# UTERINE ARTERY EMBOLISATION – FULL CLINICAL GUIDELINE

Reference No.: UHDB/Gynae/03:21/U3

## Contents



## 1. Introduction

Uterine fibroids are non-cancerous growths that occur in the womb. They often have no symptoms but they can cause heavy bleeding, pain, pressure to surrounding organs such as bowel or bladder, and sometimes make it difficult for a woman to conceive or to carry a pregnancy to term. Uterine artery embolisation involves injecting small particles into the blood vessels that take blood to the uterus, via the groin. The aim is to block the blood supply to the fibroids so that they shrink.

## 2. Purpose and Outcomes

The aim of this document is to provide a practical guideline to use Uterine Artery Embolisation (UAE) for management of symptomatic fibroid uterus for general and hospital practitioners.

## 3. Abbreviations

| | | |
|---|---|---|
| BP | - | Blood pressure |
| FBC | - | Full blood count |
| G&S | - | Group & save |
| GOPD | - | Gynaecology out Patients |
| GAU | - | Gynaecology Assessment Unit |
| GnRH | - | Gonadotropin Releasing Hormone |
| HMB | - | Heavy Menstrual Bleeding |
| IV | - | Intravenous |

| | | |
|---|---|---|
| IUCD | - | Intrauterine contraceptive device |
| MRI | - | Magnetic resonance imaging |
| NICE | - | National Institute of Clinical excellence |
| PCA | - | Patient Controlled Analgesia |
| PVA | - | PolyVinyl Alcohol (PVA) |
| UAE | - | Uterine Artery Embolisation |
| U&Es | - | Urea & Electrolytes |

## 4. Indications

- Women with large fibroids (greater than 3 cm) in diameter and HMB
- Other significant symptoms such as dysmenorrhoea or pressure symptoms related to fibroids
- Women who want to retain their uterus and/or avoid surgery.[6]

## 5. Contra-indications

- Uncertainty of diagnosis
- Current infection
- Immuno-compromised[2]
- Coagulopathy
- Previous pelvic radiation.
- Patient who will not have a hysterectomy under any circumstances : 2-3% risk of hysterectomy[3]

**Relative contra-indication**

- Renal failure
- Allergy to contrast
- Subserosal narrow stalk fibroids.
- Pregnancy or desire of pregnancy[1]

## 6. Efficacy

- Symptoms improvement 83% up to 3 years
- 40% reduction of fibroids[4] and 30% reduction of uterus[5].
- 11%-20% (HOPEFUL study, 2007[4]) re-intervention (myomectomy, hysterectomy)
- Pregnancies: not a treatment for sub fertility and women who conceived after UAE have a high risk of poor obstetric outcome including miscarriage.

## 7. Benefits

- Uterine sparing procedure.
- Avoidance of surgical (hysterectomy/myomectomy) complications
- Quick recovery

## 8. Risks and Complications

- Infection: 2 in 100 (uterine), rarely causing septicaemia
- Fibroids expulsion 1 in 10 with or without assistance
- Vaginal discharge 16 in 100, may persist up to 12 months, but is almost always self-limiting. If foul smelling and purulent, rule out infection, consider antibiotics. If persistent discharge- suspect fibroids expulsion.
- Amenorrhoea: 1.5 to 7 in 100
- 2-3 in 100 risk of emergency hysterectomy risk of re-intervention up to I in 4 if patient's age is less than 40 years and 1in 10 in above 40 years age group
- 1-2 in 100 risk of premature ovarian failure particularly in women over 45 years old
- Procedure: artery dissection or perforation: 1 in 700; Rarely non-target embolisation causing tissue necrosis.
- Puncture site bruising, haematoma

- **Post-embolisation syndrome and pseudo aneurysm formation which may require further treatment** – commonest side effects, almost always present. It is a symptom complex comprising pain, nausea, vomiting, 'flu like symptoms', fever with increased inflammatory marker and raised white cell counts. It is not to be mistaken for a predictor of impending infection. Hence performing blood cultures in the absence of other factors is unnecessary. It is almost always self-limiting; usually occurs within the first 72 hours post embolisation and then starts to subside after 72 hours, treated with analgesia and anti-inflammatory medication, often does not involve hospitalisation. Minority 3-5 in 100 may need unplanned re-admission for parenteral analgesia and fluid balance.

## 9. Selection of Patients

- Symptomatic fibroids
- Family complete or no desire for pregnancy
- Pelvic Ultrasound scan: evidence of sub-mucosal or intramural fibroid
- MRI: Evidence of intramural or sub-mucosal
- No contra-indications for uterine artery embolisation (UAE).
- Patient keen on non-surgical uterus sparing treatment.

## 10. Pathway (See Appendix A)

Referral: GP refers to Gynae Out patient department (OPD).

Gynae clinic:

- Gynecologist assesses patient and arranges US scan if not already arranged by GP. If the patient is suitable and keen for UAE:
  - Order MRI pelvis and abdomen (please write on request form - for suitability for UAE, referring consultant),
  - U&Es
  - FBC
  - Coagulation,
  - Review in 4-6 weeks.
  - Provide leaflet on UAE to patient (Appendix B)
- If patient is considered to be suitable for UAE by Interventional Radiologists, they will intimate the referring Gynaecology Consultant.
- Patients come back to GOPD (ideally 4 weeks from the initial referral for counseling and planning UAE).
  - GnRH analogue should be stopped now,
  - IUCD is removed
  - Consent form gets signed.
  - Prescribe PCA, analgesics and antibiotics.
  - Final paper request to radiology department for UAE (through Gynaecology secretaries for date).
- If UAE not appropriate, consider surgical options (myomectomy or hysterectomy)

## 11. Checks on Admission to Ward for UAE

- Starved for at least 6hours
- Observations. BP, pulse , temperature, respiratory rate,
- Recent FBC, UEs, Coagulation, G&S
- Pregnancy test
- Consent form
- Check whether allergy to contrast, antibiotics, etc
- Removal IUCD (increases risk of infection) if present.
- Indwelling Foley's catheter
- IV access
- Stat antibiotics one hour prior to embolisation as per antibiotics guideline: gynaecological infections:

- Co-Amoxiclav 1.2g stat if not penicillin allergic
- Cefuroxime 1.5g / Metronidazole 500mgs if rash only with penicillin

## 12. Pain Management

Notify the nurse led Pain Control Team prior to admission (1 week) and they will prescribe and set up the Patient controlled analgesia (PCA) on the morning of the procedure

Premedication: 2 hours before the procedure patient can have Paracetamol 1.5 gm (if < 65 kg body wt) or 2 gms (> 65 kg) and Diclofenac MR 75mg (if there is no contra-indication).

PCA should be set up in the ward; first loading dose would be given by radiologist just before the procedure.

## 13. Discharge by Doctor

- Inform patient re: Post embolisation syndrome: nausea, pain, flu like symptoms, fever ( See above)
- Analgesia- to be confirmed by pain management team (diclofenac, paracetamol, opiates)
- Ensure patient has received the information leaflet (Appendix B), contact GAU/ ward 209 for out of hours
- Document follow up arrangements.

## 14. Follow-up

- Patient should have GAU/ ward 209 contact no. for future reference
- 8-10 wks GOPD with ultrasound scan (ideally after 2-3 menstruation)
- If the patient remain symptomatic please arrange MRI (allow 6 moths to know the pattern).

## 15. Monitoring Compliance and Effectiveness

Audit compliance through agreed Business Unit audit forward programme.

## 16. References


1. Goldberg and Pereira, 2006
2. Marshburn et al, 2006 ACOG
3. O'Grady EA, Moss JG, Belli AM, et al. (2009). UK uterine artery embolisation for fibroids registry 2003–2008. British Society of Interventional radiology.
4. Hopeful study 2007
5. Leiomyomata Treated with uterine Artery Embolisation: Factors Associated with successful symptom and imaging Outcome B. Spies, MD Antoinette R. Roth, 2002).
6. National Institute of clinical excellence (NICE) clinical guidelines; CG44- Heavy menstrual bleeding (Issued: January 2007)
7. NICE interventional procedure guidance: IPG367- Uterine artery embolisation for fibroids (Issued: November 2010)
8. Clinical recommendations on the use of uterine artery embolisation in the management of fibroids. Second Edition. Report of a Joint Working Party. Royal College of Obstetricians and Gynaecologist's- The Royal College of Radiologists. 2009.

## Uterine Artery Embolisation (UAE) Patient Pathway

**GP or Gynae OPD**

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**U/S Pelvis**

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**GOPD** **-** fibroids diagnosed
- decision made to treat with UAE
- Pt Info leaflet given

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**MRI Scan** - fibroids suitable for UAE.

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**GOPD**
- Radiology request
- Part A consent form signed
- IUCD removed
- Vaginal swabs
- GNRH analogues stopped for 3months
- Prescribe PCA+ antibiotics

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**Radiologist books appointment date**

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**Gynae secretaries organise Inpatient gynae bed**

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**Pt admitted to ward 209 for procedure** (9am)

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- clerked + bloods i.e. FBC, U+Es, INR, Group + save
- pregnancy test
- bladder catheterised
- IV access
- IV antibiotics
- PCA pump set up
- Nil by mouth (NBM) for 6 hours

**Pt brought down to Imaging dept.** (1pm)

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- sedation , antiemetic , analgesia given
- procedure performed
- haemostasis achieved

**Pt transferred back to gynae ward for overnight observation/ recovery**

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**Pt discharged + to have Gynae follow up in 8-10 wks with an US**

Follow up with MRI scan in 6 months (only if remaining symptomatic)

**Patient Information**

University Hospitals of Derby and Burton NHS Foundation Trust

# Uterine Artery Embolisation (UAE)

Uterine artery embolisation (UAE) is a procedure to treat fibroids in the womb.

## What are fibroids?

Fibroids are growths of the muscles of the uterus (womb) and are seen in almost one third of women. While fibroids do not always cause any symptoms, some cause heavy or painful periods (even leading to anaemia) and pressure symptoms depending on their size and location. Fibroids may also cause subfertility or recurrent miscarriage.

## What is Uterine Artery Embolisation (UAE)?

UAE is a method of treating fibroids without surgery by blocking the blood vessels (uterine arteries) that supply blood to them. Living tissue cannot survive without a supply of blood so this process causes the fibroids to die and eventually shrink in size.

Blood vessels become steadily smaller as they branch, like branches of a tree. The uterine arteries are blocked by injecting very small particles of plastic called polyvinyl alcohol (PVA) into them through a thin tube (catheter). The PVA particles are carried along with the flowing blood until the artery is too small for them to pass any further and they get stuck, blocking any further blood flow in that branch. Gradually all the branches of the uterine artery are blocked. There are two uterine arteries and both are treated in this way.

Although the PVA particles will affect branches taking blood to every part of the uterus, normal tissue can usually tolerate this because the fibroids take most of the blood flowing in the uterine arteries, and (unlike normal parts of the uterus) they do not usually get any significant blood supply from other arteries.

## What are the benefits?

In the weeks following the procedure, the fibroids should shrink in size and therefore reduce your symptoms. Shrinkage of the fibroids can be a slow process, taking 6 - 12 months. The fibroids will usually shrink to about half their original size.

Improvement in symptoms that are related to the size of the fibroids, such as pelvic pain or the sensation of pressure on the bladder or bowel, will take a similar length of time to complete in about 80% of patients. The monthly cycles may disappear for a month or two in as many as 10% of patients. Improvement in heavy monthly bleeding due to fibroids is expected in 85 - 90% of patients when the cycles return to normal.

Overall, 80 - 90% of patients will have improved symptoms within 12 months following the treatment.

## Preparing for the procedure

You should not eat food for 6 hours before the procedure and not drink any fluids for 3 before the procedure. **Diabetic patients** should ask for advice regarding their medication from staff on Ward 209a (gynaecology).

If you are taking **Warfarin, Clopidogrel (Plavix) or Cilostazol (Pletal)**, please telephone the Royal Derby Hospital on 01332 783215 for advice. You will need to stop taking this medication several days before the procedure.

## What happens when I come into hospital for my procedure?

On the day of the procedure you will be admitted to a ward and introduced to the nursing staff. A pregnancy test is routinely performed before the procedure. You will also have a bladder catheter inserted for your own comfort as you will be lying flat for 6 - 8 hours following the procedure. You will be given antibiotic injections, which will reduce the risk of any infection at the time of the procedure.

As embolisation can be painful, a PCA (patient controlled analgesia) pump is set up which runs through a small drip in the back of your hand and allows you to give yourself small doses of morphine as required. This can be used during the procedure and for around 12 hours afterwards. The amount of discomfort felt by patients varies, and the advantage of a PCA pump is that you are in complete control of your pain relief. Please be reassured that you cannot give yourself an overdose.

## What happens during the embolisation procedure?

You will be brought to the X-ray department and into the angiographic room. You will need to lie flat on a table for the procedure. A nurse will be with you all the time. There will also be the radiographer present and a consultant radiologist who will be performing the procedure. Although you will be awake during the procedure, you will be sedated, so you may not remember much afterwards.

Local anaesthetic is injected in the groin. This may sting a little but will then go numb. A small nick is made at the crease at the top of the leg and the consultant radiologist then inserts a tiny tube (catheter) into the femoral artery.

The catheter is steered through the arteries to the uterus using x-ray imaging to guide the catheter's progress. When the consultant is happy that the catheter is in a safe position (i.e. there is no risk of particles entering arteries to other organs), particles will be injected through the catheter. Over several minutes, the arteries are slowly blocked. It is necessary to embolise the arteries feeding both sides of the uterus (if just one side is blocked, the artery on the opposite side may grow to take over and feed the fibroids). This may mean having to make small punctures in both groins.

The procedure normally takes approximately 1 hour.

## What happens after the embolisation procedure?

Following the procedure you will be taken back to your ward on a trolley. You will need to lie flat for 6 - 8 hours to reduce the risk of bleeding from the puncture sites in the groins.

You will have the morphine pump (PCA) to control any pain and the nursing staff can give medication to relieve any nausea caused by the morphine. The nursing staff will check your groins for any bleeding at regular intervals.

Once the sedation has worn off you can eat and drink, however you must do so lying flat or on your side.

You will be kept in hospital overnight and you should be allowed home on the day following the procedure.

## What are the risks, consequences and alternatives of this treatment?

Like all invasive procedures there are potential complications and side effects, which include:

- Post embolisation syndrome - this is common occurring in up to 50% of patients. This consists of abdominal pain, nausea, fever and flu like symptoms. This usually lasts for 7 - 10 days after the procedure. It only needs treatment with drugs such as paracetamol and ibuprofen. A small number of patients (3 - 5%) may need readmission to hospital for stronger painkillers and fluids.
- Infection can occur in 0.5% of treated patients. If you develop a high temperature and/or foul vaginal discharge in the months following treatment you should see your GP or gynaecologist. The infection usually responds well to antibiotics.
- Vaginal discharge without any foul smell is common and occurs in up to 15%. This usually resolves within a few weeks without any treatment.
- Amenorrhoea (no periods) - UAE can temporarily interfere with ovarian blood supply. Permanent amenorrhoea may occur in 1.5 - 7% of patients, but the majority of patients who have early menopause are over 45 years old. Studies indicate that both UAE and hysterectomy may affect the function of the ovaries (ovarian reserve) and may therefore reduce fertility[1].
- A hysterectomy (complete removal of the womb) may become necessary for 2 - 3% of patients due to the above complications, especially infection or persistent pain.
- Quality of sexual life - Although there is very little evidence regarding this, some reports indicate that about 10% of patients may experience unwanted changes in the quality of their sexual life at one year after the procedure.
- Other complications - rarely allergic reaction to the dye used during the procedure and severe bruising in the groin after the procedure (less than 1%). This may require further treatment.

It is possible that the procedure can fail, especially if the arteries are too twisted or they undergo spasm when the catheter is placed inside.

### Effect on fertility

There is evidence that that successful pregnancy is possible after an UAE, but the caesarean section and miscarriage rates may be higher in comparison to women without uterine fibroids. If you have any concerns regarding your future fertility please ask your gynaecologist for more information.

### Radiation risks

All x-ray procedures involve some exposure to radiation and so pose a degree of risk. Everyone is exposed to background radiation from the environment throughout their lives. 1 in 3 people will develop cancer at some point in their lives due to many causes including environmental radiation. Radiation from a medical procedure involving x-rays can add very slightly to this risk. The length and level of exposure to radiation in medical procedures is strictly controlled and is kept to a minimum. The added risk of cancer due to this radiation is very small. Your doctor has determined that the risk to your health of not having this procedure is considerably greater than the risk from the radiation used.

If you are concerned about any of these risks, or have any further queries, please speak to your gynaecologist.

### Can the fibroids come back?

Yes, it is possible that new fibroids may develop or on occasions previous fibroids may regrow. The risk of needing further treatment is reported to be 15% in one study[3] within 3 years. Further treatment might include another UAE, myomectomy or hysterectomy.

## Alternative treatment options

Your consultant has recommended this procedure as being the best option. However, depending on your individual circumstances the following may be suitable alternatives. Your gynaecologist will discuss this with you.

### *Hysterectomy*

Hysterectomy (complete removal of the womb) is the most common treatment for fibroids and it has the advantage that the fibroids, and the problems caused by them, are removed for good. However, it also has some significant disadvantages. Infertility is inevitable and the length of stay in hospital and the length of time before you feel able to return to normal activities are both likely to be longer than for UAE. Complications such as infection, bleeding, injury to other organs, and problems due to blood clots developing in the veins are much more likely after a hysterectomy than UAE.

### *Myomectomy*

Myomectomy is a procedure in which only the fibroids are removed, leaving the normal tissue of the womb in place. It can be a complex operation and not suitable for all fibroids. Fibroids can recur after myomectomy in up to 70% of patients, as it is very difficult to remove them all, unlike UAE which treats them all.

### *Drug treatment*

Fibroids may be treated by hormonal drugs. However, these drugs can have significant side-effects and do not provide a lasting cure. When the drugs are stopped, the fibroids usually regrow to their original size.

## DISCHARGE INFORMATION AND AT HOME ADVICE

You can return to normal activities after 48 hours, but you may experience some tiredness and cramping pain (like severe period pain) for a few weeks. If you have severe complications after the procedure, please contact your gynaecologist's secretary at the Royal Derby Hospital (01332 340131) or your GP for advice.

You may need to take painkillers for several days after the procedure (follow the manufacturer's instructions and do not exceed the stated dose).

You should not drive for 48 hours.

It is advisable to take about 10 days off work.

You will be seen again by your gynaecologist in an outpatient clinic 8 - 10 weeks after the procedure. A follow-up MRI scan may be organised for those patients with persistent or recurrent symptoms.

**References**


1. Clinical recommendations on the use of uterine artery embolisation in the management of fibroids .Second edition. Report of a joint working party. Royal College of Obstetricians and Gynaecologists. 2009.
2. Uterine artery embolisation to treat uterine fibroids. A Watkinson, A Nicholson. BMJ 335; 720-722 Oct. 2007
3. National Institute for Health and Clinical Excellence. Heavy Menstrual Bleeding. (NICE Guideline CG344) London NICE; 2007.


If you require further information, or have severe complications after the procedure please telephone your gynaecologist's secretary, Royal Derby Hospital (01332 340131), or Ward 209a on 01332 787209 or your GP

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