Al-Rafidain J Med Sci. 2025;8(2):238-241.
DOI: https://doi.org/10.54133/ajms.v8i2.2016

Research Article

Efficiency of Uterine Fibroid Embolization in Symptomatic Iraqi Patients

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Received: 27 April 2025; Revised: 10 June 2025; Accepted: 16 June 2025

Abstract

Background: Uterine fibroids are benign tumors of the smooth muscle of the uterus. Uterine artery embolization (UAE), a minimally invasive procedure performed by an interventional radiologist, causes fibroids to shrink and improves symptoms. ***Objective***: To study the effectiveness of UFE in helping symptomatic Iraqi women achieve symptomatic relief. ***Methods***: Fifty patients with symptomatic fibroid(s) who visited Kahramana Medical Center of Interventional Radiology between June 2022 and June 2023 were included in a prospective study. The patients were prepared for UFE under local anesthesia. This involved the use of an LT brachial arterial approach. Both uterine arteries were cannulated, and embolization of the fibroids was achieved using particles. ***Results***: Menorrhagia was the most common complaint (76%), followed by pressure feelings (8%). The fibroids were 3x3 cm (12 ml) to 15x12 cm (1035 ml) in size. All patients' symptoms, including pressure and bleeding, improved for six months following the operation in nearly all cases (p= 0.0004). The uterine artery was the only feeder in 98% of cases. Fibroid expulsion was observed in three patients. Fibroid size reduction, absence of internal vascularity, and rim calcification were indicators of radiological success in 92% of cases; the proportion of size decrease was roughly 65–100% of the fibroid's initial volume (p= 0.003). ***Conclusions***: Endovascular embolization, as an alternative to surgery, is a highly successful and safe treatment for uterine fibroids, particularly for women who desire to preserve their uterus and refuse surgery.

Keywords: Iraqi women, Fibroids, Uterine fibroid embolization.

كفاءة انصمام الأورام الليفية الرحمية لدى المريضات العراقيات اللواتي تظهر عليهن الأعراض

الخلاصة

الخلفية: الأورام الليفية الرحمية هي أورام حميدة في العضلات الملساء للرحم. يؤدي انصمام الشريان الرحمي، وهو إجراء بسيط موضعي يقوم به أخصائي الأشعة التداخلية، في اضمحلال الأورام الليفية وتحسين الأعراض. **الهدف**: دراسة فعالية قسطرة شريان الرحم في مساعدة النساء العراقيات اللواتي تظهر عليهن أعراض على تخفيف أو التخلص من الأعراض. **الطرائق**: تم تضمين خمسين مريضة ممن يعانين من الأورام الليفية المصحوبة بأعراض واللواتي زرن عيادة كهرمانة للأشعة التداخلية والسونار بين يونيو 2022 ويونيو 2023 في دراسة استباقية. تم إعداد المريضات ل UFE تحت التخدير الموضعي عن طريق الشريان العضدي الأيسر. تم أغلاق الشرايين الرحمية، وتم تحقيق انصمام الأورام الليفية باستخدام حبيبات مايكروية. **النتائج**: كان غزارة الطمث هي الشكوى الأكثر شيوعا (76٪)، تليها اعراض الضغط بسبب حجم العقد الليفية (8٪). كان حجم الأورام الليفية 3 × 3 سم (12 مل) إلى 15 × 12 سم (1035 مل). تحسنت جميع أعراض المريضات، بما في ذلك الضغط والنزيف بعد ستة أشهر من العملية في جميع الحالات تقريبا (p = 0.0004). كان الشريان الرحمي هو المغذي الوحيد في 98٪ من الحالات. لوحظ طرح الورم الليفي في ثلاثة مرضى. لوحظ صغر في حجم الاورام الليفية واختفاء الاوعية الدموية الداخلية للاورام، وتكلس الحافة مؤشرات على نجاح التداخل القسطاري في 92٪ من الحالات. كانت نسبة انخفاض الحجم حوالي 65-100٪ من الحجم الأولي للأورام الليفية. **الاستنتاجات**: الانصمام القسطاري للاوعية الدموية الرحمية، كبديل للجراحة، هو علاج ناجح وآمن للغاية للأورام الليفية الرحمية، خاصة للنساء اللواتي يرغبن في الحفاظ على رحمهن ويرفضن الجراحة.

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Article citation: Mohsen KI, Nori MAJ. Efficiency of Uterine Fibroid Embolization in Symptomatic Iraqi Patients. *Al-Rafidain J Med Sci*. 2025;8(2):238-241. doi: https://doi.org/10.54133/ajms.v8i2.2016

INTRODUCTION

The most common benign tumors in the female pelvic region are uterine fibroids, also known as myomas [1]. They usually show up in women who are not yet menopausal [2]. They originate from the smooth muscle cells of the myometrium and present with symptoms including lower abdomen pain or pressure and uterine bleeding, primarily menorrhagia [3]. Medical therapies like hormone therapy and surgical procedures like myomectomy and hysterectomy are available for treating uterine fibroids [4]. UFE is a minimally invasive, safe surgery that typically stops fibroids' blood supply, causing them to shrink and improving their symptoms. UFE is a great substitute for surgery, which includes myomectomy or hysterectomy [5]. The earlier the procedure, the higher the chance of recurrence because of the growth of new fibroid development, and

hence UFE is excellent for women who want to preserve their uterus and fertility [6]. Its advantages include a reduction in over 85% of cases of fibroid-related bleeding, pressure symptoms, and pain [7]; a shorter hospital stay and fewer major complications [8]; high selectivity for uterine fibroids and preservation of blood for a healthy uterus, which sets it apart from surgery [9]; and, conversely, fewer non-significant complications like fibroid expulsion, infection, fever, and vaginal discharge than operation [10]. Despite the aforementioned benefits, there is disagreement on the UAE's applicability. According to some specialists, infection, sepsis, or even death could exacerbate UFE in fibroids larger than 10 cm [11]. This study aims to assess the efficiency of uterine fibroid embolization (UFE) in the management of symptomatic fibroids in Iraqi patients.

METHODS

Study design and patient selection

This interventional study was conducted during June 2022–2023 at Kahramana Medical Center of Interventional Radiology. Fifty patients with symptomatic fibroid(s) who complained of prolonged, heavy periods, cyclical discomfort, or pressure symptoms on the bladder or rectum participated in this prospective study. They ranged in age from 20 to 50 years.

Inclusion criteria

Patients having symptoms and radiographic evidence of uterine fibroids are eligible for inclusion,

Exclusion criteria

Postmenopausal women, asymptomatic fibroids- and individuals with endometrial or ovarian problems.

Intervention and outcome measurement

A skilled interventional radiologist will perform a pelvic ultrasound examination on every patient, reporting the size, location, number, and blood flow by color Doppler to targeted fibroids and evaluating the endometrium and ovaries for any lesions. Following this, the patients will be prepared for embolization by having a complete blood count performed to evaluate platelet count > 50000 and international normalization ratio < 1.5. On the day of the procedure, the patient was fasting, a peripheral venous line was set up, all patients received parenteral ciprofloxacin 400 mg infusion for an hour, and premedication with dexamethasone 8 mg IV was administered. Embolization technique: Left brachial artery access, ultrasound-guided arterial puncture with a 21 G needle, followed by the insertion of a 4 Fr sheath. Next, a cobra catheter (4 fr) from Merit Medical was inserted, and a 0.035-inch 180 cm length hydrophilic guide wire was inserted under the guidance of a fluoroscopic device (GE Optima IGS 330, USA). Next, 20–40 ml of omipaque (370 mg I/ml) contrast media was injected using a road map technique to outline the internal iliac artery on each side. Finally, each uterine artery was selectively catheterized with a Progreat microcatheter 2.7 (Terumo) until the transverse course, and digital subtraction was done to delineate the feeders. Then, embolization was carried out using 300–500 µm and 500–700 µm of polyvinyl alcohol (PVA) Boston Scientific until stasis was reached. The process was then repeated in the other uterine artery. Intraprocedural pain control was achieved with intravenous (IV) fentanyl and ketorolac. After arterial stasis, intra-arterial 2% lidocaine injections of 5 milliliters per artery were performed. The catheter, wire, and sheath were removed, and the puncture site was compressed for ten minutes. After being admitted and monitored for around six hours, the patients were given a date for follow-up, generally six months or more, and were sent home with non-steroidal anti-inflammatory oral and suppository medications along with a laxative.

RESULTS

Fifty patients who had fibroids; their ages ranged from 25 to 52 years, with a mean age of 39 (Table 1).

The majority of these patients were in their forties. Four patients were asymptomatic, while the remaining patients, mostly 38 (76%), presented with menorrhagia, and the remaining 8 (16%) with pressure symptoms. The age and symptoms are shown in Tables 1 and 2.

Table 1: The age groups of included patients

Age	Number (%)
<30	1(2)
30-39	21(42)
40-50	27(54)
>50	1(2)
Total	50(100)

Table 2: Symptoms of the patients included in the study

Symptoms	Number (%)
Menorrhagia	38(76)
Pressure symptoms	8(16)
Asymptomatic	4(8)
Total	50(100)

Uterine volumes were categorized as small (less than 100 ml), medium (between 100 and 500 ml), and big (more than 500 ml). Figure 1 shows the specifics of each volume. With respect to the volume reduction of treated fibroids in our patients. Figure 2 illustrates that 88% of patients had fibroids that shrank to less than 70-100% of their initial size six months after UFE, while the remaining 22% had a volume reduction of 42-65%. Using ultrasound in most cases. Most cases had a percentage of fibroid volume decrease between 70 and 100% (p= 0.003), and nearly all cases had improved

symptoms, whether they were pressure- or bleeding-related (p= 0.0004).

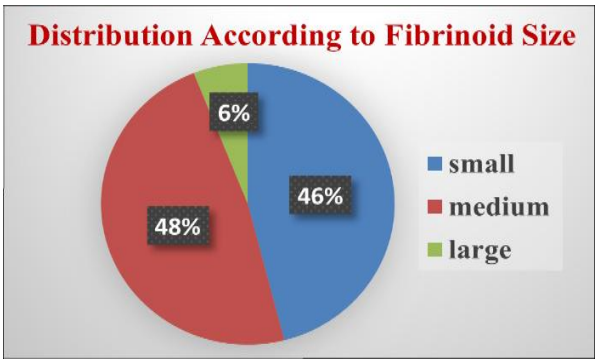

Figure 1: The size of fibroids in the included patients.

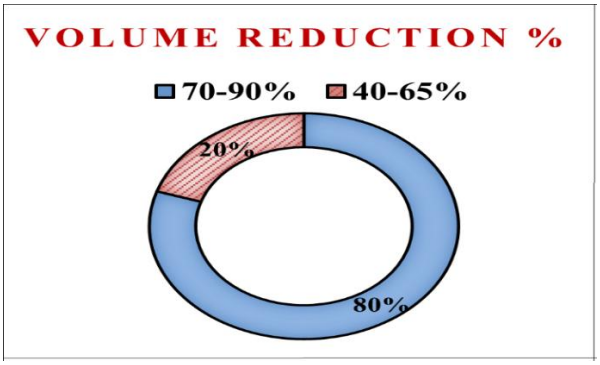

Figure 2: Volume reduction of embolized fibroids 6 months after UFE

Fibroid expulsion was observed in three cases, which represent 6%. In 98% of cases, uterine arteries are the only feeders; in the remaining 2% of cases, ovarian arteries partially or entirely supply the fibroids. An example of our work is illustrated in Figure 3.

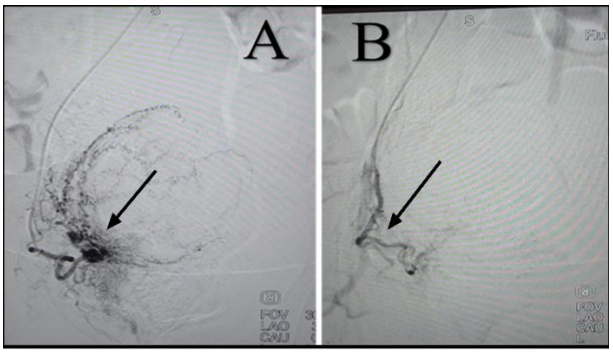

Figure 3: 42 years female with menorrhagia. **A**) digital subtraction angiography showing the feeders to the fibroid from the right uterine artery with typical basket appearance of feeding arteries; **B**) end point post arterial embolization.

DISCUSSION

There are many advantages to uterine fibroid embolization (UFE), but the main one is that it's a minimally invasive technique that may be done as an outpatient, as it doesn't involve big incisions or general anesthesia [12]. Second, most women may resume work and other usual activities in a few days because of its quick recovery period [13]. In addition to controlling severe menstrual bleeding, UFE decreases bleeding and eliminates the need for further medical procedures like iron supplements or blood transfusions [14]. Lastly, it enhanced quality of life: UFE can alleviate pelvic pain, pressure, and fibroid-related urine symptoms [10]. Uterine fibroid prevalence is approximately 50% worldwide; research conducted in Karbala, Iraq, found that 18% of cases [15]. While not all fibroids generate symptoms, those that do may include painful intercourse, back pain, heavy menstrual blood, and frequent urination. Larger fibroids may require surgery or medicines for therapy, although smaller fibroids frequently don't [16]. Our study's fibroid volume reduction was 70–100%, which is more than the average reduction of 42.7% at three months and an additional 32.5% during a year's follow-up, obtained by Laios *et al*. Additionally, the mean dominant fibroid size was decreased by 27% at three months and 68% at twelve months [17]. Our study found that complete fibroid expulsion occurred in 6% of cases, which is similar to the findings of a study by Radeleff *et al*. that described this complication occurring in 1–10% of cases and up to 50% of patients with submucosal fibroids [18]. Three patients in their 30s experienced an unplanned, uncomplicated pregnancy and delivery, accounting for 6% of cases. This rate is similar to studies by Isabel Pinto Pabon et al., which found that 11% of 100 cases had this outcome [19].

Study limitations

Uterine fibroid embolization is not suitable for symptomatic pregnant women and those with postmenopausal bleeding, otherwise, no study gross limitations.

Conclusions

Endovascular embolization of uterine fibroids is an efficient, safe, and cost-effective method for management of symptoms related to fibroids, especially in women who are urged to keep their uterus and refuse surgery. It has a high technical success rate and non-significant complications when compared with surgical treatment.

Conflict of interests

The authors declared no conflict of interest.

Funding source

The authors did not receive any source of funds.

Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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