than 20 mIU/mL after UAE. In patients with utero-ovarian anastomoses, 18.2% showed an increase of greater than 20 mIU/mL after UAE, compared with 5.8% of patients without such anastomoses (P=.03). Mean
basal FSH increase after UAE in patients with anastomoses was 8.4+/-20.2 mIU/mL, compared with 2.7+/-10.6 mIU/mL in patients without anastomoses (P=.047). Among
patients with anastomoses, the 50- to 54-year age group had the highest percentage of patients with an FSH increase greater than 20 mIU/mL (50.0%) after UAE, followed by patients in the 45- to 49-year age group (15.4%). CONCLUSIONS: Angiographically detected anastomoses between the uterine artery and the ovarian artery are not uncommon. UAE in patients with anastomoses is associated with a greater risk of significant increase of basal FSH level than in UAE in patients without anastomoses. The pathophysiologic processes resulting in change of FSH level may be a reflection of diminished ovarian function, but further study is warranted to delineate the precise mechanism.

PMID: 16778229 [PubMed - indexed for MEDLINE]

434. Minim Invasive Ther Allied Technol. 2005;14(6):352-6.

Endovascular training for obstetrician-gynecologists: Suggestions for credentialing.

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This article suggests guidelines for training and credentialing of obstetrician-gynecologists to perform endovascular procedures. It concentrates on

the performance of uterine artery embolization for symptomatic myomata. Comparison is made between other recommended case numbers for credentialing of surgeons, radiologists, and cardiologists. Educational courses are discussed, as are the credits obtained for a typical uterine artery embolization. Two paradigms of endovascular credentialing are appropriate for comparison: Cardiology standards for coronary artery interventions and vascular surgery standards for endovascular stent placement. Both require a course including laboratory and participation in 100 cases, 50 of which as primary operator. In addition, many countries require a certificate of fluoroscopy safety. A credentialing board will be created to verify both the standards and completion of course requirement and proctored cases. Credentialing will benefit both patients and obstetrician gynecologists who will be able to provide continuity of care not currently available. The gynecologist will be able to manage all complications, including myomata, which cannot be done under current circumstances.

PMID: 16754180 [PubMed - in process]

435. Minim Invasive Ther Allied Technol. 2005;14(3):167-74.

Uterine artery occlusion for the treatment of symptomatic fibroids: endoscopic, radiological and vaginal approach.

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Uterine fibroids are the most common solid pelvic tumors in women. Although many fibroids seem to cause no symptoms, for some women they can have serious adverse effects and impact on quality of life. Common symptoms associated with fibroids include abnormal uterine bleeding, pelvic pressure and reproductive dysfunction. The past decade has witnessed highly sophisticated diagnostic and therapeutic technology for fibroids. The tools currently at our disposal permit greater management flexibility, which must be tailored to the individual clinical situation. Nonsurgical treatments include medical therapy and treatments interfering with the blood supply to the uterus or the fibroid; among the latest introduced are uterine artery embolization performed by the interventional radiologist and laparoscopic uterine occlusion performed by the gynaecologist. Even simpler is the non-incision temporary uterine clamp directed with Doppler and placed in the side fornices in the vagina.

PMID: 16754159 [PubMed]

436. J Vasc Interv Radiol. 2006 May;17(5):783-9.

Effects of utero-ovarian anastomoses on clinical outcomes and repeat intervention rates after uterine artery embolization.

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PURPOSE: To assess the prevalence of anastomoses between uterine and ovarian arteries on angiography and their association with clinical outcome after uterine artery embolization (UAE). MATERIALS AND METHODS: Consecutive patients who underwent UAE for symptomatic uterine leiomyomata according to a uniform embolization technique by a single operator at a single institution were included in the study. Patients' angiographic images, pre- and postoperative magnetic resonance (MR) images, and clinical symptom evaluations were reviewed. MR imaging was performed 6 months after UAE, and clinical evaluation with symptom severity score (SSS) measurement was performed at 6-month and yearly intervals afterward. Leiomyomata volume change, SSS, and repeat intervention rates were compared for patients with and without anastomoses between uterine and ovarian arteries on angiography. RESULTS: Of 288 consecutive patients in the study (mean age, 43.8 +/- 6.4 y), patent anastomoses between the uterine and ovarian arteries were detected in 116 patients (40.3%) by angiography. On follow-up, there was a mean leiomyomata volume reduction of 50.4% and an improvement in mean transformed SSS of 38.2 points. In patients with anastomoses, mean leiomyomata volume reduction was 49.5% and mean transformed SSS improvement was 38.1 points. In patients without anastomoses, mean leiomyomata volume reduction was 50.4% and mean transformed SSS improvement was 38.4 points. At a mean follow-up of 21.5 months, 16 patients (5.6%) elected to undergo further therapy for residual symptoms, including seven hysterectomies, four myomectomies, and five repeat UAE procedures. There were statistically significant differences in repeat intervention rates between the two groups: 14 patients with anastomoses (12.1%) underwent five hysterectomies, four myomectomies, and five repeat UAE procedures, whereas two patients without anastomoses (1.2%) elected to undergo hysterectomy (P < .0001). CONCLUSION: Anastomoses between the uterine artery and ovarian artery were demonstrated on angiography in 40.3% of 288 consecutive patients studied. Although the overall repeat intervention rate after initial UAE is only 5.6%, UAE in patients with anastomoses is associated with a significantly higher incidence of repeat intervention than UAE in patients without anastomoses.

PMID: 16687743 [PubMed - indexed for MEDLINE]

437. Aust Fam Physician. 2006 May;35(5):300-3.

Uterine artery embolisation - a treatment alternative for women with fibroids.

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BACKGROUND: Fibroids are a common benign tumour of the female reproductive tract.
Uterine artery embolisation is a minimally invasive catheter based technique that compares favourably with surgical treatments. OBJECTIVE: Uterine artery embolisation is an intervention that is especially suited to women who wish to preserve their uterus. This article briefly outlines the medical and surgical treatment options for fibroids with an in depth focus on fibroid embolisation. DISCUSSION: Australian interventional radiologists have been performing uterine artery embolisation for fibroid disease successfully for a number of years. This procedure - like any intervention - is not without complication, but it does enable women a valid alternative treatment pathway for fibroids. General practitioners can discuss the procedure with their local interventional radiologist and can foster a broader understanding of the process with their female patients when considering treatment options.

PMID: 16680207 [PubMed - indexed for MEDLINE]

438. Zhonghua Fu Chan Ke Za Zhi. 2006 Jan;41(1):25-9.

[Study of the injury to the urinary system caused by radiological vascular interventional therapy of obstetrical and gynecological benign diseases]

[Article in Chinese]

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OBJECTIVE: To explore the injuries to the urinary system caused by uterine artery embolization (UAE) for treatment of obstetrical and gynecological benign diseases, including the classification, aetiology, therapy of the injuries and precaution methods. METHODS: The injuries of the urinary system were reviewed in
960 cases of obstetrical and gynecological benign diseases treated with UAE by our interventional centre. Of all 960 cases, 690 cases were myoma, 244

adenomyosis, 8 cervical pregnancy, 2 cornus pregnancy, 14 postpartum hemorrhage,
2 late postpartum hemorrhage. Meanwhile, the correlative problems of the vascular
anatomy, DSA and the embolization technics of microcatheter were analyzed. RESULTS: (1) Different degrees of urinary system injuries occurred in 5 of 960 cases, the rate was 0.5%. None was severe injury, one case (0.1%) was moderate injury, and the patient suffered of hydronephrosis caused by segmental necrosis of unilateral ureter. Mild injury occurred in 4 cases (0.4%), including one case of inflammation of bladder, one case of partial necrosis of bladder mucosa membrane, 2 cases of transient slight unilateral hydronephrosis. Among all the injuries, 4 occurred in myoma patients, and one occurred in adenomyosis patient. The operation procedures of all five cases were bilateral uterine artery embolization, and none used microcatheter. (2) The ureter branch arising from the middle or lower part of the uterine artery supplied the middle or lower part of ureter and the length of this part of ureter is about 4 cm, the bladder branch arising from the middle or lower part of uterine artery supplied the bladder and communicated with the bladder vascular net. Correlative injuries could be caused by the retroflow of embolisms into the above arteries. (3) Placement of the catheter into the upper branch of the uterine artery or the tumor vascular net, using microcatheter if necessary and notation of the retroflow in the embolization process could avoid the embolization of bladder and ureter arteries. (4) Totally 506 cases used microcatheter, the ratio was 52.7%. The 5 cases of injuries did not use microcatheter. CONCLUSIONS: Injuries to the urinary system could occur in UAE for treatment of obstetrical and gynecological benign diseases, which can be prevented by carefully differentiating the vascular communicating branch and the conditions of branches, and embolization of the upper branch of uterine artery can avoid the injury.

PMID: 16635323 [PubMed - indexed for MEDLINE]

439. J Vasc Interv Radiol. 2006 Apr;17(4):665-70.

Comparison of adjunctive use of rofecoxib versus ibuprofen in the management of postoperative pain after uterine artery embolization.

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**PURPOSE: The primary purpose of the present study was to compare the antiinflammatory effectiveness of rofecoxib with that of ibuprofen in the first 5 days after uterine artery embolization (UAE). The secondary aim was to compare pain levels and narcotic use among patients treated with different embolic agents. MATERIALS AND METHODS: From July 2003 to June 2004, 68 UAE procedures
were performed by one of the authors (D.M.H.). Of this group, 50 women agreed to**

participate in this study. Exclusion criteria were limited to contraindication to either drug or current steroid or nonsteroidal antiinflammatory drug use. In a randomized, double-blinded fashion, patients received a numbered pill box that contained one of the two agents and its placebo counterpart. Four times per day for 5 days, patients recorded their level of pain on a visual analog scale and the amount of narcotic analgesic drug needed at that time. Score sheets were returned by mail after completion. During the course of the study, three embolic agents (Gold Embospheres, Contour SE particles, and Embospheres) were used in succession, with similar numbers of patients in each group. RESULTS: Four patients were excluded from analysis: two who were readmitted to the hospital for treatment of pain (one treated with each antiinflammatory medication) and two who failed to complete their score sheets. Subject demographics were very similar with respect to antiinflammatory drug treatment and embolic agent, except that the average age of patients in the Embosphere group was 6 years older than in the Embosphere Gold and Contour SE groups (P= .02). There was no difference in the pain level and narcotic drug intake between the two drug arms, but among embolic agents, the Embosphere Gold group tended to have a higher overall average pain score (P = .12), and the two patients readmitted were in this group. Patients in the Contour SE group tended to use a lower amount of narcotic drug than those in the other two embolic agent groups (P = .09). CONCLUSIONS: There was no difference between rofecoxib and ibuprofen with respect to postprocedural pain or narcotic use after UAE. Embolic agent appeared to have a greater impact, with patients in the Embosphere Gold group reporting higher pain scores and those in the Contour SE group requiring a lower amount of narcotic drug than those in the Embosphere Gold or Embosphere groups.

PMID: 16614150 [PubMed - indexed for MEDLINE]

440. Acta Radiol. 2006 Mar;47(2):179-85.

Assessment of organ radiation dose associated with uterine artery embolization.

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PURPOSE: To evaluate the radiation dose to the skin, uterus, and ovaries during uterine artery embolization. MATERIAL AND METHODS: Guided uterine artery embolization for leiomyomata and two types of X-ray equipment with different dose levels were utilized during fluoroscopy in 20 women (ages ranging from 32 to 52 years, body weights from 55 to 68 kg). The first 13 women were treated using a non-pulsed system A, with 3.3 mm Al filtering and, for simplicity, a fixed peak voltage 80 kV. During treatment of the other 7 women, a pulsed system B with 5.4 mm Al filtering and an identical fixed voltage was used. The dose area product (DAP) was recorded. The vaginal dose of the first 13 patients and the peak skin

dose of all patients were measured with thermoluminescent dosimeters (TLDs). TLDs
were placed in the posterior vaginal fornix and on the skin at the beam entrance site. The uterine and ovarian doses were estimated based on the measured skin doses, normalized depth dose, and organ depth values. The effective dose (Deff) was estimated based on the observed DAP values. The measured vaginal doses and the corresponding estimated uterine doses were compared statistically, as were the DAP values from systems A and B. RESULTS: For system A, the mean fluoroscopic
time was 20.9 min (range 12.7-31.1), and for system B 35.9 min (range 16.4-55.4). The mean numbers of angiographic exposures for systems A and B were 82 (range 30-164) and 37 (range 20-72), respectively. The mean peak skin dose for system A was 601.5 mGy (range 279-1030) and for system B 453 mGy (range 257-875). The mean
DAP for system A was 88.6 Gycm2 (range 41.4-161.0) and for system B 52.5 Gy-cm2 (range 20.1-107.9). Statistical analysis showed a significant difference between the DAP values, the DAP for system B being the lower one. The mean estimated effective doses from systems A and B were 32 mSv (range 15.1-58.4) and 22 mSv (range 9-46), respectively. The mean estimated maximum uterine and ovarian doses
using system A were 81 mGy (range 30-247) and 85 mGy (range 24-207-), respectively; when using system B, the respective doses were 101 mGy (range 45-12) and 105 mGy (range 31-246). The measured vaginal doses had a mean value of
52.5 mGy (range 12-124). Statistical analysis revealed a significant difference between the estimated uterine doses and the measured vaginal doses. CONCLUSION: A
significant difference was found between the estimated uterine doses and the corresponding measured vaginal doses. This has to be kept in mind when using vaginal doses as a substitute for the uterine dose. There was also a significant difference between the DAP values from systems A and B. System B, with pulsed fluoroscopy and greater filtration, gave the lower exposure. The maximum skin dose indicates that skin injuries are unlikely to occur. The ovarian doses are also below the threshold for temporary or permanent sterility. The stochastic risk for radiation-induced cancer and genetic injury to the patient's future children is not considered as substantial.

PMID: 16604965 [PubMed - indexed for MEDLINE]

441. Fertil Steril. 2006 May;85(5):1478-83. Epub 2006 Mar 31.

Administration of goserelin acetate after uterine artery embolization does not change the reduction rate and volume of uterine myomas.

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OBJECTIVE: To determine if goserelin immediately after uterine artery embolization (UAE) affected myoma reduction. DESIGN: Randomized pilot study (level 1). SETTING: Teaching hospital. PATIENT(S): Twenty-six women. INTERVENTION(S): All patients underwent UAE, and then 12 patients received 10.8 mg of goserelin 24 hours later. The treatment group was 5 years older: 43 versus 37.7 years. Uterine and myoma volumes were measured by ultrasound 2 weeks before
UAE and at 3, 6, and 12 months. MAIN OUTCOME MEASURE(S): Uterine and fibroid volumes. RESULT(S): Pretreatment uterine volume was 477 versus 556 cm3, and dominant fibroid volume was 257 versus 225 cm3 in the control versus goserelin groups. Analysis of variance measurements indicated that the change over time did not significantly differ between the two groups. By 12 months, the control group had a mean uterine volume reduction of 58%, while the goserelin group had a reduction of 45%. Dominant fibroid changes over time did not differ between the two groups. At 12 months, the mean fibroid volume had decreased by 86% and 58% in
the control and goserelin groups, respectively. CONCLUSION(S): The addition of goserelin therapy to UAE did not alter the reduction rate or volume of uterine myomas.

PMID: 16579996 [PubMed - indexed for MEDLINE]

442. J Vasc Interv Radiol. 2006 Mar;17(3):577-81.

The positive effect of targeted marketing on an existing uterine fibroid embolization practice.

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PURPOSE: Although uterine fibroid embolization is an effective treatment option for symptomatic women, it is unclear what methods can be used to expand referrals in an already established practice. The authors tested the hypothesis that an advertising strategy focused on a defined target market can expand an existing uterine fibroid embolization practice. MATERIALS AND METHODS: A market-driven planning sequence was employed. This included a determination of goals, an examination of current competition, determination of target market based on local environment and previous consumer use, pretest of product sample, and implementation of advertisement. Based on the analysis the authors determined that the target audience was professional black women aged 35 to 45. A specific weekly magazine was selected due to readership demographics. An advertisement was run for 8 consecutive weeks. The authors prospectively tracked patient inquiries, clinic visits, cases performed, and revenues generated for 3 months following the initial advertisement. All patients were seen in a fully staffed, pre-existing fibroid clinic located within an urban, university-based academic practice performing 250 uterine fibroid embolizations annually. RESULTS: Ninety calls were

received directly related to the advertisement. There were 35 clinic visits, which resulted in 17 uterine fibroid embolizations and 52 total MR imaging procedures. Eighteen patients were not considered candidates based on established protocols. The 17 extra cases performed over 3 months represented a 27% increase in case volume. Total professional cash collections for these cases (including MR imaging) were 58,317 US dollars. The cost of advertising was 8,000 US dollars. As a result of existing infrastructure, no additional costs were necessary. This resulted in a net revenue gain 50,317 US dollars and a nonannualized rate of return of approximately 625%. CONCLUSION: As Interventional Radiologists look to develop and expand existing practices, traditional marketing tools such as those utilized in this study can be used to facilitate practice growth for specific clinical programs, such as uterine artery embolization. Defining a target market can significantly expand an existing uterine fibroid embolization practice. The optimal choice of targeted media awaits verification from future studies.

PMID: 16567685 [PubMed - indexed for MEDLINE]

443. J Vasc Interv Radiol. 2006 Mar;17(3):471-80.

Uterine artery embolization in the treatment of symptomatic uterine fibroid tumors (EMMY trial): periprocedural results and complications.

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Comment in:
J Vasc Interv Radiol. 2006 Mar;17(3):413-5.

PURPOSE: Uterine artery embolization (UAE) is an emerging treatment for symptomatic uterine fibroid tumors. This study was performed to evaluate the periprocedural results of the UAE procedure and identify risk factors for technical failure, fever after UAE, pain, and other complications. MATERIALS AND METHODS: As part of a multicenter, randomized trial to compare UAE versus hysterectomy in patients with symptomatic uterine fibroid tumors, 81 patients underwent UAE. Univariate and multivariate analyses were used to identify predictors for technical failure, postprocedural fever, complications as defined by the Society of Interventional Radiology (SIR), and pain scores. RESULTS: The technical failure rate according to SIR guidelines was 5.3% (95% CI, 2.3%-10.1%). The procedural failure rate was 17.3% (95% CI, 9.8%-27.3%). Bilateral failure occurred in four of 81 patients and unilateral failure occurred in 10 of 81 patients. Technical failure occurred mainly as a result of difficult anatomy (3.7%) or absence of the uterine artery (3.1%). The overall complication rates were 28.4% during the patients' hospital stay and 60.5% for the 6 weeks after discharge. The risk of technical failure was found to increase in the presence of a single fibroid tumor (odds ratio [OR], 6.21; 95% CI, 1.65-23.41; P = .007) and/or a small uterine volume (<500 cm(3); OR, 10.8; 95% CI, 1.25-93.36; P = .03). The amount of embolization material was associated with the onset of fever

after UAE (OR, 2.05; 95% CI, 1.09-3.87; P = .027), major complications (OR, 5.68; 95% CI, 2.05-15.75; P = .001), and high pain scores (OR, 1.97; 95% CI, 1.08-3.58; P = .027). CONCLUSIONS: The procedural failure rate for UAE was higher than those reported by others, mainly as a result of difficult anatomy and absence of a uterine artery in some cases. The risk of procedural failure was increased for patients with single fibroid tumors and/or small uterine volumes. A clear dose-effect response was revealed between the amount of embolization material used and the risk for postprocedural fever, major complications, and severe pain.

PMID: 16567671 [PubMed - indexed for MEDLINE]

444. J Vasc Interv Radiol. 2006 Mar;17(3):413-5.

The EMMY trial of uterine artery embolization for the treatment of symptomatic uterine fibroid tumors: randomized, yes, but a flawed trial nonetheless.

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Comment in:
J Vasc Interv Radiol. 2006 Sep;17(9):1548-9; author reply 1549-50.

Comment on:
J Vasc Interv Radiol. 2006 Mar;17(3):471-80.

PMID: 16567666 [PubMed - indexed for MEDLINE]

445. BJOG. 2006 Apr;113(4):464-8.

Long-term follow up of uterine artery embolisation--an effective alternative in the treatment of fibroids.

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OBJECTIVES: To evaluate the long-term efficacy and complications of uterine artery embolisation (UAE) for treatment of symptomatic uterine fibroids. DESIGN: A prospective observational study. SETTING: A district general hospital and two private hospitals in the southeast of England. POPULATION: Women with symptomatic fibroids who had been offered surgical options for treatment. METHODS: Postal questionnaire follow up at 5-7 years to assess long-term clinical effects among women who had undergone UAE. MAIN OUTCOME MEASURES: The questionnaire was subdivided into sections dealing with menstrual flow, amenorrhoea and menopause, fibroid-related symptoms, fertility, vaginal

discharge, sexual function, subsequent treatments for fibroids and satisfaction with the procedure. RESULTS:
A total of 258 women were identified as being between 5 and 7 years post-UAE and suitable for long-term follow up in October 2004. One hundred seventy-two completed questionnaires were analysed (67% response rate). Seventy-five percent of women still had either a return to normal or an improvement in menstrual flow compared with how they were prior to UAE. More than 80% of fibroid-related symptoms were still resolved or improved. Sixteen percent of women required further treatment for fibroids. Premature menopause directly following UAE occurred in only one woman in the study group. Eighty-eight percent of women were satisfied with the outcome of the procedure at 5-7 years and would choose it again or recommend it to others. CONCLUSIONS: These findings show that UAE is of benefit to women wishing to avoid hysterectomy and it carries a low risk of complications.

PMID: 16553656 [PubMed - indexed for MEDLINE]

446. J Minim Invasive Gynecol. 2006 Mar-Apr;13(2):155-60.

Acquisition of endovascular skills for obstetrician-gynecologists.

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STUDY OBJECTIVE: To identify skills not part of the training of obstetrician-gynecologists that are needed to perform endovascular procedures, especially uterine artery embolization. DESIGN: Literature review of known skills necessary to perform endovascular procedures. RESULTS: Important areas of endovascular skills are as follows. Understanding of the modern C-arm image intensifier is basic to performing endovascular procedures safely for the patient, physician, and others in the procedure room. Many states require physicians to obtain a Fluoroscopy Supervisors Permit when doing such interventions. Arteriotomy begins every endovascular procedure. Physicians must understand catheter manipulation and selection, and the use of microcatheters. An understanding of the pelvic arterial anatomy will help the surgeon identify the uterine arteries. Once in the uterine artery, the surgeon must understand how to successfully embolize the artery. As in any surgery, prevention of complications is important as well as management of complications once they arise. CONCLUSION:
Obstetrician-gynecologists should plan on devoting a year for the acquisition of skills needed to perform endovascular procedures. Methods of acquiring such skills include simulator training, animal laboratory procedures, and observation of live procedures. Didactic courses will give physicians an overview of endovascular procedures.

PMID: 16527720 [PubMed - indexed for MEDLINE]

447. J Vasc Interv Radiol. 2006 Feb;17(2 Pt 1):283-7.

Limited uterine artery embolization for leiomyomas with tris-acryl gelatin microspheres: 1-year follow-up.

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PURPOSE: To assess the safety and efficacy of uterine artery embolization (UAE) using large calibrated tris-acryl gelatin microspheres. MATERIALS AND METHODS: One hundred fifty-eight women with symptomatic uterine fibroids underwent UAE. Embosphere was used in 105 women and Embogold microspheres in 53 women. Major and
minor complications were assessed. At 12 months, relief of symptoms and patient satisfaction were assessed and volume reductions of the uterus and dominant fibroid were calculated. RESULTS: Median age of the subjects was 43 years (mean, 42.3 y; range, 23-53 y). Preprocedural symptoms were heavy menstrual bleeding in 89%, pain in 64%, and bulk related symptoms in 57%. At 12 months follow-up, the proportion of women with heavy menstrual bleeding, pain, and bulk-related symptoms had decreased to 9%, 8%, and 8%, respectively. Patient satisfaction was grouped as follows: very satisfied 57%, satisfied 36%, and not satisfied 7%. Mean uterine and dominant fibroid volumes before UAE were 532 cm(3) and 201 cm(3), respectively. At 12-month follow-up MR imaging, mean uterine volume decreased to
260 cm(3) and mean dominant fibroid volume to 78 cm(3). These differences were statistically significant (P < .0001). There were no procedure-related deaths. No emergency hysterectomy was needed. Permanent amenorrhea occurred in 11% of women.
Transient amenorrhea occurred in 13% of women, and fibroid expulsion occurred in 10% of women. Twelve women (7.6%) had additional therapy: nine underwent additional embolization and three had hysterectomy. CONCLUSION: Targeted UAE using large calibrated microspheres is safe and effective in the relief of symptoms in the majority of patients. At 12 months, a marked fibroid and uterine volume reduction is obtained.

PMID: 16517773 [PubMed - indexed for MEDLINE]

448. Int J Gynecol Cancer. 2006 Jan-Feb;16 Suppl 1:439-41.

Successful term pregnancy after selective embolization of a large postmolar uterine arteriovenous malformation.

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Comment in:
Int J Gynecol Cancer. 2009 May;19(4):811.

**Uterine arteriovenous malformations (AVM) are very uncommon disorders. Successful
conservative treatment with subsequently conceived is rarely reported. We describe a 31-year-old woman with a complex and large postmolar AVM; she was successfully treated with transarterial selective embolization for a long history of repeated excessive vaginal bleeding and anemia. She resumed normal menstrual periods soon after treatment, and she subsequently conceived about 2 years later. A healthy male baby was delivered at 39 weeks of gestation via vaginal route. Selective embolization of a complex and large uterine AVM seems to be feasible for the treatment of uterine bleeding and preservation of reproductive capability.**

PMID: 16515641 [PubMed - indexed for MEDLINE]

449. Obstet Gynecol. 2006 Mar;107(3):741; author reply 741-2.

Long-term outcome of uterine artery embolization of leiomyomata.

Hoeldtke NJ.

Comment on:
Obstet Gynecol. 2005 Nov;106(5 Pt 1):933-9.

PMID: 16507952 [PubMed - indexed for MEDLINE]

450. Obstet Gynecol Clin North Am. 2006 Mar;33(1):125-44.

Uterine artery embolization as a treatment option for uterine myomas.

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Information is still being collected on the long-term clinical responses and appropriate patient selection for UAE. Prospective RCTs have not been performed to compare the clinical results from UAE with more conventional therapies for symptomatic uterine leiomyomata. At least three attempts at conducting such RCTs

have been unsuccessful because of poor patient accrual that related to differing patient expectation and desires, clinical bias, insurance coverage, and the tendency that patients who have exhausted other treatment options may be disposed more favorably to less invasive treatments. Other comparative studies have serious limitations. For example, the retrospective study that compared outcomes after abdominal myomectomy with UAE suggested that patients who received UAE were more likely to require further invasive treatment by 3 years than were recipients of myomectomy. Lack of randomization introduced a selection bias because women in the group that underwent UAEwere older and were more likely to have had previous surgeries. A prospective study of "contemporaneous cohorts," which excluded patients who had sub-mucosal and pedunculated subserosal myomas, sought to compare quality of life measures and adverse events in patients who underwent UAE or hysterectomy. The investigators concluded that both treatments resulted in marked improvement in symptoms and quality of life scores, but complications were higher in the group that underwent hysterectomy over 1 year. In this study,however, a greater proportion of patients who underwent hysterectomy had improved pelvic pain scores. Furthermore, hysterectomy eliminates uterine bleeding and the risk for recurrence of myomas. Despite the lack of controlled studies that compared UAE with conventional surgery, and despite limited extended outcome data, UAE has gained rapid acceptance, primarily because the procedure preserves the uterus, is less invasive, and has less short-term morbidity than do most surgical options. The cost of UAE varies by region, but is comparable to the charges for hysterectomy and is less expensive than abdominal myomectomy. The evaluation before UAE may entail additional fees for diagnostic testing, such as MRI, to assess the uterine size and screen for adenomyosis. Other centers have recommended pretreatment ultrasonography, laparoscopy, hysteroscopy, endometrial biopsy, and biopsy of large fibroids to evaluate sarcoma. Generally,after UAE the recovery time and time lost from work are less; however, the potential need for subsequent surgery may be greater when compared with abdominal myomectomy. Any center that offers UAE should adhere to published clinical guidelines,maintain ongoing assessment of quality improvements measures, and observe strict criteria for obtaining procedural privileges. After McLucas advocated that gynecologists learn the skill to perform UAE for managing symptomatic myomas, the Society of Interventional Radiology responded with a precautionary commentary on the level of technical proficiency that is necessary to maintain optimum results from UAE. The complexity of pelvic arterial anatomy, the skill that is required to master modern coaxial microcatheters, and the hazards of significant patient radiation exposure were cited as reasons why sound training and demonstration of expertise be obtained before clinicians are credentialed to perform UAE.A collaboration between the gynecologist and the interventional radiologist is necessary to

optimize the safety and efficacy of UAE. The primary candidates for this procedure include women who have symptomatic uterine fibroids who no longer desire fertility, but wish to avoid surgery or are poor surgical risks. The gynecologist is likely to be the primary initial consultant to patients who present with complaints of symptomatic myomas. Therefore, they must be familiar with the indications, exclusions, outcome expectations, and complications of UAE in their particular cent er. When hysterectomy is the only option, UAE should be considered. Appropriate diagnostic testing should aid in the exclusion of most, but not all, gynecologic cancers and pregnancy. Other contraindications include severe contrast medium allergy, renal insufficiency, and coagulopathy. MRI may be used to screen women before treatment in an attempt to detect those who have adenomyosis; patients should be aware that UAE is less effective in the presence of solitary or coexistent adenomyosis. Because some women may experience ovarian
failure after UAE, additional studies to determine basal follicle-stimulating hormone and estradiol before and after the procedure may provide insight into UAE-induced follicle depletion.UAE is a unique new treatment for uterine myomas, and is no longer considered investigational for symptomatic uterine fibroids. There is international recognition that data are needed from RCTs that compare UAE with surgical alternatives. Current efforts to provide prospective objective assessment of treatment outcomes and complications after UAE will help to optimize patient selection and clinical guidelines. FIBROID should provide critical data for the assessment of safety and outcomes measures for women who receive UAE for symptomatic uterine myomas.

PMID: 16504811 [PubMed - indexed for MEDLINE]

451. Cardiovasc Intervent Radiol. 2006 May-Jun;29(3):354-61.

Balloon-assisted occlusion of the internal iliac arteries in patients with placenta accreta/percreta.

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BACKGROUND: Placenta accreta/percreta is a leading cause of third trimester hemorrhage and postpartum maternal death. The current treatment for third trimester hemorrhage due to placenta accreta/percreta is cesarean hysterectomy, which may be complicated by large volume blood loss. PURPOSE: To determine what
role, if any, prophylactic temporary balloon occlusion and transcatheter embolization of the anterior division of the internal iliac arteries plays in the management of patients with placenta accreta/percreta. METHODS: The records of 28
consecutive patients with a diagnosis of placenta accreta/percreta were retrospectively reviewed. Patients were divided into two groups. Six patients

underwent prophylactic temporary balloon occlusion, followed by cesarean section,
transcatheter embolization of the anterior division of the internal iliac arteries and cesarean hysterectomy (n = 5) or uterine curettage (n = 1). Twenty-two patients underwent cesarean hysterectomy without endovascular intervention. The following parameters were compared in the two groups: patient age, gravidity, parity, gestational age at delivery, days in the intensive care unit after delivery, total hospital days, volume of transfused blood products, volume of fluid replacement intraoperatively, operating room time, estimated blood loss, and postoperative morbidity and mortality. RESULTS: Patients in the embolization group had more frequent episodes of third trimester bleeding requiring admission and bedrest prior to delivery (16.7 days vs. 2.9 days), resulting in significantly more hospitalization time in the embolization group (23 days vs. 8.8 days) and delivery at an earlier gestational age than in those in the surgical group (32.5 weeks). There was no statistical difference in mean estimated blood loss, volume of replaced blood products, fluid replacement needs, operating room time or postoperative recovery time. CONCLUSION: Our findings do not support the contention that in patients with placenta accreta/percreta, prophylactic temporary balloon occlusion and embolization prior to hysterectomy diminishes intraoperative blood loss.

PMID: 16502171 [PubMed - indexed for MEDLINE]

452. AJR Am J Roentgenol. 2006 Mar;186(3):855-64.

MRI of adenomyosis: changes with uterine artery embolization.

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OBJECTIVE: Our objective was to describe the MRI features of patients with pure or dominant adenomyosis treated with uterine artery embolization (UAE) and to correlate imaging features with symptoms. SUBJECTS AND METHODS: Nineteen patients
with symptomatic pure or dominant adenomyosis on MRI were referred for UAE. All
19 patients had repeat MRI 4 months after UAE. The MR images obtained before and
after UAE were evaluated for maximal junctional zone thickness, junctional zone-myometrial ratio, uterine volume, and the presence of avascular regions. Patients were asked to complete a questionnaire about their symptoms before and 3
and 12 months after UAE. RESULTS: Uterine volume decreased significantly after UAE ($p < 0.01$). The mean uterine volume reduction was 25.1%. Junctional zone thickness decreased significantly ($p < 0.001$). The junctional zone-myometrial

ratio did not decrease significantly (p = 0.526). Fourteen (73.7%) of the 19 patients showed devascularized change within the adenomyotic region. Eighteen patients completed a questionnaire at 3 months. Sixteen (88.9%) of the 18 reported an improvement in symptoms, whereas the two remaining patients (11.1%) reported no change (p < 0.001). Of the 16 patients with clinical improvement, 11 had devascularized areas after UAE and five did not. Eleven of the 18 patients who completed a questionnaire 3 months after UAE also completed a questionnaire 12 months after UAE. Ten of these 11 patients still reported continued improvement, and one patient reported a worsening of symptoms. CONCLUSION: UAE in patients with pure or dominant adenomyosis results in decreased uterine volume and regions of devascularization. Most patients reported an improvement in clinical symptoms within 3 months after UAE. Some patients reported benefit for at least 1 year; however, the long-term durability of symptomatic relief remains unknown.

PMID: 16498121 [PubMed - indexed for MEDLINE]

453. AJR Am J Roentgenol. 2006 Mar;186(3):848-54.

Long-term outcomes of uterine artery embolization using gelatin sponge particles alone for symptomatic fibroids.

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Comment in:
AJR Am J Roentgenol. 2006 Mar;186(3):846-7.

OBJECTIVE: The purpose of this study was to evaluate the long-term outcomes of uterine artery embolization using only gelatin sponge particles for symptomatic fibroids. MATERIALS AND METHODS: As part of an ongoing study of the procedure for fibroids, prospective data of the initial 96 consecutive women treated between December 1997 and December 2001, were collected in January 2005. It had been more than 3 years since embolization in all cases. The follow-up period ranged from 4 to 60 months (mean, 37.4 months). On the basis of serial questionnaires, we investigated the cumulative rates of symptom control, gynecologic interventions, and overall failure, using the Kaplan-Meier product limit estimator. Symptom control was defined as meaning patients whose symptoms had improved as indicated on the last questionnaire and who had not undergone any further gynecologic intervention because of symptoms. Overall failure was defined as meaning the

patients who indicated that there had been no symptom improvement or recurrence
or that they had undergone further gynecologic interventions. RESULTS: Of all 96 women, 16 (17%) were lost to follow-up during the period. Cumulative rates of symptom control were 96.9% at 1 year, 89.5% at 3 years, and 89.5% at 5 years. Cumulative rates of complications related to the gynecologic intervention and overall gynecologic interventions were 2.1% and 4.2%, respectively, at 1 year, 2.1% and 5.4% at 3 years, and 2.1% and 10.5% at 5 years. Cumulative rates of overall failure were 4.2% at 1 year, 12.7% at 3 years, and 12.7% at 5 years. Major complications were noted in 3.1% (3/96). Of these three women, two required
hospitalization for transvaginal resection of sloughing fibroids and one developed sexual dysfunction. Two women became pregnant, but both pregnancies resulted in miscarriage. CONCLUSION: Uterine artery embolization using gelatin sponge particles alone can achieve long-term symptom control for fibroids in most cases.

PMID: 16498120 [PubMed - indexed for MEDLINE]

454. Anaesthesia. 2006 Mar;61(3):248-52.

Anaesthetic implications of uterine artery embolisation in management of massive obstetric haemorrhage.

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Comment in:
Anaesthesia. 2006 Oct;61(10):1010; author reply 1010-1.

The latest triennial report on maternal deaths has recommended the consideration of uterine artery embolisation in management of cases of massive obstetric haemorrhage. We have been using interventional radiology to manage both expected
and unanticipated postpartum bleeding in our centre. Three case reports are presented to highlight the value of this technique and issues relating to the anaesthetic and postoperative management of these patients are discussed.

PMID: 16480349 [PubMed - indexed for MEDLINE]

455. Radiat Prot Dosimetry. 2005;117(1-3):50-3. Epub 2006 Feb 3.

Optimisation strategies and justification: an example in uterine artery embolisation for fibroids.

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**Radiation risk has to be justified and optimised. This study discusses the radiation risk of uterine artery embolisation (UAE) for the treatment of fibroids. A total of 70 consecutive UAE dosimetry parameters were assessed. Using Monte Carlo simulation, organ and effective doses and dose conversion coefficients (DCCs) (mSv Gy cm(-2)) were calculated. During UAE optimisation, avoidance of oblique views and use of last-image-hold (LIH) documentation instead of digital subtraction angiography (DSA) were investigated. Mean dose-area product (DAP) was 37.1 Gy cm2 (median 23.7 Gy cm2) and mean fluoroscopy time was
18.4 min (median 16.6 min). Dose values decreased as the study progressed: mean DAP for patients 1-21, 68.5 Gy cm2; patients 22-43, 35.7 Gy cm2; and patients 44-69, 13.0 Gy cm2. Average DCC for DSA image procedures was 0.572, yielding a mean effective dose of 29.6 mSv (median 17.1 mSv). For LIH-only procedures, an average DCC of 0.813 was estimated [using mean effective dose: 10.6 mSv (median 8.1 mSv)].**

PMID: 16461528 [PubMed - indexed for MEDLINE]

456. Obstet Gynecol. 2006 Feb;107(2 Pt 1):427-8.

Management of interstitial pregnancy using selective uterine artery embolization.

Deruelle P, Closset E.

Comment on:
Obstet Gynecol. 2005 Nov;106(5 Pt 2):1165-7.

PMID: 16449137 [PubMed - indexed for MEDLINE]

457. Cardiovasc Intervent Radiol. 2006 Mar-Apr;29(2):179-87.

Pain and return to daily activities after uterine artery embolization and hysterectomy in the treatment of symptomatic uterine fibroids: results from the randomized EMMY trial.

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Comment in:
Cardiovasc Intervent Radiol. 2007 Jul-Aug;30(4):809-11.

PURPOSE: To evaluate the safety and efficacy of uterine artery embolization (UAE) and hysterectomy for symptomatic uterine fibroids by means of a randomized controlled trial. The present paper analyses short-term outcomes, i.e., pain and return to daily activities. METHODS: Patients were randomized (1:1) to UAE or hysterectomy. Pain was assessed during admission and after discharge, both quantitatively and qualitatively, using a numerical rating scale and questionnaires. Time to return to daily activities was assessed by questionnaire. RESULTS: Seventy-five patients underwent hysterectomy and 81 patients underwent
UAE. UAE patients experienced significantly less pain during the first 24 hr after treatment ($p = 0.012$). Non-white patients had significantly higher pain scores. UAE patients returned significantly sooner to daily activities than hysterectomy patients (for paid work: 28.1 versus 63.4 days; $p < 0.001$). In conclusion, pain appears to be less after UAE during hospital stay. Return to several daily activities was in favor of UAE in comparison with hysterectomy.

PMID: 16447002 [PubMed - indexed for MEDLINE]

458. Cochrane Database Syst Rev. 2006 Jan 25;(1):CD005073.

Uterine artery embolization for symptomatic uterine fibroids.

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BACKGROUND: Uterine fibroids cause heavy and prolonged bleeding, pain, pressure symptoms and subfertility but are mostly benign. The traditional method of treatment has been surgery as long term medical therapies have not shown to be effective. Uterine artery embolization (UAE - complete occlusion of both the uterine arteries with particulate emboli) has been reported to be an effective and safe alternative in the treatment of menorrhagia and other fibroid-related symptoms in women not desiring future fertility, but thus far this evidence is based on case controlled studies and case reports. OBJECTIVES: To review the benefits and/or harms from randomised controlled trials (RCTs) of uterine artery embolization (UAE) versus other interventions for symptomatic uterine fibroids. SEARCH STRATEGY: We searched the Cochrane Menstrual Disorders & Subfertility Group Trials register (searched 10 August 2005), the Cochrane Central Register of Controlled Trials (CENTRAL) on the Cochrane Library, Issue 3, 2004), MEDLINE (January 1966 to November 2005) and EMBASE (January 1980 to November 2005). We
also contacted authors of potential ongoing studies. SELECTION CRITERIA: RCTs of UAE versus any medical or surgical therapy for symptomatic uterine fibroids. DATA

COLLECTION AND ANALYSIS: Two of the authors (AS and JKG) assessed the trials and
extracted the data independently. They also contacted the investigators of eligible RCTs for unpublished data. MAIN RESULTS: Three trials were included in this review. Two RCTs compared UAE with abdominal hysterectomy in 234 women. Although the follow-up period was intended for two years, the available published results was only for six months follow-up. The second trial included 63 women comparing UAE with myomectomy in women who wished to preserve their fertility. The minimum follow-up reported was six months with a mean of 17 (+/- 9.3) months.
The clinical success rate measured by improvement in fibroid-related symptoms e.g. menstrual loss was at least 85% in the UAE group from both trials. The mean dominant fibroid volume decreased by 30 to 46% in two trials. UAE significantly reduces length of hospital stay compared to surgery for either hysterectomy or myomectomy. Women undergoing UAE resumed routine activities sooner than those
undergoing surgery. UAE was associated with a higher rate of minor post procedural complications such as vaginal discharge, post puncture haematoma and post embolization syndrome (pain, fever, nausea, vomiting), as well as higher unscheduled visits and readmission rates after discharge, compared with hysterectomy. There were no major complication differences between the two groups. Three women in the myomectomy trial had elevated FSH levels post UAE indicating possible ovarian dysfunction. AUTHORS' CONCLUSIONS: UAE offers an advantage over hysterectomy with regards to a shorter hospital stay and a quicker return to routine activities. There is no evidence of benefit of UAE compared to surgery (hysterectomy / myomectomy) for satisfaction. The higher minor complications rate after discharge in the UAE group as well as the unscheduled visits and readmission rates require more longer term follow-up trials to comment on its effectiveness and safety profile. There is currently an ongoing trial (REST, U. K.) and EMMY trial yet to report on the long term follow up, the results of which are awaited with interest.

PMID: 16437515 [PubMed - indexed for MEDLINE]

459. J Reprod Med. 2005 Nov;50(11):844-50.

Uterine artery embolization in the management of vaginal bleeding from cervical pregnancy: a case series.

Trambert JJ, Einstein MH, Banks E, Frost A, Goldberg GL.

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OBJECTIVE: To report our experience of selective embolotherapy in 8 consecutive patients with cervical pregnancy (CxP) presenting with vaginal bleeding. STUDY DESIGN: A total of 9 selective pelvic embolization procedures were performed on 8 patients with CxP, either as an emergency, for control of vaginal hemorrhage (2

patients), or on a nonemergency basis, for moderate vaginal bleeding (6 patients). One patient underwent 2 embolization procedures, once for each indication. RESULTS: Successful hemostasis was obtained in both emergency cases. In 3 of the nonemergency cases, the CxP rapidly resolved. In the 3 other nonemergency cases, elevated beta-human chorionic gonadotropin levels persisted,
with a new episode of vaginal bleeding in 2 patients 2 and 4 weeks later, respectively; the bleeding resolved after the administration of methotrexate. Significant vaginal hemorrhage occurred 4 weeks later in the third patient and responded to repeat embolotherapy. One patient required a blood transfusion. The uterus was preserved in all 8 patients. One patient was lost to follow-up, but normal menses resumed in all 7 of the others; and 2 patients had subsequent successful pregnancies. CONCLUSION: Embolotherapy is effective in treating and preventing vaginal hemorrhage associated with CxP while allowing uterine preservation. Along with methotrexate and other medical treatment of CxP, we recommend routine use of embolization in patients presenting with vaginal bleeding.

PMID: 16419633 [PubMed - indexed for MEDLINE]

460. J Vasc Interv Radiol. 2006 Jan;17(1):181-2; author reply 182.

Re: primary failure of uterine artery embolization: use of magnetic resonance imaging to select patients for repeated embolization.

Kroencke TJ, Lohle PN.

Comment on:
J Vasc Interv Radiol. 2005 Aug;16(8):1143-7.

PMID: 16415150 [PubMed - indexed for MEDLINE]

461. J Vasc Interv Radiol. 2006 Jan;17(1):103-11.

Measurement of blood flow before and after embolization with use of fluorescent microspheres in an animal model.

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PURPOSE: Catheter-directed embolization has become a widespread technique for the
treatment of benign and malignant neoplasms. The mechanism whereby embolization
leads to selective atrophy of these neoplasms is largely speculative. As a

potential model for the large regional perfusion differences between normal and neoplastic tissues, renal perfusion was studied before and after catheter-directed embolization. The working hypothesis was that embolization would create measurable changes in blood flow in the renal cortex and medulla. MATERIALS AND METHODS: Microspheres (l0 microm in diameter) containing a series of different fluorophores were injected into the arterial system before and after the renal arteries were embolized with a series of larger (100-300 microm) particulate embolic agents. The distribution of the microspheres in the renal cortex, renal medulla, and liver was analyzed by fluorescence microscopy as well as by extraction of the fluorophores. RESULTS: The distribution of the fluorescent microspheres was readily assessed by fluorescence microscopy or extraction of the fluorophores. Before embolization, the renal cortex received approximately three times more flow than the medulla. After embolization, perfusion of the renal cortex and medulla decreased in parallel. CONCLUSIONS: Fluorescent microspheres are a powerful tool for measuring the changes in flow that occur after catheter-directed embolization. The fact that parallel decreases in flow were found in the renal cortex and medulla indicates that the distribution of each embolic agent was flow-directed. These results might provide insight into the mechanism of tumor atrophy after uterine artery embolization or hepatic chemoembolization.

PMID: 16415139 [PubMed - indexed for MEDLINE]

462. Fertil Steril. 2006 Jan;85(1):46-7; discussion 48-50.

Expanding treatment options for women with symptomatic uterine leiomyomas: timely medical breakthroughs.

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Comment on:
- Fertil Steril. 2006 Jan;85(1):36-9.
- Fertil Steril. 2006 Jan;85(1):22-9.
- Fertil Steril. 2006 Jan;85(1):30-5.
- Fertil Steril. 2006 Jan;85(1):14-21.

Only during the last decade has there been a flourishing of alternative treatment options to major surgery for the management of symptomatic uterine leiomyoma. In addition to currently available minimally invasive surgical interventions, such as endometrial ablation techniques, radiologic interventions with uterine artery embolization and focused ultrasound surgery are welcome treatment options, despite the lack of long-term efficacy data.

PMID: 16412726 [PubMed - indexed for MEDLINE]

463. Fertil Steril. 2006 Jan;85(1):14-21.

Uterine artery embolization versus myomectomy: a multicenter comparative study.

Goodwin SC, Bradley LD, Lipman JC, Stewart EA, Nosher JL, Sterling KM, Barth MH, Siskin GP, Shlansky-Goldberg RD; UAE versus Myomectomy Study Group.

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Comment in:
Fertil Steril. 2006 Jan;85(1):40-3; discussion 48-50.
Fertil Steril. 2006 Jan;85(1):46-7; discussion 48-50.
Fertil Steril. 2006 Oct;86(4):1029; author reply 1029.
Fertil Steril. 2006 Jan;85(1):44-5; discussion 48-50.

OBJECTIVE: To determine whether there is significant quality of life score improvement after uterine artery embolization (UAE) and to compare UAE and myomectomy outcomes. DESIGN: Prospective cohort controlled study. SETTING: Sixteen medical centers in the United States. PATIENT(S): One hundred forty-nine UAE patients and 60 myomectomy patients. Patients were assigned to myomectomy or
UAE on the basis of a best treatment decision made by the patient and her physician. All patients were observed for 6 months. The UAE patients also had follow-up examinations at 1 year. INTERVENTION(S): Myomectomy or UAE. MAIN OUTCOME MEASURE(S): Quality of life score changes, menstrual bleeding score changes, uterine size differences, time off, and adverse events. RESULT(S): Both groups experienced statistically significant improvements in the uterine fibroid quality of life score, menstrual bleeding, uterine volume, and overall postoperative quality of life. The mean hospital stay was 1 day for the UAE patients, compared with 2.5 days for the myomectomy patients. The UAE and myomectomy patients returned to their normal activities in 15 days and 44 days, respectively, and returned to work in 10 days and 37 days, respectively. At least one adverse event occurred in 40.1% of the myomectomy patients, compared with 22.1% in the UAE group. CONCLUSION(S): The uterine fibroid quality of life score was significantly improved in both groups. No significant differences were observed in bleeding improvement, uterine volume reduction, uterine fibroid quality of life score improvement, and overall quality of life score improvement between groups. Patients receiving UAE required fewer days off work, fewer hospital days, and experienced fewer adverse events.

PMID: 16412720 [PubMed - indexed for MEDLINE]

464. Gynecol Obstet Fertil. 2006 Jan;34(1):38-40. Epub 2006 Jan 6.

[Uterine embolization for submucous fibroid: a bad alternative to surgery?]

[Article in French]

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A case of septic expulsion of a leiomyoma is reported 18 weeks after uterine artery embolisation (UAE). The patient underwent UAE for a symptomatic sub-mucous leiomyoma (type 2) of 5 cm. She was feverish and presented pelvic pain and purulent vaginal discharges. Vaginal examination revealed a necrotic mass prolapsed through the cervix that was carefully twisted out. Histopathologic examination showed extensive necrosis of the myomatous tissue. Microbiologic cultures showed heavy growth of Escherichia coli. Such findings challenge the interest and the safety of UAE for sub-mucous fibroids. Our case report stresses that uterine artery embolisation for submucous fibroids does not constitute, because of its risks, an alternative to conventional surgical treatment represented mainly by hysteroscopic resection.

PMID: 16406733 [PubMed - indexed for MEDLINE]

465. Acta Radiol. 2005 Dec;46(8):887-90.

Embolization of spontaneous rupture of an aneurysm of the ovarian artery supplying the uterus with fibroids.

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We report a case of spontaneous retroperitoneal hemorrhage caused by rupture of an aneurysm of the right ovarian artery in a 55-year-old woman. Diagnosis was achieved by computed tomography and arteriography. The ruptured aneurysm was treated by transcatheter arterial embolization using microcoils and gelatin sponge particles. This is the first case of rupture of an aneurysm of the ovarian artery not related to pregnancy, and the third case of embolization of a ruptured ovarian artery aneurysm in the literature. We illustrate the usefulness of embolization in treatment of an ovarian artery aneurysm without surgery.

PMID: 16392615 [PubMed - indexed for MEDLINE]

466. Cardiovasc Intervent Radiol. 2006 Jan-Feb;29(1):1-3.

Higher rate of partial devascularization and clinical failure after uterine artery embolization for fibroids with spherical polyvinyl alcohol.

Golzarian J, Lang E, Hovsepian D, Kroncke T, Lampmann L, Lohle P, Pelage JP, Shlansky-Goldberg R, Valenti D, Vorwerk D, Spies J.

PMID: 16391950 [PubMed - indexed for MEDLINE]

467. Br J Anaesth. 2006 Feb;96(2):231-7. Epub 2005 Dec 23.

Ephedrine and phenylephrine for the treatment of maternal hypotension in a chronic sheep model of increased placental vascular resistance.

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**Comment in:
Br J Anaesth. 2006 Jun;96(6):804; author reply 804-5.**

BACKGROUND: We hypothesized that ephedrine and phenylephrine are equal with respect to uterine and placental haemodynamics and fetal acid-base status after exposure to maternal hypoxaemia and hypotension in a chronic sheep model of increased placental vascular resistance (R(UA)). METHODS: At 114-135 days gestation, chronically instrumented fetal sheep underwent placental embolization leading to increased R(UA). Twenty-four hours after embolization, the ewes were anaesthetized and randomized to receive boluses of ephedrine (n=7) or phenylephrine (n=6) for epidural-induced hypotension after maternal hypoxaemia. Uterine (Q(UtA)) and placental (Q(UA)) volume blood flows and uterine vascular resistance (R(UtA)) and R(UA) were recorded. Uterine (PI(UtA)) and umbilical artery (PI(UA)) pulsatility indices were obtained by Doppler ultrasonography. Fetal arterial blood samples were analysed for acid-base values and lactate concentrations. RESULTS: During hypotension, Q(UtA), fetal pH, BE, and Po(2) decreased whereas R(UtA), PI(UtA), R(UA), and fetal lactate concentration increased. With ephedrine, Q(UtA), R(UtA), PI(UtA), R(UA), and fetal Po(2) returned to baseline. Fetal pH, BE, and lactate concentration did not change from hypotensive values. With phenylephrine, Q(UtA) remained lower (P=0.007) and R(UtA) (P=0.007), PI(UtA) (P=0.013), and R(UA) (P=0.050) higher than at baseline. Fetal Po(2) returned to baseline and fetal pH and BE did not change from hypotensive values. However, fetal lactate concentration increased further (mean difference 1.49, 95% confidence interval 0.72-2.26 mmol litre(-1); P=0.004). CONCLUSIONS: In a chronic sheep model of increased placental vascular resistance, compared with ephedrine administration, phenylephrine administration was

associated with impaired uterine and placental haemodynamics and increased fetal lactate concentrations.

PMID: 16377647 [PubMed - indexed for MEDLINE]

468. Nippon Igaku Hoshasen Gakkai Zasshi. 2005 Oct;65(4):452-4.

[Uterine artery embolization using gelatin sponge in a miniature pig: a study of arterial size and the distribution of embolic materials]

[Article in Japanese]

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Uterine artery embolization using gelatin sponge particles was performed in a miniature pig, and the distribution of the particles was investigated. The particles spread in the cervix and proximal portion of the left horn. Histological study revealed embolic material in both the myometrium and endometrium. Several particles were found even in arteries smaller than 100 microm in diameter in the endometrium. Further studies should address the risks of gelatin sponge particles in the peripheral arteries of the uterine endometrium, as they may induce inflammatory processes and evoke complications including infection and menopause.

PMID: 16334402 [PubMed - indexed for MEDLINE]

469. Obstet Gynecol. 2005 Dec;106(6):1309-18.

The FIBROID Registry: symptom and quality-of-life status 1 year after therapy.

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OBJECTIVES: To investigate the change in symptom severity and health-related quality of life among patients treated with uterine artery embolization for leiomyomata. METHODS: Using the Fibroid Registry for Outcomes Data (FIBROID), a multicenter, prospective, voluntary registry of patients undergoing uterine embolization for leiomyomata, we studied changes in symptom status, health-related quality of life, subsequent care, menstrual status, and satisfaction with outcome. Health-related quality-of-life and symptom status were

measured using the Uterine Fibroid Symptom and Quality of Life, a leiomyoma-specific questionnaire. Summary statistics were used to describe the data set and multivariate analyses to determine predictors of outcome at 12 months. RESULTS: Of 2,112 eligible patients, follow-up data were obtained on 1,797 (85.1%) at 6 months and 1,701 (80.5%) at 12 months. At 12 months, the mean symptom score had improved from 58.61 to 19.23 (P < .001), whereas 5.47% of patients had no improvement. The mean health-related quality-of-life score improved from 46.95 to 86.68 (P < .001), whereas 5.0% did not improve. In the first year after embolization, hysterectomy was performed in 2.9% of patients, with 3.6% requiring gynecologic interventions by 6 months and an additional 5.9% between 6 and 12 months. Amenorrhea as a result of embolization occurred in 7.3%
of patients. Of these, 86% were age 45 or older. Most patients were satisfied with their outcome (82% strongly agree or agree). Predictors of a greater symptom change score include smaller leiomyoma size, submucosal location, and presenting symptom of heavy menstrual bleeding. CONCLUSION: Uterine embolization results in
substantial symptom improvement for most patients, with hysterectomy required in
only 2.9% of patients in the first 12 months after therapy.

PMID: 16319257 [PubMed - indexed for MEDLINE]

470. J Vasc Interv Radiol. 2005 Nov;16(11):1465-71.

Incidence of nonviable leiomyomas on contrast material-enhanced pelvic MR imaging in patients referred for uterine artery embolization.

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PURPOSE: To assess the incidence of nonviable leiomyomas in patients referred for uterine artery embolization (UAE) with use of contrast material-enhanced pelvic magnetic resonance (MR) imaging and to determine the effect of this information on interventional radiologists' decision to perform UAE or consider other treatment options. MATERIALS AND METHODS: One hundred consecutive women referred
for UAE for treatment of symptomatic leiomyomas were studied. Of these, 94 patients underwent MR imaging examinations, which were retrospectively reviewed.
Leiomyoma locations (ie, submucosal, intramural, subserosal), volume (length, width, height), and percent nonenhancement were recorded and the measurements

were divided into four categories (0-25%, 25%-50%, 50%-75%, 75%-100%). RESULTS:
In 94 patients, 381 leiomyomas exceeding 3 cm in each dimension were recorded. Twenty-one patients (22%) did not receive embolization based on the findings of preprocedural MR imaging. In six patients (6%), there were nine nonviable dominant tumors with an average size of 7.8 cm3. These cases were not treated with UAE. Another 15 patients (16%) did not undergo UAE based on other MR imaging
findings (including uterine size, presence of isolated adenomyosis, and endometrial lesions). CONCLUSIONS: Contrast material-enhanced MR imaging before
UAE is highly useful in the evaluation of patients referred for UAE. MR imaging can be used to determine the viability of tumors and detect other findings that preclude UAE.

PMID: 16319152 [PubMed - indexed for MEDLINE]

471. J Vasc Interv Radiol. 2005 Nov;16(11):1431-7.

Spherical polyvinyl alcohol versus tris-acryl gelatin microspheres for uterine artery embolization for leiomyomas: results of a limited randomized comparative study.

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Comment in:
J Vasc Interv Radiol. 2005 Nov;16(11):1419-22.

PURPOSE: To compare the outcomes of uterine artery embolization (UAE) for leiomyomas with use of tris-acryl gelatin microspheres (TAGM) versus spherical polyvinyl alcohol (PVA) particles. MATERIALS AND METHODS: Patients undergoing UAE
were randomly assigned to receive TAGMs or PVA. Embolization was performed in a
standardized manner. Outcome data were collected at 3 months after embolization,
including assessment of clinical symptoms, scores from a fibroid tumor-specific symptom and quality of life (QOL) questionnaire, and findings on contrast material-enhanced magnetic resonance (MR) imaging, including the degree of tumor
infarction and volume reduction. Data were analyzed with use of t tests, the Mann-Whitney U test, and chi2 tests as appropriate. RESULTS: Thirty-six patients were treated. There were no differences in the two treatment groups at baseline. Clinical follow-up was obtained in 35 patients. Among the clinical outcome

measures, QOL score improvement was greater for UAE with TAGMs compared with PVA
(49.0 vs 27.9; P = .02), but no other differences were noted. Of the 25 patients in whom 3-month MR imaging follow-up was completed, those treated with TAGM were
significantly more likely to have complete infarction of all leiomyomas (six patients vs one patient; P = .02), were more likely to have at least 90% tumor infarction (eight patients vs four patients; P = .03), and had a lower mean percent of residual perfused fibroid tumor tissue (9.6% vs 44.3%; P = .004) compared with patients treated with PVA. Based on these differences between the embolic agents, enrollment in this study was terminated. CONCLUSION: The use of spherical PVA particles in the manner described herein results in an unacceptably high rate of failed tumor infarction in UAE.

PMID: 16319148 [PubMed - indexed for MEDLINE]

472. J Vasc Interv Radiol. 2005 Nov;16(11):1419-22.

Uterine artery embolization: current implications of embolic agent choice.

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Comment on:
J Vasc Interv Radiol. 2005 Nov;16(11):1431-7.

PMID: 16319145 [PubMed - indexed for MEDLINE]

473. Eur J Obstet Gynecol Reprod Biol. 2006 Jun 1;126(2):226-33. Epub 2005 Nov 15.

Uterine fibroid embolization versus myomectomy in women wishing to preserve fertility: preliminary results of a randomized controlled trial.

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OBJECTIVE: To compare the clinical results of surgical and endovascular treatment of uterine myomas in young women. STUDY DESIGN: In a university-affiliated, tertiary care center a prospective trial was conducted. Sixty-three women, wishing to retain fertility, with intramural fibroid(s) larger than 4 cm, were randomly selected either for uterine artery embolization or myomectomy.

Invasiveness, efficacy, and complications of both procedures were compared. RESULTS: Thirty embolizations and 33 myomectomies (15 laparoscopic, 18 open) were performed. The mean follow-up was 17 months. In embolized patients, there was a significantly shorter procedure length (p<0.0001), hospital stay (p<0.001) and disability period (p<0.0001), lower CRP (p<0.001) and higher hemoglobin (p<0.0001) concentrations the 2nd day after procedure. But there was a higher incidence of re-interventions (p<0.01) and a lower rate of total symptomatic relief (p<0.1). The groups did not significantly differ in: technical success rate, febrile morbidity, FSH levels 6 months after the procedure, and complication rates. CONCLUSIONS: Although the reproductive outcomes of uterine artery embolization and myomectomy cannot be evaluated at the moment, our first results indicate that both methods are clinically successful in the majority of cases and are not connected with significant number of serious complications.

PMID: 16293363 [PubMed - indexed for MEDLINE]

474. J Obstet Gynaecol Can. 2005 Aug;27(8):775-80.

Improving quality of care for patients undergoing arterial embolization for uterine fibroids: case report and review.

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BACKGROUND: Uterine artery embolization (UAE) is an effective and accepted management option for symptomatic uterine fibroids. This case report presents a complication following UAE and is followed by a review outlining the need to monitor quality of care for women who undergo this procedure. CASE: A 37-year-old
woman presented with fever and general malaise refractory to medical treatment 16
days after UAE was performed to treat a symptomatic fibroid. At hysterectomy, 20 days after UAE, a 10 cm necrotic and infected submucosal fibroid with cervicitis was identified. CONCLUSION: Complications of UAE for treatment of fibroids will be minimized if patients are selected appropriately, if the procedure is performed correctly, and if outcomes, efficacy, and complication rates are monitored.

PMID: 16287010 [PubMed - indexed for MEDLINE]

475. Obstet Gynecol. 2005 Nov;106(5 Pt 2):1165-7.

Management of interstitial pregnancy using selective uterine artery embolization.

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Comment in:
Obstet Gynecol. 2006 Feb;107(2 Pt 1):427-8.

BACKGROUND: Interstitial pregnancy is a rare and dangerous form of ectopic pregnancy which is treated by surgery, medical treatment, or both. Management options are not standardized. Currently, conservative nonsurgical treatment seems to be an alternative method in case of interstitial pregnancy. CASE: A right interstitial pregnancy was diagnosed in a 28-year-old woman. She was successfully treated by 2 courses of systemic methotrexate (1 mg/kg) 24 hours apart followed by selective uterine artery embolization. The postembolization course was uneventful, and no rupture occurred. Ten weeks after embolization, human chorionic gonadotropin level was negative. CONCLUSION: Uterine embolization associated with methotrexate can be used successfully in treating selected cases of early interstitial pregnancy. We hypothesize that this procedure combined with methotrexate could reduce hemorrhagic risk.

PMID: 16260556 [PubMed - indexed for MEDLINE]

476. Obstet Gynecol. 2005 Nov;106(5 Pt 1):933-9.

Long-term outcome of uterine artery embolization of leiomyomata.

Spies JB, Bruno J, Czeyda-Pommersheim F, Magee ST, Ascher SA, Jha RC.

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Comment in:
Obstet Gynecol. 2006 Mar;107(3):741; author reply 741-2.

OBJECTIVE: To determine the long-term outcome from uterine artery embolization for leiomyomata. METHODS: In a prospective study, 200 consecutive patients treated with uterine embolization were each followed for 5 years. Outcome, including symptom status compared with baseline, reinterventions, menstrual status, and satisfaction were recorded. Summary statistics were used to report baseline characteristics and outcome at each interval. Predictors of subsequent interventions, failure, and satisfaction with treatment were analyzed using logistic regression and Cox proportional hazards models. Failure was defined as subsequent hysterectomy, definitive myomectomy, repeat embolization, or failure of symptom improvement at the patient's final follow-up interval. RESULTS: Of the 200 patients initially treated, 5-year follow-up was completed in 182 (91%), with 18 patients missing. At 5 years after treatment, 73% had continued symptom control, whereas 36 (20%) had failed or recurred. There had been 25

hysterectomies (13.7%), 8 myomectomies (4.4%), and 3 repeat embolizations (1.6%).
Long-term failure was more likely in those not improved at 1 year (relative risk [RR] 5.73; 95% confidence interval [CI] 2.32-14.12, P < .001) and in those with baseline leiomyoma volumes greater than the median (RR 2.18; 95% CI 1.05-4.51, P = .036). After adjustment, patients in the first tertile of leiomyoma volume reduction (< or = 30.5%) were 3 times more likely to be dissatisfied with outcome compared with women in the third tertile (> or = 56.3% volume reduction) (RR 3.23; 95% CI 1 07-9.81, P = .037). CONCLUSION: Uterine embolization provides durable symptom relief for most patients, with a 25% chance of failure of symptom control or recurrence over the course of a 5-year follow-up. LEVEL OF EVIDENCE: II-3.

PMID: 16260509 [PubMed - indexed for MEDLINE]

477. Am J Obstet Gynecol. 2005 Nov;193(5):1618-29.

Uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids (EMMY trial): peri- and postprocedural results from a randomized controlled trial.

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Comment in:
Am J Obstet Gynecol. 2006 Oct;195(4):1190; author reply 1191.

OBJECTIVE: This was a randomized controlled trial to evaluate the safety of uterine artery embolization (UAE) compared with hysterectomy. STUDY DESIGN: Twenty-eight Dutch hospitals recruited 177 patients with symptomatic uterine fibroids and menorrhagia who were eligible for hysterectomy. Patients were randomized to UAE (n = 88) or hysterectomy (n = 89). In this paper we evaluate the peri- and postprocedural complications, length of hospital stay, unscheduled visits, and readmission rates up to 6 weeks' post-intervention. Analysis was by intention to treat. RESULTS: Bilateral UAE failure occurred in 4 patients (4.9%). Major complications occurred in 4.9% (UAE) and 2.7% (hysterectomy) of cases (P = .68). The minor complication rate from discharge until 6 weeks after was significantly higher in the UAE group than in the hysterectomy group (58.0% vs 40.0%; RR 1.45 [1.04-2.02]; P = .024). UAE patients were more often readmitted (11.1% vs 0%; P = .003). Total length of hospital stay was significantly shorter in UAE patients (mean [SD]: 2.5 [2.7] vs 5.1 [1.3], P < .001). CONCLUSION: UAE is a procedure similar to hysterectomy with a low major complication rate and with a reduced length of hospital stay. Higher readmission rates after UAE stress the

need for careful postprocedural follow-up.

PMID: 16260201 [PubMed - indexed for MEDLINE]

478. Tunis Med. 2005 Aug;83(8):492-4.

[Emergency embolization in gynaecological bleeding. Two case reports]

[Article in French]

Hatremi R, Sameh A, Azza S, Najla M, Rym BH, Sami M, Faouzia Z, Radhi H.

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Two patients with gynaecological hemorrhage underwent successfully trans-arterial embolization. The first womanhad an uncontrollable perineal hemorrhage following
a delivery with forceps. Angiography showed extravasation of contrast from right and left vaginal artery. Hyperselective embolisation stopped the vaginal
bleeding. The second woman had massive hemorrhage following radiotherapy for cervical cancer. Angiography demonstrated extravasation of contrast from both uterine arteries. The bleeding was controlled after hyperselective embolisation. Emergency arterial embolisation is a safe and effective means of control of irrepressible genital hemorrhage.

PMID: 16238279 [PubMed - indexed for MEDLINE]

479. Acta Obstet Gynecol Scand. 2005 Nov;84(11):1075-80.

Arterial embolization and prophylactic catheterization for the treatment for severe obstetric hemorrhage*.

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BACKGROUND: To evaluate indications, efficacy, and complications associated with arterial embolization and prophylactic balloon catheterization in the management of obstetric hemorrhage at a university hospital. METHODS: Twenty-two women underwent arterial embolization between February 2001 and November 2003 for the
treatment for primary postpartum hemorrhage resulting from abnormal placentation
(n=11), uterine atony (n=7), paravaginal laceration (n=3), and disseminated intravascular coagulopathy (n=1). Blood loss was between 3.2 and 15 l. In seven patients, abnormal placentation was diagnosed prenatally and in these patients

balloon catheterization was performed prophylactically before elective cesarean section. RESULTS: Of the seven patients, who underwent prophylactic catheterization, embolization was successful in five resulting in adequate hemostasis. Hysterectomy was performed in three, in two patients for uncontrolled hemorrhage and in one patient for placental invasion to bladder. There were no complications associated with prophylactic catheterization and embolization. The other 15 patients were treated in an emergency setting. In eight patients, embolization was performed as a primary surgery, and it was successful in six. In the other seven patients, hysterectomy was performed as an emergency surgery, but
bleeding continued. Of these, in six patients, hemostasis was achieved with embolization. Complications associated with emergency embolization were observed
in three patients. These were thrombosis of left popliteal artery, vaginal necrosis, and paresthesia of the right leg. CONCLUSIONS: Arterial embolization is of significant value in treating obstetric hemorrhage. Prophylactic insertion of balloon catheters before cesarean section seems to be a safe and effective method in controlling anticipated bleeding. In patients with persistent bleeding following cesarean section and hysterectomy, embolization could be a primary procedure before re-surgery.

PMID: 16232175 [PubMed - indexed for MEDLINE]

480. J Womens Health (Larchmt). 2005 Oct;14(8):692-703.

The economic impact of uterine fibroids in the United States: a summary of published estimates.

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OBJECTIVE: To present a summary of published estimates of the economic burden of
uterine fibroids in the United States and identify areas for additional research. METHODS: A search of three electronic databases, MEDLINE, EMBASE, and Current Contents, was conducted, along with a review of information on the Internet and abstraction of economic data. RESULTS: Only 10 papers and 1 Internet document met
our inclusion criteria and were used to abstract data. Cost estimates for surgically invasive treatments of uterine fibroids included hysterectomy (USD 5,012-7,934), myomectomy (USD 5,425-11,839), and uterine artery embolization (UAE) (USD 5,425-7,645) (2004 USD). One cost-effectiveness study estimated lower costs and higher quality-adjusted life years with UAE compared with hysterectomy. A second study estimated potential savings of USD 4.2 million in hospital charges in the United States if higher rates of vaginal (vs. abdominal) hysterectomy

would be achieved after pretreatment with gonadotropin hormone-releasing hormone
(GnRH) agonists compared to without pretreatment with GnRH agonists (80% vs. 13%). There were no estimates of the total direct and indirect economic burden of uterine fibroids. Neither estimates of the costs for the ambulatory care of
fibroids nor studies estimating the indirect costs associated with the management of fibroids and their symptoms were found. CONCLUSIONS: This summary of published
U.S. economic estimates shows that despite the high prevalence of fibroids and their impact on clinical practice and women's lives, there is very little
published information on their economic impact apart from data showing standard treatments for uterine fibroids are invasive and expensive. Reduction in the need for and cost of invasive procedures by the increased usage of noninvasive
treatments could potentially achieve significant national cost savings, but
further clinical and economic studies are needed.

PMID: 16232101 [PubMed - indexed for MEDLINE]

481. Adv Nurse Pract. 2005 Oct;13(10):20-5; quiz 26.

Uterine artery embolization: a minimally invasive option to end fibroid symptoms.

Hiller JY, Miller MJ, Stavas JM.

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PMID: 16231549 [PubMed - indexed for MEDLINE]

482. Eur J Obstet Gynecol Reprod Biol. 2006 Jul;127(1):68-72. Epub 2005 Oct 17.

Selective pelvic arterial embolization in the management of obstetric hemorrhage.

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OBJECTIVE: Retrospective evaluation of pelvic arterial embolization for the treatment of severe post-partum hemorrhage. METHODS: Data were collected, from
our departmental clinical records, on all patients with life-threatening
post-partum hemorrhage managed with arterial embolization between January 2001
and December 2003. RESULTS: During the period analyzed, there were 29,119 deliveries in our institution. Of these, 27 patients underwent pelvic arterial embolization to control severe hemorrhaging despite conservative management. Of the 27 patients, 22 (81.5%) had a vaginal delivery and 5 had a caesarean section.

The major indication for embolization was uterine atony (15 women). Disseminated intravascular coagulation developed in 20 cases (74.1%). There were eight cases (29.6%) who underwent hysterectomy, seven of them pre-embolization. The most frequent vessel embolized was the uterine artery (13 cases; 38.3%). One patient (3.7%) presented complications related to the procedure. The success rate was 96.3%. CONCLUSION: Pelvic arterial embolization is a good therapeutic choice for severe post-partum hemorrhage refractory to conservative treatment measures.

PMID: 16229935 [PubMed - indexed for MEDLINE]

483. Radiographics. 2005 Oct;25 Suppl 1:S99-117.

Uterine fibroid vascularization and clinical relevance to uterine fibroid embolization.

Pelage JP, Cazejust J, Pluot E, Le Dref O, Laurent A, Spies JB, Chagnon S, Lacombe P.

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Embolization has become a first-line treatment for symptomatic uterine fibroid tumors. Selective catheterization and embolization of both uterine arteries, which are the predominant source of blood flow to fibroid tumors in most cases, is the cornerstone of treatment. Although embolization for treatment of uterine fibroid tumors is widely accepted, great familiarity with the normal and variant pelvic arterial anatomy is needed to ensure the safety and success of the procedure. The uterine artery classically arises as a first or second branch of the anterior division of the internal iliac artery and is usually dilated in the presence of a uterine fibroid tumor. Angiography is used for comprehensive pretreatment assessment of the pelvic arterial anatomy; for noninvasive evaluation, Doppler ultrasonography, contrast material-enhanced magnetic resonance (MR) imaging, and MR angiography also may be used. After the uterine artery is identified, selective catheterization should be performed distal to its cervicovaginal branch. For targeted embolization of the perifibroid arterial plexus, injection of particles with diameters larger than 500 mum is generally recommended. Excessive embolization may injure normal myometrium, ovaries, or fallopian tubes and lead to uterine necrosis or infection or to ovarian failure. Incomplete treatment or additional blood supply to the tumor (eg, via an ovarian artery) may result in clinical failure. The common postembolization angiographic end point is occlusion of the uterine arterial branches to the fibroid tumor while antegrade flow is maintained in the main uterine artery. Copyright RSNA, 2005.

PMID: 16227501 [PubMed - indexed for MEDLINE]

484. Radiographics. 2005 Oct;25 Suppl 1:S119-32.

Imaging manifestations of complications associated with uterine artery embolization.

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Uterine artery embolization (UAE) is an increasingly performed, minimally invasive alternative to hysterectomy or myomectomy for women with symptomatic uterine fibroids. A growing body of literature documents symptomatic improvement in the majority of women who undergo UAE. Although UAE is usually safe and effective, there are a number of known complications associated with the procedure. Major complications include fibroid passage, infectious disease (endometritis, pelvic inflammatory disease-tubo-ovarian abscess, pyomyoma), deep venous thrombosis, pulmonary embolism, inadvertent embolization of a malignant leiomyosarcoma, ovarian dysfunction, fibroid regrowth, uterine necrosis, and even death. Minor complications include hematoma, urinary tract infection, retention of urine, transient pain, and vessel or nerve injury at the puncture site. As UAE takes its place in the treatment arsenal for women with symptomatic fibroids, radiologists need to be familiar with UAE-associated complications, which may require further treatment and may even be life threatening in some cases. Knowledge of these complications and their imaging features should lead to prompt diagnosis and appropriate treatment. Copyright RSNA, 2005.

PMID: 16227486 [PubMed - indexed for MEDLINE]

485. Acta Radiol. 2005 Aug;46(5):547-53.

Uterine fibroid embolization can still be improved: observations on post-procedure magnetic resonance imaging.

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Erratum in:
Acta Radiol. 2006 Feb;47(1):3 p following 117.

PURPOSE: To evaluate the efficacy and completeness of uterine fibroid embolization (UFE) measured by changes in volume and signal intensity at magnetic resonance imaging (MRI), and to compare with clinical outcome. MATERIAL AND

METHODS: 40 women with symptomatic uterine fibroids underwent bilateral uterine artery embolization. At MRI studies, including post-contrast sequences before and repeatedly after treatment, the uterus and dominant fibroids were evaluated for volume, location, and contrast enhancement. Prior to treatment, all myomas showed significant contrast enhancement. The mean uterine volume was 929 ml. Clinical examinations with emphasis on menorrhagia, pelvic pain, and urinary dysfunction were performed before and 6 and 12 months after treatment. RESULTS: UFE was bilaterally successful in 38 patients. After UFE, MRI showed no enhancement of myomas in 30 patients. In 8 patients, post-procedural MRI revealed partially remaining vascularization of fibroids despite angiographically complete embolization of the uterine arteries. On average, uterine volume decreased by 46.2% at 12 months. There was significant improvement of symptoms in the majority of patients, but slightly less improvement in patients with partially remaining vascularization of myomas. CONCLUSION: UFE causes significant volume reduction of myomas and clinical improvement. MRI can reveal remaining vascularization in myomas despite angiographically complete embolization of uterine arteries.

PMID: 16224935 [PubMed - indexed for MEDLINE]

486. Hum Reprod. 2006 Feb;21(2):380-3. Epub 2005 Oct 13.

Successful spontaneous pregnancy following surgical removal of a post uterine artery embolized necrotic fibroid capsule: a case report.

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Uterine artery embolization has been shown to be an effective treatment in controlling symptomatic uterine fibroids. Reports suggest that significant complications associated with the procedure are rare. However, data pertaining to preservation of fertility after embolization are scarce, and some authors do not advocate this procedure for women considering future pregnancy. We present a case of a post-embolization uterine cavity abnormality which was repaired surgically, followed by successful pregnancy outcome.

PMID: 16223787 [PubMed - indexed for MEDLINE]

487. J Vasc Interv Radiol. 2005 Oct;16(10):1409-10.

Acute endovascular stent-graft occlusion after treatment of an arterioureteral fistula.

Kobayashi K, Murthy R, Madoff DC.

PMID: 16221916 [PubMed - indexed for MEDLINE]

488. Med Hypotheses. 2005;65(6):1172-5.

Sympathetic and T helper (Th)2 bias may ameliorate uterine fibroids, independent of sex steroids.

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We propose that inadequate sympathetic bias and Th2 bias in the uterine environment contributes to the formation of fibroids, independent of the sex steroid status. We also propose that fibroids represent a modern maladaptation that partly results from decreasing exposure to seminal fluid, which contains catecholalmines, transforming growth factor beta1 (TGFbeta1), aldosterone, prostaglandins, and other factors that shift the uterine environment to sympathetic and T helper (Th)2 bias. Lower risk of fibroids is associated with pre-menarche, post-menopause, pregnancy, exposure to contraceptives, smoking, earlier age of first pregnancy, shorter interval since last pregnancy, higher parity, and non-obesity. These associations are currently attributed to alterations of sex steroids. However, the association may also be explained by the observation that pre-menarche, post-menopause, pregnancy, and smoking represent periods of sympathetic and Th2 bias. Furthermore, use of contraceptives, early age of first pregnancy, short interval since last pregnancy, high parity, abnormal pap smear, and non-obesity may represent surrogates for increased sexual activity and increased exposure to seminal fluid. Catecholalmines, aldosterone, TGF, and prostaglandins are among the seminal fluid components that promote sympathetic and Th2 bias. Vasectomized copulations protect against fibroids, an observation that undermines the steroid hypothesis and supports our hypothesis. The putative mechanism of action of uterine artery embolization (UAE) for fibroid treatment is starvation of blood supply, but the extensive collaterals that protect uterine perfusion would presumably also buffer against fibroid hypoperfusion. Instead, the sympathetic and Th2 responses to UAE-related ischemia may contribute to fibroid regression. A potential explanation for the association of fibroids with intrauterine devices may be a Th1 cell-mediated immune response to the foreign body, which may also enhance the contraceptive effect. Novel methods of preventing and treating fibroids by promoting sympathetic and Th2 shift through natural, pharmacologic, and neuromodulatory means are envisioned. Fibroids are likely a modern dysfunction given the high Darwinian fitness cost of fibroid-related infertility, and may be

attributable to reduced intercourse frequency. Fibroids have been observed among animals in captivity that are presumably reproductively isolated.

PMID: 16213989 [PubMed - indexed for MEDLINE]

489. Cardiovasc Intervent Radiol. 2006 Mar-Apr;29(2):188-91.

Mid-term clinical results and patient satisfaction after uterine artery embolization in women with symptomatic uterine fibroids.

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PURPOSE: To evaluate the mid-term clinical results and patient satisfaction following uterine artery embolization (UAE) in women with symptomatic fibroids.
METHODS: Between August 1998 and December 2002, 135 patients had UAE for symptomatic uterine fibroids. All patients were asked to fill in a questionnaire. Questions were aimed at changes in bleeding, pain, and bulk-related symptoms. Symptoms after UAE were scored as disappeared, improved, unchanged or worsened.
Adverse events were noted, such as vaginal dryness and discharge, menopausal complaints or fibroid expulsion. Patient satisfaction after UAE was assessed. Patient satisfaction of women embolized with polyvinyl alcohol (PVA) particles was compared with satisfaction of women embolized with calibrated microspheres.
RESULTS: The questionnaire was returned by 110 of 135 women (81%) at a median time interval of 14 months following UAE. In 10 women additional embolization or hysterectomy had been performed. Of the 110 responders, 86 (78%) were satisfied with the result of UAE. The proportion of satisfied women was higher in the group embolized with calibrated microspheres than in women embolized with PVA, although
this difference was not statistically significant (p = 0.053). CONCLUSION: UAE in women with symptomatic uterine fibroids leads to improvement of symptoms and patient satisfaction is good in the vast majority after a median follow-up period of 14 months.

PMID: 16195836 [PubMed - indexed for MEDLINE]

490. Ceska Gynekol. 2005 Sep;70(5):383-8.

[Embolization of uterine arteries during myoma treatment from the patient's point of view]

[Article in Czech]

Fucíková Z, Mára M, Maskovsá J, Kuzel D, Fencl P, Svárovský J, Drbohlav P, Masata

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OBJECTIVES: To acquire information about the patient's follow-up evaluation of treating fibroids by uterine artery embolization (UAE). DESIGN: A retrospective multicenter clinical trial. SETTING: Department of Obstetrics and Gynaecology, 1st Faculty of Medicine and the General Faculty Hospital, Charles University, Prague. METHODS: 45 women who underwent the UAE due to uterine fibroids from 1999
to 2003 were asked to complete a questionnaire. The questionnaire included 26 questions asking how the women had been informed and what they had expected. Further questions were focused on the course of embolization itself, early post-procedural difficulties (post-embolization syndrome) and patient's overall evaluation of treatment in a longer term. Those women who had completed the questionnaire and had been ready to co-operate were thereafter examined and included in the follow-up monitoring and, if necessary, further treatment was recommended. RESULTS: Thirty one out of 45 patients from 26 to 48 years of age, who had been addressed (68.9%) answered the questionnaire. UAE was indicated 12
times (38.7%) on account of symptoms, 10 times (32.3%) because of sterility, 5 times (16.1%) as a preventive measure within the framework of family planning and
4 times (12.9%) for an asymptomatic but growing leiomyoma. Twenty seven (87.1%)
women were also offered an alternative treatment, which they refused. As far as problems are concerned, 18 (58%) women described the course of treatment as corresponding with what they had expected, 5 times it was less painful, and 8 times it was worse than expected. The long-term results were considered as positive by 87.1% of responders, only 12.9% considered the treatment as failure. 5 in 11 women planning pregnancy became pregnant, 3 of them gave birth in term and 2 miscarried in the 1st trimester. CONCLUSION: From the point of view of the patients, the evaluated method proves highly successful, it is well tolerated and it involves a low risk of complications. It is not possible, at this point, however, to give an unequivocal answer to the question whether the method should
also be routinely offered to women who are planning pregnancy.

PMID: 16187443 [PubMed - indexed for MEDLINE]

491. Clin Radiol. 2005 Oct;60(10):1126-9.

Aberrant ovarian artery supply of uterine sarcoma: a cause of rebleeding following uterine artery embolization.

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PMID: 16179174 [PubMed - indexed for MEDLINE]

492. BJOG. 2005 Oct;112(10):1440-2.

Uterine artery embolisation for massive uterine fibroids in the presence of submassive pulmonary emboli.

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PMID: 16167954 [PubMed - indexed for MEDLINE]

493. BJOG. 2005 Oct;112(10):1437-9.

Changes of plasma vascular endothelial growth factor level after uterine artery embolisation for leiomyomata.

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Uterine artery embolisation (UAE) has become an alternative treatment for symptomatic uterine leiomyomata. Most reports suggest that it is well tolerated and effective, although there have been no reports of studies of biological parameters after UAE. In this study, we analysed the plasma level of vascular endothelial growth factor (VEGF) and the pulsatility index (PI) of uterine arteries before and after UAE. The level of plasma VEGF increased significantly after UAE (on day 1 and day 3) and decreased on day 7, and then increased again on day 30. The level of VEGF reached a peak value within three days after UAE. A significant inverse correlation was found between uterine artery PI and the level of VEGF on day 30, suggesting that VEGF may have negative effect on the efficacy of treatment of uterine leiomyomata by UAE.

PMID: 16167953 [PubMed - indexed for MEDLINE]

494. Radiographics. 2005 Sep-Oct;25(5):1159-72; discussion 1173-6.

Uterine artery embolization for leiomyomas: pre- and postprocedural evaluation with US.

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**Transabdominal and transvaginal ultrasonography (US) are commonly used to assess
the uterus and pelvis prior to and following uterine artery embolization (UAE) for symptomatic leiomyomas (fibroids). Preprocedural US may help identify relative contraindications for UAE, whereas postprocedural US can help determine the quality and quantity of fibroid involution and help identify any complications associated with the procedure. The consulting radiologist should be familiar with certain typical postprocedural US findings, which might otherwise be improperly interpreted, leading to unnecessary intervention. Magnetic resonance (MR) imaging or computed tomography will frequently provide the most accurate information in UAE patients with certain pathologic conditions, and early study results suggest that MR imaging may be helpful in predicting treatment response. Nevertheless, US is a readily available first-line imaging modality and a well-accepted method for both pre- and postprocedural evaluation of patients who undergo UAE. A proper understanding of the US findings in this patient population allows objective determination of treatment response and detection of most of the commonly recognized complications that are associated with UAE. (c) RSNA, 2005.**

PMID: 16160102 [PubMed - indexed for MEDLINE]

495. J Obstet Gynaecol. 2005 Jan;25(1):28-31.

Pregnancy following uterine artery embolisation.

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PMID: 16147689 [PubMed - indexed for MEDLINE]

496. Cardiovasc Intervent Radiol. 2005 Sep-Oct;28(5):611-5.

Pregnancy following uterine artery embolization with polyvinyl alcohol particles for patients with uterine fibroid or adenomyosis.

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PURPOSE: To determine whether uterine fibroid embolization (UFE) with polyvinyl alcohol (PVA) particles affects fertility in women desiring future pregnancy.
METHODS: Of 288 patients managed with UFE with PVA particles for uterine myoma or
adenomyosis between 1998 and 2001, 94 patients were enrolled in this study. The age range of participants was 20-40 years. The data were collected through review of medical records and telephone interviews. Mean duration of follow-up duration was 35 months (range 22-60 months). Patients using contraception and single women
were excluded, and the chance of infertility caused by possible spousal infertility or other factors was disregarded. Contrast-enhanced magnetic resonance imaging was performed in all patients before and after UFE, and the size of PVA particles used was 255-700 mum. RESULTS: Among 94 patients who underwent UFE with PVA, 74 were on contraceptives, 6 had been single until the point of interview, and 8 were lost to follow-up. Of the remaining 6 patients who desired future pregnancy, 5 (83%) succeeded in becoming pregnant (1 patient became pregnant twice). Of a total of 8 pregnancies, 6 were planned pregnancies and 2 occurred after contraception failed. Five deliveries were vaginal, and 2 were by elective cesarean. Artificial abortion was performed in 1 case of unplanned pregnancy. There was 1 case of premature rupture of membrane (PROM)
followed by preterm labor and delivery of an infant who was small-for-gestational-age. After UFE, mean volume reduction rates of the uterus and fibroid were 36.6% (range 0 to 62.6%) and 69.3% (range 36.3% to 93.3%), respectively. CONCLUSION: Although the absolute number of cases was small, UFE with PVA particles ultimately did not affect fertility in the women who underwent the procedure.

PMID: 16132385 [PubMed - indexed for MEDLINE]

497. Eur J Obstet Gynecol Reprod Biol. 2005 Dec 1;123(2):131-8. Epub 2005 Aug 29.

Treatment of uterine fibroids by embolization--advantages, disadvantages, and pitfalls.

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Uterine fibroids are the most common benign tumors of the female genital tract. Apart from vaginal or abdominal hysterectomy, which has been in use for more than
100 years, the more recently established techniques of laparoscopy and hysteroscopy provide two additional treatment approaches. In cases of symptomatic
uterine fibroids, the most widely accepted alternative to surgery is the

catheter-supported embolization of uterine arteries (uterine artery embolization, UAE). All patients who wish to be treated by UAE because of symptomatic fibroids should be presented to both gynecologists and radiologists. To the best of our knowledge, there are no interdisciplinary guidelines for UAE. Therefore, it would be very helpful if gynecologists and radiologists could reach an agreement for both indications and treatment strategies. However, there is no defined "gold standard" for fibroid therapy at all. In this respect, the therapeutic approach should be influenced less by the preference of the (potential) surgeon, and more by factors like size, localization, and number of fibroids. In addition, symptoms, ethnicity, and the wish to have children should be considered. Cooperation between radiologists and gynecologists is absolutely necessary, not only for the choice of the optimal treatment and care of patients, but also for the development of useful guidelines and future studies. UAE may be a therapeutic approach for selected patients. In these special cases, embolization is a safe and practical alternative to the established treatment options.

PMID: 16129548 [PubMed - indexed for MEDLINE]

498. Radiology. 2005 Sep;236(3):1111-2; author reply 1112.

Uterine artery embolization for adenomyosis: looking at the glass half full.

Goldberg J.

Comment on:
Radiology. 2005 Mar;234(3):948-53.

PMID: 16118179 [PubMed - indexed for MEDLINE]

499. J Vasc Interv Radiol. 2005 Aug;16(8):1143-7.

Primary failure of uterine artery embolization: use of magnetic resonance imaging to select patients for repeated embolization.

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Comment in:
J Vasc Interv Radiol. 2006 Jan;17(1):181-2; author reply 182.

The purpose of this study was to determine if contrast material-enhanced magnetic resonance (MR) imaging could be used to stratify patients who have undergone failed primary uterine artery embolization (UAE) for repeated embolization. One hundred one consecutive patients who underwent UAE at a single center were followed prospectively and assessed for the presence of persistent contrast

enhancement of leiomyomas on follow-up MR imaging. Among 11 of the 111 patients
with primary clinical failure (10%), MR imaging showed persistent enhancement in eight. Of the eight cases of failure with continued tumor enhancement on MR imaging, six were treated with repeated embolization. All six patients showed complete symptomatic relief at 12-month follow-up. In women who have been treated
with failed primary UAE, continued enhancement of leiomyomas on MR imaging can be
used to identify candidates for successful repeated UAE.

PMID: 16105928 [PubMed - indexed for MEDLINE]

500. Acad Radiol. 2005 Sep;12(9):1158-66.

MRI-guided focused ultrasound surgery of uterine leiomyomas.

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Uterine fibroids are the most common pelvic tumors in women and are a significant cause of morbidity for women of reproductive age. Today, there are a variety of less invasive alternatives available to hysterectomy, such as myomectomy, hormonal therapy, uterine artery embolization, and more recently magnetic resonance-guided focused ultrasound surgery (MRgFUS). With this technique, ultrasound waves are focused through intact skin of the anterior abdominal wall resulting in localized thermal tissue ablation, monitored by online MR temperature control. By using an effective combination of image guidance and energy delivery, MRgFUS therefore allows for preservation of uterine function while obviating the need for a minimally invasive procedure or surgery.

PMID: 16099686 [PubMed - indexed for MEDLINE]

501. Fertil Steril. 2005 Aug;84(2):509.

Safe resectoscopic evacuation of a 10-week viable cervical pregnancy after transfemoral bilateral uterine artery embolization.

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OBJECTIVE: To describe therapy of a 10.5-week viable cervical pregnancy. DESIGN:

Case report. SETTING: An academic medical center. PATIENT(S): A 38-year-old women with cervical pregnancy. INTERVENTION(S): Transfemoral bilateral uterine artery embolization followed by resectoscopic evacuation of the gestational products. MAIN OUTCOME MEASURE(S): Resolution of products of conception and serum beta-hCG levels. RESULT(S): Successful outcome with minimal maternal morbidity and preservation of the uterus. CONCLUSION(S): Uterine artery embolotherapy followed by resectoscopic evacuation of cervical pregnancy minimized morbidity and preserved the uterus.

PMID: 16086576 [PubMed - indexed for MEDLINE]

502. Eur J Obstet Gynecol Reprod Biol. 2006 Apr 1;125(2):165-70. Epub 2005 Jul 27.

Pregnancy outcomes and deliveries following laparoscopic transsection of uterine vessels: a pilot study.

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OBJECTIVE: To assess pregnancy outcomes and deliveries after laparoscopic uterine artery transsection (LTUV) in symptomatic women with fibroids. SETTING: Department of Obstetrics and Gynecology, Endoscopic Training Center, Baby Friendly Hospital, Kladno, Czech Republic. DESIGN: One hundred and fifty three patients underwent laparoscopic transsection of uterine vessels during a 4-year period. RESULTS: Nine of the 21 women desiring pregnancy conceived spontaneously and one after anovulation treatment. The average age of the women was 32.4 years, and the range was 26-39 years. Two women had vaginal delivery at term and one delivered vaginally at 31 weeks secondary to premature preterm rupture of membrane (PROM). Four others delivered at term by cesarean section. One woman with placenta previa was delivered by cesarean section 3 weeks before term. Mean birth weight was 3199 g (range 1710-3910 g). One spontaneous abortion was reported in the first trimester of pregnancy. One case of undesired pregnancy occurred. An extrauterine pregnancy was reported in this woman. CONCLUSION: LTUV is a minimally invasive operative procedure, that preserves the uterus and ovarian blood supply and allows for the achievement of pregnancy in women with symptomatic fibroids. Fetal growth and umbilical Doppler findings remained normal in all cases. An increased risk for preterm delivery and cesarean section was found in this small series.

PMID: 16054287 [PubMed - indexed for MEDLINE]

503. Eur J Obstet Gynecol Reprod Biol. 2006 Jul;127(1):140-2. Epub 2005 Jul 15.

Amenorrhea due to partial uterine necrosis after uterine artery embolization for control of refractory postpartum hemorrhage.

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We report a case of a woman in whom selective embolization of both uterine arteries was performed using gelatin sponge for control of refractory postpartum hemorrhage. Ten months after delivery, the women had not resumed noticeable menstruation. Examination and investigation were consistent with partial uterine necrosis and complete obliteration of the cavity.

PMID: 16024157 [PubMed - indexed for MEDLINE]

504. J Vasc Surg. 2005 Jul;42(1):98-106.

The spectrum, management and clinical outcome of Ehlers-Danlos syndrome type IV:
a 30-year experience.

Oderich GS, Panneton JM, Bower TC, Lindor NM, Cherry KJ, Noel AA, Kalra M, Sullivan T, Gloviczki P.

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PURPOSE: Ehlers-Danlos syndrome type IV (EDS-IV) results from abnormal procollagen III synthesis and leads to arterial, intestinal, and uterine rupture. The purpose of this study was to review the spectrum, management, and clinical outcome of EDS-IV patients. METHODS: We retrospectively reviewed the clinical data of 31 patients (15 male and 16 female) with a clinical diagnosis of EDS-IV treated over a 30-year period (1971 to 2001). Biochemical confirmation was obtained in 24 patients, and mutation of the COL3A1 gene was confirmed in 11 patients. The study excluded patients with other connective tissue dysplasias. RESULTS: The mean age at the time of diagnosis was 28.5 +/- 11 years (range, 10 to 53 years). Twenty-four patients developed 132 vascular complications; of these, 85 were present either before or at the time of the initial evaluation, and 47 complications occurred during a median follow-up of 6.3 years (range, 0.5 to 26 years). Survival free of vascular complications was 90% at age 20 years, 39% at 40 years, and 20% at age 60 years. Fifteen patients underwent 30 operative

interventions for vascular complications, including arterial reconstruction (n = 15), simple repair or ligation (n = 4), coil embolization (n = 3), splenectomy (n = 2), and abdominal decompression, nephrectomy, graft thrombectomy, vein stripping and thoracoscopy (n = 1 each). Three hospital deaths occurred from exsanguinating hemorrhage: two after operative interventions and one because of a ruptured splenic artery. Procedure-related morbidity was 46%, including a 37% incidence of postoperative bleeding and a 20% need for re-exploration. The incidence of late graft-related complications was 40% of arterial reconstructions, including 4 anastomotic aneurysms, 1 fatal anastomotic disruption, and 1 graft thrombosis. Patient survival was 68% at age 50 years and 35% at age 80 years. Of the 12 deaths during the study period, 11 were associated with vascular or graft-related complications. CONCLUSION: Operative mortality in patients with vascular complications of EDS-IV was not excessively high, but the incidence of postoperative bleeding complications and late graft-related problems was significant. Despite successful repair of vascular complications, survival was shortened because of secondary vascular or graft-related complications.

PMID: 16012458 [PubMed - indexed for MEDLINE]

505. Gynecol Obstet Fertil. 2005 Jul-Aug;33(7-8):511-3.

[Uterine arteriovenous malformation. A rare cause of recurrent metrorrhagia]

[Article in French]

Rubod C, Mubiayi N, Robert Y, Vinatier D.

Service de gynécologie chirurgicale, hôpital Jeanne-de-Flandre, CHRU de Lille, 2, avenue Oscar-Lambret, 59037 Lille cedex, France.

Comment in:
Gynecol Obstet Fertil. 2005 Dec;33(12):1057.

Uterine arteriovenous malformation is a rare condition. We report a case with acquired arteriovenous malformation arising from the left uterine artery. She was diagnosed by color Doppler ultrasound and treated with a selective uterine artery embolization.

PMID: 16005663 [PubMed - indexed for MEDLINE]

506. Int J Gynaecol Obstet. 2005 Jun;89(3):305-18.

SOGC clinical practice guidelines. Uterine fibroid embolization (UFE). Number 150, October 2004.

Society of Obstetricians and Gynaecologists of Canada.

OBJECTIVE: To help direct the organized and effective implementation of uterine fibroid embolization into clinical practice in Canada. OPTIONS: This document is restricted to the management of uterine fibroid embolization as performed by the radiologists utilizing a transfemoral artery approach with arteriography followed by vessel embolization. OUTCOMES: Uterine fibroid embolization has been evaluated in terms of patient satisfaction, risks of complications, risks in subsequent pregnancy and rate of hysterectomy within a few months of the procedure. As the procedure is relatively new, data on long-term outcomes are not available. EVIDENCE: Published opinions of experts, supplemented by evidence from clinical trials where appropriate. VALUES: The quality of the evidence is rated using the criteria described by the Canadian Task Force on the Periodic Health Examination. BENEFITS, HARMS, AND COSTS: For women presenting with symptomatic uterine fibroids who are candidates for UFE, there is often a benefit to avoiding an abdominal surgery. The risks of theUFE procedure, possible complications, and short- and long-term prognosis must be measured on an individual basis against the well studied surgical alternatives. Patient preference is an important component of this evaluation. The non-material costs of on going symptoms from the fibroids are difficult to measure and use comparatively against the cost of hospitalization and treatment. In evaluating costs of UFE, the calculations should take into consideration the cost of managing occasional complications including subsequent hysterectomy. The cost of myomectomy or hysterectomy will vary largely depending on technique used and length of hospital stay. RECOMMENDATIONS: 1. Women considering treatment of fibroids should be counselled that while the early results of uterine artery embolization are encouraging, no long-term data exist. (II-2-B). 2.UFE should only be considered for women with symptomatic or problematic fibroids who might otherwise be advised to have surgical treatment. (III-A). 3. UFE as a treatment for fibroids inpatients wishing to preserve their fertility should be undertaken with full disclosure to the patient about the limitations of such a procedure and the lack of existing data regarding future fertility and pregnancy outcomes. (III-C). 4. UFE is contraindicated in women who have evidence of current genitourinary infection and/or malignancy. (II-2-B). 5. Women who choose UFE as an alternative to hysterectomy should be counselled regarding the risk of major complications of UFE where hysterectomy may be urgently required and potentially lifesaving. In view of this small but important risk, UFE is relatively contraindicated in women who are unwilling to have a hysterectomy under any circumstances. (III-C). 6. Genitourinary infection is the predominant cause of serious morbidity and mortality. Further research on the utility of prophylactic antibiotic therapy and the value of pretreatment screening for infection is needed. (II-2-B). 7. A gynaecologist who is familiar with UFE should evaluate all patients considered for UFE before the procedure is booked and a consensus on the suitability of the procedure achieved between the gynaecologist and radiologist. (III-C). 8. Only radiologists with specialized embolization experience and techniques should perform UFE. (III-C). 9. The particular responsibilities of both gynaecologist and radiologist should be established prior to treatment and be set out in a relevant hospital protocol. A particular physician must be responsible for the

patient at all times. (III-C). 10. A Canadian national registry of numbers, indications,outcomes, complications, and successful pregnancies associated with UFE should be created and jointly administered and funded by the SOGC, CAR, and CIRA. (III-C).

PMID: 16001461 [PubMed - indexed for MEDLINE]

507. Obstet Gynecol. 2005 Jul;106(1):195-6; author reply 196.

Pregnancy after uterine artery embolization for leiomyomata: the Ontario Multicenter Trial.

Goldberg J.

Comment on:
Obstet Gynecol. 2005 Jan;105(1):67-76.

PMID: 15994645 [PubMed - indexed for MEDLINE]

508. Obstet Gynecol. 2005 Jul;106(1):44-51.

Prospective data collection of a new procedure by a specialty society: the FIBROID registry.

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Erratum in:
Obstet Gynecol. 2005 Oct;106(4):869.

OBJECTIVE: To describe registry methods and baseline patient demographics from a national sample of women undergoing uterine artery embolization for uterine leiomyomata. METHODS: Interventional radiology practices were recruited to submit
data by a secure Web site on women undergoing uterine artery embolization for symptomatic leiomyomata. Baseline data included patient demographics, prior medical, surgical, and obstetrical history, uterine anatomy, and quality-of-life measures. Subsequent data collected included details of the uterine artery embolization procedure and hospital stay and outcomes at 30 days; patients were also offered the opportunity to participate in longer-term follow-up. Characteristics of white and African-American women were compared using t tests, chi(2), or Wilcoxon rank-sum tests as appropriate. RESULTS: As of December 31, 2002, 3,319 uterine artery embolization cases had been entered into the registry by 72 sites; number of patients entered by individual sites ranged from 1 to 514.

Of these patients, 95.4% consented to participation in the short-term outcomes registry. Forty-eight percent of patients were African American, and 44.4% were white and non-Hispanic. Heavy menstrual bleeding was the single most bothersome symptom in 64.3% of patients. Compared with white non-Hispanic women, African-American women were significantly younger, more likely to be obese, had larger uteri and more numerous leiomyomata, more severe symptoms, and poorer quality-of-life scores before treatment. CONCLUSION: It is feasible to collect prospective data on new technologies. The FIBROID Registry prospectively collected data on more than 3,000 women undergoing uterine artery embolization for symptomatic leiomyomata. Baseline patient characteristics of this patient population seem to be similar to those of women undergoing other procedures for leiomyomata. LEVEL OF EVIDENCE: III.

PMID: 15994616 [PubMed - indexed for MEDLINE]

509. Best Pract Res Clin Obstet Gynaecol. 2005 Jun;19(3):431-49. Epub 2005 Feb 12.

Alternative medical and surgical options to hysterectomy.

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The range of alternatives to hysterectomy includes 'expanded' oral medical regimens, the levonorgestrel-releasing intrauterine system (LNG-IUS), a wide range of endometrial ablative techniques, and-where fibroids are the primary pathology-myomectomy and uterine artery embolization. Since research has shown that hysterectomy is a highly effective treatment, these alternatives must be assessed against the recognized high satisfaction rates and improved quality of life reported following hysterectomy. Additional issues that would also need to be addressed include complication rates, side-effects, and cost-effectiveness. For women with prolonged abnormal uterine bleeding, recent research suggests that hysterectomy is significantly superior to an expanded medical treatment regimen for health-related quality-of-life measures. Satisfaction with treatment, and health-related quality of life and psychosocial well-being, are reportedly similar between hysterectomy and the LNG-IUS, but the latter has the advantage of reduced cost. Endometrial ablation reduces menstrual blood flow, but its benefits relative to hysterectomy lessen over time. No large-scale studies have adequately compared uterine artery embolization or myomectomy to hysterectomy. Perhaps the most telling finding from recent research with respect to the place of alternative therapies to hysterectomy is that the existence or advent of these alternatives has not reduced hysterectomy rates, but merely increased treatment options and interventions for excessive menstrual loss.

PMID: 15985257 [PubMed - indexed for MEDLINE]

510. Cardiovasc Intervent Radiol. 2005 Sep-Oct;28(5):670-2.

Treatment of uterine artery vasospasm with transdermal nitroglycerin ointment during uterine artery embolization.

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Uterine artery vasospasm can complicate uterine artery embolization (UAE) by prolonging procedure times or even causing treatment failure. Embolization must be delayed until the spasm improves and adequate antegrade flow in the vessel is restored. Vasospasm can also produce a "false endpoint" to the procedure, where stasis of flow in the vessel is falsely attributed to successful embolization but is actually the result of vasospasm, leading to undertreatment or treatment failure. Traditional treatments for uterine artery vasospasm have included transcatheter intra-arterial vasodilators and catheter withdrawal from the vessel, both of which can yield mixed results. We report a case of uterine artery vasospasm during UAE successfully treated with transdermal nitroglycerine ointment.

PMID: 15983855 [PubMed - indexed for MEDLINE]

511. Curr Opin Obstet Gynecol. 2005 Aug;17(4):329-32.

The role of uterine artery embolization in the management of uterine fibroids.

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PURPOSE OF REVIEW: Uterine artery embolization is increasingly being offered as an alternative to hysterectomy and myomectomy for the treatment of symptomatic uterine fibroids. This review is intended to evaluate the role of this technique in the management of uterine fibroids using information provided from recently published literature. RECENT FINDINGS: A growing body of literature supports the efficacy of uterine artery embolization in relieving fibroid-related menorrhagia, pelvic pain and pressure symptoms and in substantially reducing the fibroid size in most patients. Recent publications also show significant improvements in health-related quality of life and high long-term satisfaction rates. The procedure is associated with shorter hospitalization and recovery times and lower morbidity rates compared with conventional surgical treatments. However, serious

complications, such as uterine infarction or infection leading to emergency hysterectomy, have been reported in a few cases, and considerable work is currently underway to determine how the safety of the procedure can be enhanced.
Although no long-term data on subsequent fertility are yet available, early reports on ovarian function and pregnancy outcomes after uterine artery embolization are encouraging. SUMMARY: Based on current evidence, uterine artery embolization can be considered a valuable alternative to surgical therapy in the management of well-selected women with symptomatic uterine fibroids. Additional research is needed to help define the place of this technique for women who desire future pregnancy.

PMID: 15976535 [PubMed - indexed for MEDLINE]

512. Am J Surg Pathol. 2005 Jul;29(7):955-61.

Uterine arterial embolization with tris-acryl gelatin microspheres: a histopathologic evaluation.

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Uterine artery embolization (UAE) as an alternative to surgery for the treatment of uterine fibroids and adenomyosis uteri became increasingly popular. While the clinical success of this new treatment strategy is without doubt, there is still considerable uncertainty with respect to the morphologic changes induced by UAE. In this study, a total of 173 women were treated with UAE using tris-acryl gelatin microspheres (TGMS), a new particulate spherical embolic agent, for either symptomatic adenomyosis or leiomyoma. Surgical specimens of 8 women who underwent subsequent myomectomy or hysterectomy were evaluated by conventional histology and immunohistochemistry. TGMS were readily apparent in both macroscopy and routine histology. In patients with fibroids, TGMS accumulated in medium-sized vessels in the direct tumor vicinity, a minor fraction of particles was detected in the outer half of the myometrium and within leiomyomata. In patients with adenomyosis, a random distribution of TGMS was noted throughout the outer half of the myometrium. Freshly infused particles occluded the respective arteries without a significant tissue reaction. In the course of time, a granulomatous foreign body reaction in the vicinity of particles occurred, eventually followed by complete vessel destruction. Leiomyoma treated with UAE

showed either hyaline necrosis, coagulative necrosis, or no change at all. Foci of adenomyosis remained unaltered. In conclusion, after UAE with TGMS, particles were identified predominately but not exclusively at the periphery of fibroids. Pathologists must be aware of the morphologic changes induced by UAE in leiomyoma
to avoid misinterpretation of induced tissue alterations as signs of malignant tumor growth.

PMID: 15958862 [PubMed - indexed for MEDLINE]

513. Fertil Steril. 2005 Jun;83(6):1842.

Abdominal myomectomy after failed uterine artery embolization.

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Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, North Carolina 27710, USA.

OBJECTIVE: Report a case of a difficult myomectomy after a failed uterine artery embolization (UAE). DESIGN: Case report. SETTING: A university medical center. PATIENT(S): A 30-year-old woman with pelvic pain and menorrhagia secondary to an
enlarging 18- to 20-week-size fibroid uterus. INTERVENTION(S): Abdominal myomectomy. MAIN OUTCOME MEASURE(S): Complicated myomectomy after UAE. RESULT(S):
A patient underwent a difficult myomectomy after failed UAE. The myomectomy was
only partially completed due to the difficult dissection of the myomas.
CONCLUSION(S): Myomectomy after UAE may be unusually difficult due to the degenerative changes that occur within the leiomyomas.

PMID: 15950659 [PubMed - indexed for MEDLINE]

514. Tohoku J Exp Med. 2005 Jul;206(3):261-5.

Successful conservative treatment of a cesarean scar pregnancy with uterine artery embolization.

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Ectopic pregnancy developing in a previous Cesarean section scar is rare and is

associated with catastrophic complications, such as uterine rupture and uncontrollable bleeding, which may lead to loss of the uterus. The operative treatments that have been reported for cesarean scar pregnancy are dilatation and curettage and excision of trophoblastic tissues using either laparotomy or laparoscopy. Recently, conservative treatment of scar pregnancy with locally and/or systemically administered methotrexate (MTX) has been reported. However,
recent reports demonstrated that cases treated with MTX sometimes required laparotomy later because of excessive bleeding. In this series of cases we have demonstrated that viable cesarean scar pregnancies can be treated safely by selective transarterial embolization in combination with subsequent dilatation and curettage and local or systemic injections of MTX. In these three cases, uterine artery embolization proved to be a useful procedure for preventing uncontrollable bleeding and unnecessary uterine loss.

PMID: 15942155 [PubMed - indexed for MEDLINE]

515. J Minim Invasive Gynecol. 2005 Mar-Apr;12(2):165-7.

Delayed spontaneous expulsion of a cervical ectopic pregnancy: a case report.

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Cervical ectopic pregnancy is an uncommon event. Modern diagnostic and treatment
options provide an opportunity for conservative treatment of this condition. A case of a profuse hemorrhage associated with delayed spontaneous expulsion of a cervical ectopic pregnancy is described, and the management is discussed. In this patient, the cervical ectopic pregnancy was treated successfully using systemic methotrexate and selective uterine artery embolization. The patient returned 1 week later with spontaneous expulsion of the ectopic pregnancy associated with profuse hemorrhage. The bleeding subsided following tamponade using a transcervical Foley catheter. We conclude that conservative treatment of cervical ectopic pregnancy is feasible, with careful posttreatment surveillance.

PMID: 15904623 [PubMed - indexed for MEDLINE]

516. Acta Obstet Gynecol Scand. 2005 Jun;84(6):606-7.

Uterine artery embolization to control bleeding after myomectomy.

Zorlu CG, Akar ME, Seker-Ari E, Yilmaz S, Sindel T.

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PMID: 15901277 [PubMed - indexed for MEDLINE]

517. Curr Opin Obstet Gynecol. 2005 Jun;17(3):225-31.

Fibroids and in-vitro fertilization: which comes first?

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PURPOSE OF REVIEW: There is no consensus about the impact of uterine fibroids on fertility. This review explores past and recent studies that investigated the effects of submucosal, intramural, and subserosal fibroids on in-vitro fertilization (IVF) outcomes. We discuss the importance of proper evaluation of the uterus and endometrial cavity, and current options for optimal fibroid management in patients desiring fertility. RECENT FINDINGS: Several studies have reviewed the data on fibroids and infertility, further exploring this potential relationship. Two recent studies investigated reproductive outcomes before and after myomectomy, and IVF outcomes based on fibroid size and location. Both studies concluded that fibroids can impair reproductive outcomes. Several papers thoroughly reviewed medical and surgical management options for patients with fibroids and desired fertility. Although several medical therapies may reduce fibroid volume or decrease menorrhagia, myomectomy remains the standard of care for future fertility. Recent data identified an increased rate of pregnancy complications after uterine artery embolization compared with laparoscopic myomectomy. A new procedure, magnetic resonance imaging-guided focused ultrasound ablation, shows promise for the management of symptomatic fibroids, and possibly for the management of fibroids prior to pregnancy. As with embolization, more data are needed to evaluate postprocedure fertility and pregnancy outcomes. SUMMARY: Fibroid location, followed by size, is the most important factor determining the impact of fibroids on IVF outcomes. Any distortion of the endometrial cavity seriously affects IVF outcomes, and myomectomy is indicated in this situation. Myomectomy should also be considered for patients with large fibroids, and for patients with unexplained unsuccessful IVF cycles.

PMID: 15870554 [PubMed - indexed for MEDLINE]

518. Obstet Gynecol. 2005 May;105(5 Pt 2):1247-50.

Conservative management of placenta previa percreta in a Jehovah's Witness.

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**BACKGROUND: Hemorrhage is a serious threat with placenta accreta, often requiring
aggressive operative intervention by hysterectomy and resuscitative measures with large-volume blood replacement to ensure survival. Refusal to accept transfusion makes management especially difficult. CASE: We report a Jehovah's Witness patient who had 9 previous cesarean deliveries and presented with anemia and placenta previa percreta invading the bladder wall. Management objectives were to
enhance the patient's status, using erythropoietin and autologous transfusion, and to minimize the chance of hemorrhage by prophylactic uterine artery embolization. The placenta was left in situ after the delivery with no untoward consequences. Methotrexate was held in readiness, but was not required as adjuvant therapy. CONCLUSION: Effective care of such patients requires close collaborative team effort and advanced planning to ensure a good outcome.**

PMID: 15863598 [PubMed - indexed for MEDLINE]

519. Int J Gynaecol Obstet. 2005 May;89(2):114-9.

Diagnosis and management of uterine arteriovenous fistulas with massive vaginal bleeding.

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OBJECTIVE: To study the clinical manifestations, diagnosis, management, and prognosis of uterine arteriovenous fistulas with massive vaginal bleeding. METHODS: The clinical records of 15 patients who satisfied the diagnostic criteria were retrospectively analyzed. RESULTS: All patients had massive vaginal bleeding and a history of cesarean section, curettage, or gynecologic carcinoma. The disease was diagnosed by angiography or color Doppler ultrasonography. Vaginal bleeding can be aggravated by dilation and curettage. No complications occurred in the 14 patients who were treated with uterine artery embolization. Of the 11 patients who underwent successful embolizations, all returned to a normal menstrual cycle and 5 later became pregnant. CONCLUSION: Uterine arteriovenous fistula is a rare and potentially life-threatening condition. Uterine artery embolization is a safe and effective choice of treatment for this condition, and it can preserve both uterus and ovary function.

PMID: 15847873 [PubMed - indexed for MEDLINE]

520. Acta Obstet Gynecol Scand. 2005 May;84(5):478-82.

Surgical and radiological management of uterine fibroids--a UK survey of current consultant practice.

Taylor A, Sharma M, Tsirkas P, Arora R, Di Spiezio Sardo A, Mastrogamvrakis G, Buck L, Oak M, Magos A.

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BACKGROUND: The aim of this study was to determine the current surgical and radiological management of uterine fibroids by consultants working in the UK. METHODS: A structured questionnaire was posted to all 1439 UK consultants. Non-responders were sent one reminder. The main outcome measures were surgical route and technique used for myomectomy, and the use and availability of uterine artery embolization (UAE). RESULTS: Eight hundred fifty-two (59%) consultants replied. Seven hundred thirty-five (86%) admitted to regular sessions of gynecologic surgery, and 75% of this group performed open myomectomy, 16% laparoscopic myomectomy, and 66% hysteroscopic myomectomy. Open myomectomy: Forty-one percent of consultants performed open surgery on uteri equivalent to 12-week gestational age or less, 87% prescribed preoperative gonadotrophin-releasing hormone agonists (GnRHa) in order to reduce surgical bleeding, with 35% using myomectomy clamps, 23% tourniquets, and 19% vasoconstrictors. Laparoscopic myomectomy: The largest uterine size the majority would attempt was equivalent to a 12-week gestation, 58.6% used preoperative GnRHa, 21% used intraoperative vasoconstrictors, and 1.4% tourniquets in order to minimize bleeding. Hysteroscopic myomectomy: As with laparoscopic myomectomy, the largest uterine size the majority would attempt was equivalent to a 12-week pregnancy. Blood transfusion: Twenty per cent, 10%, and 7% reported the need for blood transfusion in up to 10% of patients undergoing open, laparoscopic, or hysteroscopic myomectomy, respectively. UAE: Fifty-one percent have access to UAE and 40% have referred at least one patient in 2001. CONCLUSIONS: Open and hysteroscopic myomectomy are frequently utilized in contrast to laparoscopic myomectomy. The reported rate of blood transfusion appears low. Although UAE is widely available, the majority of patients are still managed surgically.

PMID: 15842213 [PubMed - indexed for MEDLINE]

521. Med Lett Drugs Ther. 2005 Apr 11;47(1206):31-2.

Uterine artery embolization for fibroids.

[No authors listed]

UAE is an alternative to surgery for treatment of uterine fibroids that uses injections of small plastic or gelatin beads to thrombose fibroid vessels arising from the uterine artery. Clinical studies have reported less menorrhagia and pelvic pain in patients who have undergone the procedure. After embolization, many patients experience pain requiring an overnight hospital stay and administration of parenteral opioids. UAE is generally not recommended for women who have not completed childbearing.

PMID: 15821634 [PubMed - indexed for MEDLINE]

522. Eur J Radiol. 2005 Apr;54(1):136-47.

Percutaneous uterine artery embolization for the treatment of symptomatic fibroids: current status.

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Uterine artery embolization (UAE) is increasingly being used as an alternative treatment to hysterectomy for symptomatic fibroids. Symptoms of pelvic pressure, urinary frequency and menorrhagia are controlled in 73-98% of patients who undergo UAE. At the 1-year follow-up, the uterus may shrink by up to 55% but re-growth of fibroid may however occur. The rate of major complications and amenorrhoea following this procedure is low, ranging in most series from 1 to 3.5% and 1 to 7%, respectively. Nevertheless, the rate of amenorrhoea in women over 45 seems to be higher. In order to completely block the arterial supply to the fibroid, UAE is typically performed in both uterine arteries. Different embolic agents are used such as polyvinyl alcohol, gelfoam and more recently gelatine tris-acryl microspheres. After UAE, perfusion of the uterus is maintained. Uterine function is therefore conserved and although women who become pregnant after UAE seem to be at risk for malpresentation, pre-term birth, cesarean delivery and postpartum hemorrhage, successful pregnancies after UAE have been reported in some series. A major technical problem with UAE remains the possible presence of fibroid blood supply from other sources, such as the ovarian arteries or other pelvic branches, which can lead to failure of the procedure. In conclusion, although randomized trials are still underway, UAE appears a good option for those patients who whish to conserve their fertility or when surgery is contra-indicated. However, to evaluate the long-term effects of UAE longer follow up is required.

PMID: 15797303 [PubMed - indexed for MEDLINE]

523. Bull Acad Natl Med. 2004;188(7):1173-81; discussion 1181-3.

[Treatment by embolization of small uterine myomata]

[Article in French]

Ravina JH, Aymard A, Ciraru N, Merland JJ.

**We examined the effectiveness of uterine artery embolization (UAE) as a primary treatment for small symptomatic myomatas (<50 mm diameter). One hundred patients
aged from 29 to 68 years underwent UAE between 01/01/99 and 12/31/2002. Efficacy
was judged by physical examination and imaging studies at 6 to 12 months. All the patients were evaluated. Treatment failed in five cases, while symptoms resolved in all the other patients. Five patients became pregnant. The main complication was amenorrhea. No serious adverse effects were observed. The efficacy and safety of this method make it a possible preventive treatment for pre-symptomatic myomata. If these findings are confirmed, they will open a new era in the treatment of fibroids.**

PMID: 15787072 [PubMed - indexed for MEDLINE]

524. BJOG. 2005 Apr;112(4):461-5.

Predictive factors for fibroids recurrence after uterine artery embolisation.

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**OBJECTIVES: To assess clinical failure and symptom recurrence after uterine artery embolisation (UAE) and to define predictive factors. DESIGN: Prospective study of a case series. SETTING: Gynaecology and radiology departments of a French University Hospital. POPULATION: Eighty-five women who underwent embolisation for the treatment of uterine fibroids. METHOD: Vascular access was obtained via the right common femoral artery. Free-flow embolisation was performed using 150-250 mum polyvinyl alcohol particles and an absorbable particle sponge. MAIN OUTCOME MEASURES: Clinical failure was defined as persistence of symptoms at three months of follow up and recurrence as return of symptoms. The main outcome measure was the need for further treatment after UAE.
RESULTS: Results are available for 81 patients. Median follow up was 30 months.**

There were 15 clinical failures and recurrences requiring further treatment (eight hysterectomies, five hysteroscopic resections for submucous fibroids, one second embolisation and one woman refusing further treatment). Recurrence-free survival rate at 30 months (no clinical failure, no recurrence) was 82.8% (95% CI 73.7-91.8%). Multivariate analysis identified two predictive factors: dominant fibroid size on ultrasound imaging (each 1 cm increase: HR = 1.68, 95% CI 1.10-2.69) and number of fibroids (each additional fibroid: HR = 1.34, 95% CI 1.08-1.66). CONCLUSIONS: Symptom recurrence rate 30 months after fibroid embolisation was 17.2%. Fibroid size and number were predictive factors for recurrence. As most recurrences occurred after two years, we recommend that patients be monitored clinically and that imaging be for more than two years after UAE.

PMID: 15777445 [PubMed - indexed for MEDLINE]

525. Cardiovasc Intervent Radiol. 2005 Jan-Feb;28(1):117-9.

Pregnancy 4 months after uterine artery embolization.

Pietura R, Jakiel G, Swatowski D, Semczuk M, Szczerbo-Trojanowska M.

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PMID: 15772730 [PubMed - indexed for MEDLINE]

526. J Obstet Gynaecol. 2004 Oct;24(7):834-5.

Post-abortal bleeding due to uterine artery pseudoaneurysm.

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**Department of Obstetrics and Gynaecology, Cumberland Infirmary, Carlisle CA2 7HY,
UK.**

PMID: 15763812 [PubMed - indexed for MEDLINE]

527. J Vasc Interv Radiol. 2005 Mar;16(3):347-50; quiz 351.

The safety and efficacy of a percutaneous closure device in patients undergoing uterine artery embolization.

Chrisman HB, Liu DM, Bui JT, Resnick SA, Sato K, Chen R, Vogelzang RL, Omary RA.

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University, Northwestern Memorial Hospital, Illnois, Chicago, USA.

PURPOSE: The use of suture-mediated closure devices (SMCDs) in patients undergoing uterine artery embolization (UAE) for symptomatic leiomyomata is controversial. With recent literature suggesting a higher complication rate with the use of SMCDs, their use in this specific population has been questioned. The purpose of this study is to assess the safety and efficacy of SMCDs specifically for those patients undergoing UAE for symptomatic uterine leiomyomata. MATERIALS
AND METHODS: A prospective database was established in a single high-volume medical center for patients undergoing UAE for symptomatic leiomyomata. Data were
tracked prospectively, with technical outcome and complication rates serving as endpoints. RESULTS: UAE was performed in 342 consecutive patients from January 2001 to September 2003. The SMCD was used in 328 of these patients (96%). Successful primary hemostasis was achieved in 320 of 328 patients (97%), with additional manual compression required in the remaining eight patients (3%). No major complications were observed. Minor complications consisted of minor hematomas in four women (1%) and anteriomedial thigh pain in 68 women (21%) within 1 month of follow-up, resulting in an overall complication rate of 22%.
All symptoms related to anteromedial thigh pain ipsilateral to the arterial puncture site were managed conservatively with 1 week of oral nonsteroidal antiinflammatory medication. CONCLUSION: The SMCD provided safe and effective hemostasis in patients undergoing UAE. Transient thigh discomfort, which may result from irritation of the anterior femoral cutaneous nerves (femoral neuralgia syndrome), was uniformly relieved with nonsteroidal antiinflammatory therapy.

PMID: 15758130 [PubMed - indexed for MEDLINE]

528. Nippon Hoshasen Gijutsu Gakkai Zasshi. 2005 Feb 20;61(2):285-90.

[Experience in IVR performed using a posture support device designed especially for a patient unable to take the decubitus position]

[Article in Japanese]

**Ichida T, Hosogai M, Ogawa T, Yamada E, Shougaki M, Okusako K, Masai H, Yokoyama
K, Okuyama K, Hatagawa M.**

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**We were requested to perform IVR for uterine artery embolotherapy of a patient who was unable to take the decubitus position. Because of extreme overweight, the
patient was limited to a sitting posture on a bed in the living environment. Therefore, a device to support her sitting posture on the IVR patient table was**

designed and created. The support device was used to hold the patient's body in a half-sitting posture and distribute her weight load appropriately so that the weight load applied to the patient's body could be minimized. Using this support device, IVR could be performed smoothly during a period of 2 hours 40 minutes.

PMID: 15753870 [PubMed - indexed for MEDLINE]

529. Masui. 2005 Feb;54(2):156-9.

[Thoracic epidural analgesia is effective in perioperative pain relief for uterine artery embolization]

[Article in Japanese]

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BACKGROUND: Uterine artery embolization (UAE) has become widely employed in Japan. Although several methods of anesthesia and analgesia are performed for UAE, pain control does not appear to be satisfactory. We report a series of UAE, successfully managed using thoracic epidural analgesia. METHODS: Before UAE an epidural analgesic catheter was inserted at T 10-11. Local anesthetic and morphine sulfate were administered through the catheter. After the UAE patients received patient-controlled epidural analgesia (PCEA) for 24 hours. The next day, patients were treated with diclofenac sodium 25 mg suppository every 8 hours. RESULTS: In all cases, early pain was controlled well by epidural analgesia. Late pain was controlled by combining epidural analgesia with diclofenac sodium. Nausea and pruritus due to morphine sulfate occurred in some cases, but disappeared after discontinuation of PCEA. CONCLUSIONS: Several phases of severe pain are seen perioperatively in UAE. Because thoracic epidural analgesia is easily administered and the dosage of the drugs used effectively controlled, it is a practical method for perioperative pain control for UAE.

PMID: 15747511 [PubMed - indexed for MEDLINE]

530. Zhonghua Fu Chan Ke Za Zhi. 2004 Dec;39(12):797-800.

[Diagnosis and management of uterine arteriovenous fistula with massive vaginal bleeding]

[Article in Chinese]

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OBJECTIVE: To study the clinical manifestation, diagnosis, management and prognosis of uterine arteriovenous fistula with massive vaginal bleeding. METHOD: The clinical records of 15 patients who satisfied the diagnostic criteria were retrospectively analyzed. RESULTS: All patients had massive vaginal bleeding, with a history of caesarean section, curettage or gynecologic carcinoma. The disease could be diagnosed by angiography or color Doppler ultrasound. Vaginal bleeding was aggravated by dilation and curettage. Fourteen patients were treated with uterine artery embolization, and no complications occurred postembolization. Of the eleven successful embolizations, all patients returned normal menstrual cycling. Five of these patients became pregnant later. CONCLUSIONS: Uterine arteriovenous fistula is a rare and potentially life threatening disease. Uterine artery embolization is a safe and effective treatment for this disease, and it can preserve normal function of uterus and ovaries.

PMID: 15733402 [PubMed - indexed for MEDLINE]

531. J Reprod Med. 2005 Jan;50(1):57-60.

Arteriovenous malformation in a bicornuate uterus leading to recurrent severe uterine bleeding: a case report.

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BACKGROUND: Uterine arteriovenous malformations (AVMs) are rare entities that have been documented in a wide age range. Several treatment modalities have been highlighted in the literature. Uterine artery embolization appears to be effective therapy for select cases. Embolization provides an alternative to hysterectomy and the potential for future fertility. To our knowledge, only 1 other case report describes an AVM existing within a bicornuate uterus. CASE: A 31-year-old, married, Caucasian woman with a history of infertility presented with intermittent uterine hemorrhage resulting in symptomatic anemia. The patient was diagnosed with a uterine AVM existing within the left horn of a bicornuate uterus. The patient underwent uterine artery embolization, with resolution of the vascular mass and resumption of regular menstrual flow. CONCLUSION: AVM in a bicornuate uterus is rarely reported. Selective uterine artery embolization offers an effective modality of treatment.

PMID: 15730176 [PubMed - indexed for MEDLINE]

532. Eur Radiol. 2005 Sep;15(9):1850-4. Epub 2005 Feb 24.

Uterine restoration after repeated sloughing of fibroids or vaginal expulsion following uterine artery embolization.

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The aim of our study is to present our experience with uterine restoration after repeated sloughing of uterine fibroids or transvaginal expulsion following uterine artery embolization (UAE) and to determine its safety and outcome. One hundred and twenty-four women (mean age, 40.3 years; age range, 29-52 years) with
symptomatic uterine fibroids were included in this retrospective study. We performed arterial embolization with poly(vinyl alcohol) particles (250-710 microm). Clinical symptoms and follow-up information for each patient were obtained through medical records. At an average of 3.5 months (range, 1-8 months) after embolization, magnetic resonance imaging examinations with T1- and T2-weighted and gadolinium-enhanced T1-weighted images were obtained for all patients. The mean follow-up duration was 120 days (90-240 days). Eight (6.5%) patients experienced uterine restoration after repeated sloughing of uterine fibroids or spontaneous transvaginal expulsion. The locations of the leiomyomas were submucosal (n=5), intramural (n=2) and transmural (n=1). The maximum diameter of the fibroids ranged from 3.5 to 18.0 cm, with a mean of 8.4 cm. The time interval from embolization to the uterine restoration was 7-150 days (mean 70.5 days). The clinical symptoms before and during vaginal sloughing or expulsion were lower abdominal pain (n=4), vaginal discharges (n=3), infection of necrotic myomas (n=2) and cramping abdominal pain (n=1). Gentle abdominal compression (n=1) and hysteroscopic assistance (n=1) were required to remove the whole fibroid. No other clinical sequelae, either early or delayed, were documented. Magnetic resonance images revealed the disappearance of leiomyomas,
intracavitary rupture resulting in transformation of intramural or transmural myomas into submucosal myomas and localized uterine wall defects. Although the small size of this study precludes a strict conclusion, there appear to be few serious complications directly related to vaginal expulsion. Vaginal expulsion or fibroid sloughing is a possible course following UAE that is manageable, and the patients should be informed about this possibility.

PMID: 15729564 [PubMed - indexed for MEDLINE]

533. Ann Acad Med Singapore. 2005 Jan;34(1):78-83.

Uterine artery embolisation for symptomatic fibroids in a tertiary hospital in Singapore.

Mohan PC, Tan BS, Kwek BH, Abu J, Koh D, Tay KH, Lau TN, Ong D, Yu SL.

Department of Diagnostic Radiology, Singapore General Hospital, Singapore.

INTRODUCTION: Transcatheter uterine artery embolisation (UAE) for the treatment of symptomatic uterine enlargement due to fibroids has been performed in several overseas centres with promising results. We report our experience with UAE in Singapore General Hospital. MATERIALS AND METHODS: Twenty women with symptomatic uterine fibroids who declined surgery were treated by transcatheter UAE. The uterine arteries were selectively catheterised and embolised with polyvinyl alcohol particles. Post-procedure analgesia was administered via a patient-controlled analgesia pump. The patients were followed up at regular intervals clinically and with transabdominal ultrasonography. RESULTS: Transcatheter UAE was performed on all patients with no major complications. Nineteen patients had both uterine arteries embolised while 1 patient had only the right uterine artery embolised on account of hypoplasia of the left uterine artery. The mean hospital stay was 3.5 days (range, 2 to 9). At a mean follow-up of 56 weeks (range, 6 to 168), all patients reported improvements in their presenting symptoms. Objective improvement in terms of reduction of uterine and fibroid sizes was determined on ultrasonography. The median size of the uterine volume decreased from 308 to 187 mL while the median diameter of the largest fibroid reduced from 6.2 to 4.6 cm. The median haemoglobin level increased to 12.7 g/dL from the pre-procedural median of 9.9 g/dL. One patient, who initially responded with a decrease in uterine and dominant fibroid size, became symptomatic (menorrhagia) at 6 months post-embolisation. She underwent a repeat procedure with complete resolution of symptoms. A second patient had recurrence of symptoms at 12 months, but was subsequently lost to follow-up. CONCLUSION: Mid-term results of UAE for the treatment of symptomatic fibroids in our hospital indicate this to be a safe and effective therapeutic option.

PMID: 15726223 [PubMed - indexed for MEDLINE]

534. Cardiovasc Intervent Radiol. 2005 Mar-Apr;28(2):148-9.

Uterine artery embolization for fibroid disease is not experimental.

Worthington-Kirsch RL.

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Comment in:
Cardiovasc Intervent Radiol. 2005 Mar-Apr;28(2):150-2.

PMID: 15719184 [PubMed - indexed for MEDLINE]

535. Acta Obstet Gynecol Scand. 2005 Mar;84(3):303-5.

Post-embolization syndrome and complete expulsion of a leiomyoma after uterine artery embolization.

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PMID: 15715544 [PubMed - indexed for MEDLINE]

536. BJOG. 2005 Mar;112(3):321-5.

Pregnancy following uterine artery embolisation for symptomatic fibroids: a series of 26 completed pregnancies.

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OBJECTIVES: To evaluate the outcome of pregnancies after uterine artery embolisation for uterine fibroids. DESIGN: Retrospective analysis of pregnancy subsequent to uterine artery embolisation by one interventional radiologist. SETTING: A UK District General Hospital. POPULATION: Twenty-nine pregnancies in 671 women who had undergone uterine artery embolisation. METHODS: Cases were
identified by screening questionnaire and from the study database. Detailed information was collected by questionnaires, direct conversations with women and,
when necessary, from hospital records. MAIN OUTCOME MEASURES: Pregnancy outcome,
complications and neonatal outcomes. RESULTS: Of 26 completed pregnancies, detailed information was available for 24 and limited information for 2. Seven (27%) ended in miscarriage, there were two terminations and one ectopic pregnancy. Of 16 deliveries after 24 weeks, first and second trimester bleeding occurred in 40% and 33%, respectively, 4 (25%) had preterm deliveries and the caesarean section rate was 88%. Two (13%) women developed proteinuric hypertension and two others had preterm spontaneous rupture of the membranes. Fourteen of 16 cases were delivered by caesarean section. The rate of primary postpartum haemorrhage was 3/15 (20%). The mean birthweight of term babies was
3.39 kg (SD 0.64) and none required admission to neonatal intensive care. There

was one (6.7%) case of fetal growth restriction. CONCLUSION: Although this study is relatively small, there is an increase in delivery by caesarean section. There does not appear to be any other major excess obstetric associated risk when the demographics of the population in question is considered.

PMID: 15713147 [PubMed - indexed for MEDLINE]

537. Fertil Steril. 2005 Feb;83(2):487-90.

Uterine artery embolization: a pilot study in a rabbit model.

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Eight female adult ex-breeder New Zealand white rabbits underwent bilateral, unilateral, or superselective unilateral uterine artery embolization. The histopathologic changes after embolization in New Zealand white rabbits resemble those in humans, making rabbits an appropriate model for experimental uterine artery embolization.

PMID: 15705401 [PubMed - indexed for MEDLINE]

538. Radiology. 2005 Mar;234(3):948-53. Epub 2005 Jan 28.

Midterm results of uterine artery embolization for symptomatic adenomyosis: initial experience.

Pelage JP, Jacob D, Fazel A, Namur J, Laurent A, Rymer R, Le Dref O.

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Comment in:
Radiology. 2005 Sep;236(3):1111-2; author reply 1112.

PURPOSE: To prospectively evaluate the midterm results of uterine artery embolization for symptomatic adenomyosis. MATERIALS AND METHODS: The study protocol was approved by the institutional review board, and all participants gave written informed consent. Eighteen women (mean age, 44.3 years) with symptomatic adenomyosis were treated with bilateral embolization of the uterine arteries. The diagnosis of diffuse adenomyosis was based on heterogeneous abnormal myometrial echogenicity with myometrial cysts at ultrasonography (US) or
on enlarged junctional zone and myometrial cysts at magnetic resonance (MR)

imaging. Focal adenomyosis was diagnosed if there was a circumscribed nodular lesion mimicking intramural fibroid. All patients with associated uterine fibroids were excluded. Embolization was offered as an alternative to hysterectomy in all women. Clinical evaluation was made at regular intervals to assess patient outcome. Follow-up US or MR imaging was performed 6 months after embolization to assess uterine volume reduction. RESULTS: Bilateral uterine artery embolization was achieved in all but one woman by using polyvinyl alcohol particles or trisacryl microspheres. All women resumed normal menstruation after the procedure. After 6 months, 15 (94%) of 16 women reported improvement in menorrhagia. Follow-up images at 6 months depicted a slight decrease (mean, 15%) in uterine volume in 17 (94%) of 18 women. After 1 year, 11 (73%) of 15 women had improvement in menorrhagia, and eight (53%) of 15, complete resolution. After 2 years, five (56%) of nine women had complete resolution of menorrhagia. Eight (44%) of 18 women required additional treatment during follow-up for failure or recurrence; five women (28%) underwent hysterectomy. CONCLUSION: Even if short-term results of uterine artery embolization to treat adenomyosis appear encouraging, midterm results are disappointing, with only 55% of treated patients showing clinical improvement after 2 years.

PMID: 15681687 [PubMed - indexed for MEDLINE]

539. AJR Am J Roentgenol. 2005 Feb;184(2):555-9.

MRI of uterine necrosis after uterine artery embolization for treatment of uterine leiomyomata.

Torigian DA, Siegelman ES, Terhune KP, Butts SF, Blasco L, Shlansky-Goldberg RD.

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PMID: 15671379 [PubMed - indexed for MEDLINE]

540. AJR Am J Roentgenol. 2005 Feb;184(2):399-402.

Uterine artery embolization for pedunculated subserosal fibroids.

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OBJECTIVE: The objective of our study was to assess the outcomes of uterine artery embolization as a treatment for pedunculated subserosal fibroids, which we defined as those in which the diameter of the stalk was 50% narrower than the

diameter of the fibroid. MATERIALS AND METHODS: During a 72-month period, 196 consecutive women underwent embolization for treatment of symptomatic uterine fibroids that were confirmed on baseline sagittal and axial MR images. We identified those women with pedunculated subserosal fibroids treated with embolization and retrospectively assessed complications and out-comes of embolization using a serial questionnaire and MRI. RESULTS: Of the 196 women, 12 (age range, 34-48 years; mean age, 42.3 years) had one or more pedunculated subserosal fibroids. Fifteen pedunculated subserosal fibroids were identified on baseline MR images in the 12 patients. The mean tumor diameter was 8.3 cm (range,
4.0-15.5 cm; 95% confidence interval [CI], 6.7-9.9 cm). The mean stalk diameter was 3.1 cm (range, 2.0-5.5 cm; 95% CI, 2.5-3.7 cm). The follow-up period ranged from 5 to 51 months (mean, 18.1 months). No serious complications such as separation of the tumors from the uterus, torsion of the tumors, or infection occurred after embolization. Enhanced MR images obtained 1 week after embolization showed that complete devascularization of the tumors had been achieved in 73% (11/15) of the tumors. The rates of mean tumor volume reduction were 41% (range, 12-73%) 4 months and 53% (range, 31-85%) 1 year after embolization. The mean stalk diameter was 3.2 cm (range, 1.7-5.4 cm; 95% CI, 2.5-3.9 cm) 4 months and 2.9 cm (range, 1.1-4.2 cm; 95% CI, 1.8-3.9 cm) 1 year after embolization. No significant difference in stalk diameters was noted 4 months (p=0.617) or 1 year (p=0.963) after embolization compared with the diameters before the treatment. The rates of mean uterus volume reduction were 35% (range, 15-47%) 4 months and 47% (range, 35-60%) 1 year after embolization. Marked or moderate improvement in bulk-related symptoms was achieved in 100% (10/10) of the women at 4-month follow-up, 100% (5/5) at 1-year follow-up, and 100% (2/2) at 2-year follow-up. CONCLUSION: We found no serious complications after embolization for pedunculated subserosal fibroids with stalk diameters of 2 cm or larger. Successful outcomes can be obtained in such tumors.

PMID: 15671352 [PubMed - indexed for MEDLINE]

541. Coll Antropol. 2004 Dec;28(2):793-7.

Uterine artery embolization for the treatment of uterine fibroids.

Strinić T, Vulić M, Buković D, Masković J, Hauptman D, Jelincić Z.

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Uterine artery embolization can be regarded as a less invasive procedure for the treatment of fibroids compared with myomectomy, hysterectomy, and laparoscopic
myolysis. The aim of this study was the evaluation of safety and efficacy of uterine artery embolization and of womens' opinion about this treatment. After gynecological examination sixty-nine premenopausal women underwent uterine artery
embolization. All procedures but four were technically successful; three women

underwent unilateral embolization because of vascular malformation and one of them had an allergic reaction to contrast medium. Of the 69 patients: 58 went home the day after embolization, and 11 within first week. The follow-up examinations after 3, 6 and 12 month showed a significant reduction of uterine and fibroid volume with significant improvement of bleeding. Therefore, according to this report, uterine artery embolization is a successful, minimal invasive treatment of myoma that preserves the uterus and requires shorter hospitalization and recovery times than surgery.

PMID: 15666613 [PubMed - indexed for MEDLINE]

542. BJOG. 2005 Jan;112(1):122-3.

Uterus and bladder necrosis after uterine artery embolisation for postpartum haemorrhage.

Porcu G, Roger V, Jacquier A, Mazouni C, Rojat-Habib MC, Girard G, Pellegrin V, Bartoli JM, Gamerre M.

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PMID: 15663413 [PubMed - indexed for MEDLINE]

543. Rofo. 2005 Jan;177(1):89-98.

[Transarterial embolization for uterine fibroids: clinical success rate and results of magnetic resonance imaging]

[Article in German]

Kröncke TJ, Gauruder-Burmester A, Scheurig C, Gronewold M, Klüner C, Fischer T, Klessen C, Rudolph J, Siara K, Zimmermann E, Hamm B.

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PURPOSE: To analyze the clinical success rate and the findings of magnetic resonance imaging (MRI) after uterine artery embolization of symptomatic leiomyomas (fibroids) of the uterus. MATERIALS AND METHODS: This is a prospective
single-center case study of 80 consecutively treated patients, followed for 3 - 6 months (group I), 7 - 12 months, (group II), and 13 - 25 months (group III). MRI was used to determine the uterine volume and size of the dominant leiomyoma. Symptoms and causes requiring repeat interventions were analyzed. RESULTS: Significant ($p < 0.01$) volume reduction of the uterus (median: 34.95 % confidence interval [CI]: 30.41 - 41.76 %) and dominant leiomyoma (median: 52.07 %, CI: 47.71 - 61.57 %) was found. The decrease in uterine volume (I-III: 22.68 %, 33.56

%, 47.93 %) and dominant leiomyoma volume (I-III: 41.86 %, 62.16 %, 73.96 %) progressed with the follow-up time. Bleeding resolved significantly (p < 0.0001) in all three follow-up groups (groups I-III: 92.86 %, 95.23 %, 96.67 %). Furthermore, urinary frequency (groups I-III: 70 %, 75 %, 82.35 %) and sensation of pelvic pressure (groups I-III: 42.86 %, 60 %, 93.75 %) improved, which was statistically significant in group III (p < 0.01). The number of leiomyomas correlated (p < 0.05) with improvement of the bleeding and the pelvic pressure. Repeat therapy was necessary for complications in four patients (5 %) and for therapeutic failure in three patients (3.8 %). Permanent amenorrhea was observed in four patients (5 %) of age 45 years or older. CONCLUSION: Uterine artery embolization of uterine leiomyomas has a high clinical success rate with an acceptable incidence of complications and repeat interventions.

PMID: 15657826 [PubMed - indexed for MEDLINE]

544. J Reprod Med. 2004 Dec;49(12):986-8.

Successful management of cervical pregnancy by selective uterine artery embolization: a case report.

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BACKGROUND: Cervical pregnancy is potentially associated with life-threatening hemorrhage and often requires hysterectomy to stop the bleeding. Conservative management is becoming more common as treatment of cervical pregnancy. CASE: A
case of cervical pregnancy presented with a severe vaginal hemorrhage at 6 weeks' gestation. The patient was conservatively managed with selective bilateral uterine artery embolization (UAE). The vaginal bleeding stopped completely after UAE. The clinical course was uneventful and serum human chorionic gonadotropin decreased immediately. The cervical mass gradually shrank and disappeared on the 31st day after UAE. UAE. CONCLUSION: This was the second case of cervical pregnancy successfully treated with only UAE.

PMID: 15656217 [PubMed - indexed for MEDLINE]

545. Fertil Steril. 2005 Jan;83(1):220-2.

A uterine cavity-myoma communication after uterine artery embolization: two case reports.

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OBJECTIVE: To report two cases of uterine cavity-myoma fistula as a medical complication after uterine artery embolization. DESIGN: Case report. SETTING: Women's Medical Center/Viscomi Institute, Sao Paulo, Brazil. PATIENT(S): Two patients presenting with symptomatic myomatous uterus: a 40-year-old woman with
increased abdominal volume and hypermenorrhea, and a 42-year-old woman with pelvic pain and infertility. INTERVENTION(S): Uterine artery embolization, hysteroscopic follow-up, and laparoscopic myomectomy. MAIN OUTCOME MEASURE(S):
Hysteroscopic follow-up after uterine artery embolization. RESULT(S): The patients underwent uterine artery embolization. In the months that followed, a subsequent surgical hysteroscopic follow-up was performed to eliminate the necrotic material of the degenerated myomas. The two patients presented the same
outcome 1 year after the uterine artery embolization had been performed: a communication between the uterine cavity and a degenerated myoma. Laparoscopic
correction of the uterine wall defect was performed afterward. CONCLUSION(S): Because embolization is a growing option for the treatment of leiomyoma, it is important that potential complications be reported, especially if the patients want to become pregnant. The natural history of the fistula and its consequences are unknown, and physicians should be aware of these complications. Hysteroscopic
follow-up was important in the diagnosis of the two cases.

PMID: 15652915 [PubMed - indexed for MEDLINE]

546. Fertil Steril. 2005 Jan;83(1):1-23.

Laparoscopic myomectomy for symptomatic uterine myomas.

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Comment in:
Fertil Steril. 2005 Aug;84(2):548-9; author reply 549-50.

OBJECTIVE: To evaluate the safety, efficacy, and techniques of laparoscopic myomectomy as treatment for symptomatic uterine myomas. DESIGN: Medline literature review and cross-reference of published data. RESULTS: Results from randomized trials and clinical series have shown that laparoscopic myomectomy provides the advantages of shorter hospitalization, faster recovery, fewer

adhesions, and less blood loss than abdominal myomectomy when performed by skilled surgeons. Improvements in surgical instruments and techniques allows for safe removal and multilayer myometrial repair of multiple large intramural myomas. Randomized trials support the use of absorbable adhesion barriers to reduce adhesions, but there is no apparent benefit of presurgical use of GnRH agonists. Pregnancy outcomes have been good, and the risk of uterine rupture is very low when the myometrium is repaired appropriately. CONCLUSION(S): Advances in surgical instruments and techniques are expanding the role of laparoscopic myomectomy in well-selected individuals. Meticulous repair of the myometrium is essential for women considering pregnancy after laparoscopic myomectomy to minimize the risk of uterine rupture. Laparoscopic myomectomy is an appropriate alternative to abdominal myomectomy, hysterectomy, and uterine artery embolization for some women.

PMID: 15652881 [PubMed - indexed for MEDLINE]

547. Clin Radiol. 2005 Jan;60(1):116-22.

Comparison of particle penetration with non-spherical polyvinyl alcohol versus trisacryl gelatin microspheres in women undergoing premyomectomy uterine artery embolization.

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AIM: The purpose of this study was to compare the depth of vascular penetration of non-spherical polyvinyl alcohol (PVA) versus trisacryl gelatin microspheres (MS) in women undergoing uterine artery embolization (UAE) immediately before transabdominal myomectomy. MATERIALS AND METHODS: A total of 17 patients who had been referred for embolization before myomectomy underwent bilateral uterine artery embolization using either 355-500 microm PVA (group A) or 700-900 microm MS (group B). The depth of penetration of the particles was assessed by identifying their presence and location in the resected specimen. RESULTS: Of the 17 women enrolled in this study, 10 were in group A and 6 in group B. One woman underwent embolization using both types of particle and was excluded from the analysis. Embolic particles were significantly (p = 0.048) more frequently located within the fibroid (4/6, 67%) in Group B than Group A (1/10, 10%). Particles were also identified in the perifibroid tissues in 4/6 (67%) in Group B and 4/10 (40%) in Group A, with no statistical difference. There were no procedural complications. CONCLUSION: MS particles (700-900 microm) penetrate significantly deeper into leiomyomata compared with non-spherical PVA (355-500 microm). MS may therefore confer advantages in UAE, as they may more specifically target the fibroid, allowing an earlier end-point to embolization and minimizing

ischaemic damage to normal myometrium and ovaries.

PMID: 15642302 [PubMed - indexed for MEDLINE]

548. Obstet Gynecol. 2005 Jan;105(1):67-76.

Pregnancy after uterine artery embolization for leiomyomata: the Ontario multicenter trial.

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Comment in:
Can Fam Physician. 2007 Feb;53(2):293-5.
Obstet Gynecol. 2005 Jul;106(1):195-6; author reply 196.

OBJECTIVE: To report on pregnancies and deliveries occurring in a large cohort of women who underwent uterine artery embolization instead of surgery for symptomatic leiomyomata. METHODS: A total of 555 women underwent uterine embolization in a multicenter clinical trial. The primary embolic agent was 355-500 microm polyvinyl alcohol particles with treatment end-point as bilateral stasis in the uterine arteries. Women desiring pregnancy were informed of the uncertain effect of embolization on fertility and pregnancy. Average age at embolization was 43 years (range 18-59 years). Thirty-one percent were younger than age 40 years. Women were followed up prospectively by telephone, and obstetric records of the women who conceived were reviewed. RESULTS: Twenty-one women of average age 34 years (range 27-42 years) conceived, (3 of these twice), and 13 women were nulliparous. Twenty-three of the 24 pregnancies were conceived spontaneously (1 woman had in vitro fertilization). There were 4 spontaneous abortions (16.7%, 95% confidence interval 5.4-41.9%) and 2 elective pregnancy terminations. Fourteen of the 18 live births were full term and 4 were preterm. There were 9 vaginal deliveries and 9 cesarean deliveries, 4 of which were elective. Abnormal placentation occurred in 3 cases, all nulliparas (12.5% 95% confidence interval 3.1-36.3%). Two cases developed placenta previa (1 had a clinical partial accreta) and the third developed a placenta membranacea with accreta resulting in cesarean hysterectomy. Three postpartum hemorrhages all secondary to placental abnormalities occurred. Four newborns were small for gestational age (< or = 5th percentile); 2 of these pregnancies were complicated by gestational hypertension. CONCLUSION: Women are able to achieve pregnancies after uterine artery embolization, and most resulted in term deliveries and appropriately grown newborns. Close monitoring of placental status, however, is recommended.

PMID: 15625144 [PubMed - indexed for MEDLINE]

549. Int J Gynaecol Obstet. 2005 Jan;88(1):67-8.

Uterine artery embolization in HIV positive patients.

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PMID: 15617714 [PubMed - indexed for MEDLINE]

550. W V Med J. 2004 Sep-Oct;100(5):182-4.

Team approach with gynecologists taking the lead role in selecting patients for uterine artery embolization.

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Uterine Artery Embolization (UAE) has become an increasingly popular treatment alternative to hysterectomy in the management of symptomatic uterine fibroids. Despite its growing promise, UAE has yet to be consistently offered by gynecologists to their qualified patient candidates. At the West Virginia University School of Medicine, Charleston Division, and Charleston Area Medical Center's Vascular Center of Excellence, we have implemented a team approach with
gynecologists taking a pivotal role in the selection, co-management, and follow up of patients receiving UAE for the treatment of their uterine fibroids. We have developed a list of indications for UAE treatment in patients using our experience plus a literature search using Medline with keywords "Uterine Artery Embolization" and "Uterine Fibroids/Myomas."

PMID: 15617462 [PubMed - indexed for MEDLINE]

551. J Vasc Interv Radiol. 2004 Dec;15(12):1483-5.

Late leiomyoma expulsion after uterine artery embolization.

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A case of late expulsion of a leiomyoma after uterine artery embolization (UAE) is reported in a 49-year-old woman who underwent UAE for a huge (13 cm x 12 cm; 1,061 cm(3)) bleeding- and bulk-related intramural leiomyoma diagnosed with ultrasonography. Free-flow embolization was performed with 150-400-microm polyvinyl alcohol particles and absorbable particle sponge. Symptoms and myoma size were successfully controlled until 44 months, at which time the patient reported vaginal discharge. A 7-cm necrotic, partly submucosal leiomyoma was detected. The patient refused hysterectomy and spontaneously expelled the leiomyoma through the cervix 6 months later. In conclusion, UAE necessitates long-term follow-up and women should be warned of late complications.

PMID: 15590809 [PubMed - indexed for MEDLINE]

552. J Vasc Interv Radiol. 2004 Dec;15(12):1457-62.

Evaluation of magnetic navigation in an in vitro model of uterine artery embolization.

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PURPOSE: To compare steering of a novel magnetic guide wire with a standard 0.014-inch guide wire within a vascular phantom. MATERIALS AND METHODS: The magnetic guiding system (MGS) was composed of two permanent magnets on each long
side of the fluoroscopy table generating a 0.1-T magnetic field, and a C-arm angiography system. The magnetic field was created according to vectors drawn onto two radiographic projections. Consequently, the tip of the intravascular guide wire containing a permanent magnet was deflected parallel to the magnetic field. Ninety-six catheterizations were performed in water-filled polyvinyl chloride tubes imitating the arterial tree of a female pelvis. This vascular phantom resembled a total of 12 uterine arteries with three different calibers (inner diameters: 1.1 mm, 1.7 mm, and 4.2 mm). Fluoroscopy and procedure times were measured to compare magnetic-assisted and conventional catheterization. RESULTS: Catheterization to every predefined target was successful for all attempts with both guiding techniques. The fluoroscopy time during magnetic navigation was significantly shorter in vessels of all three sizes compared with conventional navigation (means of 19.6 sec, 5.9 sec, and 4.8 sec vs. 48.8 sec, 49.8 sec, and 32.7 sec for small, medium, and large vessels, respectively; P < .05). Procedure times with use of the magnetic guide wire (149.6 sec, 52.1 sec, and 39.9 sec) were not significantly different than those with conventional navigation (60.4 sec, 68.6 sec, and 47.7 sec). CONCLUSIONS: The MGS enables exact endovascular navigation with shorter fluoroscopy time in an in vitro model. The

MGS may offer opportunities to reduce x-ray exposure to patients and staff.

PMID: 15590805 [PubMed - indexed for MEDLINE]

553. J Vasc Interv Radiol. 2004 Dec;15(12):1423-9.

Superior hypogastric nerve block for pain control in outpatient uterine artery embolization.

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**PURPOSE: To assess the efficacy of the superior hypogastric nerve block (SHNB) in permitting uterine artery embolization (UAE) to be performed as a routine outpatient procedure. MATERIALS AND METHODS: One hundred thirty-nine patients who
underwent UAE in a prospective single-arm clinical trial in an academic institution underwent SHNB from an anterior abdominal approach to control acute postprocedural pain, in addition to conventional conscious sedation. They were discharged and prescribed one of two drug combinations started during the in-hospital recovery period. Regimen A included short-acting morphine tablets and indomethacin rectal suppositories and regimen B included long-acting morphine tablets for baseline pain supplemented with short-acting morphine tablets for breakthrough pain, and naproxen rectal suppositories. All patients were contacted by phone on the third and fifth postprocedural days and their peak pain experience was recorded on a scale of 0 to 10. RESULTS: All patients were able to be discharged the day of the procedure. Seven patients (5%) returned to the hospital because of pain. One was discharged after undergoing a second SHNB and four were discharged after receiving intravenous analgesics; two required longer admission for intravenous analgesia. The mean (+/-SD) peak pain score in the first 5 days after the procedure for all patients was 4.8 +/- 2.6. There was a significant difference between regimens A (mean pain score, 5.7 +/- 2.2) and B (mean pain score, 2.7 +/- 2.5; Mann-Whitney, 5.94; P < .01). CONCLUSION: The addition of SHNB to the more conventional post-UAE pain management methodology
enhances pain control, enabling the procedure to be offered with minimum pain on a routine outpatient basis.**

PMID: 15590800 [PubMed - indexed for MEDLINE]

554. J Vasc Interv Radiol. 2004 Dec;15(12):1415-21.

Risk of intrauterine infectious complications after uterine artery embolization.

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PURPOSE: To identify risk factors for the development of intrauterine infection following uterine artery embolization. MATERIALS AND METHODS: A retrospective review of uterine artery embolizations (UAE) performed for the treatment of symptomatic fibroids from January 2000 to July 2003 was conducted. With logistic regression and the Fisher exact test, multiple variables were analyzed as predictors for intrauterine infectious complications requiring medical and/or surgical therapy, including the use of preprocedural antibiotics, embolic agent used, quantity of embolic material, location of fibroids (submucosal, nonsubmucosal), and size and location of the dominant fibroid. RESULTS: A total of 414 UAE procedures were performed in 410 patients with a technical success rate of 99%. Average age of the patient cohort was 42.8 years (SD, 5.8 years). One hundred forty-eight patients (36.1%) had submucosal fibroids or fibroids projecting submucosally, 262 patients (63.9%) had nonsubmucosal fibroids. Intrauterine infectious complications requiring intravenous antibiotic therapy and/or surgery occurred in five patients (1.2%). A total of five infectious complications requiring therapy occurred in the submucosal group (3.4%) and none in the nonsubmucosal group. Patients within the submucosal group were more likely
to develop intrauterine infectious complications than patients with nonsubmucosal fibroids based on univariate analysis (P = .006) but with logistic regression, the association was not significant (P = .079). No significant difference with embolic agent, quantity of embolic particles, use of preprocedure antibiotics, or size of or location of the dominant fibroid was found. CONCLUSION: No specific risk factor for intrauterine infection following UAE was identified in this study. Infection after UAE is rare and appears to be a sporadic occurrence. Nevertheless, close surveillance is warranted in all women following UAE given the potential morbidity of this complication.

PMID: 15590799 [PubMed - indexed for MEDLINE]

555. Gynecol Obstet Fertil. 2004 Dec;32(12):1057-63.

[Uterine fibroids. Embolization: state-of-the-art]

[Article in French]

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Comment in:
Gynecol Obstet Fertil. 2005 May;33(5):363.
Gynecol Obstet Fertil. 2005 May;33(5):363-4.
Gynecol Obstet Fertil. 2005 May;33(5):364-6.

Uterine artery embolization is a radiological procedure consisting in occluding the perifibroid arterial plexus to induce fibroid ischemia. To date, with more than 50,000 women treated worldwide, embolization seems to be a valuable alternative to hysterectomy and multiple myomectomies particularly in women with severe menorrhagia. Embolization should ideally be performed in case of intramural or submucosal uterine fibroids. It must be preferrably realized in case of multiple fibroids, be they intramural or submucosal (when hysteroscopic resection is not feasible). Complication rates are low if large calibrated microspheres are used to perform embolization and if pedunculated subserosal fibroids are excluded. In case of associated adenomyosis clinical recurrence seems more frequent. The role of embolization as an alternative to a single myomectomy, particularly in young women desiring future pregnancy remains a matter of debate and should be evaluated with clinical randomized trials. Pluridisciplinary management of women is the key to a widespread acceptance of uterine artery embolization in the management of uterine fibroids.

PMID: 15589783 [PubMed - indexed for MEDLINE]

556. Nephrologie. 2004;25(7):287-92.

[Pregnancy and hemodialysis]

[Article in French]

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Pregnancy is a rare occurrence in patients on chronic hemodialysis (CHD). The rate of successful pregnancies amounts to almost 60%, thanks to modifications of the dialysis schedule and a specifically adapted obstetrical and neonatal management. We report on seven pregnancies occurring between 1995 and 2001 in six
women with a mean age of 32 years (22-39 years), on HD for a mean period of 36 months (12-96 months). Maternal and fetal complications, and the long-term outcome of mothers and children are reported, and the collaborative approaches adopted by obstetrician, pediatrician and nephrologist are discussed. The frequency and length of HD was systematically increased. One patient chose to terminate her pregnancy at 20 weeks of gestation. The mean gestational age for the six other pregnancies was 31 weeks (24-34 weeks) with an average weight at birth of 1495 g (660-1920 g). One neonate born at 24 weeks died 2 days following delivery. One patient was treated with uterine artery embolization for

post-partum haemorrhage. Pediatric evaluation of the five children, who were followed up for a period ranging between 2.5 to 5.5 years, showed a good long-term outcome. In conclusion, pregnancy needs not be counterindicated or systematically terminated in patients on CHD, particularly if transplantation is not possible, if the patient refuses it, or if she is relatively old and there is a long waiting period before transplantation.

PMID: 15584638 [PubMed - indexed for MEDLINE]

557. Cardiovasc Intervent Radiol. 2004 Nov-Dec;27(6):600-6. Epub 2004 Aug 12.

FEMIC (Fibromes Embolisés aux MICrosphères calibrées): uterine fibroid embolization using tris-acryl microspheres. A French multicenter study.

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PURPOSE: A French multicenter registry was set up to confirm the safety and efficacy of large calibrated tris-acryl gelatin microspheres for embolization of symptomatic fibroids. METHODS: Technical recommendations included embolization
using large microspheres (>500 microm) with no secondary embolization agent. Postprocedural pain, clinical improvement and adverse events were prospectively evaluated during a follow-up period of at least 6 months. RESULTS: Eighty-five women complaining of fibroid-related symptoms entered the study. In seven women,
a secondary embolization agent was used in addition to microspheres. Complete resolution of menorrhagia was achieved in 84% of women at 24 months and significant uterine and fibroid volume reductions were noted after 6 months (37% and 73%, respectively). Three women experienced definitive amenorrhea (4%) and two women required hysteroscopic resection of a fibroid. Eight women were treated
by hysterectomy because of treatment failure. In seven of these women, treatment failure was explained by an additional cause of symptoms including diffuse adenomyosis, endometrial hyperplasia or ovarian artery supply to the fibroids. CONCLUSION: Limited uterine artery embolization using large microspheres has good
clinical success rate with low postprocedural pain and complications. Women can expect excellent midterm results with a high level of symptom control and significant fibroid volume reduction. Confidence in the end-point recommended here may require the experience of several cases.

PMID: 15578135 [PubMed - indexed for MEDLINE]

558. Zentralbl Gynakol. 2004 Dec;126(6):355-8.

[Current state of uterine artery embolization for treating symptomatic leiomyomas of the uterus]

[Article in German]

Gauruder-Burmester A, Kröncke TJ, Vorwerks D, Tunn R, Hamm B.

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**A number of new approaches in treating symptomatic leiomyomas of the Uterus have
been introduced in recent years. Only little scientific data is available an percutaneous or laparoscopic myolysis using focussed ultrasound, laser, or coagulation guided by magnetic resonance imaging or an laparoscopic ligation of the uterine vessels by means of bipolar coagulation or clipping. Established therapeutic options are limited by a number of disadvantages, except for total laparoscopic hysterectomy with morcellation. The latter is a minimally invasive procedure that spares important pelvic structures and thereby reduces the risk of prolapse and is associated with rapid recovery of the patients. Another minimally invasive therapeutic approach with preservation of the uterus is transarterial catheter embolization of uterine leiomyomas in which the vessels supplying the leiomyomas, in particular the branches of the uterine artery, are partly occluded by injection of synthetic (polyvinyl) beads. Uterine artery embolization has
since developed into a good alternative to other therapeutic options. Studies report cure rates ranging from 77-93 %.**

PMID: 15570549 [PubMed - indexed for MEDLINE]

559. Ai Zheng. 2004 Nov;23(11 Suppl):1405-8.

[Comparison of pelvic transarterial chemoembolization with lipiodol ultra-fluid carboplatin and transarterial carboplatin through experiment in dogs]

[Article in Chinese]

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**BACKGROUND & OBJECTIVE: Transarterial chemoembolization, based on transarterial
chemotherapy, is a new treatment for malignant neoplasms. This study was to investigate distribution of platinum (Pt) in blood and uterine tissue after infusing different carboplatin arterially. METHODS: Fourteen female dogs were randomly divided into 2 groups: embolizational group (group A, 7 dogs),and chemotherapy group (group B, 7 dogs). In group A, carboplatin (12 mg/kg), mingled**

with lipidol ultra-fluid (0.2 ml/kg), was injected into dogs' iliac arteries. In group B, carboplatin (12 mg/kg), dissolved in 5% glucose, was injected into the same arteries. The uterine tissues and blood samples were collected at different time points, concentrations of Pt in samples were measured by atomic absorption method. RESULTS: Peak concentration of Pt in uterine tissues of group A was (215.0+/-17.6) microg/g, that of group B was (211.3+/-40.1) microg/g (P >0.05), the peak appeared at 0 min in both groups. Area under concentration-time curve (AUC) of Pt in tissues of group A was (13.9+/-3.9) mg x min x g(-1), significantly larger than that of group B (5.9+/-0.6) mg x min x g(-1). Peak concentration of Pt in plasma of group A was (8.7+/-12.5) microg/g, that of group B was (16.7+/-3.6) microg/g. AUC(0-240 min) was (0.5+/-0.1) mg x min x g(-1) in group A,and (1.2+/-0.4) mg x min x g(-1) in group B (P< 0.05). CONCLUSION: Compared with arterial chemotherapy, arterial chemo- embolization may result in higher Pt concentration in local area, and lower Pt concentration in plasma, it may reduce the systemic toxicities, and enhance local effect on tumor.

PMID: 15566645 [PubMed - indexed for MEDLINE]

560. J Am Assoc Gynecol Laparosc. 2004 Aug;11(3):348-52.

Ovarian function after uterine artery embolization and hysterectomy.

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STUDY OBJECTIVE: To evaluate the effect of uterine artery embolization (UAE) and hysterectomy on ovarian function. DESIGN: Prospective case control study (Canadian Task Force classification II-2). SETTING: University teaching hospital. PATIENTS: Eighty-four healthy premenopausal women with symptomatic uterine myoma(s) undergoing UAE or hysterectomy. INTERVENTION: Patients had blood drawn
to measure follicle-stimulating hormone (FSH), luteinizing hormone (LH), and estradiol (E2) levels and underwent transvaginal ultrasound to measure volume of the myoma(s) and uterus on cycle day 3 before the procedures. These measurements
were repeated 3 and 6 months after treatment. MEASUREMENTS AND MAIN RESULTS: The
main outcome was the differences in serum FSH, LH, E2, and ultrasound findings before and after UAE or hysterectomy. Of the 68 patients who underwent UAE and 16
who underwent hysterectomy, 48 and 13 respectively, completed 6-month follow-up.
The mean age of the patients in the UAE group was 44.9 +/- 3.8 years and 43.7 +/- 5.6 years in the hysterectomy group. There was no significant difference in serum FSH before (8.9 +/- 0.7 IU/L) and 6 months after UAE (9.9 +/- 1.0 IU/L), and between the baseline (10.4 +/- 1.8 IU/L) and 6 months posthysterectomy (7.8 +/- 1.8 IU/L). The uterine volume 6 months after UAE (361 +/- 50 mL) was

significantly smaller than before UAE(538 +/- 38mL; p =.005, 95% CI 44-241). Compared with baseline (154 +/- 20 mL), the dominant myoma volume was smaller at
6 months after UAE (97 +/- 16 mL; p <.05, 95% CI 1.57-62). CONCLUSION: Uterine artery embolization is associated with a significant reduction in myoma and uterine volume. Ovarian function at 6 months, as indicated by day 3 FSH levels, is not affected by UAE or hysterectomy.

PMID: 15559347 [PubMed - indexed for MEDLINE]

561. Rozhl Chir. 2004 Aug;83(8):360-4.

[Cooperation between a surgeon and an interventional radiologist in cases of internal bleeding]

[Article in Czech]

Voboril Z, Krajina A, Lojík M, Raupach J, Voboril R, Jandík P.

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INTRODUCTION: Internal bleeding still remains a serious condition, which must be urgently diagnosed and treated. In the Faculty Hospital in Hradec Králové the diagnosis of the internal bleeding source and its consequent treatment is managed under cooperation between a surgeon and an interventional radiologist. A CASE-REVIEW: In the case-review section of this report, a total number of five patients with serious cases of internal bleeding, the source of which was diagnosed and treated under cooperation between the above mentioned specialists
is presented. The patients concerned suffered from the following: a trauma to the liver parenchyma, posttraumatic arterioportal shunts, an intraheparic aneurysm, a relaps of the uterine carcinoma with hemorrhaging into the colon and the vagina, bleeding into retroperitoneum. In all the cases the lesion was successfully treated and the hemorrhage was managed. DISCUSSION: Exact location of the bleeding artery during an arteriogragraphic examination is a prerequisite of a successful treatment of the condition. Both, the absorbable materials which allow gradual recanalization of the embolized vessel, and the non-absorbable materials may be used to conduct embolization of the affected vessel. It is necessary to haemodynamically stabilize the patient prior to the procedure. CONCLUSION: In many cases, the cooperation between a surgeon and an interventional radiologist allows for the source of the internal bleeding to be located and managed. It is indicated in certain cases of benign and malignant disorders and in some cases of the parenchymatose organs trauma.

PMID: 15552006 [PubMed - indexed for MEDLINE]

562. Int J Gynaecol Obstet. 2004 Dec;87(3):249-51.

Uterine artery embolization for the treatment of symptomatic fibroids.

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PMID: 15548400 [PubMed - indexed for MEDLINE]

563. Am J Obstet Gynecol. 2004 Nov;191(5):1733-5.

Leiomyosarcoma in a premenopausal patient after uterine artery embolization.

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**A premenopausal 45-year-old woman underwent uterine artery embolization for suspected symptomatic leiomyomata. Fourteen months later, with renewed symptoms
and a new pelvic mass, metastatic leiomyosarcoma was diagnosed. A lack of clinical response to a technically successful embolization should alert care providers that further evaluation and/or therapy is needed.**

PMID: 15547555 [PubMed - indexed for MEDLINE]

564. Am J Obstet Gynecol. 2004 Nov;191(5):1713-5.

Myoma expulsion after uterine artery embolization: complication or cure?

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A 54-year-old woman had an expulsed myoma 10 weeks after uterine artery embolization. After treatment with antibiotics and a small surgical intervention, she recovered completely without any sign of myomatous disease afterwards. Patients should be informed about the possibility of expulsion. Expulsion of myomas after uterine artery embolization occurs relatively frequently and may be just one of the ways to attain cure.

PMID: 15547547 [PubMed - indexed for MEDLINE]

565. Eur Radiol. 2005 Jun;15(6):1168-72. Epub 2004 Oct 22.

Uterine artery embolisation for uterine fibroids using a 4F Rosch inferior mesenteric catheter.

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PURPOSE: To evaluate in a prospective study the use of a 4F Rosch inferior mesenteric (RIM) catheter for uterine artery embolisation (UAE). MATERIALS AND METHODS: UAE was performed in 72 women over a 37-month period. A 4F RIM braided
J-curve 65-cm catheter was used in combination with an angled hydrophilic 150 cm, 0.035" flexible tip guide-wire to catheterise the horizontal portion of both uterine arteries (UA) from a right common femoral artery (CFA) approach. Technical success was defined as successful catheterisation and embolisation of both uterine arteries. Fluorosocpic and procedure times were recorded. RESULTS: Mean subject age=43.7 years (range=25-57 years). Technical success was 98.6% (n=71/72). A single approach via the right CFA was used in 88.9% (n=64/72) and a bilateral CFA approach in 11.1% (n=8/72). Bilateral uterine artery catheterisation using a single 4F RIM catheter via the right CFA approach was successful in 79.2% (n=57/72). Microcatheters were used in 2.8% of patients (n=2/72). Mean fluoroscopic time=13.6+/-5.3 min (mean+/-SD). Mean procedure time=44.2+/-16.5 min. CONCLUSION: High technical success rate for UAE is possible using a single 4F RIM catheter via a unilateral right CFA approach, which obviates the need for Waltman loop formation, reversed curve catheters and complex suture-catheter arrangements.

PMID: 15538579 [PubMed - indexed for MEDLINE]

566. Obstet Gynecol. 2004 Nov;104(5 Pt 2):1189-92.

Delayed hemorrhage after cervical conization unmasking severe factor XI deficiency.

Kim SH, Srinivas SK, Rubin SC, Freedman LJ, Gray HJ.

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BACKGROUND: Factor XI deficiency, a rare bleeding disorder found most commonly in
patients of Ashkenazi Jewish background, may be present in patients with a

history of abnormal bleeding after elective surgery. CASE: A patient of Ashkenazi Jewish descent presented 12 days after cervical conization for adenocarcinoma in situ with severe vaginal bleeding requiring multiple transfusions and uterine artery embolization. After a thorough workup, a severe factor XI deficiency was found. The patient ultimately required modified radical hysterectomy for treatment of early cervical cancer. With appropriate perioperative management, the patient underwent abdominal surgery without further bleeding complications. CONCLUSION: Factor XI deficiency can present with severe bleeding episodes after elective surgery. Adequate preoperative assessment and perioperative management
are necessary to prevent bleeding complications in these patients.

PMID: 15516448 [PubMed - indexed for MEDLINE]

567. Obstet Gynecol. 2004 Nov;104(5 Pt 2):1161-4.

Necrotic leiomyoma and gram-negative sepsis eight weeks after uterine artery embolization.

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BACKGROUND: Uterine artery embolization for symptomatic leiomyomata is generally
safe, but rare life-threatening complications, including sepsis, can result.
CASE: A 39-year-old woman with primary antiphospholipid syndrome, who was on chronic warfarin therapy, underwent uterine artery embolization for severe menorrhagia and a 12-cm intracavitary leiomyoma. Eight weeks postembolization, the patient, who had been essentially asymptomatic, presented in septic shock from gram-negative anaerobic bacteria. She underwent hysterectomy and bilateral salpingo-oophorectomy for a large infarcted necrotic leiomyoma and partial uterine necrosis. The patient's 8-day hospitalization required extended care in the intensive care unit and blood transfusion and resulted in surgical menopause in a patient who is not a candidate for hormone therapy. CONCLUSION: Uterine artery embolization is a procedure not without significant risks. From published case reports, it appears that patients most at risk for severe infection of an infarcted leiomyoma after this procedure are those with a large dominant leiomyoma.

PMID: 15516437 [PubMed - indexed for MEDLINE]

568. Obstet Gynecol. 2004 Nov;104(5 Pt 2):1159-61.

Buttock necrosis after uterine artery embolization.

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BACKGROUND: Uterine artery embolization is an increasingly popular alternative to hysterectomy or myomectomy for treatment of symptomatic uterine leiomyomata. CASE: A woman with a symptomatic uterine fibroid developed 2 areas of full-thickness necrosis on her right buttock following uterine artery embolization. After surgical debridement, healing occurred over 14 weeks. CONCLUSION: Buttock necrosis is a possible complication of nontarget embolization during uterine artery embolization.

PMID: 15516436 [PubMed - indexed for MEDLINE]

569. J Obstet Gynaecol Can. 2004 Oct;26(10):899-911, 913-28.

Uterine fibroid embolization (UFE).

[Article in English, French]

Lefebvre GG, Vilos G, Asch M; Society of Obstetricians and Gynaecologists of Canada; Canadian Association of Radiologists; Canadian Interventional Radiology Association.

OBJECTIVE: To help direct the organized and effective implementation of uterine fibroid embolization into clinical practice in Canada. OPTIONS: This document is restricted to the management of uterine fibroid embolization as performed by the radiologists utilizing a trans-femoral artery approach with arteriography followed by vessel embolization. OUTCOMES: Uterine fibroid embolization has been evaluated in terms of patient satisfaction, risks of complications, risks in subsequent pregnancy and rate of hysterectomy within a few months of the procedure. As the procedure is relatively new, data on long-term outcomes are not available. EVIDENCE: Published opinions of experts, supplemented by evidence from clinical trials where appropriate. VALUES: The quality of the evidence is rated using the criteria described by the Canadian Task Force on the Periodic Health Examination. BENEFITS, HARMS, AND COSTS: For women presenting with symptomatic uterine fibroids who are candidates for UFE, there is often a benefit to avoiding an abdominal surgery. The risks of the UFE procedure, possible complications, and short- and long-term prognosis must be measured on an individual basis against the well-studied surgical alternatives. Patient preference is an important component of this evaluation. The non-material costs of ongoing symptoms from the fibroids are difficult to measure and use comparatively against the cost of hospitalization and treatment. In evaluating costs of UFE, the calculations

should take into consideration the cost of managing occasional complications including subsequent hysterectomy. The cost of myomectomy or hysterectomy will vary largely depending on technique used and length of hospital stay. RECOMMENDATIONS: 1. Women considering treatment of fibroids should be counselled
that while the early results of uterine artery embolization are encouraging, no long-term data exist. (II-2-B) 2. UFE should only be considered for women with symptomatic or problematic fibroids who might otherwise be advised to have surgical treatment. (III-A) 3. UFE as a treatment for fibroids in patients
wishing to preserve their fertility should be undertaken with full disclosure to the patient about the limitations of such a procedure and the lack of existing data regarding future fertility and pregnancy outcomes. (III-C) 4. UFE is contraindicated in women who have evidence of current genitourinary infection and/or malignancy. (II-2-B) 5. Women who choose UFE as an alternative to hysterectomy should be counselled regarding the risk of major complications f UFE where hysterectomy may be urgently required and potentially lifesaving. In view of this small but important risk, UFE is relatively contraindicated in women who are unwilling to have a hysterectomy under any circumstances. (III-C) 6. Genitourinary infection is the predominant cause of serious morbidity and mortality. Further research on the utility of prophylactic antibiotic therapy and the value of pretreatment screening for infection is needed. (II-2-B) 7. A gynaecologist who is familiar with UFE should evaluate all patients considered for UFE before the procedure is booked and a consensus on the suitability of the procedure achieved between the gynaecologist and radiologist. (III-C) 8. Only radiologists with specialized embolization experience and techniques should perform UFE. (III-C) 9. The particular responsibilities of both gynaecologist and radiologist should be established prior to treatment and be set out in a relevant hospital protocol. A particular physician must be responsible for the patient at all times. (III-C) 10. A Canadian national registry of numbers, indications, outcomes, complications, and successful pregnancies associated with UFE should be created and jointly administered and funded by the SOGC, CAR, and CIRA. (III-C).

PMID: 15507201 [PubMed - indexed for MEDLINE]

570. Rofo. 2004 Nov;176(11):1648-57.

[Uterine fibroid embolization with spheric micro-particles using flow guiding: safety, technical success and clinical results]

[Article in German]

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PURPOSE: To evaluate safety and mid term efficacy (> or = 1 year follow-up) of uterine fibroid embolization (UFE) using spherical particles (Embosphere) in a

study applying criteria identical to those submitted to the FDA for initial material approval. MATERIALS AND METHODS: Twenty of the first 26 consecutive patients referred for potential UFE were enrolled in the study. Pre-interventional MRI was used to assess morphologic contraindication to UFE. The embolization procedures were performed from a unilateral femoral approach using 4F selective catheters in straight vessels, > 2 mm in diameter, and micro-catheters in smaller and tortuous arteries. The endpoint of the "flow guided" embolization was defined by reaching the angiographic "pruned tree" appearance and sluggish flow in the main stem of the uterine artery. Assessment of morphologic mid term success was done by MRI 10 days, 3 months, 6 months, 9 months and 1 year after UFE. The clinical mid term success was assessed by having questionnaires completed for menstrual bleeding, retention of clinical (symptomatic) benefit and quality of life. RESULTS: Technical success was 100 %, with 8 minor (2 post-interventional collapses, 2 hematomas, 4 relevant post-embolizations syndromes, 1 spontaneous expulsion of a submucous myoma) and 3 major complications (1 hysterectomy because of vaginal bleeding for 5 weeks, 1 transient amenorrhea and 1 spontaneous expulsion of myoma with transient bleeding requiring admission). In 17 of 19 patients, MRI showed total fibroid devascularization throughout the entire follow-up. The average shrinkage of the dominant fibroid was 71.3 % at one year. The menstrual bleeding record in the cohort group fell from an average of 501.6 before treatment to 76.2 points at one year. At the same time, the clinical symptoms significantly improved. The patient satisfaction with the applied therapy was > 95 % at 1 year. One patient with residual fibroid perfusion underwent a second procedure, which achieved complete devascularization and adequate clinical success at one year. The second patient with incomplete devascularization had a persistent clinical benefit. CONCLUSION: Under controlled study conditions, flow guided UFE with spherical particles achieves high overall success and patient satisfaction. MRI provides exact morphologic description of the fibroid for the initial evaluation and for post-procedural follow-up.

PMID: 15497084 [PubMed - indexed for MEDLINE]

571. Eur J Vasc Endovasc Surg. 2004 Nov;28(5):559-61.

Arterioureteric fistula: successful treatment of two cases.

Ferrante A, Manni R, Giustacchini M, Cotroneo A, Snider F.

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PMID: 15465380 [PubMed - indexed for MEDLINE]

572. Cardiovasc Intervent Radiol. 2004 Sep-Oct;27(5):549-50.

Acute renal failure after uterine artery embolization.

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Renal failure is a potential complication of any endovascular procedure using iodinated contrast, including uterine artery embolization (UAE). In this report we present a case of acute renal failure (ARF) following UAE performed as a treatment for uterine fibroids. The likely causes of ARF in this patient are explored and the possible etiologies of renal failure in patients undergoing UAE are reviewed.

PMID: 15461981 [PubMed - indexed for MEDLINE]

573. Am J Hematol. 2004 Oct;77(2):151-5.

Near-fatal uterine hemorrhage during induction chemotherapy for acute myeloid leukemia: a case report of bilateral uterine artery embolization.

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Severe transfusion-dependent uterine hemorrhage is a relatively uncommon complication of induction chemotherapy for acute myeloid leukemia (AML). Even less common is the failure of systemic conjugated estrogens in this setting. We report a case of life-threatening uterine hemorrhage in a 38-year-old woman in the setting of transfusion-refractory thrombocytopenia after completing induction chemotherapy for AML. She experienced dramatic breakthrough uterine hemorrhage
despite multiple platelet transfusions, conjugated estrogens, recombinant factor VIIa, epsilon-aminocaproic acid, and intracavitary thrombin-soaked gauze tamponade. At the point of near-exsanguination in the setting of hypotension, hematocrit of 14%, and a platelet count of 3,000/microL, she underwent bilateral uterine artery embolization which proved immediately successful. We review the literature and indications for this procedure in the oncologic patient care setting. Copyright 2004 Wiley-Liss, Inc.

PMID: 15389826 [PubMed - indexed for MEDLINE]

574. BJOG. 2004 Oct;111(10):1139-40.

Pre-myomectomy uterine artery embolisation minimises operative blood loss.

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Women with massive fibroids (extending beyond the level of the umbilicus) are conventionally offered a hysterectomy, rather than myomectomy, which is considered too technically challenging, with risks of excessive haemorrhage. Some women desire fertility, or may simply wish to preserve their uterus. Uterine artery embolisation is a relatively new treatment for fibroids, and complication rates are thought to be high with massive fibroids. We have performed uterine artery embolisation immediately prior to myomectomy, and found a reduction in blood loss. Uterine artery embolisation may be a useful adjunct to surgery in women with massive fibroids or for whom uterine artery embolisation alone is considered inadequate primary treatment, those with previous myomectomy where
surgery might be complicated by extensive adhesions, in Jehovah's Witnesses and in other women who refuse blood transfusion.

PMID: 15383118 [PubMed - indexed for MEDLINE]

575. Int J Gynecol Pathol. 2004 Oct;23(4):386-92.

Uterine artery embolization of leiomyomas with trisacryl gelatin microspheres (TGM): pathologic features and comparison with polyvinyl alcohol emboli.

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In recent years, uterine artery embolization (UAE) has gained popularity as an alternative to surgery for the treatment of symptomatic uterine leiomyomas. Polyvinyl alcohol (PVA) particles have been the principal agent used for UAE. Recently, trisacryl gelatin microspheres (TGM) have been advocated as a preferable occlusive material for UAE. It is the first embolic agent to be cleared specifically by the United States Food and Drug Administration for this use. To date, information on the tissue effects, distribution, and morphology of UAE with TGM in resected human organs is very limited. Herein, we document the pathologic findings in a 46-year-old woman who underwent hysterectomy and bilateral salpingo-oophorectomy and omentectomy for metastatic colonic adenocarcinoma 19 months after UAE with TGM (microsphere size = 500-700 micron)
for uterine leiomyomas. Histologically, a submucosal leiomyoma and an intramural uterine leiomyoma showed massive coagulative necrosis of the infarct-type with a peripheral zone of hyalinized fibrous tissue. Aggregates of TGM were within the necrotic leiomyomas and throughout the myometrium. Non-targeted extrauterine sites also contained TGM, including the paracervical soft tissue and the

mesosalpinx as well as the ovaries and omentum where they were adjacent to metastatic colonic carcinoma. Other than the myomas, none of the embolized organs showed ischemic necrosis. Although some TGM were intravascular, most were extravascular. Typically, the microspheres were adjacent to muscular arteries from which they appeared to have been extruded following localized dissolution of the arterial wall. A thin rim of foreign body-type giant cells and mononuclear macrophages surrounded many of the TGM and focally involved the arterial wall. No vascular thrombosis was seen. TGM are believed to have advantages over PVA emboli for UAE. Hence, additional examples of surgical specimens following treatment of leiomyomas with TGM can be expected. Pathologists should be aware of the morphology of TGM in resected genital tract tissues. Although TGM are easily distinguished from embolic PVA particles, they may be mistaken for PVA microspheres if not carefully studied. Elastic stains are useful in the differential diagnosis of embolic agents.

PMID: 15381909 [PubMed - indexed for MEDLINE]

576. Gynecol Obstet Fertil. 2004 Sep;32(9):818-24.

[Embolization of uterine fibroids and infertility: is a clinical trial conceivable?]

[Article in French]

Fauconnier A, Pelage JP, Lacombe P, Ville Y.

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Uterine artery embolization is a recent technique intended for treating uterine fibroids, as an alternative to hysterectomy. The possible side effects putting at stake the prognosis of fertility after embolization are considered as a brake to its use for the treatment of infertility associated with myoma. Secondary hysterectomy and permanent amenorrhea are the two main risks. But they are not so frequent and can be prevented. To date, the experience in the field of fertility and pregnancy after arterial embolization for fibroids is quite limited. However, first results are encouraging and not very different from those observed after surgical myomectomy. A therapeutic trial using arterial embolization for the management of fibroids within a context of infertility can be devised in the presence of submucosal or intramural myomas responsible for metromenorrhagia and with no major infertility factors associated. It is likely that uterine artery embolization should provide results equivalent or superior to those of surgical

myomectomy in case of numerous and intramural fibroids with no prevailing myoma.
Arterial embolization could be also interesting in case of recurrent myoma after laparotomic myomectomy.

PMID: 15380768 [PubMed - indexed for MEDLINE]

577. Cardiovasc Intervent Radiol. 2004 Jul-Aug;27(4):305-6.

Uterine artery embolization: what the others say....

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Comment on:
Cardiovasc Intervent Radiol. 2004 Jul-Aug;27(4):307-13.

PMID: 15366216 [PubMed - indexed for MEDLINE]

578. Eur J Obstet Gynecol Reprod Biol. 2004 Oct 15;116(2):250-1.

Focal cervical and vaginal necrosis following uterine artery embolisation.

Löwenstein L, Solt I, Siegler E, Raz N, Amit A.

PMID: 15358482 [PubMed - indexed for MEDLINE]

579. Cardiovasc Intervent Radiol. 2004 Jul-Aug;27(4):307-13. Epub 2004 Jun 23.

Quality improvement guidelines for uterine artery embolization for symptomatic leiomyomata.

Hovsepian DM, Siskin GP, Bonn J, Cardella JF, Clark TW, Lampmann LE, Miller DL, Omary RA, Pelage JP, Rajan D, Schwartzberg MS, Towbin RB, Walker WJ, Sacks D; CIRSE Standards of Practice Committee; SIR Standards of Practice Committee.

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Comment in:
Cardiovasc Intervent Radiol. 2004 Jul-Aug;27(4):305-6.

Uterine artery embolization (UAE) is assuming an important role in the treatment

of women with symptomatic uterine leiomyomata worldwide. The following guidelines, which have been jointly published with the Society of Interventional Radiology in the Journal of Vascular and Interventional Radiology, are intended to ensure the safe practice of UAE by identifying the elements of appropriate patient selection, anticipated outcomes, and recognition of possible complications and their timely address.

PMID: 15346204 [PubMed - indexed for MEDLINE]

580. AJR Am J Roentgenol. 2004 Sep;183(3):733-6.

MRI detection of uterine necrosis after uterine artery embolization for fibroids.

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PMID: 15333363 [PubMed - indexed for MEDLINE]

581. J Perinatol. 2004 Sep;24(9):560-2.

Pseudoaneurysm of the uterine artery requiring bilateral uterine artery embolization.

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OBJECTIVE: To report a case of uterine artery pseudoaneurysm which initially failed unilateral uterine artery embolization that subsequently responded to bilateral embolization. DESIGN: A case report. SETTING: University hospital. PATIENT(S): 32-year-old G(2) P(1) female. INTERVENTION(S): Left uterine artery embolization followed by right uterine artery embolization 1 day later. MAIN OUTCOME MEASURE(S): Vaginal bleeding, hemoglobin. RESULTS: Unilateral uterine artery embolization failed to control vaginal bleeding. Repeat embolization of the contralateral side was successful. CONCLUSIONS: Uterine artery embolization is an effective method of treating delayed postpartum hemorrhage secondary to a pseudoaneurysm of the uterine artery.

PMID: 15329736 [PubMed - indexed for MEDLINE]

582. Int J Obstet Anesth. 2002 Oct;11(4):260-4.

Need for maternal critical care in obstetrics: a population-based analysis.

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The purpose of this study was to note potential obstetric risk factors leading to maternal intensive care and to estimate the frequency, costs and outcomes of management. In a cross-sectional study of intensive care admissions in Kuopio from March 1993 to October 2000, 22 consecutive obstetric patients admitted to a mixed medical-surgical intensive care unit were followed. We recorded demographics, admitting diagnoses, APACHE II score, clinical outcomes and treatment costs. The overall need for maternal intensive care was 0.9 per 1000 deliveries during the study period. The mean age (+/-SD) of the patients was 31.7 (+/-6.6) years and the APACHE II score 10.8 (+/-6.2). The most common admission diagnoses were obstetric haemorrhage (73%) and pre-eclampsia-related complications (32%). The duration of ICU stay was 5.8 days (range 1-31) and one of the 21 patients died in the intensive care unit (4.5%). The total cost of intensive care was in the order of USD 5000 per patient. Very few obstetric patients develop complications requiring intensive care. Although several risk factors associated with maternal intensive care were documented, most cases occurred in low-risk women, which implies that the risk is relevant to all pregnancies. Long-term morbidity was rare, and collectively the outcome of intensive care was good. Further research is needed to determine effective approaches in prevention, such as uterine artery embolization.

PMID: 15321532 [PubMed]

583. J Obstet Gynaecol Can. 2004 Aug;26(8):743-6.

Elective non-removal of the placenta and prophylactic uterine artery embolization postpartum as a diagnostic imaging approach for the management of placenta percreta: a case report.

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BACKGROUND: Placenta percreta, invasion of placental tissue through the uterine wall, is a rare but potentially fatal complication of pregnancy. Historically, the diagnosis was made at laparotomy, usually during Caesarean hysterectomy. CASE: We describe a case of placenta percreta, in which the placenta was allowed to remain fixed to the uterine wall. Antenatal ultrasound and magnetic resonance imaging techniques were used to establish the diagnosis and guide clinical management. Elective postoperative uterine artery embolization down balloon catheters was used to prevent postpartum hemorrhage and to promote involution and

shedding of the placenta. After 6 months, the uterus had involuted to the nonpregnant state. CONCLUSION: New diagnostic imaging techniques may be used to
guide conservative management of placenta percreta, thereby maintaining fertility and avoiding hemorrhage, blood transfusion, and hysterectomy.

PMID: 15307979 [PubMed - indexed for MEDLINE]

584. J Vasc Interv Radiol. 2004 Aug;15(8):801-7.

Recovery after uterine artery embolization for leiomyomas: a detailed analysis of its duration and severity.

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PURPOSE: To determine the duration and severity of recovery after uterine artery embolization (UAE) for leiomyomas. MATERIALS AND METHODS: As part of a study comparing different embolic materials used for UAE, detailed data on the severity of postprocedural recovery were gathered in 99 patients. These data included patient-controlled analgesia records, visual analogue scale (VAS) pain scores of daily peak pain levels for 7 days, medication use in the first week, and severity of constitutional symptoms experienced over the course of the first month after the procedure. The VAS scale assesses acute pain severity on a 10-cm linear scale and yields a continuous measure from 1 to 10. The constitutional symptoms were scored based on a questionnaire. The data were analyzed with use of summary statistics, and linear regression analysis was used to determine the impact of various baseline factors on the severity of recovery. RESULTS: The mean peak VAS score for the first 24 hours after UAE was 3.03 (SD, 0.26) and the mean maximum score in the first week was 4.89 (SD, 0.26). Only 11 patients had an in-hospital VAS score greater than 7, and 19 had a VAS score of greater than 7 on any of the first 7 days after discharge. The mean number of oral narcotic tablets used per patient was 10.8 in the first week. Although 33 patients had a temperature higher than normal sometime in the first postprocedural week, high temperature (>38.5 degrees C) occurred in only two patients. There were no differences detected in the measured parameters based on the type of embolic material used. CONCLUSION:
Despite the reputation of UAE to the contrary, when current techniques are used, recovery after UAE for fibroids is relatively mild, with few instances of severe pain, high fever, or severe constitutional symptoms.

PMID: 15297583 [PubMed - indexed for MEDLINE]

585. J Vasc Interv Radiol. 2004 Aug;15(8):793-800.

Polyvinyl alcohol particles and tris-acryl gelatin microspheres for uterine artery embolization for leiomyomas: results of a randomized comparative study.

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**Comment on:
J Vasc Interv Radiol. 2004 Aug;15(8):789-91.**

**PURPOSE: To determine if the type of embolic material used for uterine artery embolization (UAE) for leiomyomas has an impact on short-term recovery or the effectiveness of embolization. MATERIALS AND METHODS: One hundred patients were
randomly assigned to undergo UAE with polyvinyl alcohol (PVA) particles or tris-acryl gelatin microspheres. Short-term, in-hospital medication use and pain levels were recorded. After discharge, symptom severity, temperature, and medications used were recorded daily for 1 week and symptom levels were measured
for weeks 2-4. Three months after embolization, contrast material-enhanced magnetic resonance imaging examinations were evaluated blindly to determine the extent of leiomyoma infarction. Symptom and quality of life (QOL) status was determined with use of questionnaires. Analysis was completed with use of chi(2) analysis, Fisher exact tests, Student t tests, and analysis of variance as appropriate. Regression analysis was used to analyze the impact on outcome of baseline factors (other than type of embolic agent). RESULTS: No significant differences were noted at baseline between the two treatment groups. On average, there were significantly higher volumes of tris-acryl microspheres used (9.0 mL vs 3.0 mL; P =.0001), whereas microcatheter occlusion was more common with PVA (28% vs 4%, P =.001). There were no differences in pain severity, other postprocedural symptoms, or medication use between the two treatment groups. There were also no differences in the frequency of incompletely infarcted leiomyomas, degree of improvement in symptom score, patient satisfaction, or QOL.
CONCLUSION: No substantive differences were detected between outcomes of embolization with PVA particles or tris-acryl gelatin microspheres.**

PMID: 15297582 [PubMed - indexed for MEDLINE]

586. J Vasc Interv Radiol. 2004 Aug;15(8):789-91.

Polyvinyl alcohol particles versus tris-acryl gelatin microspheres for uterine artery embolization for leiomyomas.

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**Comment in:
J Vasc Interv Radiol. 2004 Aug;15(8):793-800.**

PMID: 15297581 [PubMed - indexed for MEDLINE]

587. Am J Obstet Gynecol. 2004 Jul;191(1):18-21.

Pregnancy outcomes after treatment for fibromyomata: uterine artery embolization versus laparoscopic myomectomy.

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OBJECTIVE: The objective of this study was to compare pregnancy outcomes in women with fibromyomata who were treated with uterine artery embolization to the outcomes in women who were treated with laparoscopic myomectomy. STUDY DESIGN: We compiled data from 53 pregnancies after uterine artery embolization and 139 pregnancies after laparoscopic myomectomy. We calculated and compared rates for spontaneous abortion, postpartum hemorrhage, preterm delivery, cesarean delivery, small for gestational age, and malpresentation. RESULTS: Pregnancies after uterine artery embolization had higher rates of preterm delivery (odds ratio, 6.2; 95% CI, 1.4, 27.7) and malpresentation (odds ratio, 4.3; 95% CI, 1.0, 20.5) than did pregnancies after laparoscopic myomectomy. The risks of postpartum hemorrhage (odds ratio, 6.3; 95% CI, 0.6, 71.8) and spontaneous abortion (odds ratio, 1.7; 95% CI, 0.8, 3.9) after uterine artery embolization were similarly higher than the risks after laparoscopic myomectomy; however, these differences were not statistically significant. CONCLUSION: Pregnancies in women with fibromyomata who were treated by uterine artery embolization, compared with pregnancies after laparoscopic myomectomy, were at increased risk for preterm delivery and malpresentation.

PMID: 15295339 [PubMed - indexed for MEDLINE]

588. Abdom Imaging. 2004 Mar-Apr;29(2):267-77.

Embolization of uterine fibroids.

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Since the first description of uterine artery embolization for the treatment of symptomatic fibroids of the uterus in 1994, this minimally invasive procedure has been increasingly performed in many Western countries. The method is characterized by a high technical success rate of about 85%, a highly significant relief of symptoms, and a very low rate of complications that make this method an appealing alternative to classic treatment options of surgical or laparoscopic myomectomy or hysterectomy. These characteristics have made the procedure well accepted by affected women. Nevertheless, indications and potential contraindications have to be evaluated carefully, especially in patients of childbearing age whenever a considerable number of deliveries is reported after uterine fibroid embolization. This article discusses the clinical background, indications and contraindications, angiographic techniques, potential complications and side effects, and the mid-term results known at present.

PMID: 15290957 [PubMed - indexed for MEDLINE]

589. Am J Obstet Gynecol. 2004 Jun;190(6):1697-703; discussion 1703-6.

Patient satisfaction and disease specific quality of life after uterine artery embolization.

Smith WJ, Upton E, Shuster EJ, Klein AJ, Schwartz ML.

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USA.**

**OBJECTIVES: This study was undertaken to evaluate changes in fibroid specific symptom severity and health-related quality of life (HRQOL) after uterine artery embolization (UAE) and to consider the impact of these changes on satisfaction with the procedure. STUDY DESIGN: A validated, fibroid specific, symptom, and HRQOL questionnaire was mailed to 80 women who had undergone UAE from 1998 through 2002. Pre- and postprocedure symptom severity and HRQOL scores were obtained. The primary outcome measure was change in fibroid symptoms and HRQOL
after UAE. Secondary outcomes included objective measures of patient satisfaction, and the decrease in uterine volume after UAE. RESULTS:
Questionnaires were completed by 64 women (80.0%) at a mean of 32.1 months from
UAE (range: 57.5-6 months). After UAE, mean uterine volume decreased by 26.3%**

(95% CI 19.6-33.0), and 17 of 79 women (21.5%) underwent an additional procedure
after a mean of 18.6 months. Symptom severity scores decreased by a mean of 35.2%
(95% CI 29.3-41.1) and HRQOL scores increased by a mean of 35.7% (95% CI 28.9-42.4). Satisfaction with UAE was correlated with the change in symptom severity and HRQL scores (P <.0001 and P=.0004, respectively) and the decrease in uterine volume after UAE (P=.0196). CONCLUSION: Women who undergo UAE have a
significant decrease in symptom severity and increase in HRQOL, associated with high levels of satisfaction with the procedure, even when subsequent therapies are pursued.

PMID: 15284774 [PubMed - indexed for MEDLINE]

590. Br J Anaesth. 2004 Oct;93(4):591-4. Epub 2004 Jul 26.

Management of severe postpartum haemorrhage by uterine artery embolization.

Wee L, Barron J, Toye R.

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We report a case of postpartum haemorrhage which was successfully treated by embolization of the uterine artery. This technique is not well known and is thought to be underused in this condition. We wish to alert medical personnel to its role in this life-threatening situation.

PMID: 15277301 [PubMed - indexed for MEDLINE]

591. Clin Exp Obstet Gynecol. 2004;31(2):149-50.

Uterine necrosis after laparoscopic uterine vessel dissection for symptomatic fibroid--a case report.

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Department of Obstetrics and Gynecology, Endoscopic Training Center, Baby Friendly Hospital, Kladno, Czech Republic.

Laparoscopic dissection of uterine vessels is a new minimally invasive method to treat symptomatic fibroids. A potential complication of uterine artery dissection is uterine necrosis. A woman with a large intramural fibroid underwent laparoscopic dissection of the uterine vessels using ultrasonic activated shears and three months later developed focal uterine necrosis requiring exploratory laparotomy and supracervical hysterectomy. Although uterine artery coagulation

and dissection are procedures with a low reported rate of complications, uterine fibroid or focal uterine necrosis can occur.

PMID: 15266775 [PubMed - indexed for MEDLINE]

592. Rofo. 2004 Jul;176(7):1001-4.

[Three-dimensional digital rotation angiography for embolization therapy of uterine leiomyomas: first results]

[Article in German]

Bucek RA, Reiter M, Dirisamer A, Kettenbach J, Lammer J.

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PURPOSE: To evaluate three-dimensional rotational digital subtraction angiography (3D-RDSA) in the embolization of the uterine artery in the treatment of symptomatic uterine leiomyomas (fibroids). MATERIALS AND METHODS: Eight women
with complex pelvic vessel anatomy caused by large fibroids were embolized using 3D-RDSA. The raw data were sent to an external workstation, and video files with a resolution of one image/3 degrees and a scan range of 180 degrees in a surface-shaded display mode were produced. The primary goal was to assess an image intensifier angulation for the optimal visualization of the origin of the uterine artery. In addition, the intervention parameters were compared with those of 48 patients with standard angiography. RESULTS: The analysis revealed no single angulation that can be recommended for standard angiography. No statistical differences were found between both groups concerning fluoroscopy time, dosage area product and amount of administered contrast medium ($p > 0.05$). CONCLUSION: It can be stated that 3D-RDSA is a feasible method that facilitates the catheterization of the uterine artery even in patients with complex pelvic vessel anatomy, with the potential to reduce the radiation exposure and the amount of administered contrast medium in future embolization therapy of symptomatic uterine fibroids.

PMID: 15237343 [PubMed - indexed for MEDLINE]

593. Zentralbl Gynakol. 2004 Jun;126(3):119-24.

[Alternatives to hysterectomy: a review]

[Article in German]

Gaetje R.

Klinik für Gynäkologie und Geburtshilfe, Johann Wolfgang Goethe-Universität, Frankfurt.

Total hysterectomy is considered as gold standard in the treatment of symptomatic uterine fibroids in women without reproductive wishes. However an increasing number of patients asked for alternatives to hysterectomy. Myomectomy, endometrial ablation, hormonal treatment, uterine artery embolization, and supracervical hysterectomy may be useful in the treatment uterine fibroids in an individual patient.

PMID: 15236094 [PubMed - indexed for MEDLINE]

594. J Vasc Interv Radiol. 2004 Jul;15(7):773; author reply 774-5.

Re: Leiomyoma recurrence after uterine artery embolization.

Pelage JP, Jacob D, Le Dref O, Laurent A.

Comment on:
J Vasc Interv Radiol. 2003 Nov;14(11):1395-9.

PMID: 15231895 [PubMed - indexed for MEDLINE]

595. J Vasc Interv Radiol. 2004 Jul;15(7):773-4; author reply 774-5.

Re: Leiomyoma recurrence after uterine artery embolization.

McLucas B, Adler L.

Comment on:
J Vasc Interv Radiol. 2003 Nov;14(11):1395-9.

PMID: 15231894 [PubMed - indexed for MEDLINE]

596. Acta Obstet Gynecol Scand. 2004 Jul;83(7):688-90.

Failure of uterine arterial embolization: placenta accreta with profuse postpartum hemorrhage.

Chou YJ, Cheng YF, Shen CC, Hsu TY, Chang SY, Kung FT.

Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, Kaohsiung,
Taiwan.

Comment in:

Acta Obstet Gynecol Scand. 2005 May;84(5):497-8.

PMID: 15225198 [PubMed - indexed for MEDLINE]

597. Eur J Obstet Gynecol Reprod Biol. 2004 Jul 15;115(1):85-9.

Uterine fibroids--do size and location determine menstrual blood loss?

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Division of Developmental Medicine, University of Glasgow, Glasgow, UK.

OBJECTIVE: To investigate any potential effect of fibroid size and distribution on menstrual blood loss (MBL). STUDY DESIGN: Retrospective comparative study of 50 women with symptomatic fibroids who underwent uterine imaging and objective MBL measurement prior to uterine artery embolisation between 1999 and 2002. SETTING: West of Scotland Gynaecology and radiology departments. METHOD: Uterine imaging was by magnetic resonance imaging (MRI) in all but one case and MBL was performed using the alkaline haematin technique. Fibroid characteristics were assessed by an experienced radiologist unaware of the MBL measurements. RESULTS: Thirty-three (66%) women had objective menorrhagia with a MBL in excess of 80 ml per period. The commonest location of fibroids was intramural; these particular fibroids also had the largest diameter and the greatest uterine volume. There was a negative relationship between MBL and the diameter of the largest fibroid ($r = -0.419$, $P < 0.01$). All but two women (both of whom had subserosal fibroids alone) demonstrated distortion of the uterine cavity. All women with submucosal fibroids presented with menorrhagia. CONCLUSION: This study found that MBL correlated with neither fibroid size nor location. However, all the women with sub-mucosal fibroids had menorrhagia with a MBL greater than 80 ml.

PMID: 15223171 [PubMed - indexed for MEDLINE]

598. Hum Reprod. 2004 Aug;19(8):1774-7. Epub 2004 Jun 24.

Uterine artery embolization for management of interstitial twin ectopic pregnancy: case report.

Ophir E, Singer-Jordan J, Oettinger M, Odeh M, Tendler R, Feldman Y, Fait V, Bornstein J.

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Interstitial pregnancy is rare and dangerous variation of ectopic pregnancy. We describe a case of unilateral interstitial viable twin pregnancy treated by selective uterine artery embolization. A 23-year-old women with clinical and ultrasonic diagnosis of viable twin interstitial pregnancy was treated by selective uterine artery embolization after failure of systemic methotrexate treatment. Her serum beta-HCG was undetectable 2 months after the procedure and
the ultrasound scan 70 days after embolization showed only multiple echogenic spots in the right uterine cornua. This therapeutic modality seems to be effective for conservative management of interstitial ectopic pregnancy, and as a prophylactic measure before surgical intervention to prevent major bleeding.

PMID: 15218007 [PubMed - indexed for MEDLINE]

599. J Am Assoc Gynecol Laparosc. 2004 May;11(2):273-6.

Multiple myomas treated with a temporary, noninvasive, Doppler-directed, transvaginal uterine artery clamp.

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A 43-year-old woman with menorrhagia, dysmenorrhea, and pelvic pain of several years' duration had a uterus enlarged by myomas to the size of a 16-week pregnancy. Her uterine arteries were noninvasively transvaginally identified and occluded for 6 hours with a clamp that was guided by audible Doppler ultrasound. Following removal of the clamp, blood flow in the uterine arteries returned immediately. Menorrhagia symptoms diminished. Three months following treatment,
uterine volume decreased by 48.9%, and dominant myoma volume decreased by 77.2%.

PMID: 15200790 [PubMed - indexed for MEDLINE]

600. J Am Assoc Gynecol Laparosc. 2004 May;11(2):138-52.

Childbirth and myoma treatment by uterine artery occlusion: do they share a common biology?

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When the uterine arteries are bilaterally occluded, either by uterine artery

embolization or by laparoscopic obstruction, women with myomas experience symptomatic relief. After the uterine arteries are occluded, most blood stops flowing in myometrial arteries and veins, and the uterus becomes ischemic. It is postulated that myomas are killed by the same process that kills trophoblasts: transient uterine ischemia. When the uterine arteries are bilaterally occluded, either by uterine artery embolization (UAE) or by laparoscopic obstruction, women with myomas experience symptomatic relief. After the uterine arteries are occluded, most blood stops flowing in myometrial arteries and veins, and the uterus becomes ischemic. Over time, stagnant blood in these arteries and veins clots. Then, tiny collateral arteries in the broad ligament (including communicating arteries from the ovarian arteries) open, causing clot within myometrium to lyse and the uterus to reperfuse. Myomas, however, do not survive this period of ischemia. This is unique organ response to clot formation and ischemia. What allows the uterus to survive a relatively long period of ischemia while myomas perish? Childbirth appears to be the predicate biology. Following placental separation, the uteroplacental arteries and the draining veins of the placenta are torn apart at their bases in the junctional zone of the myometrium and bleed directly into the uterine cavity. Left unchecked, every woman would bleed to death in less than 10 minutes after placental delivery. Most women do not bleed to death because vessels in the uterus clot after placental delivery. During pregnancy, clotting and lytic factors in blood increase many fold. Following delivery, uterine contractions continue, intermittently, periodically slowing the velocity of flowing blood through myometrium. The combination of slowed blood flow, elevated clotting proteins, and torn placental vessels (known as Virchow's triad) causes blood in myometrial arteries and veins to clot. Fibrinolytic enzymes later lyse clot in arteries and veins not associated with placenta perfusion, and the uterus is reperfused. Remnant placental tissue - primarily uteroplacental arteries and veins - does not survive this period of ischemia. Placental tissue dies and over weeks is sloughed into the uterine cavity. At the same time, residual endometrial tissue grows under the sloughing placental tissue thus re-establishing the endometrial lining. It is postulated that myomas are killed by the same process that kills trophoblasts - transient uterine ischemia.

PMID: 15200765 [PubMed - indexed for MEDLINE]

601. BJOG. 2004 Jul;111(7):700-5.

Evaluation of the effect of uterine artery embolisation on menstrual blood loss and uterine volume.

Khaund A, Moss JG, McMillan N, Lumsden MA.

Department of Gynaecology, North Glasgow University Hospitals, Glasgow Royal Infirmary, UK.

OBJECTIVE: To evaluate the effect of uterine artery embolisation (UAE) on

menstrual blood loss (MBL) and uterine volume in women with symptomatic uterine
fibroids. DESIGN: Prospective observational study. SETTING: West of Scotland gynaecology and radiology departments. POPULATION: Fifty women (mean age 43 years) with symptomatic fibroids undergoing UAE between January 1999 and June 2003. METHODS: Women collected sanitary protection from one menses pre-embolisation and at regular intervals thereafter. This allowed objective measurement of MBL using the alkaline haematin technique. Uterine volume was calculated using magnetic resonance imaging (MRI) before and six months following
embolisation. Interventional radiologists performed bilateral UAE. The Wilcoxon's signed rank test was used for statistical analysis of data. MAIN OUTCOME MEASURES: Post-embolisation MBL and uterine volume changes. RESULTS: Median pretreatment MBL was 162 mL (mean 234, range 9-1339). The median MBL decreased to
60 mL at 3 months (n= 34, range 0-767, P < 0.001), 70 mL at 6-9 months (n= 34, range 0-1283, P < 0.001), 37 mL at 12-24 months (n= 25, range 0-265, P < 0.001), 18 mL at 24-36 months (n= 17, range 0-205, P < 0.001) and 41 mL at 36-48 months (n= 6, range 0-66, P < 0.05). The median reduction in uterine volume was 40% (n= 46, 95% CI 33.0-49.7, P < 0.001). CONCLUSIONS: UAE causes a statistically significant reduction in objectively measured MBL. UAE is also associated with a statistically significant reduction in uterine volume at six months. There was no relationship between the changes in uterine volume and MBL.

PMID: 15198761 [PubMed - indexed for MEDLINE]

602. J Vasc Interv Radiol. 2004 Jun;15(6):535-41.

Quality improvement guidelines for uterine artery embolization for symptomatic leiomyomata.

Hovsepian DM, Siskin GP, Bonn J, Cardella JF, Clark TW, Lampmann LE, Miller DL, Omary RA, Pelage JP, Rajan D, Schwartzberg MS, Towbin RB, Walker WJ, Sacks D; CIRSE Committee; SIR Standards of Practice Committee.

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Republished in:
J Vasc Interv Radiol. 2009 Jul;20(7 Suppl):S193-9.

PMID: 15178712 [PubMed - indexed for MEDLINE]

603. Am J Perinatol. 2004 May;21(4):223-6.

Complete abortion of a nonviable cervical pregnancy following methotrexate

treatment.

Sherer DM, Dalloul M, Santoso P, Stimphil R, Sokolovski M, Abulafia O.

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11203, USA.**

**Cervical pregnancy is an uncommon ectopic pregnancy that accounts for approximately <1% of extrauterine gestations. This condition is associated with an extremely high risk of massive hemorrhage and previously often required hysterectomy. Current early ultrasonographic diagnosis and medical management in
conjunction with other conservative measures, which include uterine artery embolization and intracervical balloon tamponade, have enabled conservation of the uterus. A young nulliparous patient ultrasonographically diagnosed with a cervical pregnancy and early fetal demise at 11 and 4/7 weeks gestation was managed with high-dose methotrexate and folinic acid rescue treatment. On the second day after treatment was initiated she spontaneously passed an intact gestational sac accompanied by minimal hemorrhage. Treatment was continued, with
decreasing serum beta subunit of human chorionic gonadotropin levels and subsiding hemorrhage. Subsequent surgical measures were not required. This case suggests that complete abortion of a cervical pregnancy not necessitating
surgical measures can occur.**

PMID: 15168321 [PubMed - indexed for MEDLINE]

**604. Int Urogynecol J Pelvic Floor Dysfunct. 2004 May-Jun;15(3):214-5. Epub 2004 Feb
10.**

Pelvic organ prolapse after uterine artery embolization for uterine myoma.

Bedaiwy MA, Paraiso MF.

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Uterine artery embolization (UAE) is gaining popularity as a treatment modality in patients with symptomatic uterine fibroids who do not desire fertility. Complications of this procedure can be serious and disabling. A 50-year-old woman presented with stage II uterovaginal prolapse after UAE for symptomatic uterine fibroids. Pelvic organ prolapse developed 16 months after the initial procedure. Surgical correction was performed. This is the first case report of pelvic organ prolapse after UAE. Normal prior gynecological examinations, and absence of pelvic pressure symptoms, indicate that pelvic organ prolapse had occurred

subsequent to UAE.

PMID: 15168005 [PubMed - indexed for MEDLINE]

605. Am J Obstet Gynecol. 2004 May;190(5):1230-3.

Persistent vaginal discharge after uterine artery embolization for fibroid tumors: cause of the condition, magnetic resonance imaging appearance, and surgical treatment.

Walker WJ, Carpenter TT, Kent AS.

Royal Surrey County Hospital, Departments of Obstetrics and Gynaecology and Radiology, Guildford, United Kingdom.

OBJECTIVE: The purpose of this study was to establish the cause of and treatment for chronic vaginal discharge after uterine artery embolization. STUDY DESIGN: This was a retrospective review of the diagnosis and treatment of the procedure at 3 months. RESULTS: In 94% of patients, the condition either completely resolved or diminished to a nonproblematic level. CONCLUSION: The persistent discharge in these patients was due to a superficial cavity within the infarcted fibroid tumor that was communicating with the endometrial cavity through a hole in the endometrium. This situation is indicated by a specific appearance on TII sagittal magnetic resonance images. Hysteroscopic resection of the necrotic fibroid tumor cavity was usually curative.

PMID: 15167823 [PubMed - indexed for MEDLINE]

606. Masui. 2004 Apr;53(4):391-5.

[Pain control with epidural anesthesia for uterine artery embolization]

[Article in Japanese]

Saito S, Chiba A, Hayakawa S, Toyoshima M, Enomoto A.

Department of Anesthesiology, Iwaki Municipal Hospital, Iwaki 973-8555.

BACKGROUND: To reduce the severity of post procedure pain associated with uterine
artery embolization (UAE) for leiomyomata, we used continuous infusion of low concentration ropivacaine through an epidural catheter. METHODS: Thirteen patients for UAE were evaluated. In a patient without indication for epidural anesthesia, the pain was controlled with intermittent morphine infusion. Other patients had post procedure pain managed with 10 ml bolus of 1% lidocaine and continuous infusion of 0.2% ropivacaine at 5 ml x hr-1 for 16 hours. RESULTS: The patient complained of severe pain just after UAE and required epidural lidocaine.

Then, we started to infuse lidocaine or ropivacaine just before starting UAE. Among these cases, 9 patients required extra pain control using NSAIDs as a rescue. Only three patients required no medication except epidural analgesia. CONCLUSIONS: Continuous infusion of 0.2% ropivacaine at a rate of 5 ml x hr-1 is not enough for pain management after UAE.

PMID: 15160664 [PubMed - indexed for MEDLINE]

607. Clin Radiol. 2004 Jun;59(6):520-6.

Uterine artery embolization for adenomyosis without fibroids.

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**AIM: To evaluate the potential usefulness of transcatheter uterine artery embolization as a treatment for symptomatic adenomyosis in patients without uterine fibroids. MATERIALS AND METHODS: Uterine artery embolization using polyvinyl alcohol particles sized 250-710 mm was performed in 43 patients (mean; 40.3 years, range; 31-52 years) with dysmenorrhoea, menorrhagia, or bulk-related symptoms (pelvic heaviness, urinary frequency) due to adenomyosis without fibroids. All patients underwent pre-procedural and 3.5 months (range 1-8 months) follow-up magnetic resonance imaging (MRI) with contrast enhancement. Clinical symptoms were also assessed at the time of MRI before and after embolization. RESULTS: Significant improvement of dysmenorrhoea (95.2%) and menorrhagia (95.0%)
was reported in most patients. Contrast-enhanced MRI revealed non-enhancing areas
suggesting coagulation necrosis of adenomyosis in 31 patients (72.1%), decreased size without necrosis in 11 patients (25.6%), and no change in one patient
(2.3%). The mean volume reduction of the uteri after uterine artery embolization was 32.5% (from 321.7+/-142.9 to 216.7+/-130.1 cm(3)). CONCLUSION: Transcatheter
uterine artery embolization is an effective therapy for the treatment of
symptomatic pure adenomyosis, and may be a valuable alternative to hysterectomy.**

PMID: 15145722 [PubMed - indexed for MEDLINE]

608. Fertil Steril. 2004 May;81(5):1375-82.

Quantified short-term outcome of uterine artery embolization with gelatin sponge particles and lipiodol for symptomatic myoma.

Huang LY, Cheng YF, Chang HW, Chang SY, Kung FT, Liang HM, Huang KH.

**Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, Kaohsiung,
Taiwan.**

**OBJECTIVE: To investigate and quantify clinical outcomes and spectral Doppler analyses of uterine arteries in patients with myoma undergoing uterine artery embolization (UAE) with gelatin sponge particles and lipiodol. DESIGN: Prospective observational study. SETTING: Tertiary medical center. PATIENT(S): Forty premenopausal women with symptomatic myoma. INTERVENTION(S): Uterine artery
embolization with gelatin sponge particles and lipiodol. MAIN OUTCOMES MEASURE(S): Hemoglobin, hematocrit, CA-125, pictorial blood loss assessment, visual analogue pain scale, questionnaire for symptoms, tumor volume, and spectral Doppler analyses of uterine arteries. RESULT(S): The mean follow-up period was 8.1 months (range, 6-12). Menstrual flow improved in 29 of 35 patients (83%) and decreased significantly by 78.4%. Menstrual pain improved in 27 of 35 patients (77%) and decreased significantly by 70%. Hematocrit and CA-125 improved
significantly. The mean percentage reductions of uterine and myomal volumes were
40.2% and 54.9%, respectively. The mean peak systolic velocity of the uterine arteries decreased by 52%. The major complication rate was 2.56%. There was no correlation between tumor volume reduction and clinical outcome. CONCLUSION(S):
Uterine artery embolization with gelatin sponge particles and lipiodol had satisfactory short-term outcomes, comparable to those associated with polyvinyl alcohol particles. Quantified and semiquantified measurements provided objective assessment of clinical outcomes. Serum CA-125 might play a role in clinical follow-up. Reduction of tumor volume is not predictive of UAE efficacy.**

PMID: 15136105 [PubMed - indexed for MEDLINE]

609. Curr Opin Obstet Gynecol. 2004 Jun;16(3):239-43.

Non-surgical management of leiomyoma: impact on fertility.

Olive DL, Lindheim SR, Pritts EA.

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**PURPOSE OF REVIEW: This review is designed to discuss the literature, published from December 2002 to January 2004, on the non-surgical treatment of fibroid. All established and new modalities are reviewed, and all new developments in the field are discussed. The resulting impact on the treatment of infertility will
also be evaluated. RECENT FINDINGS: In the past year important advances occurred**

in the medical treatment of uterine fibroids. It was found, in a large randomized trial, that preoperative treatment with gonadotropin-releasing hormone analogue did not improve surgical results or decrease blood loss. However, important strides were made in understanding the molecular biology of the effect of the hormone analogue on fibroids. Other medical therapies investigated include danazol, raloxifene, mifepristone, aromatase inhibitors, and the levonorgestrel-containing intrauterine device. Most promising in terms of long-term usage for reduction of size and symptoms appears to be the combination of gonadotropin-releasing hormone analogue and raloxifene, although selective progesterone receptor modulators may also achieve this aim. However, none avoid producing an anovulatory state that inhibits fertility, and none have been shown to enhance fertility following discontinuation. Uterine artery embolization is another non-surgical technique under intense investigation. The year's literature suggests that while results are comparable with hysterectomy in terms of complication rate and patient satisfaction, there may be important issues for women who wish to undergo the procedure and retain future fertility. Specifically, there is a significant rate of premature ovarian failure, as well as occasional damage to the endometrial vasculature with resulting atrophy and adhesion formation. Improvements in technique, in particular the use of larger and more spherical microspheres for embolization, may reduce these unwanted effects. However, few data exist regarding the course of pregnancy and outcome following embolization. SUMMARY: A number of non-surgical treatments exist for uterine fibroids, but none has been shown to be of value in the patient desiring future fertility. Myomectomy remains the standard of care for such women, and all other therapies should be designated experimental and limited to appropriate investigational studies.

PMID: 15129053 [PubMed - indexed for MEDLINE]

610. Gynecol Obstet Fertil. 2004 Apr;32(4):320-9.

[Intractable postpartum haemorrhages: where is the place of vascular ligations, emergency peripartum hysterectomy or arterial embolization?]

[Article in French]

Sergent F, Resch B, Verspyck E, Rachet B, Clavier E, Marpeau L.

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OBJECTIVE: Update of knowledge on the various methods of management of intractable postpartum haemorrhage. METHOD: PubMed, MEDLINE were the electronic
sources, in English and French languages, used for data retrieval. Uterine atony and abnormal placental insertions (placenta praevia or accreta) are the major causes of primary postpartum haemorrhages. To preserve fertility, we dispose of angiographic selective embolization or surgical vascular ligations. Embolization

is a non-invasive method practicable by simple catheterization under local anesthesia. Vascular ligations of the uterine vessels or internal iliac arteries require mostly laparotomy. New and easier surgical methods, such as uterine compression or hemostatic suturing techniques have been described for which we lack experience. RESULTS: For uterine atony, the success rate of arterial embolization and uterine artery ligations is close to 100%. Ligation of internal iliac arteries is a little less effective and technically more difficult to carry out. It remains interesting in obstetrical traumatic hurts, which do not concern the uterus. If bleeding from the lower segment occurs during caesarean section, low uterine artery ligatures are necessary. These methods are all the more effective than they are prematurely implemented before the rise of major coagulopathy. In this case, uterine devascularization has also to be applied to ovarian vessels. With placenta accreta, accreta portion of the placenta can be left in place and arterial embolization or vascular ligations can be done. Nevertheless the main cause of failure with conservative treatments is placenta accreta. CONCLUSION: The simplest and the least morbid methods must be retained.
After vaginal birth, arterial embolization can be done, if there is no maternal haemodynamic disorder nor interventional vascular radiology unit nearby. During caesarean section, progressive uterine artery ligation can be done adapted to the bleeding cause. In case of failure of a conservative treatment, it would be dangerous to multiply techniques. Emergency peripartum then should remain the choice procedure.

PMID: 15123103 [PubMed - indexed for MEDLINE]

611. Ceska Gynekol. 2004 Jan;69(1):48-50.

[Pregnancy after uterine artery embolization in uterine myoma]

[Article in Czech]

Kostál M, Tosner J, Náteková J, Rousková L.

Gynekologicko-porodnická klinika FN, Hradec Králové.

OBJECTIVE: To report a case of successful pregnancy outcome after embolization treatment of symptomatic leiomyoma. DESIGN: Case report. SETTING: Department of
Gynaecology and Obstetrics of University Hospital, Hradec Králové. SUBJECT AND METHOD: A 41-year old primigravida who had previously undergone uterine artery embolization and myomectomy had successful course of the spontaneously conceived
pregnancy terminated per sectionem cesarean. An analysis of the 50 published cases of pregnancy after uterine artery embolization revealed the following complications: spontaneous abortion (22%), malpresentation (17%), hypotrophy (7%), premature delivery (28%), caesarean section (58%) and postpartum hemorrhage

(13%). CONCLUSION: Whether this procedure is safe for women desiring future fertility is controversial. There are very few data regarding the outcomes of pregnancies after embolization.

PMID: 15112387 [PubMed - indexed for MEDLINE]