



Uterine Artery Embolization

Dr. Vikash Jain



**Heartbreaking
image by
an Iraqi artist
taken in
an orphanage.
This little
girl has never
seen her
mother, so she
drew a mom
on the ground
and fell asleep
with her.**

**"Appreciate what you
have, since you don't
know what you've got
until it's taken away
from you...
That's when it is
too late."**

Maternal Mortality

-All pregnancies-

- Current maternal mortality rate in INDIA is around 190 deaths/1,00,000 live births (2014)

<u>Etiology</u>	<u>M. M.</u>
<i>Hemorrhage</i>	28.7%
<i>Embolism</i>	19.7%
<i>P.I.H.</i>	17.6%
<i>Infection</i>	13.1%
<i>Cardiomyopathy</i>	5.6%
<i>Anesthesia complications</i>	2.5%
<i>Others</i>	12.7%

Pelvic artery embolisation

1960s

Transcatheter arterial embolization has been a recognized method of haemorrhage control since the 1960s, and has been used in the control of pelvic haemorrhage due to malignancy, trauma.

1995

Uterine artery embolization (UAE) as a primary form of therapy for fibroid was 1st reported by Ravina in 1995

In 1979, this technique was used successfully in the control of postpartum haemorrhage by Brown and colleagues.

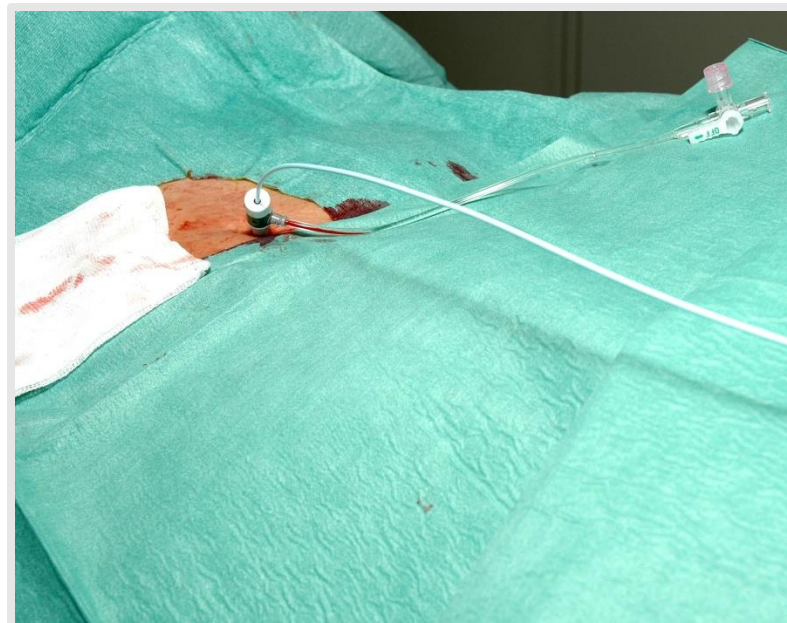
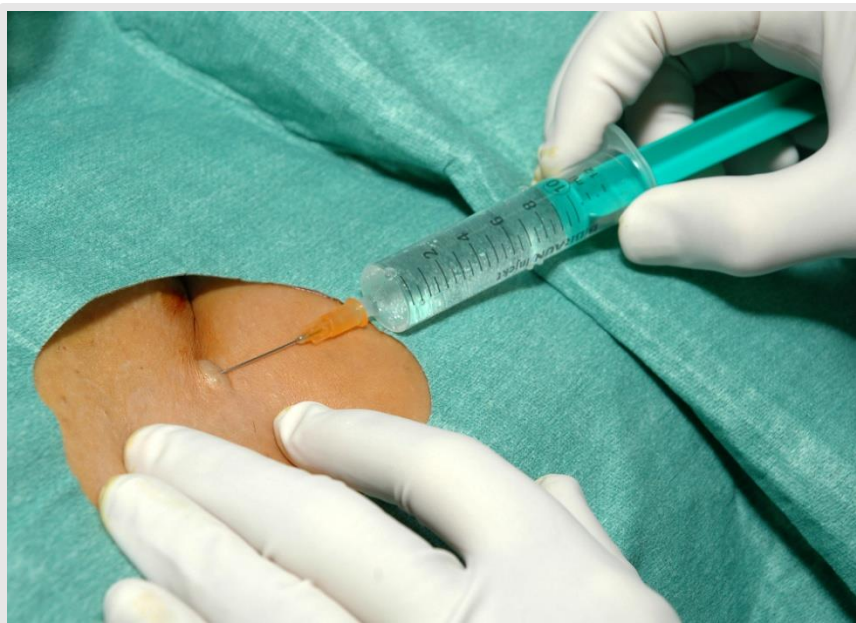
1979

Technique

Technique

1. Local anesthesia, prophylactic Abx (Cefazolin 2 gm IV)
2. Femoral artery accessed with 4-5 Fr catheter
3. Catheter advanced to abdominal aorta and pelvic angiogram performed.

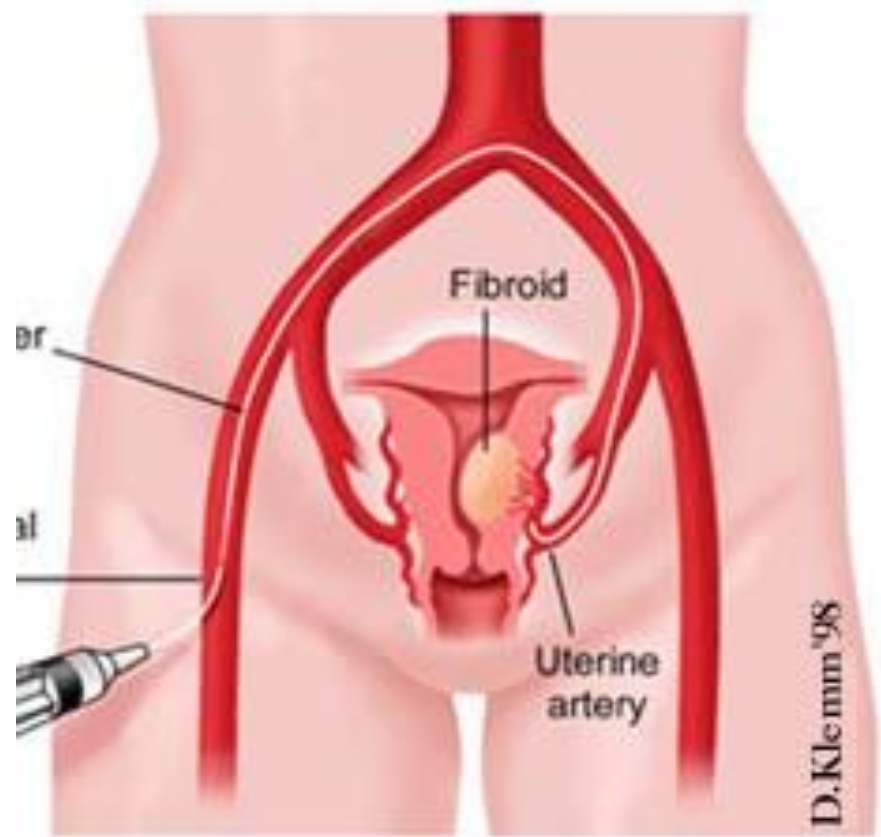
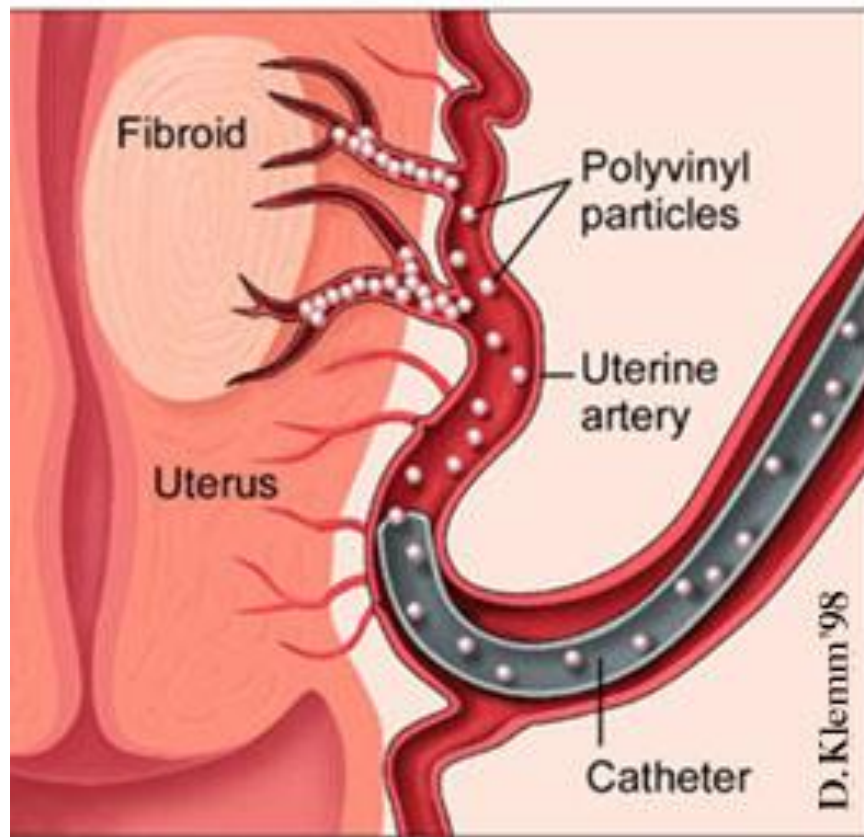
Important to identify not only the uterine arteries, but also other collateral supplies to the myomatous uterus (e.g. ovarian aa., lumbar aa.)





Pelvic Arteriogram

Technique

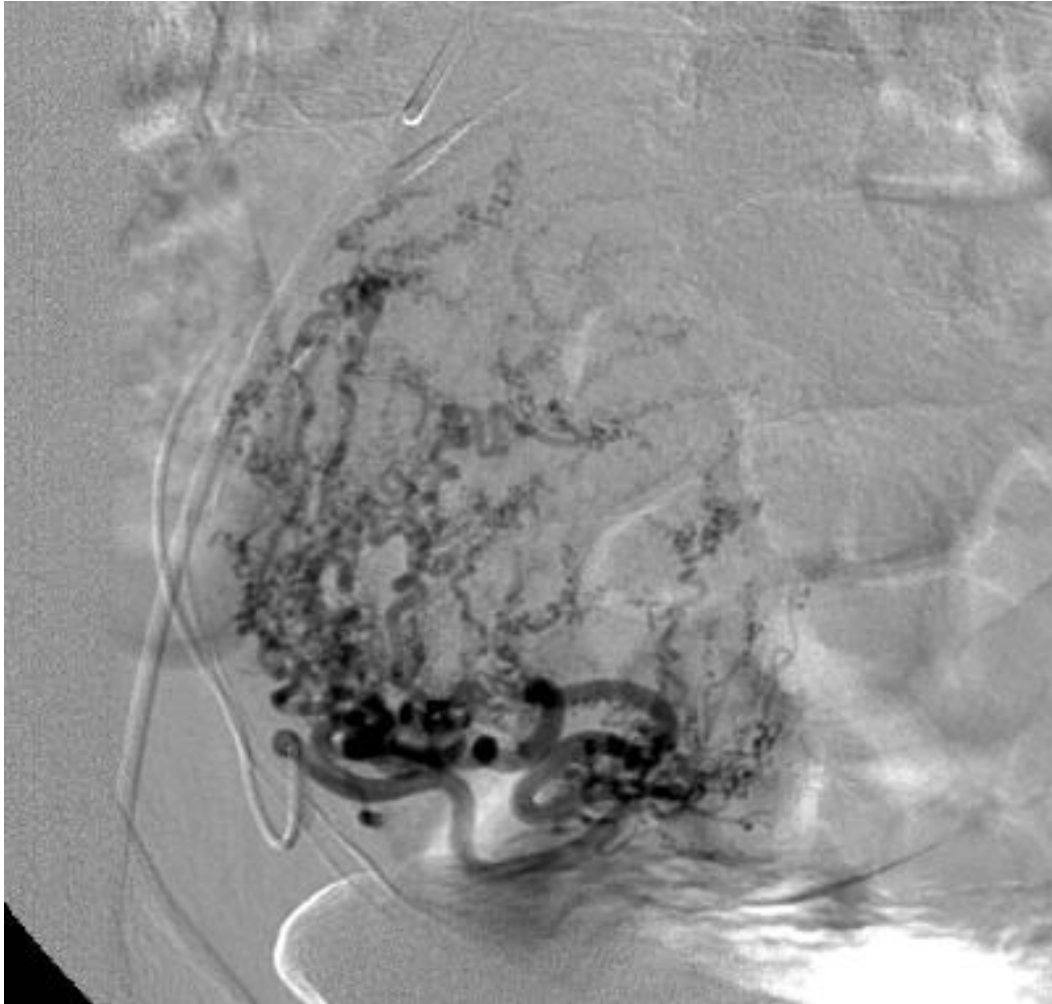


- 4) The uterine arteries are identified and selectively catheterized



- 1- Catheter tip positioned in Ant. Div. of Internal Iliac Art.
- 2- Origin of Rt. Uterine A.

Selective Injection of Uterine Arteries

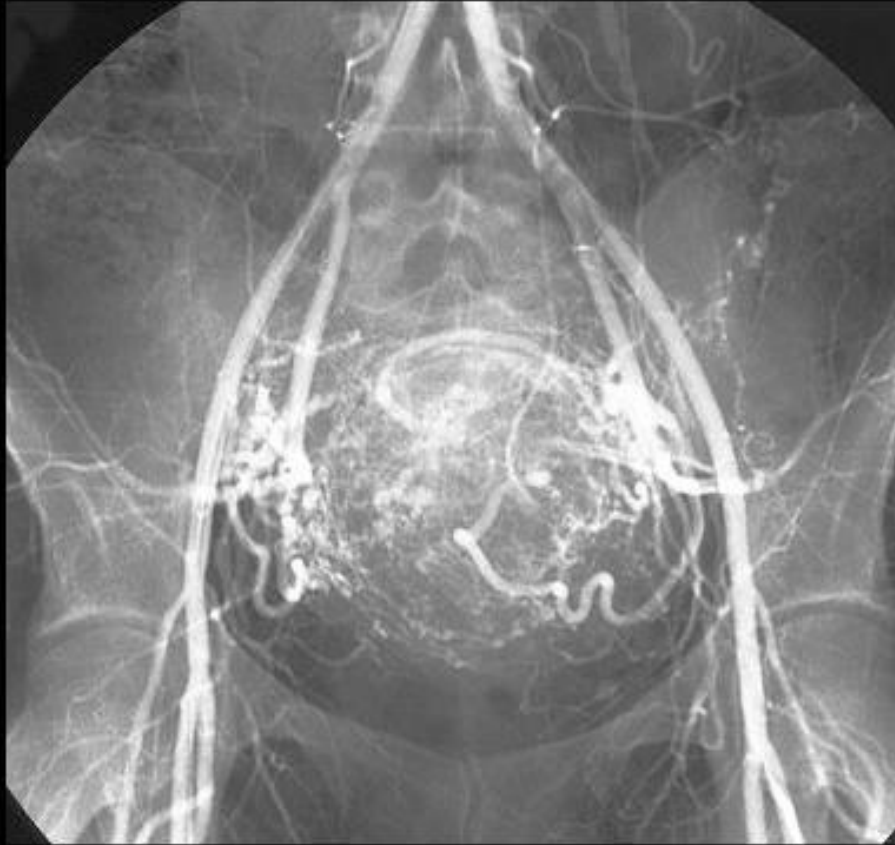


Uterine artery
supplying the
hypervascular fibroid
blush

5) An embolic agent (Gelfoam or PVA) of appropriate diameter is injected into the uterine arteries to induce thrombosis.



6) Post-embolization pelvic angiography should be performed to document arterial occlusion



Pre-embolization



Post - embolization

Indications:

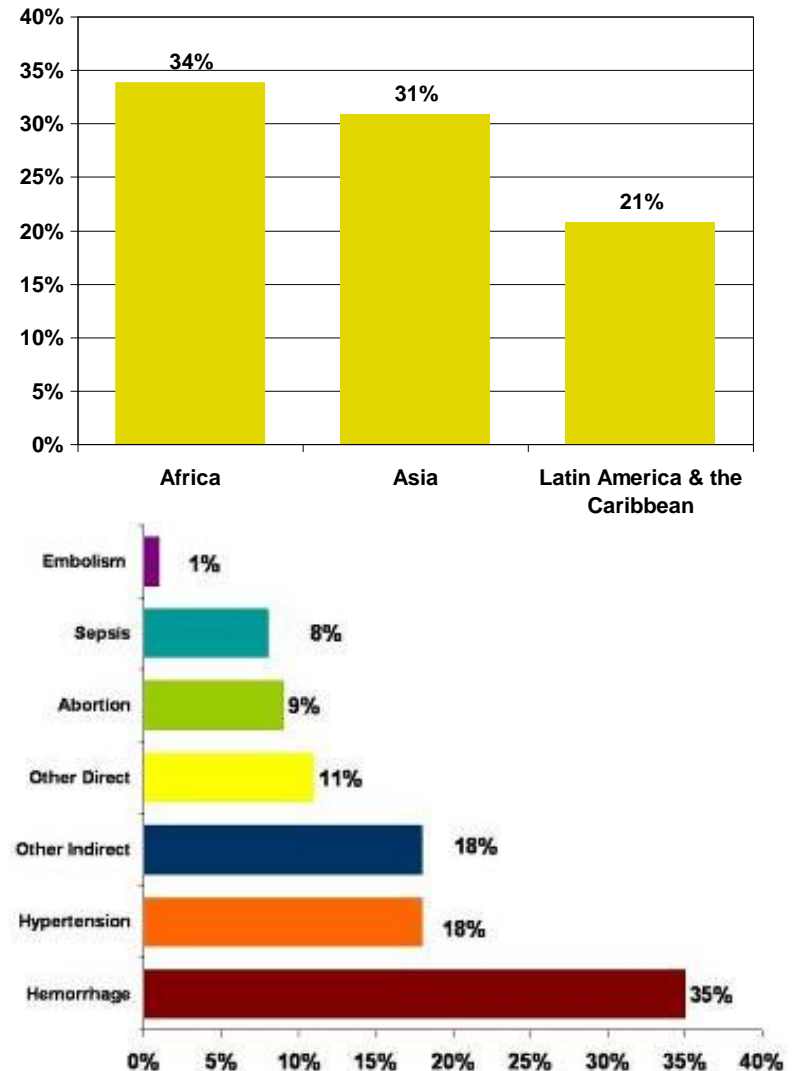
- Obstetric hemorrhage:
 - PPH, Post abortal hemorrhage,
 - Gestational trophoblastic disease,
 - Placenta accreta and percreta.
- Uterine AVM
- Fibroid
- Adenomyosis
- Palliative tumor embolization.

Post-partum hemorrhage

PPH: Leading Cause of Maternal Mortality

- 14 million women in developing countries experience PPH—26 women every minute.
- **accounts for nearly one-quarter of all maternal deaths worldwide**, with an estimated of 125,000 deaths per year and 1 death occurs every 4 min.

Sources: Khan et al., 2006; POPPHI, 2009; Taking Stock of Maternal, Newborn and Child Survival, 2000–2010 Decade Report



Initial assessment & Rx

- Initial assessment of blood loss:
 - ✓ Blood loss- Hb
 - ✓ Hemodynamic status- vitals
 - ✓ Disseminated intravascular coagulation.
- IV administration of crystalloid or colloid substances and transfusion of specific blood units.
- Treatment of intravascular coagulopathy with fresh-frozen plasma & platelet infusion.

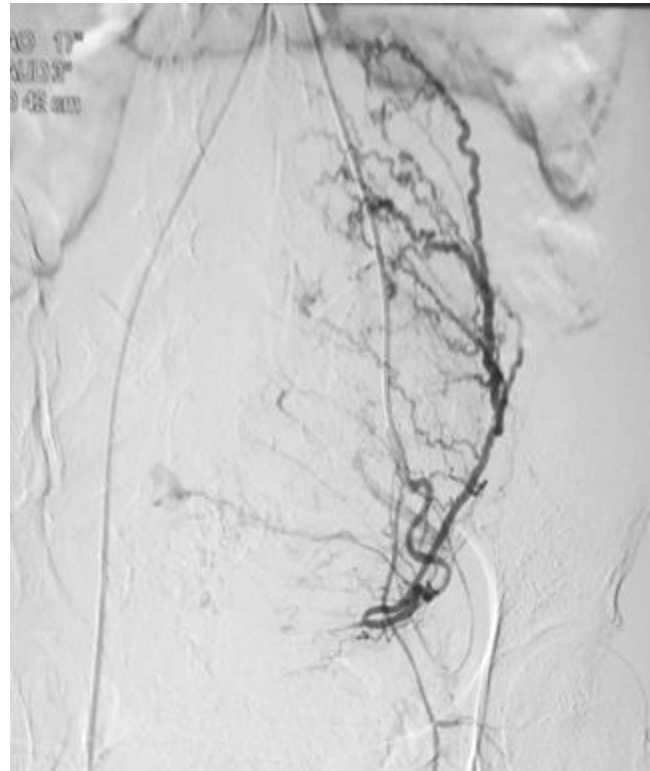
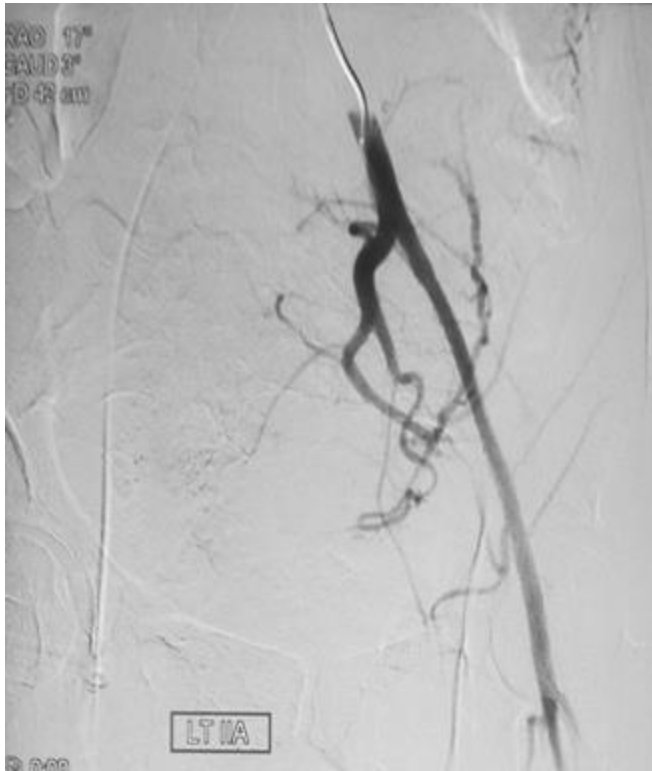
Obstetric assessment & Rx

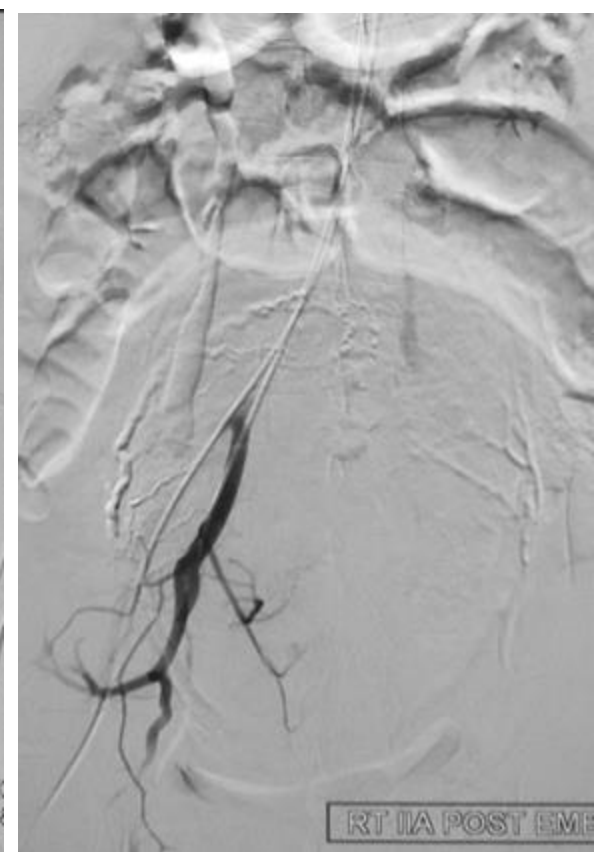
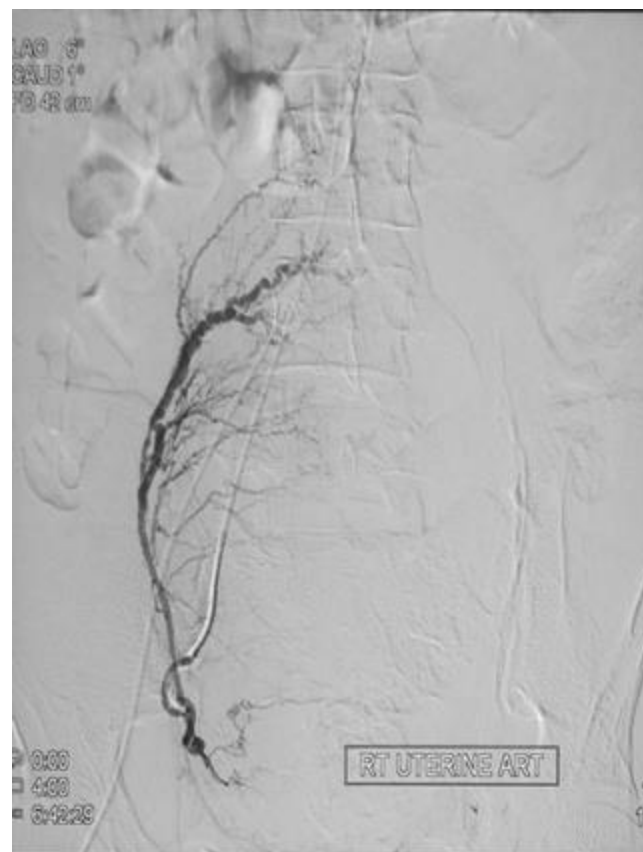
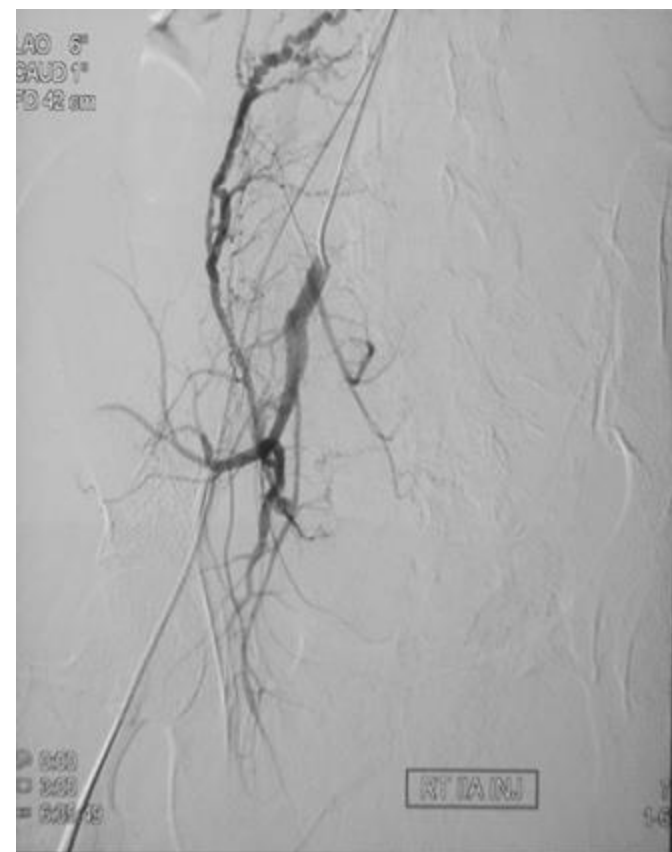
- Uterine atony treated with:
 - Uterine massage,
 - Utero-vaginal packing, and
 - Administration of IV oxytocin and prostaglandin E₂ analogue, sulprostone.
 - Often Bakri balloon placement.
- Obstetric assessment:
 - Examination and repair of genital laceration
 - Exploration and manual removal of retained products from uterine cavity.

Decision for embolization:

- Made on the basis of active, continuing bleeding despite the treatment just mentioned or
- When patient is referred with pack in situ, in the presence of profuse bleeding with an unidentified source or irreparable trauma especially in cases where conservation of the uterus is desired.

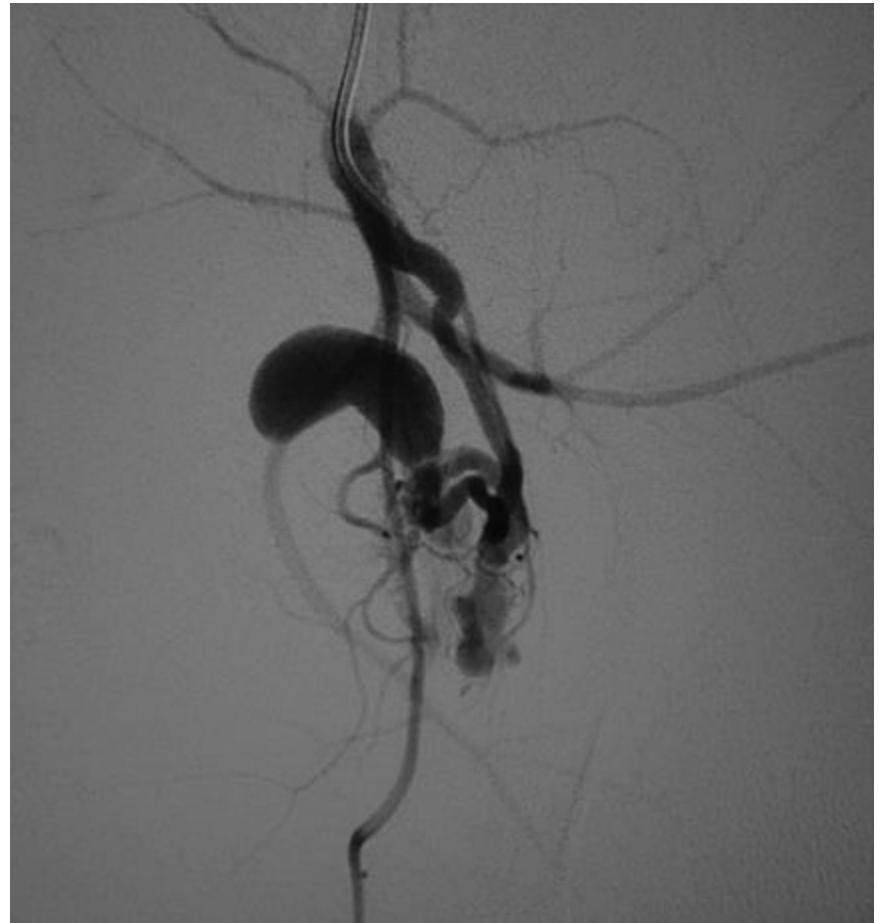
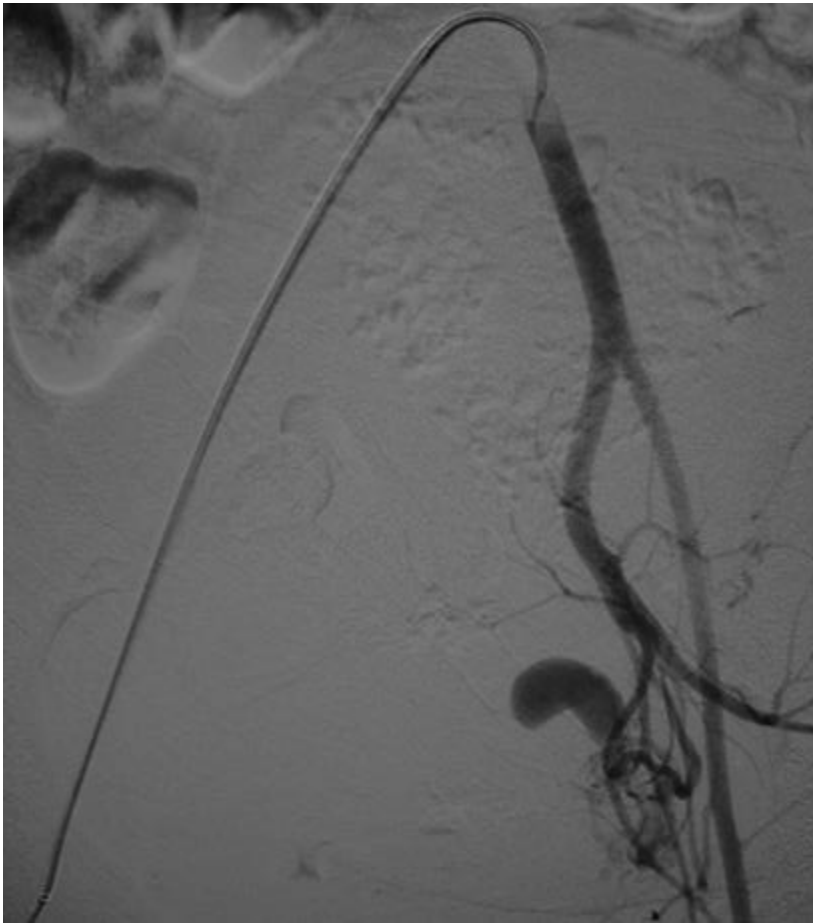
22yrs FTVD atonic PPH & Shock, resuscitated

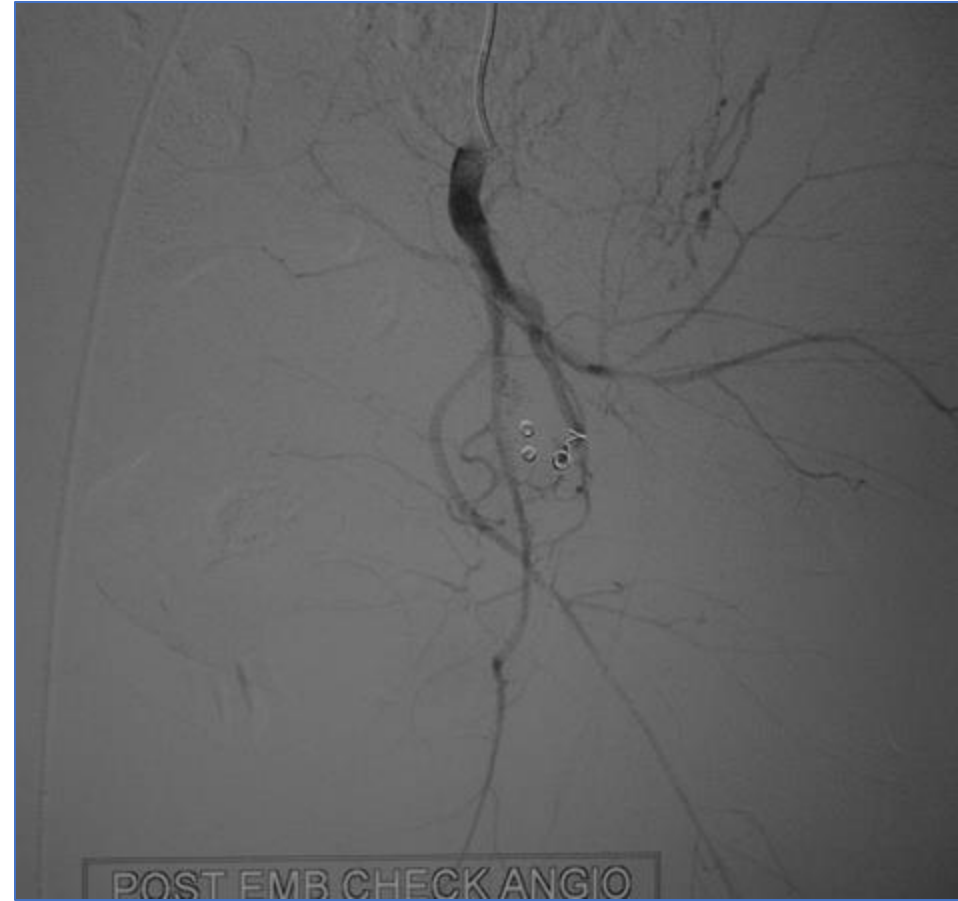
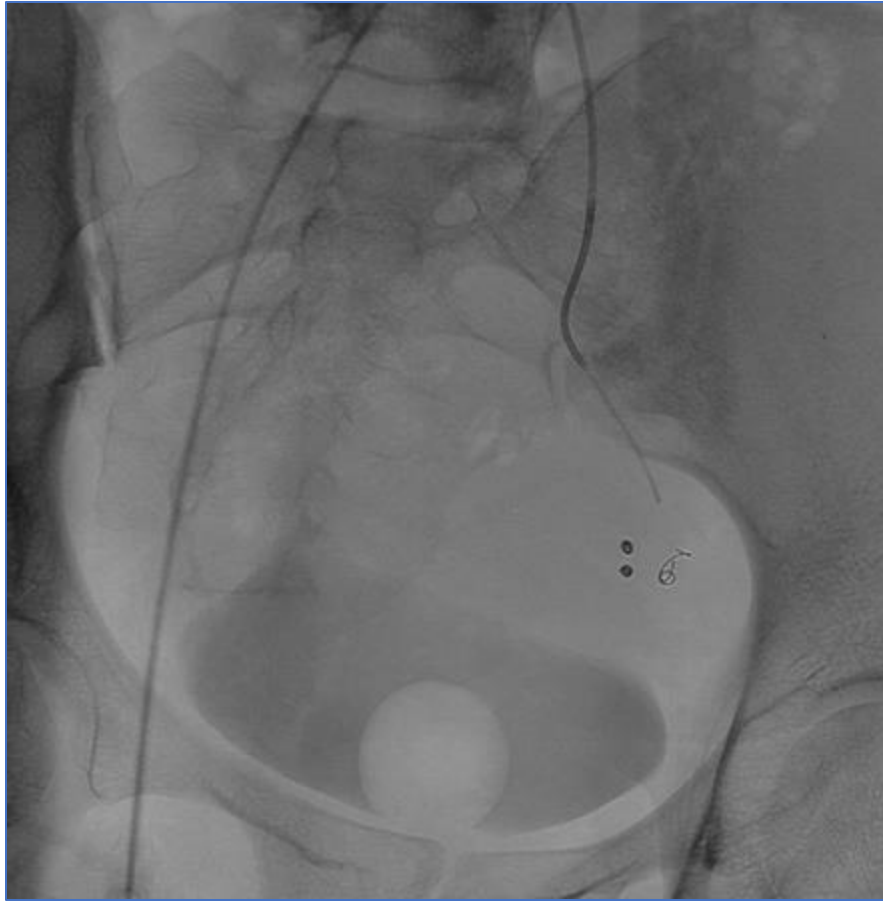




No further episode of per vaginal bleeding

27/F with obstructed labour and emergency LSCS. Presented with secondary PPH on day 13th.





F'up: No fresh bleeding per vaginum

Outcome

Series of Postpartum Hemorrhage with Five or More Patients Treated by Embolization as Reported in the Literature			
Researchers	Year	No. of Cases	Success (%)
Greenwood et al. [29]	1987	7	100
Gilbert et al. [33]	1992	5	100
Mitty et al. [27]	1993	7	100
Yamashita et al. [30]	1994	15	100
Merland et al. [22]	1996	16	100
Pelage et al. [24]	1998	27 (1 failure)	96
Hansch et al. [26]	1999	6 (1 failure)	83
Subtotal		83 (2 failures)	98 ^a

Acta Obstetricia et Gynecologica. 2010; 89: 1096–1099

informa
healthcare

SHORT REPORT

Pelvic artery embolization in the management of obstetric hemorrhage

HARPREET KAUR SIDHU¹, GRV PRASAD¹, VANITA JAIN¹, JASWINDER KALRA¹,
VIVEK GUPTA² & NIRANJAN KHANDELWAL²

¹Department of Obstetrics and Gynecology, *Postgraduate Institute of Medical Education and Research, Chandigarh, India*, and ²Department of Radiology, *Postgraduate Institute of Medical Education and Research, Chandigarh, India*



Royal College of
Obstetricians and
Gynaecologists



Royal College of
Radiologists



British Society of
Interventional
Radiology

Good Practice No. 6
June 2007

RCOG, RCR & BSIR Practice Guide 2007

THE ROLE OF EMERGENCY AND ELECTIVE INTERVENTIONAL RADIOLOGY IN POSTPARTUM HAEMORRHAGE

➤ **Interventional radiology is an important tool** in the prevention and management of postpartum haemorrhage.'

➤ '...embolisation can prevent major blood loss, obviating the need for transfusion and hysterectomy. Thus potentially reducing the need for intensive care and **decrease maternal mortality and morbidity.**'

Serious PPH, arterial embolization and future fertility: a retrospective study of 46 case

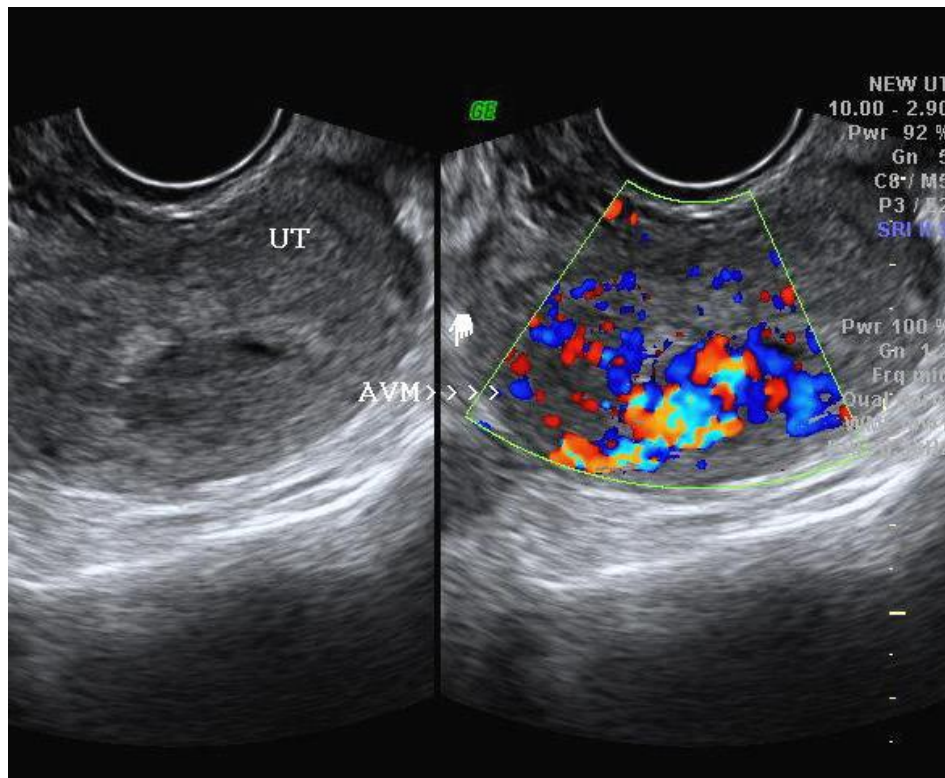
- Clinical success was achieved in 88.5% patient.
- All patient had normal menses at 1 yr f'up.
- 39% wanted another child and 100% succeeded.
- CONCLUSIONS: Embolization is a safe and effective non-surgical method to resolve post-partum hemorrhage and should be regarded as gold standard in a hemodynamically stable patient. Furthermore, subsequent fertility is not impaired by the procedure.

Take Home Message

- Embolisation should be the treatment of choice & should be regarded as gold standard for severe PPH with the failure of conservative treatment.
- It should be performed before patient goes into shock or severe DIC develops.
- Menses, Fertility, Pregnancy all appear to return to normal post embolisation.

Uterine AVM

28/F

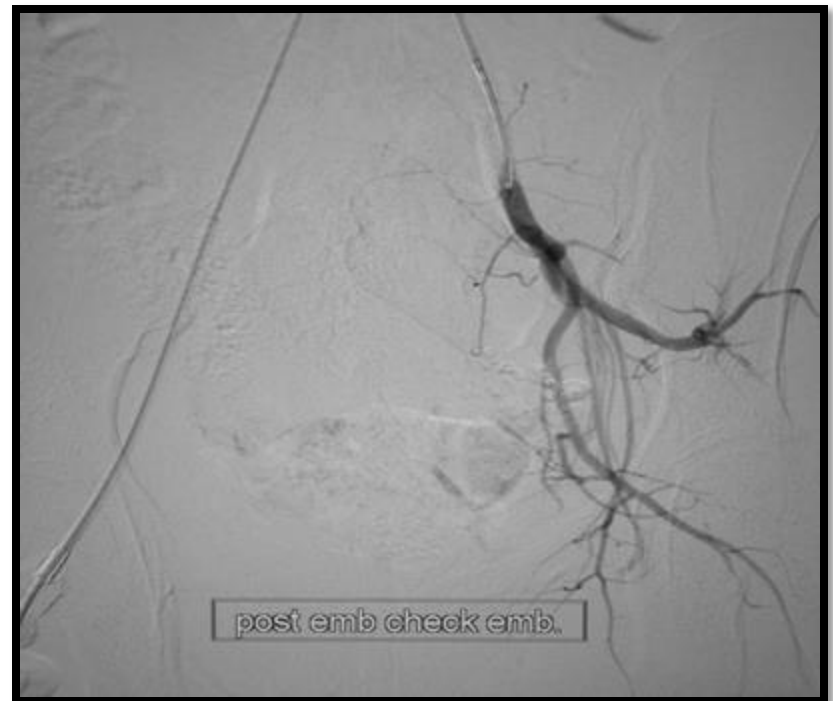
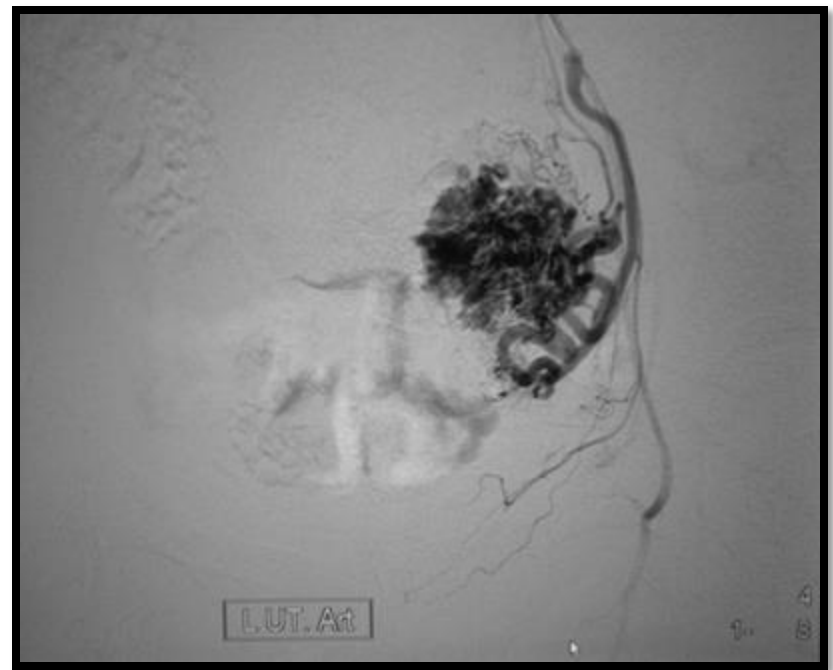


- Repeated episodes of p/v bleed.
- H/O of D&C.
- USG s/o Uterine AVM.

Rx of Choice



Bleeding subsided



Uterine fibroid

Uterine Fibroid Embolization (UFE)

- Proven to be a very effective alternative for selected women with symptomatic uterine fibroids.
- Ideal patient for UFE:
 - Pt has failed medical management
 - Multiple fibroids of moderate size (3-7cm)
 - Absolute contraindication to surgery (including pt preference).
 - Pre-menopausal ideally wanting to retain uterus.
 - Post-menopausal pt with failure of spontaneous regression.

Contraindications

- *Absolute*
 - Asymptomatic fibroids
 - Pregnancy
 - Known/suspected pelvic infection or bacteremia.
 - Not willing to take small (0.1-1%) risk of hysterectomy.
 - Serious doubt about diagnosis.
- *Relative*
 - Narrow stalked pedunculated submucosal fibroid.



Pre-embolization



6 months post embolization

Uterine fibroid embolization

- Prospective study involving 555 patients in Canada
- 35% reduction in median uterine fibroid size.
- 83% reduction in menorrhagia
- 77% reduction in dysmenorrhea
- 86% reduction in bulk related symptoms.

Clinical recommendations on the use of uterine artery embolisation (UAE) in the management of fibroids

Third edition (2013)



Royal College of
Obstetricians &
Gynaecologists



- The clinical outcomes of UAE are good. It is as effective as surgery for symptom control.
- For symptomatic fibroids it should be considered a treatment along with traditional surgical option.

UAE, Hysterectomy & Myomectomy

- Overall patient satisfaction rate similar. It offers shorter hospital stay and quicker return to normal activities.
- Uterine preservation needs to be weighed against higher re-intervention rate. (32% requiring 2nd intervention after 5 years).

Clinical recommendations
on the use of uterine artery
embolisation (UAE) in the
management of fibroids



Royal College of
Obstetricians &
Gynaecologists



Fertility, UAE and Myomectomy

- The evidence for the beneficial effect of myomectomy or UAE on fertility and pregnancy outcome is poor.
- Myomectomy, more appealing in single dominant fibroid
- Treatment should be offered only after informed discussion.

The Post-Embolization Syndrome

- Affects most patients and lasts 2-5 days after procedure
- Pelvic pain / cramping (usually peaks at 12-24 hrs post-embo)
- Nausea/vomiting
- Low-grade fever
- General malaise

Rx- NSAIDs & Antiemetics.

- Vaginal discharge (16%): usually self limiting.
- Fibroid expulsion(10%): in submucosal fibroid.
- Endometritis (0.6%): sometimes associated with fibroid expulsion.
- Amenorrhoea (1.5-7%) Markedly age related (>45yrs).

Complications: Most occur > 30 days after UAE

Hysterectomy is required in 1.5% of cases



Royal College of
Obstetricians &
Gynaecologists



The Royal College of Radiologists

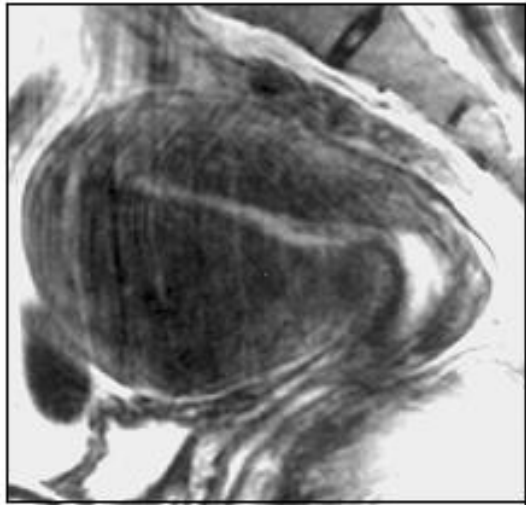
Clinical recommendations
on the use of uterine artery
embolisation (UAE) in the
management of fibroids

UAE for Adenomyosis

- 37.4% reduction in uterine volume.
- 81.2% reduction in menorrhagia.
- 82.6% had complete/ significant reduction of bulk related symptoms.
- 28% had recurrence of symptoms. Mean time interval of recurrence was 27.3 months

**Kim et al., Long term results of UAE for adenomyosis.
American journal of radiology,2007**

Adenomyosis: MRI F'up



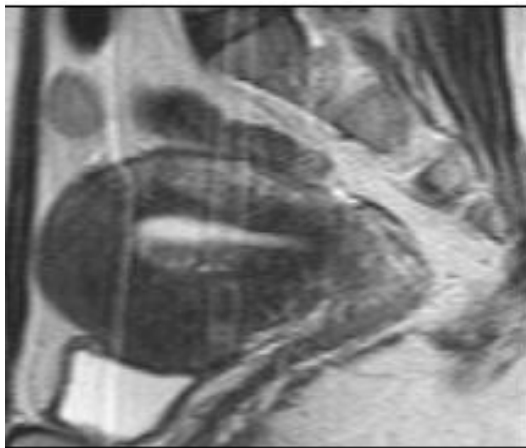
Pre procedure



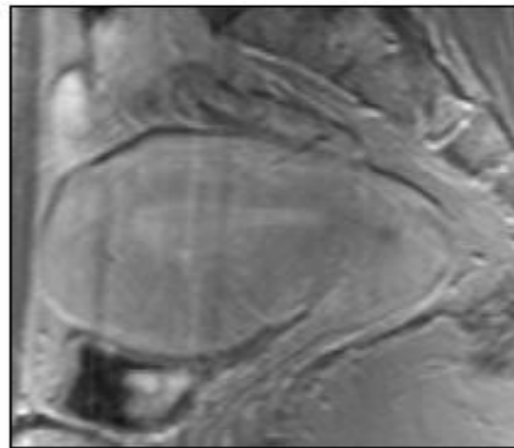
3months f'up



3months f'up



5 yrs f'up



5 yrs f'up

39yrs/F with
menorrhagia and
dysmenorrhoea. Post
UAE, persistent
improvement till 5yrs

3 situation encountered here:

- 32 yr old young patient with adenomyosis with failure of medical Rx.
- 45 yr patient with adenomyosis with ejection fraction on echocardiography of 22%.
- 29 yr patient with persistent menorrhagia. Myomectomy done 10 months back. MRI still shows 6 fibroids.

Take Home Points

- UAE is a safe and effective alternative to more invasive surgeries for treatment of fibroid/adenomyosis related symptoms.
- The “**American college of Obstetrics and Gynecology *Practice bulletin* of August 2008**” states that there is “Level A” evidence(scientifically solid proof) that based on long and short term outcomes, UAE is safe and effective option for appropriately selected women who wish to retain their uterus.

THANK YOU

