

Uterine Artery Embolization

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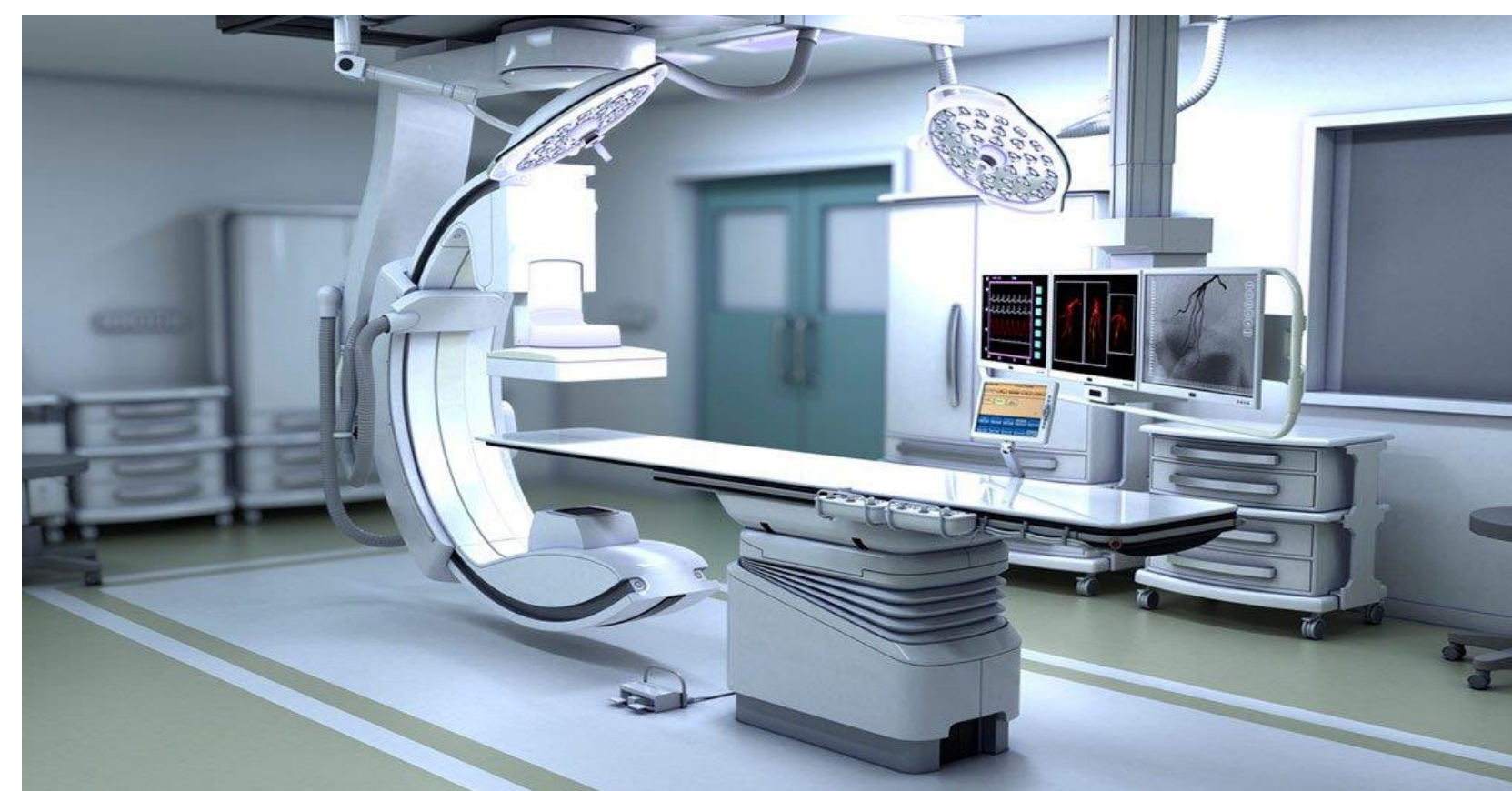
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Introduction

Uterine artery embolizations (UAEs) can be done for countless reasons, one of the most common being to treat post-partum hemorrhaging. "In 2012, post-partum hemorrhaging accounted for 25% of maternal morbidity worldwide" (Liberth and Gordon, 2019, p. 135). Due to the high risk of these situations, all departments must work together to ensure the success of the procedure.

Interventional Radiology (IR)

IR is defined as the use of radiography and fluoroscopy to guide a series of wires, catheters, and other medical devices into the body. (Long, Rollins, and Smith, 2016)



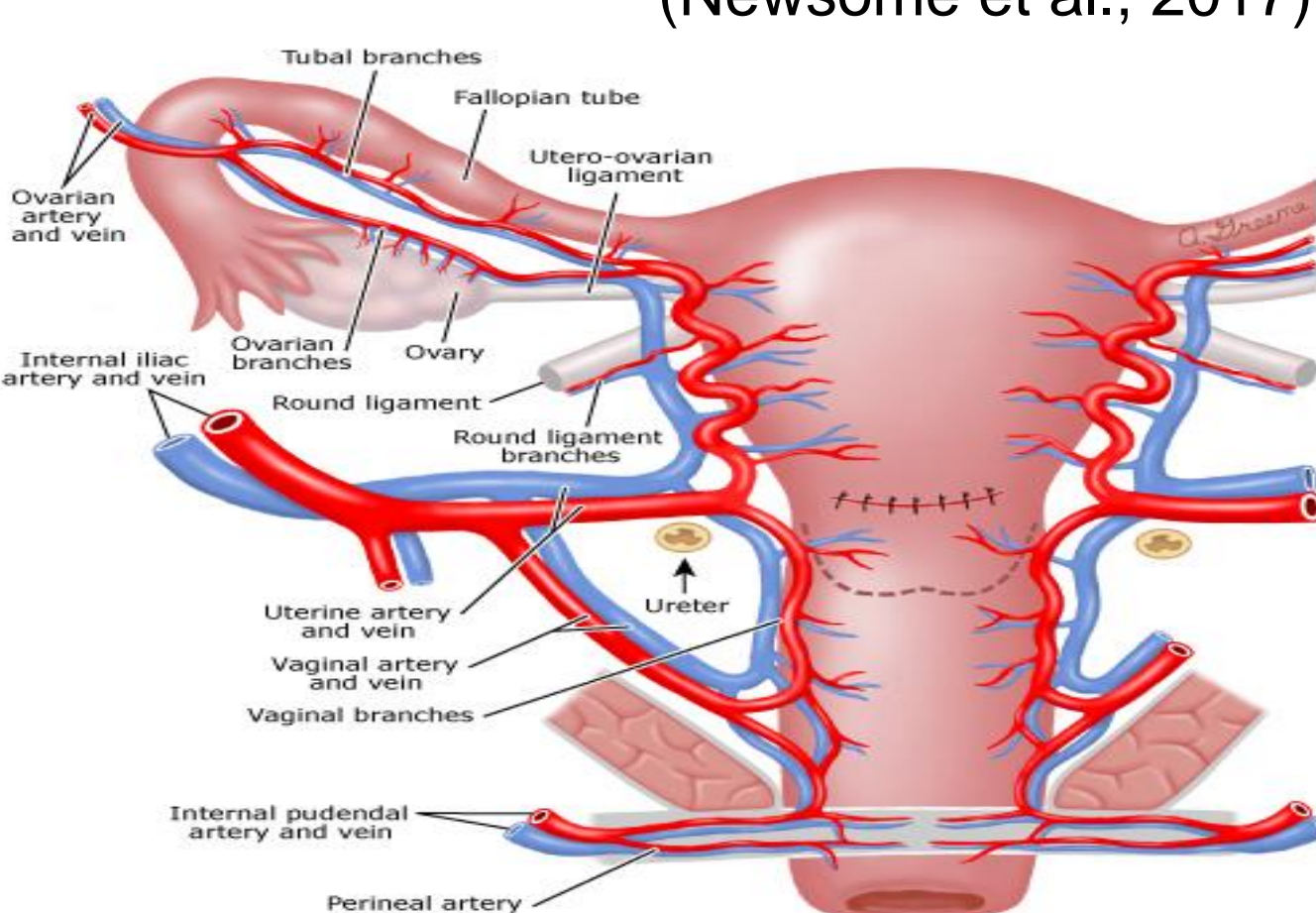
This is a traditional IR suite set-up (Digirad, 2020)

What is a Uterine Artery Embolization (UAE) ?

- UAE is a procedure incorporating an injected embolic agent to cut off or restrict blood flow to the Uterine Artery.
- Vascular access is obtained through the femoral artery in the groin, where a sheath is placed to allow wires, catheters, and fluids to pass through.
- Monitoring of the microcatheter location is done by doing multiple injections both by hand and/or by power injector.
- Once the correct location is found with a microcatheter, the doctor will precisely place the embolic material to restrict the blood flow to the area of interest.
- There may be a combination of embolics used to ensure that adequate blockage has been reached and a final contrast injection will take place.

(Newsome et al., 2017)

a diagram depicting the anatomy of the uterus



(Mayo Clinic, n.d.)

What can lead to hemorrhages?

- lower genital tract injuries
- coagulopathy (Lee et al., 2018)
- uterine fibroids and endometriosis
- trauma/ scar tissue formation
- placental polyps, accrete, and abruption
- uterine arteriovenous malformations (AVMs) and pseudoaneurysms (Gorsi et al., 2021)
- invasive placentation
- caesarean section (O'Brien et al., 2019)

Modalities involved

- **Computed Tomography (CT)** scans are done pre and post operation to monitor and locate bleeding.

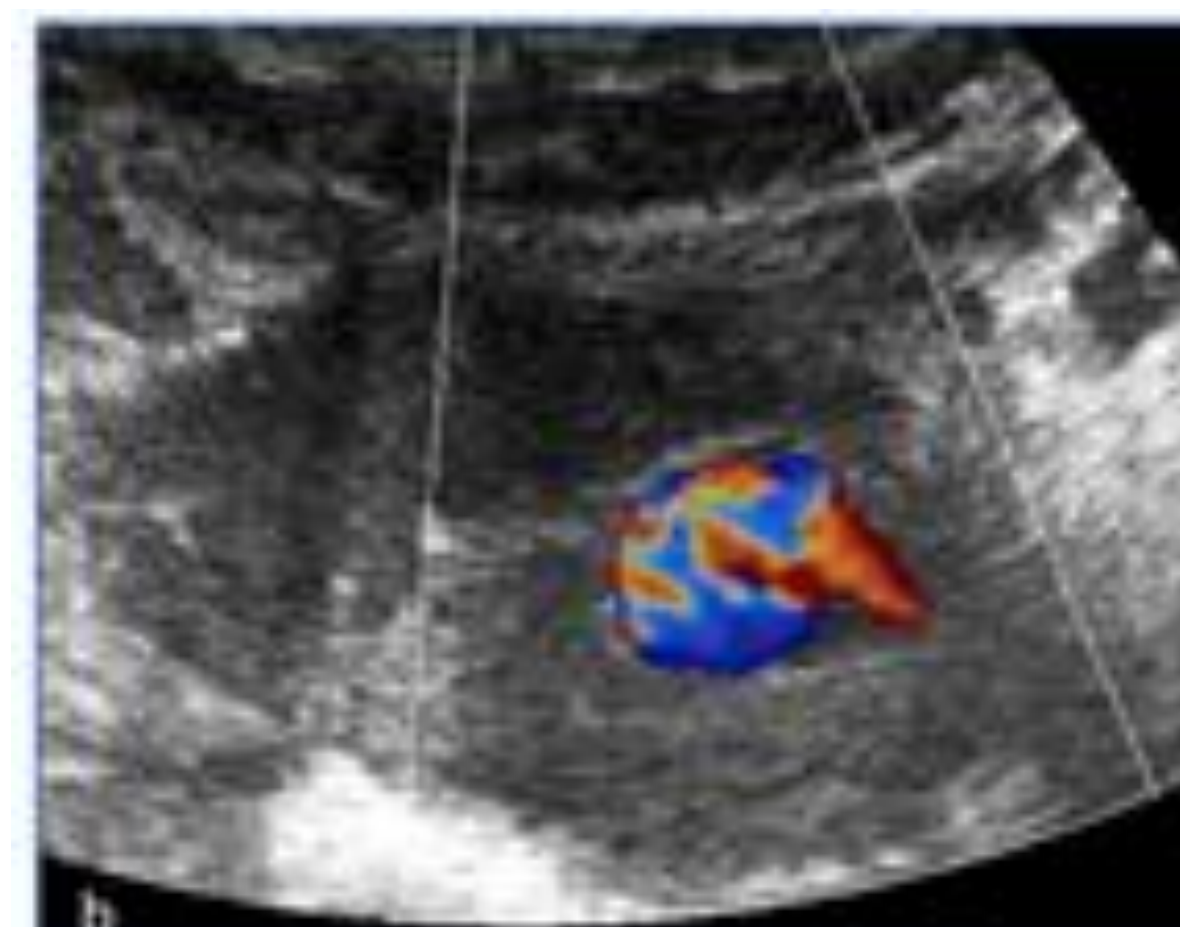


A CT scan showing a hematoma at an incision site.

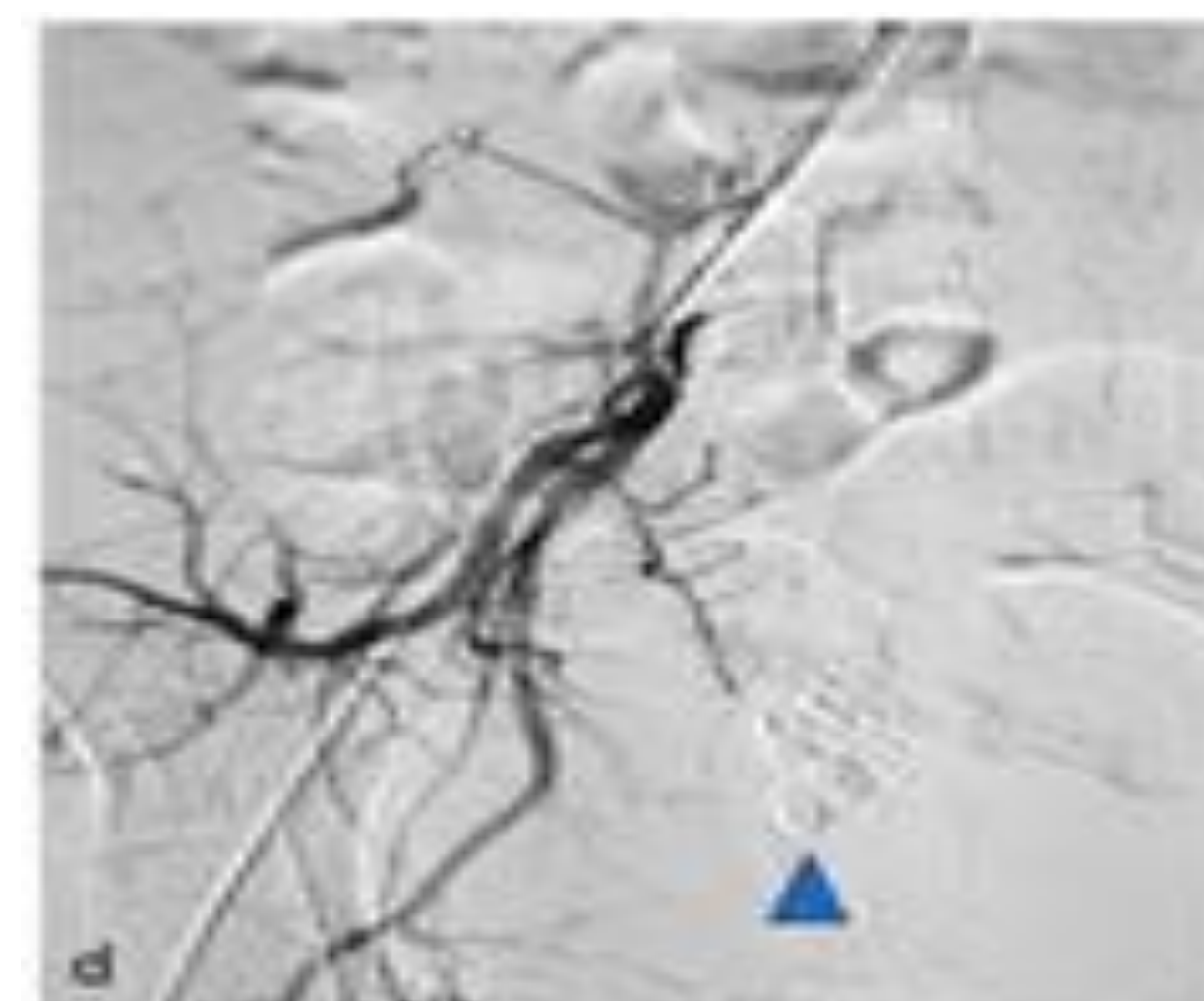
(Gorsi et al., 2021)

- **Ultrasound** is required to locate the vascular site that will be used for access.

This is a doppler ultrasound showing the active blood flow within a pseudoaneurysm (Gorsi et al., 2021)



- **Angiography** is a study conducted to visualize the vascular system by injecting a radiopaque contrast material. (Peters, 2020)



A post embolization angiogram to determine if adequate restriction of blood flow to the pseudoaneurysm was achieved.

(Gorsi et al., 2021)

Signs/symptoms

- Severe or heavy bleeding
 - If delivery related amounts are between 500mL and 1000mL
- Pelvic pain
- Abdominal swelling

(Mayo Clinic, n.d.)

Treatment Plans

- Once the physician locates the corrects vessels, an embolic agent will be administered.
 - Gelfoam, coils, and glue are the most common used.
 - Polyvinyl alcohol can also be added in for permanent vessel embolization.

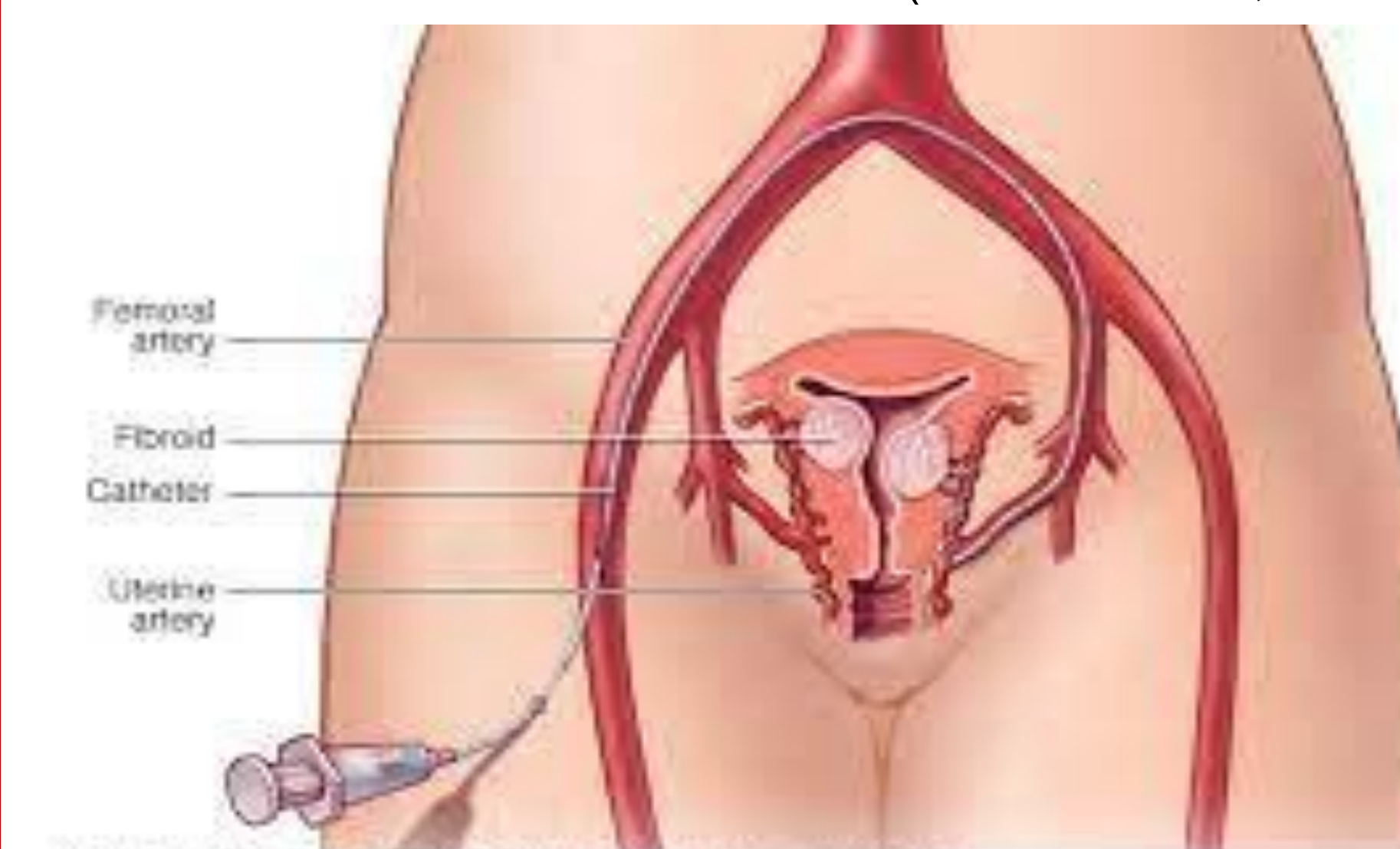
(Gorsi et al., 2021,p. 1)

- Embolizations are not always successful the first time so re-embolization may have to be done in the following hours or days.

(Gorsi et al., 2021)

- If bleeding can not be controlled with embolization, a hysterectomy will be performed to eliminate the possibility of further hemorrhage.

(O'Brein et al., 2019)



Visual representation of how vascular access is gained.

(Mayo Clinic, n.d.)

Advantages of UAE

- Reproductive abilities are maintained
- Continued menstruation cycles
- Relief of symptoms including incontinence, heavy bleeding, and abdominal swelling.

(Mayo Clinic, n.d.)

Risks

- Infection
- unintentional embolization
- post embolic syndrome
- hematoma or pseudoaneurysm
- ischemic complications
- vesico-vaginal fistulas

(Mayo Clinic, n.d.)

(Gorsi et al., 2021)

Statistics/ success rates

- Clinical success was seen in 95.4% of cases
- Gelfoam was the most frequently used embolization agent occurring in 50% of all cases
- Due to the high success rates of percutaneous UAE, emergency hysterectomy rates have been reduced.

(Gorsi et al., 2021)

Conclusion

Due to the positive outcomes recorded from this procedure, it can be concluded that there has been great success in not only stopping post-partum hemorrhaging, but also treating uterine fibroids. Since UAE is a less invasive approach as compared to hysterectomy, most women are able to get pregnant again, as well as regain normal menstrual cycles.