

Uterine Artery Embolization is Advanced, Minimally Invasive Treatment for Fibroids with Intervention Procedure: a Case Report

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Abstract

Uterine Artery Embolization (UAE) has become most effective and minimally invasive alternative treatment over the past many years, especially for women with symptomatic fibroids for whom conservation of uterus is important. Here we are reporting a case of an eighteen year old, unmarried female who presented with pain in lower abdomen and pelvis, menorrhagia and she also noticed gradually increasing lump in pelvis and lower abdomen.

After clinical examination, patient was referred for radiological investigations, initially ultrasonography was performed which revealed, a large sized posterior wall uterine fibroid measuring approx. 19 x 10 x 18 cm and it was further confirmed on MRI with contrast study. UAE was carried out in order to relieve the symptoms, reduce the size of fibroid and at the same time preserve the uterus. The procedure was uneventful after follow-up for 3 months, there was partial regression in the size of fibroid.

Keywords: Uterine Artery Embolization (UAE), Uterine Fibroids, Menorrhagia, Embolisation, Polyvinyl Alcohol (PVA).

1. Introduction

The first UAE was performed by Jean-Jacques Merland in the year 1974 in Paris, for treatment of intractable menorrhagia in a severely disabled woman with uterine fibroids¹. UAE as a primary form of therapy was reported by Ravina and Merland in 1995 in their study of 16 patients².

Uterine fibroids which are also known as leiomyomas will increase in size and flare-up due to estrogens as they are estrogen-responsive. They are classified as benign neoplasms and mainly composed of smooth muscle cells of uterus with fibrous connective tissue^{3,4}.

Fibroids are known for its incidence as most common tumour in the female reproductive age. As per the reported statistics, its incidence is about 40% in premenopausal women¹. Out of total cases of fibroids 25–30% will have symptomatic presentation.

Hence, it was common indication for hysterectomy^{1,5}. UAE is alternative, most effective treatment which helps as uterine saviour.

Fibroids are classified by their position and extension as submucosal, subserosal and intramural. Exophytic or pedunculated fibroids are the subtypes of Subserosal and submucosal fibroids.

Pedunculated fibroids mean its attachment to the uterus by a stalk which is narrower than half of the total extent of fibroid. Exophytic one will have an attachment to the uterus with a broad base.

The symptoms that are usually encountered are mainly excessive prolonged menstrual bleeding with passage of blood clots, feeling of fullness in the pelvis, pain in abdomen and pelvis or lower back, frequent urination, infertility, abnormally enlarged abdomen with constant urge to urinate.

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2. Case Report

An eighteen year old unmarried female presented with progressive lump and pain in lower abdomen with menorrhagia since 1 year and she also noticed gradually increasing lump in pelvis and lower abdomen since 9 months. On examination the large lump was firm in consistency and corresponded to 32 weeks of gestation. Per vaginal examination was not done as the patient was unmarried. On per rectal examination, rectal mucosa was free, boggy was felt in pouch of Douglas and parametrium was free.

Ultrasound examination was advised, which revealed a large well-defined, heterogeneous, mixed and complex echogenic mass lesion was seen in the region of fundus and body of uterus. There was no involvement of Cervix.

On color Doppler Sonography, the lesion showed central as well as peripheral vascularity. Hence patient was advised for MRI study which revealed, a large, well-defined lesion with heterogeneous signal intensity on T2-weighted images and few cystic areas was noted in the posterior uterine wall and occupying lower abdominal-pelvic region suggestive of large size intramural fibroid. The size of the fibroid was approximately 19 x 10 x 18 cm in supero-inferior, antero-posterior and transverse dimensions respectively. Uterus and endometrial cavity appears stretched and displaced anteriorly. The mass lesion was compressing the right distal ureter with resultant right sided moderate hydronephrosis.

As this patient was a young unmarried female, there was a need for conservation of the uterus but at the same time relieves her symptoms and therefore uterine artery embolization was planned.

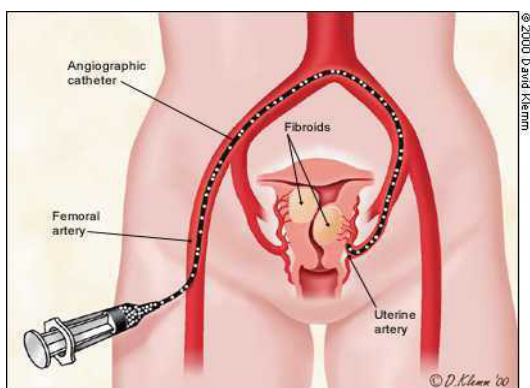


Figure 1. Diagrammatic representation of a tiny catheter maneuvered into the uterine artery through the femoral artery.

3. Technique of Uterine Artery Embolization

Before the procedure, pre-anesthetic check-up, fitness was done. Intravenous antibiotics were administered. Patient was given sedation and local anesthesia, 5 F Robert catheter was introduced first into the femoral artery and selectively in the left uterine artery. Once it was guided into uterine artery, arteriography was performed by injecting contrast. Particles of PolyVinyl Alcohol (PVA) of size 500 µm in diameter, with normal saline are injected to augment the vascular supply of the fibroid, until the uterine artery was apparently blocked (selective embolization). The same procedure was performed for the right uterine artery (Figure 1 & Figure 2).

It was observed polyvinyl alcohol flows and blocks the vascular supply of the uterine fibroids, hence it reduces blood flow and causes ischemic necrosis (Figure 4).

As normal myometrium is supplied by multiple collateral arteries, therefore continuing its blood supply (Figure 3).

When both uterine arteries (left and right) were embolized catheter was gradually removed. Post-procedure patient was monitored with standard post-arteriographic measures and recovery was normal.

4. Advantages of Uterine Artery Embolization over surgery (Hysterectomy, Myomectomy)

UAE has many advantages over surgical procedure like traditional hysterectomy, myomectomy etc. No blood transfusion or prolonged hospital stay is required in UAE

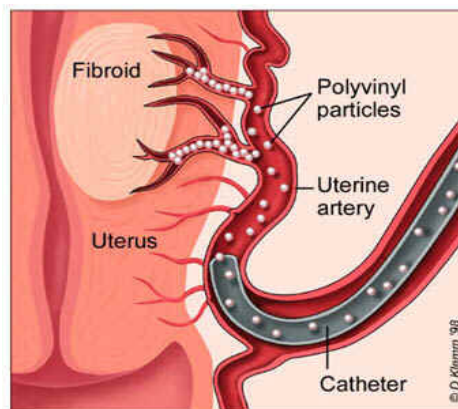


Figure 2. Polyvinyl alcohol particles of 500 µm in diameter are injected and enter the abnormal arteries in the uterus.

Post-embolization angiogram

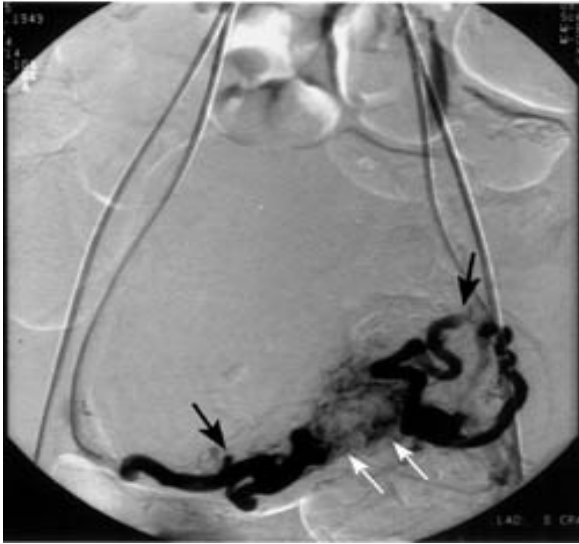


Figure 3. Digital subtraction pre-embolization arteriogram of the uterine artery showing hypervascular arterial supply of the fibroid.

Pre-embolization angiogram



Figure 4. Post-embolization arteriogram shows that the small arteries feeding the fibroid are completely blocked.

as it is one day procedure. Recovery is faster in patients who are treated with UAE.

When we compare myomectomy versus UAE, the advantages are all the fibroids are treated at same time with UAE; and recurrence rate appears much lower than myomectomy^{6,7}.

5. Advantages of Uterine Artery Embolization over Hormonal Therapy

Hormonal therapy is expensive. Early menopause-like symptoms are seen with hormonal therapy, these rarely seen as a result of UAE. Also other side effects related to hormone are not with UAE.

6. Side Effects and Complications

After the procedure, patients mainly experience 6 to 12 hours of pelvic pain which is variably intense. The other side effect could be cramping pelvic pain, for which treatment with oral or intravenous analgesics is suggested. If pain is not subsided epidural analgesia is recommended followed with oral analgesics.

'Postembolization syndrome', is another side effect with incidence of 15 to 30%, occurring after the procedure

in the first week, consisting of fever and malaise. Conservative treatment helps in resolving this syndrome spontaneously. The tissue gets degenerated in form of breakdown products from degenerating uterine fibroids which is the cause for this syndrome⁸.

Severe infection/septicaemia is been uncommon. Necrotic submucosal fibroids after the procedure by UAE, expelled from the uterus. Temporary amenorrhea and post-procedure menopause may be a rare complication after this interventional procedure.

It is reported as radiation exposure 20 cGy with the use of continuous fluoroscopy during UAE to the ovaries⁹. However, when intermittent fluoroscopy is used it is in much lower doses and absorbed radiation doses do not cause any genetic defects in offspring⁹.

'Misembolization' is another rare complication and it can affects other pelvic organs and can be avoided with proper precautions during embolization and meticulous technique.

7. Conclusion

Uterine artery Embolization has become most effective alternative treatment to surgery for those women specially wants to preserve their uterus. With advancement of the technology, and well trained interventionist the safety, efficacy is high which was also reported in

the literature and in our case study we observed, it is unchallenged non surgical option for young women with large sized fibroids, bulk related symptoms with menorrhagia without surgical intervention.

UAE has a low complication rate. It is minimally invasive, less expensive one day procedure. Proper patients selection, pre-procedure evaluation, meticulous and correct procedure technique by team of interventional radiologist are essential for its success.

In our present case study, all above guidelines were followed for intervention and post-procedure it showed excellent result without any major or minor side-effects with high patient satisfaction.

8. References

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