

Uterine fibroid embolisation: Initial experience in our local population

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Abstract

Objective: To evaluate the results of uterine fibroid embolisation as a treatment option for symptomatic uterine fibroids in the local population.

Methods: The retrospective study was done at the Department of Diagnostic and Interventional Radiology, Shifa International Hospital, Islamabad, and comprised records of 12 patients with symptomatic uterine fibroids who had undergone uterine fibroid embolisation with the use of polyvinyl alcohol between May 2008 and July 2012. All of these patients had been assessed by a gynaecologist. Pre-embolisation workup was done by pelvic Magnetic Resonance Imaging. A detailed questionnaire was prepared to assess clinical improvement and interval change in fibroid size on follow-up imaging.

Results: A technically successful embolisation was done in all patients. All patients experienced immediate post-procedure pain, but responded to conservative treatment. Clinical follow-up showed a significant reduction in symptoms within six months of the procedure, with 88% improvement in menorrhagia and 100% improvement in pain. Follow-up imaging showed reduction in fibroid sizes ranging from 17-63%. Two patients developed infection, which is a known complication of this procedure.

Conclusion: Uterine fibroid embolisation is a well-recognised treatment option for symptomatic uterine fibroids. Ascertaining its long-term results in our local population will, however, require additional studies with larger patient populations.

Keywords: Symptomatic uterine fibroid, Uterine fibroid embolisation, Poly Vinyl Alcohol (PVA) particles. (JPMA 63: 1482; 2013)

Introduction

Leiomyomas or fibroids are the most common uterine tumours with about 50% prevalence at menopause.¹ Out of all fibroids, at least 50% are estimated to be asymptomatic² and are more often than not left untreated. In symptomatic cases, however, fibroids can cause excessive menstrual bleeding, varying degrees of pain and, if large enough, significant pressure symptoms. In some cases they may even contribute to infertility by hampering implantation.³ A number of treatment options have been used over time, including surgery, pharmaceutical management, endometrial ablation and uterine fibroid embolisation (UFE). Though hysterectomy still remains the definitive treatment for fibroids, it carries with it a significant morbidity and mortality. Studies have shown abdominal hysterectomies to be associated with a significant morbidity in 3% of cases and minor morbidity in approximately 14% of cases.⁴ Various studies also show comparable results of abdominal myomectomies with UFE and indeed even suggest that UFE is safer with shorter recovery time.^{5,6} The role of UFE in patients

wishing to have treatment of fibroids for infertility has not been well studied. Studies are, however, available that show similar fertility rates after UFE in comparison to myomectomy⁷ although with higher risks for pre-term delivery and malpresentation.⁸ There are indeed studies that show that patients can conceive and have successful pregnancy outcomes after UFE.⁹ UFE has hence gained considerable acceptance as an alternative treatment for uterine fibroids. Treatment of symptomatic fibroids by transcatheter embolisation of the uterine arteries was first reported by Ravina et al in 1995.¹⁰ By 2004 it was estimated that 35,000 to 50,000 procedures had been performed all over the world.¹¹

Various studies performed worldwide show that UFE has a promising role in the treatment of uterine fibroids.¹² The procedure has also gained recognition in Pakistan although performed only at a limited number of institutes, and, to our knowledge, limited data has been published regarding its outcome in our society. A recent small-scale study performed at a tertiary care hospital in Karachi showed improvement in symptoms with a 77% reduction in menorrhagia and 89% reduction in pelvic pain.¹³ The purpose of this study was to try and establish the results of the few cases that we have performed at our institute to date.

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Patients and Methods

The retrospective study was done at the Department of Diagnostic and Interventional Radiology, Shifa International Hospital (SIH), Islamabad. Twelve patients who had undergone UFE between May 2008 and July 2012 for menorrhagia and/or pain due to fibroids were identified through the radiology database. The pre-embolisation imaging work-up of fibroids was performed by pelvic magnetic resonance imaging (MRI). A detailed questionnaire was made to assess improvement in patient symptoms and reduction in fibroid size post UFE. Patient lost to follow-up (n=1) was excluded from the final analysis.

A pre-procedure laboratory work-up was performed which included complete blood count (CBC), International Normalised Ratio (INR), Activated Partial Thromboplastin Time (APTT) and serum creatinine. All patients were administered a single dose of broad-spectrum antibiotics prophylactically prior to the procedure. A consultant interventional radiologist performed all procedures in an angiography suite on a monoplane flat panel digital subtraction angiography (DSA) unit (Toshiba). Single femoral access technique under local anaesthesia was used in all patients. Pain during the procedure was managed by intravenous pethidine with midazolam. A pelvic angiogram was done and bilateral UFE performed in all patients.

After placing a 5Fr vascular access sheath, a 4Fr C2 catheter was advanced over hydrophilic guide wire into the left internal iliac artery and diagnostic angiography was performed. The 4Fr catheter was used for selective catheterisation of the uterine artery and embolisation (Figure 1a and 1b). In case of severe tortuosity and difficult catheterisation, a micro-catheter was used to avoid vasospasm. Finally, 500-700µm and 300-500µm polyvinyl alcohol (PVA) particles were slowly infused into the artery and "near-stasis of flow" in uterine arteries was considered the end point of the procedure.

Procedure was then repeated for the right side using the same catheter after forming a Waltman's loop (Figure 2a and 2b). After the procedure, haemostasis was achieved by manual compression.

All patients reported some degree of post-procedure pain, which was managed with oral acetaminophen and Non-Steroidal Anti-Inflammatory Drugs (NSAIDS) with codeine, and administration of intravenous pethidine as required. Patients were kept under observation in the hospital for 24 hours and discharged on oral analgesics once their clinical condition was satisfactory. One patient was discharged the same day.

All patients were followed up as outpatients. Imaging follow-up was advised six months after UFE. Patients were compliant and only one was lost to follow-up. Follow-up results of the rest of the patients was retrospectively retrieved from the online database system and recorded in a detailed proforma. The proforma contained questions that assessed the degree of patient's symptomatic improvement. Improvement in pain was considered if the pain intensity reduced by a scale of 2 on the numerical rating scale. Improvement in menorrhagia was considered if the number of pads/day used reduced by one-third of its initial value. Per cent reduction in fibroid size on follow-up imaging was also documented.

Results

The age of the 12 patients ranged between 38 and 48 years. Indications to UFE included heavy menstrual bleeding and pelvic pain (5 patients), menorrhagia alone (5 patients) and pain alone (2 patients). All women were premenopausal and had been referred by a gynaecologist after initial basic work-up. One patient had undergone a myomectomy 6 years back with no symptomatic relief.

Technically successful embolisation was performed in all patients. All patients experienced variable intensities of post-procedure pain, which was treated with intravenous opioids for 24 hours and with oral medications after discharge. No significant procedural complications were encountered.

Out of the 12 patients, 11 (92%) came for follow-up. One (8%) patient with menorrhagia and pelvic pain was lost to follow-up.

Clinical follow-up after six months showed a reduction in menorrhagia in 8 (88%) out of 9 patients. All the 6 patients who had pain reported improvement.

Success or failure of the procedure was assessed by symptomatic improvement on clinical follow-up and per cent reduction in fibroid size based upon follow-up imaging.

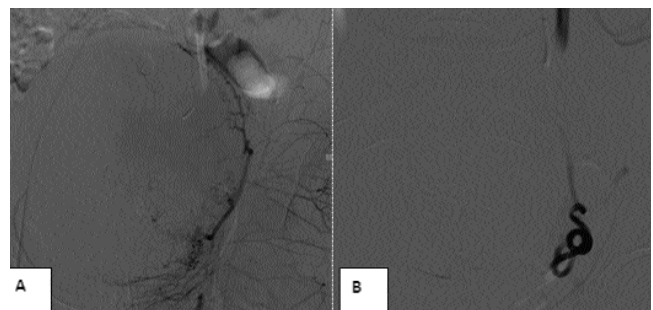


Figure-1: Left uterine artery angiogram prior to (A) and after (B) embolisation.

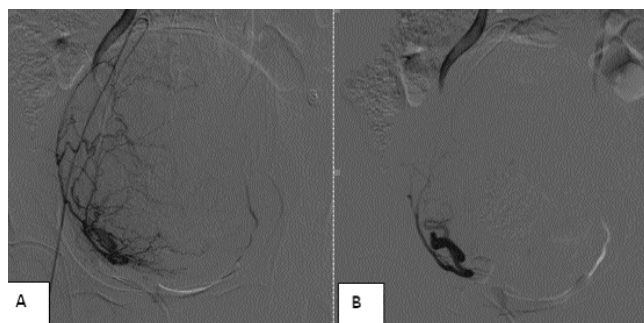


Figure-2: Right uterine artery embolisation: formation of a 'Waltmans loop'(A) and post-embolisation 'near-stasis' of blood flow (B).



Figure-3: Pre (A) and post (B) embolisation sagittal T2 weighted images of the same patient showing significant interval reduction in size of fibroid six months post-procedure.

Follow-up imaging was done in 11 patients after six months of the procedure (Figure 3 a and b). In 4 of these patients large reductions in fibroid size (range: 40 to 90%) were reported; 6 had mild decrease in size of fibroid (<40%), and 1 had no change in the size of fibroids.

Two of the patients developed pelvic infections that required short-term hospitalisation. One of them had a large fibroid (>15cm) that underwent necrosis with expulsion of necrotic portion, a known complication of this procedure. She also developed pelvic infection (two-and-a-half months after the procedure) that required hospitalisation for four days.

Discussion

Symptomatic uterine fibroids are a major public health problem being a leading cause for uterine surgery in women all over the world. UFE provides an important minimally invasive mode of treatment for uterine fibroids which is safe and effective. Like all procedures, however, it has its own set of complications. Major complications include fibroid passage, pelvic infections, uterine necrosis, fibroid re-growth, ovarian failure, deep venous thrombosis and rarely even death. Minor complications include haematoma formation, urinary retention/urinary tract infection, pain, and injury to neurovascular bundle at

the site of the puncture.¹⁴

Various previous studies have shown 75-80% improvement in patient symptoms after being treated with UFE with success even in patients with very large fibroids.^{12,15} Our results, 100% improvement in pain and 88% improvement in menorrhagia, are comparable with other studies.

UFE in patients wishing to preserve their fertility has been controversial. According to a review published in 2004, until further data is available, laparoscopic myomectomy, open myomectomy, or hysteroscopic resection constitutes the standard of care in patients wishing to preserve their fertility.¹⁶ Such cases may, however, be difficult, especially in the presence of multiple interstitial and/or submucous fibroids, and recurrence rates may be higher than 60%.¹⁷ The advantage that UFE has over myomectomy is that all fibroids are affected by a single procedure. The fibroids then either shrink or in some cases are expelled vaginally.^{9,18}

There are few studies available that show similar fertility rates after UFE in comparison to myomectomy⁷ although with higher risks for pre-term delivery and malpresentation.⁸ Previous studies are also available showing that patients can conceive and have successful pregnancy outcomes after UFE.^{9,18}

MRI is the diagnostic tool of choice for a pre-embolisation work-up. It determines patient eligibility and also helps to assess potential risks that could be encountered during the procedure. It is also helpful in monitoring post-procedure outcome and for diagnosing any complications.^{19,20} It also allows accurate diagnosis of any pedunculated fibroids as well as mimickers of fibroids, including adenomyosis and solid adnexal masses. Pedunculated subserosal fibroids were previously thought to be a relative contraindication to UFE due to the potential risk of stalk necrosis and detachment of fibroid leading to peritonitis. Studies, however, currently show that pedunculated fibroids with stalk diameters more than 2cm are not associated with increased complications.²⁰

At our institute, we used the single femoral access technique to cannulate bilateral uterine arteries as it is safe and cuts down on the cost of using multiple catheters. Most patients experienced minor complications, including pain and nausea. Two patients developed fever and pelvic infection. One of them developed severe pelvic infection with passage of fibroids likely due to the fact that she had a large fibroid (>15cm in size) that underwent necrosis and sloughed off. She

had pelvic infection with fever and foul-smelling per vaginal discharge about two-and-a-half months after the procedure and required hospitalisation for four days with the administration of intravenous antibiotics. She, however, recovered fully and had significant improvement in her presenting symptoms. The second patient also developed infection with fever one month after the procedure. She was also hospitalised for three days and recovered after conservative treatment. One patient developed slightly irregular cycles, but had improvement in her presenting symptom which was pain.

Limitations of our study include its retrospective, single-centre nature as well as a small sample size due to which results cannot be generalised.

Conclusion

UFE promises to provide an important minimally invasive alternative treatment of uterine fibroids. For definitive results of its role in our local population, studies with larger sample size and long-term follow-up are required.

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