

Original Research Article

Role of uterine artery embolisation in the treatment of symptomatic fibroids

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ABSTRACT

Background: Uterine fibroids are the most common tumor in the female reproductive tract with high incidence of 40%. The objectives were to evaluate the technical success of the uterine artery embolisation in symptomatic fibroids and to evaluate improvement of symptoms and determine complications.

Methods: Total 15 patients with symptomatic uterine fibroids were undergone uterine artery embolisation over a period of two years. The patients were followed with pelvic ultrasound immediately after the procedure and at 2 and 6 months intervals after procedure.

Results: There was significant reduction in size of fibroids and improvement of symptoms after the procedure. Technical success rate and clinical success rate are 96% and 93% respectively which are comparable with other international studies. The complications with this procedure are few. The most common complication is pelvic pain.

Conclusions: Uterine fibroids are the most common benign pelvic neoplasms, affecting nearly 40% of women of reproductive age. In the management of symptomatic fibroids uterine artery embolisation is a safe and effective alternative to surgery with markedly reduced morbidity and mortality.

Keywords: Fibroids, Uterine artery embolisation

INTRODUCTION

Uterine fibroids are the most common tumor in the female reproductive tract with high incidence of 40%.¹

Patient presents with menorrhagia, dysmenorrhea, urinary frequency, abdominal distension and constipation. The definitive treatment for fibroids is hysterectomy. More than half million hysterectomies are performed every year in the United States.²

Statistics in India are not known. Although surgical treatment completely cures the disease, also ensures infertility.

METHODS

From January 2003 to March 2005, 15 women with symptoms related to uterine leiomyoma were treated with selective arterial embolisation of the uterine arteries. The aims and objectives of the study were to evaluate the technical success of the uterine artery embolisation in symptomatic fibroids and to evaluate improvement of symptoms and determine complications. The cases taken up for the procedure were identified from the Obstetrics and Gynaecology outpatient department. The cases were included in a prospective longitudinal study which was conducted over a period of approximately two years.

RESULTS

Total 15 consecutive women with hemorrhage related to uterine leiomyoma were treated with selective arterial embolisation of the uterine arteries. The mean age of the women was 36 years (range, 30 - 45 years). The most common age group affected was between 35 - 40 years.

All women presented with refractory vaginal bleeding (menorrhagia), which was considered the dominant symptom and the main inclusion criteria. Dysmenorrhea was the second most frequent symptom and was encountered in 8 (53%) women.

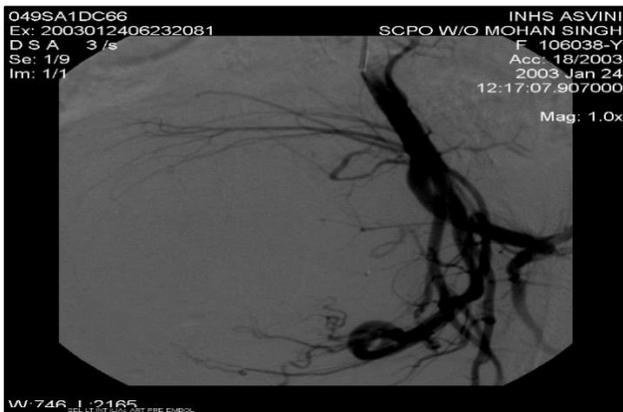


Figure 1: Selective left internal iliac arteriogram demonstrating hypertrophy of left uterine artery.

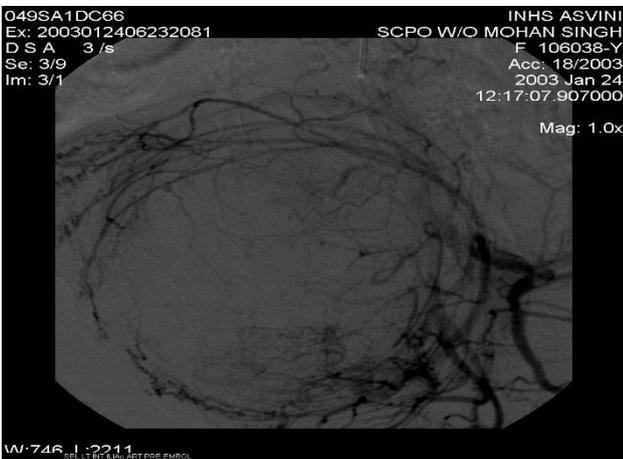


Figure 2: Selective left uterine arteriogram.

Bilateral embolisation of the uterine arteries was successful in 14 (93%) women. Unilateral embolisation was performed in one (7%) woman because of anatomic variations. Of the total 15 patients 29 uterine arteries were embolized. Hence technical success was 96%.

In 8 women (53%), the immediate postoperative course was characterized by pelvic pain, which was well managed by using analgesics. While in three (20%) patients showed pelvic pain at 1 - 2 days after procedure.

This syndrome resolved with the use of nonsteroidal antiinflammatory drugs and analgesic drugs.



Figure 3: Preembolisation left uterine arteriogram demonstrating enhancing fibroids.

One (7%) woman complained of amenorrhea two month after the procedure. Nontarget embolisation of the pelvic muscle which resolved spontaneously occurred in one woman (7%). Necrotic fragments of a submucosal myoma were expelled through the cervix during the 1st month after the procedure in two women (13%).

In another woman with a large subserosal fibroid, hysterectomy had to be performed because of progressively abnormal increasing size. A local complication was observed in one woman (7%) and consisted of the small hematoma at the puncture site. This complication was treated conservatively and had no clinical consequences.

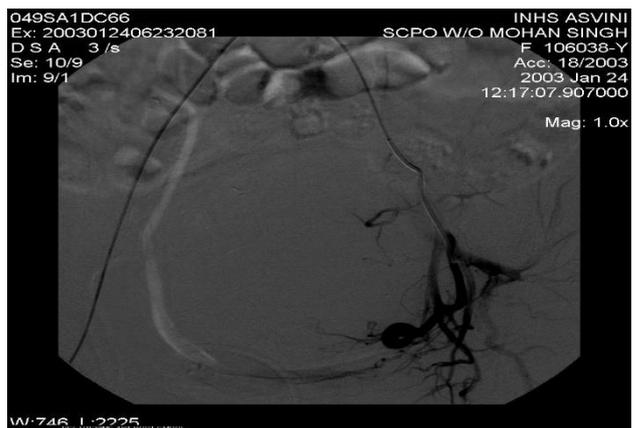


Figure 4: Postembolisation left uterine arteriogram demonstrating absent flow to the fibroid mass.

Before embolisation, the mean diameter of the solitary or largest leiomyoma was 6.8 cm (range, 3.2-9.87cm) and most of them were found to have intramural and multiple more than five (8 women (53%)) leiomyomas. All of the women included in the study previously had been unsuccessfully treated with medical treatment.

At 2 months' follow-up, the mean diameter was 4.1cm (range, 2–5.2cm); at 6 months, 2.9cm (range, 1.3–3.7 mm), which corresponded to a mean size reduction of 40% and 57%, respectively.



Figure 5: Ultrasound image of dominant fibroid prior to embolisation. The maximum cross-sectional diameter: 9.8 cm.



Figure 6: Ultrasound image of dominant fibroid immediately following embolisation showing increased echogenicity due to embolisation material.



Figure 7: Ultrasound image of dominant fibroid 2 months following embolisation. The maximum cross-sectional diameter: 5.3 cm.



Figure 8: Ultrasound image of dominant fibroid 6 months following embolisation. The maximum cross-sectional diameter: 2 cm.



Figure 9: Selective right internal iliac arteriogram demonstrating hypertrophy of right uterine artery.



Figure 10: Selective right uterine arteriogram.

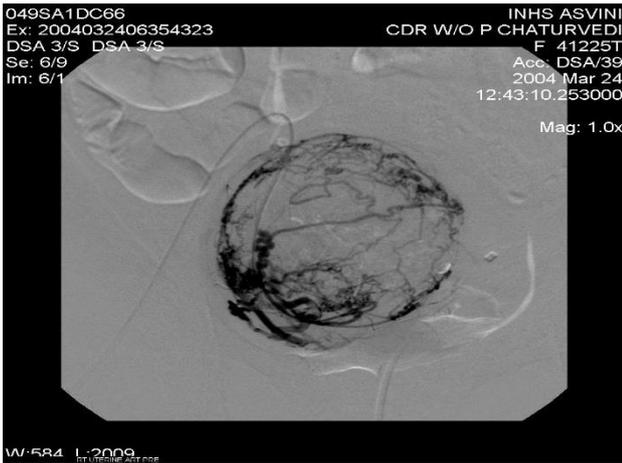


Figure 11: Preembolisation right uterine arteriogram demonstrating enhancing fibroids.



Figure 12: Postembolisation right uterine arteriogram demonstrating absent flow to the fibroid mass.



Figure 13: Ultrasound image of dominant fibroid prior to embolisation. The maximum cross-sectional diameter: 9.7 cm.

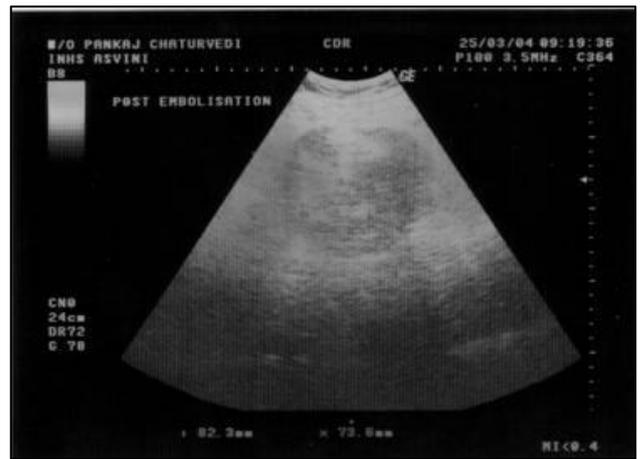


Figure 14: Ultrasound image of dominant fibroid immediately following embolisation showing increased echogenicity due to embolisation material.



Figure 15: Ultrasound image of dominant fibroid 2 months following embolisation. The maximum cross-sectional diameter: 5.0 cm.



Figure 16: Ultrasound image of dominant fibroid 6 months following embolization. The maximum cross-sectional diameter: 2.6 cm.

DISCUSSION

Uterine artery embolisation is emerging as alternative to conventional treatment of symptomatic uterine fibroids. It was first reported in 1994 by Ravina.³ One of the objectives of our study was to document technical success of UAE procedure. The high degree of technical success of 96% reported in our study is comparable with American and European studies and is also as per SCVIR guidelines.^{4,11}

The most common reason for technical failure was difficulty in cannulising arteries.¹² In our study majority of cases were cannulated at the first attempt and remaining in second attempt. Bilateral embolisation was difficult due to variant pelvic vessel anatomy either congenitally absent or vascular occlusion. In our study a hypoplastic uterine artery was identified in 1 of 15 cases. Absent or hypoplastic uterine arteries were reported by Hutchins and Kirsch et al.^{12,13} In this study, the rate of 4% (1 of 15 cases) was higher than that reported by others and the artery was not embolized due to the chances of non-target embolisation.

In this study the majority (6 of 10) of vasospasm cases were treated with the use of intra-arterial vasodilators. While remaining cases (4 of 10) cases were treated by using combination of 3-F microcatheter and intraarterial vasodilators.

In this study, embolisation was performed by using a single 5-F catheter in 11 (73%) women. In the remaining 4 (27%) women, a 3-F microcatheter was used to limit flow-limiting arterial spasm. Micro catheters were used more often than the European trials.⁸⁻¹⁰ This could be due to individual preference, micro catheter cost may also play a role. Nontarget embolisation is major hazard in patient undergoing UAE. In our study we had one case of non target embolisation of pelvic muscles manifested as severe gluteal pain.

Fluoroscopy time is to be taken in to consideration as ovaries are exposed to radiation. In this study, the average fluoroscopy time (30 minutes) was comparable to others.¹⁴ Fluoscopy time decreases with experience. Embolisation was performed by using 255 - 350 µm polyvinyl alcohol particles. Gel foam was used as secondary embolic agent in two cases. The choice of embolic agents depends upon availability, arterial diameter and individual preference.

The mean hospital stay in our study was 4 days and was longer than American studies.^{4,7} In our study, postprocedural pain was the main cause for extended hospital stay. One of the complications following UAE is the development of premature amenorrhea due to ovarian failure in 5% of patients.¹⁵ The proposed etiology is non-target embolisation via utero-ovarian anastomoses. In our study out of fifteen women one (7%) had premature amenorrhea diagnosed clinically.

In the present study, majority of women showed improved symptomatology, better quality of life and reduced size of fibroids. In six out of fifteen (40%) women, normal menstruation was resumed in the first cycle after embolisation.

The complete disappearance of menorrhagia (grade 1) was achieved in 8 (53%) women; marked improvement of symptoms (grade 2), in 6 (40%) women (including one who underwent unilateral embolisation). One (7%) woman reported no improvement of symptoms (grade 4).

In this study, we used the diameter of the largest leiomyoma to assess size reduction. Before embolisation, the mean diameter of the solitary or largest leiomyoma was 6.8 cm (range, 3.2 - 9.87 cm) and most of them were found to have intramural and multiple more than five (8 women (53%)) leiomyomas. At 2 months follow-up, the mean diameter was 4.1cm (range, 2-5.2cm); at 6 months, 2.9 cm (range, 1.3-3.7 mm), which corresponded to a mean size reduction of 40% and 57% respectively.

In one of the patients, a case of subserosal fibroid, during postembolisation USG follow up, a large pedunculated subserosal fibroid was noted which was confirmed by MRI. This case had to be taken up for hysterectomy because of progressively increasing size of fibroid and persistent menorrhagia. Histopathology of the operated specimen confirmed the diagnosis of fibroid.

Our 93% clinical success rate in treating fibroid related symptoms is comparable to that reported in other articles (36).

CONCLUSION

Uterine artery embolisation is safe and effective alternative to surgery for symptomatic uterine fibroids. Our technical success rate and clinical success rate are 96% and 93% respectively which are comparable with other international studies.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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