

Update on Endovascular Therapy for Fibroids and Adenomyosis

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Abstract

Uterine fibroids and adenomyosis are prevalent benign neoplasms that can lead to serious deleterious health effects including life-threatening anemia, prolonged menses, and pelvic pain; however, up to 40% of women remain undiagnosed. Traditional treatment options such as myomectomy or hysterectomy can effectively manage symptoms but may entail longer hospital stays and hinder future fertility. Endovascular treatment, such as uterine artery embolization (UAE), is a minimally invasive procedure that has emerged as a well-validated alternative to surgical options while preserving the uterus and offering shorter hospital stays. Careful patient selection and appropriate techniques are crucial to achieving optimal outcomes. There have been advancements in recent times that encompass pre- and postprocedural care aimed at enhancing results and alleviating discomfort prior to, during, and after UAE. Furthermore, success and reintervention rates may also depend on the size and location of the fibroids. This article reviews the current state of endovascular treatments of uterine fibroids and adenomyosis.

Keywords

- ▶ fibroid
- ▶ adenomyosis
- ▶ embolization
- ▶ uterine artery embolization
- ▶ interventional radiology

Uterine fibroids and adenomyosis are common gynecological conditions that can lead to increased morbidity and negatively impact women's quality of life. According to Krentel and De Wilde,¹ adenomyosis was found 40% of the time in patients who underwent a hysterectomy for general uterine complications. Despite their prevalence, approximately 35 to 50% of women would have evidence of undiagnosed fibroids through ultrasound.² Along with their asymptomatic nature, they can manifest as prolonged menstrual bleeding that often results in pelvic pain, iron-deficiency anemia, and infertility.³ While myomectomy and hysterectomy are well-established surgical options, these options are invasive and result in women having prolonged hospitalization times.⁴ Uterine artery embolization is a uterus-sparing nonsurgical option, and it is widely reported to involve shorter hospital lengths of stay and less postpro-

cedural pain.⁵ This review aims to discuss the current endovascular treatment trends for uterine fibroids and adenomyosis.

Patient Selection

UAE is a treatment option for adenomyosis and uterine fibroids, with both entities sharing common symptoms including prolonged menstrual bleeding, pelvic pressure, and dyspareunia. Patients commonly experience some form of combination of these symptoms; however, confirmation with history, physical exam, and imaging findings remains key to ensure that other conditions that often can present with similar symptoms are appropriately excluded.⁶ The Uterine Fibroid Symptom Health-Related Quality of Life Questionnaire (UFS-QOL) is a tool specifically designed to

assess the symptoms associated with uterine fibroids. The UFS-QOL was developed to measure symptoms and health-related quality of life in women with uterine fibroids.⁷

Image modalities such as contrast-enhanced magnetic resonance imaging (MRI) and transvaginal ultrasound (TVUS) are the preferred methods to evaluate size, location, and number of fibroids.⁸ Adenomyosis is often diagnosed on TVUS with the hallmark finding of a thickened endometrium and the presence of myometrial cysts.⁹ Similarly, on MRI, adenomyosis is identified by myometrial cysts and a thickened junctional zone exceeding 12 mm.⁹ On the other hand, uterine fibroids are usually defined by specific characteristics and enhancement patterns seen on MRI.¹⁰ Highly cellular fibroids demonstrate a high signal intensity on T2-weighted images (WI) with characteristic avid postcontrast enhancement. However, degenerated fibroids tend to appear highly variable on MRI.¹⁰ A study of 30 patients by Çakır et al¹¹ found that fibroids with higher T2-WI signal intensity in the preprocedural MRI were associated with a higher rate of post-UAE technical success.

Fibroid Location

During the initial patient encounter, clinicians should pay close attention to the location of the fibroids. Appropriately classifying fibroids is necessary for treatment planning and complication prevention. The Federation Internationale de Gynecologie et Obstetrique (FIGO) classification system was developed to uniformly and consistently describe and classify uterine fibroid to facilitate communication, clinical care, and research (► Fig. 1). The FIGO system categorizes fibroids that are submucosal, other fibroids, and hybrid fibroids. The recent article by Munro et al¹² proposed an MRI reporting template for structured reporting of uterine fibroids using the FIGO classification system. While the FIGO classification system guides physicians with a more standardized algorithm for describing as well as characterizing uterine fibroids and treatment decision making, clinical findings and patient preference play an important role as well in deciding the best treatment strategy. Also, significant inter-reader variability has been found between gynecologists and radiologists when reporting FIGO types. In 2017, Lacayo et al¹³ conducted a study that showed that the size of uterine fibroids did not affect the infarction rate, but rather the location of the fibroid was the only influencing factor. Pedunculated serosal tumors were less likely to have complete infarction compared to transmural fibroids. Additionally, multivariate analysis revealed that fibroids located at the cervix and lower uterine body, as well as the anterior wall of the uterus, were more likely to have an incomplete infarction. However, the reasons for this finding remain unclear and may be related to collateral arterial supply.

Koziarz et al¹⁴ conducted a meta-analysis of seven observational studies on UAE in patients with pedunculated subserosal fibroids to evaluate the effectiveness and safety of this treatment. The analysis showed that the risk of adverse events after UAE in patients with pedunculated subserosal fibroids was 1.7%. Furthermore, all adverse events were classified as mild using the SIR guidelines.¹⁵

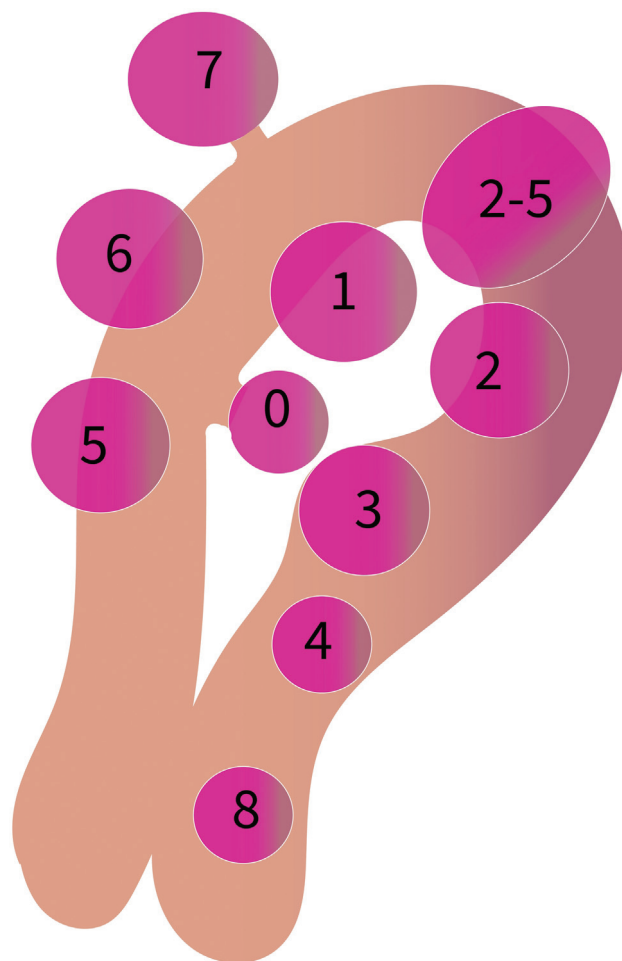


Fig. 1 The subtypes of fibroids according to FIGO classification are categorized into two groups based on the presence or absence of submucosal components. Fibroids with submucosal components include Type 0 (pedunculated intracavitary), Type 1 (submucosal component $\geq 50\%$), Type 2 (submucosal component $< 50\%$), and hybrid fibroids (Types 2–5). On the other hand, fibroids without submucosal components include Type 3 (intramural fibroids with endometrial contact), Type 4 (intramural fibroids with no endometrial contact), Type 5 (intramural fibroids with $\geq 50\%$ subserosal component), Type 6 (intramural fibroids with $< 50\%$ subserosal component), Type 7 (pedunculated subserosal), and Type 8 (nonmyometrial location, such as cervical, broad ligament, or parasitic fibroids). EIA, external iliac artery; IIA, internal iliac artery. (Digital illustration by Merve Ozen, MD.)

Fibroids that are mainly submucosal or transmural, with a volume of less than 66 mL, are more likely to be expelled following UFE. The average timeframe for fibroid expulsion after UFE is 15 weeks, with most occurrences taking place within 3 months. However, some expulsions have been recorded as early as a few days after the procedure, while others have been reported as late as 50 months after. Typically, the size of expelled fibroids is around 6 to 8 cm on average.¹⁶ These conflicting findings suggest that further investigation is necessary to determine whether certain locations of fibroids may be more prone to incomplete treatment by UAE. There are only case reports documenting instances of expulsion following UAE for adenomyosis.

Contraindications

The presence of an intrauterine device is not an absolute contraindication for UAE, and its removal prior to UAE is not mandatory but accepted as a relative contraindication. Absolute contraindications for UAE include a viable pregnancy, an active infection, and gynecologic malignancy.¹⁷ Other relative contraindications that require extra caution are coagulopathy, severe contrast agent allergy, renal impairment, immunocompromised patients, chronic endometritis, and previous pelvic irradiation or surgery.¹⁷ Intracavity fibroids are another relative contraindication for UAE as they have a higher rate of sepsis and fibroid expulsion, which will be discussed in an upcoming section. While a myomectomy has been limited by fibroid size and number, it has been found that a combined approach of both UAE and myomectomy for intracavity fibroids may be a safe and effective approach.¹⁸

Procedural Workup

UAEs are best performed as part of a collaborative effort between the interventional radiologist and gynecologist who has already discussed medical and surgical options with the patient. The interventional radiologist should set up a consultation before the procedure to review the patient's demographic information and symptoms and assess the risk for the procedure to see if the patient is a good candidate for UAE.¹⁹

As many as two-thirds of all women will have one or more fibroids in their lifetime, and only a fourth of them will have symptoms significant enough to warrant treatment. Symptoms may include abnormal uterine bleeding (AUB), bulk and pressure symptoms, and urinary symptoms. Pregnancy or fertility complications can also be associated with fibroids.²⁰

Patients with fibroids experiencing AUB should also be evaluated for other possible causes of abnormal bleeding. A thorough history and physical examination are essential. The International Federation of Gynecology and Obstetrics classifies AUB using PALM-COEN. PALM represents anatomic etiologies, including polyps, adenomyosis, leiomyomas, and malignancy. COEN represents medical causes, including coagulopathies, ovulatory dysfunction, endometrial, iatrogenic, and not otherwise specified. Imaging, such as TVUS and MRI, can identify most anatomic etiologies, except for malignancies. All patients should undergo cervical cancer screening, and patients older than 45 or 40 years with risk factors for endometrial adenocarcinoma, including obesity or another history of unopposed estrogen, should undergo endometrial sampling, either with an office biopsy or a dilation and curettage in the office prior to undergoing further management.²¹

Patients with urinary symptoms or infertility should complete full workups by specialists in urinary dysfunction and infertility, respectively, before undergoing intervention of fibroids for these conditions. If fibroids are asymptomatic, patients and their doctors should discuss whether intervention is needed. For example, a patient who has infertility should make sure their partner undergoes a semen analysis

prior to undergoing an invasive procedure with the expectation of solving their infertility.

Patients undergoing any procedure should not only understand the risks and benefits but also the alternatives for that procedure. As most women with fibroids are asymptomatic, many only need reassurance. For those suffering from AUB, hormonal intervention, including combined hormonal contraception, progesterone therapy, including systemic and intrauterine devices, as well as gonadotropin-releasing hormone agonists or antagonists, can be considered. Many patients looking into UAE have already been counseled on hysterectomy and myomectomy. However, a hysteroscopic myomectomy can treat the problem with minimal recovery if bleeding symptoms are related to an intracavitary fibroid, provided it is amenable to hysteroscopic resection.

Procedure

Anatomy

Uterine arteries can have many variants occurring in up to 10 to 15% of the population.²² During the procedure, it is important to examine the anterior division of the iliac artery since, in 51% of cases, the uterine artery arises from it²² (→Fig. 2). While there are many variants, branches on both sides of the body are symmetrical in 91% of patients.²²

In 10% of patients, ovarian arteries can provide collateral arterial supply for adenomyosis and fibroids. Several studies have concluded that some failures after UAE have been associated with underlying ovarian collateral supply of the uterus.^{23–26} Other collateral supply sources, such as the round ligament and inferior mesenteric arteries, have also been reported in case reports. One fear clinicians have in performing ovarian artery embolization is ovarian failure. There is also contradictory literature with Razavi et al²⁷ concluding that ovarian artery embolization should only be performed unilaterally. Most recent discussions about ovarian artery embolization are based on case reports and mostly retained ovarian function after the procedure.²⁸ In the FIRSST study where UAE was compared with MRI-guided focused US (MRgFUS), UAE showed a significantly greater absolute decrease in anti-Müllerian hormone levels at 24 months compared with MRgFUS.²⁹ However, a higher incidence of a second fibroid procedure was observed in patients who underwent MRgFUS compared to those who underwent UAE, and the degree of symptom alleviation was comparatively lower with MRgFUS.

Vascular Access

UAE is traditionally performed using femoral artery access, but in recent years, radial artery access has become more prevalent. Growing literature demonstrates increased success rate and decreased incidence of complications, leading us to consider transradial (TR) access as a preferred option for UAE. In some clinical situations, an alternative route to the more conventional transfemoral access (TFA) is a necessity, such as obesity and extensive peripheral lower extremity vascular disease.³⁰

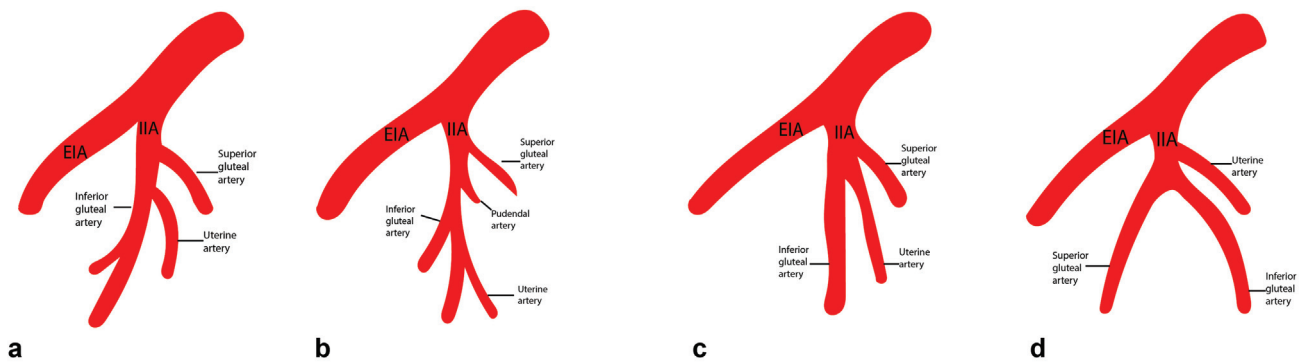


Fig. 2 (a) Type 1 refers to the most common scenario where the uterine artery arises from the inferior gluteal artery. (b) In Type 2, the uterine artery is the second or third branch of the inferior gluteal artery, while other branches like the internal pudendal artery may be the first. (c) Type 3 is characterized by the inferior gluteal, superior gluteal, and uterine arteries all originating at the same level (trifurcation). (d) Finally, Type IV is when the uterine artery originates before the inferior gluteal and superior gluteal arteries. (Digital illustration by Merve Ozen, MD.)

The results of Sher et al's³¹ retrospective study involving 374 patients are promising, as it suggests that TR UAE for symptomatic fibroids can be performed using a same-day discharge protocol with low rates of patient return. Additionally, Nakhaei et al³² found that TRA UAE resulted in only five access site hematomas in 90 patients and one vasospasm in 92 cases, which is also reassuring for TR access.

Embolic Agents

One area of active research in UAE is the different embolic agents. During UAE, specific embolic agents must be used based on the physicians' experience as well as the size and location of the fibroids.¹³ Several different embolic agents have been approved by the FDA for use in UAE, including polyvinyl alcohol particles (PVAs) and tris-acryl gelatin microspheres (TAGMs). A systemic review found that PVA was better at complete fibroid infarction after the first 24 hours when compared to TAGMs, but TAGM was better than PVA at <90% infarction rate outcome.³³ Regardless, nonspherical PVA particles and TAGMs produced similar rates of uterine fibroid infarction.¹³

Calibrated microspheres are another type of embolic agent that is commonly used in the UAE. An advantage of calibrated microspheres is that, unlike PVA, they are more uniform in size, which results in more predictable embolization and minimizes the clogging of the catheters used during UAE.³⁴ In a prospective multicenter study, microspheres showed a low rate of adverse events, reduced uterine fibroid volumes, and improved quality of life.³⁵ In another prospective clinical trial, 8Spheres (Suzhou Hengrui Callisyn Biomedical Technology, China), a type of conformal microsphere, has been shown to relieve heavy menstrual bleeding effectively and has no significant impact on ovarian function.³⁶ Embozenes microspheres (Varian, United States) are another type of tightly calibrated microsphere that can be used as an embolic agent.

Small-sized PVAs ranging between 100 and 300 μm were found to be safe and effective in treating adenomyosis in a study conducted by Yuan et al,³⁷ with an average follow-up of 42 months. They found no significant relationship between

the clinical outcomes, the initial presence of adenomyosis, with or without fibroids, and the JZ thickness.³⁷

Regardless of type, embolic agents play an important role in the success of uterine artery embolization. Another important factor in the success of UAE is the determination of embolization end point strategy. Embolization with an endpoint of near stasis, as opposed to complete stasis, has been reported to result in less postprocedural pain.³⁸ It is now widely accepted that embolizing the uterine artery with a 5 to 10 heart-beat stasis is an adequate endpoint³⁹ (→ Fig. 3).

Periprocedural Pain Management

UAE can be associated with moderate to severe postprocedural pain, and effective pain management is important for patient comfort and satisfaction. Several studies have recently investigated the use of different pain management strategies after UAE. These strategies include preprocedural oral analgesics, local anesthesia, epidural patient-controlled analgesia, conscious sedation, and general anesthesia.⁴⁰

Some interventional radiologists prefer administering pain medications before or during the UAE to minimize postprocedural pain. The combination of medications that can be administered is a loading dose of hydromorphone hydrochloride or nonsteroidal anti-inflammatory drugs (NSAIDs) and a patient-controlled analgesia. Ondansetron is the preferred antiemetic due to its effectiveness and tolerability.³⁹ This approach is also believed to avoid post-embolization syndrome (PES), which will be discussed as one of the most common postprocedural complications after UAE for fibroids and adenomyosis.

A study from Katsumori et al⁴¹ investigating intra-arterial lidocaine administration immediately after UAE with TAGM for leiomyoma was found to be safe. Still, it did not contribute to a significant reduction in pain or amount of narcotic agents administered.⁴¹

Another approach gaining more popularity for periprocedural pain is superior hypogastric nerve block. Yoon et al⁴² showed that superior hypogastric nerve block significantly decreased pain and nausea after uterine artery embolization as compared with a sham procedure.

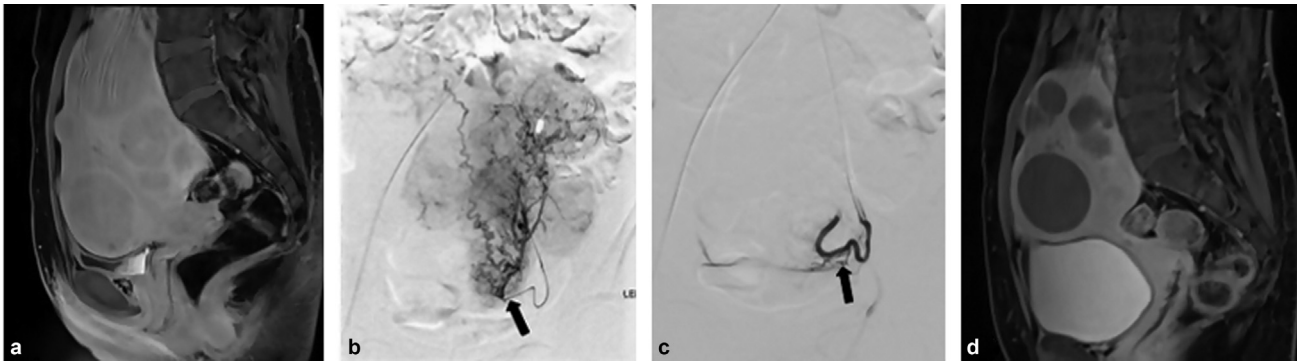


Fig. 3 A 34-year-old woman presented with heavy and prolonged menstrual bleeding, pelvic pain, and pressure symptoms. She conducted her own research after being presented with only hysterectomy as a treatment option and came to our clinic seeking care. (a) Pre-UAE (uterine artery embolization) sagittal T1-weighted fat-saturated contrast-enhanced (CE) image shows multiple enhancing fibroids. (b) Preembolization digital subtraction angiography (DSA) of the left UA from the transverse UA segment (arrow) shows hypertrophic UA and opacification of multiple fibroids. (c) Postembolization left UA DSA shows occluded UA and patent cervico-vaginal branch (arrow). (d) Six-month follow-up CE MRI shows the decreased size of the uterus and no enhancement of the fibroids consistent with cystic degeneration. During the clinic follow-up, she expressed resolved heavy, prolonged bleeding and bulk symptoms.

In a recent systematic review of post-UAE pain control regimens, the authors compared the average maximum pain scores of 26 studies that tested various medications, such as opioids, NSAIDs, acetaminophen, intra-arterial lidocaine, steroids, ketamine, or $\alpha 2$ adrenergic receptor agonists. After analyzing these groups' mean maximal pain scores, the authors concluded that there was no significant difference between them. Thus, they suggested that using opioids along with NSAIDs and acetaminophen may be sufficient in controlling post-UAE pain.⁴³

Overall, the choice of pain management strategy after UAE should be individualized based on patient factors and preferences. Further research is needed to evaluate the benefits and risks of the different alternatives. Furthermore, providing detailed preprocedural counseling to patients regarding post-UAE pain timeline and severity can manage patient's expectations and reduce procedure-related anxiety.

Postprocedural Care

After undergoing UAE to treat fibroids and adenomyosis, most patients undergo a similar cascade of events referred to as PES. PES consists of pelvic pain, nausea, vomiting, and fever that start around 10 to 20 minutes after the procedure and usually peaks at around the eighth hour.⁴⁴ Diagnosis of PES can be difficult for non-interventionalists and may warrant further investigation to exclude other differentials like sepsis.⁴⁵ While it is not completely understood, the etiology of PES is believed to be due to the release of inflammatory mediators from tissue infarction after embolization.⁴⁶ One prospective study assessed that women who underwent UAE had a mean postprocedural score of 7/10 (± 2.47) and an average hospital stay of 31.2 hours.³⁹ Many therapies have been tried to decrease postprocedural pain, such as intra-arterial lidocaine and steroids. A randomized prospective study showed that using intra-arterial lidocaine caused a significant reduction in the early hours of postprocedural pain.⁴⁷ Another study showed that administration of a single-dose intravenous infusion of dexamethasone

decreased pain scores 12 hours after UAE as well as the incidence of nausea and vomiting.⁴⁸ After controlling the nausea and vomiting, the patient is discharged with narcotic agents to be taken on an as-needed basis.³⁹

Aside from PES, other complications, although rare, can also arise after UAE. Fibroid expulsions (FEs) are a late complication that may occur where the necrotic fragments of the fibroid are expelled through the cervical canal.⁴⁵ Symptoms can include vaginal bleeding, cramping, and pelvic pain. Larger sloughed off fibroids can also cause a blockage at the cervical os, which could lead to infection. Certain factors predispose patients to FE, such as size and location of the tumor, with submucosal and transmural fibroids having the highest risk.⁴⁹ Pedunculated fibroids, while historically thought of as high risk, have a low risk of adverse events and FE; they can safely be treated with UAE.¹⁴ The treatment of FE depends on a case-by-case basis, as most women tolerate FE well, with 50% needing no operative intervention.⁵⁰ While the rate of fibroid expulsion ranges from 1.7 to 50%,⁵⁰ it is still a serious complication that must be addressed. Another rare complication that may arise from UAE involves chronic vaginal discharge. While often asymptomatic, one study found vaginal discharge mixed with spherical particles from intramural and submucosal fibroids.⁵¹

Outcomes

The outcomes of UAE on uterine fibroids are 50 to 60% fibroid size reduction, 88 to 92% reduction of bulk symptoms, greater than 90% elimination of uterine bleeding, and 75% elimination of symptoms.⁵² The complications of UAE on uterine fibroids include 2 to 17% with prolonged vaginal discharge, 3 to 15% with fibroid expulsion, and 1 to 3% with septicemia according to SIR Standards of Practice Guidelines.⁵² UAE has lower success with adenomyosis, where 76% of women had a resolution of symptoms.⁵³ Complications of UAE in adenomyosis are postprocedural pain in 87% of patients, persistent amenorrhea in 6 to 21% of patients, and need for hysterectomy in 14% of patients.⁵⁴

While the outcomes of UAE for both fibroids and adenomyosis are high, success also depends on the size of the

embolic agent being used. According to one study, the use of only 500 to 700 μm particles resulted in a high rate of failed tumor infarction in uterine fibroids.⁵⁵ That same study showed that using 700- to 900- μm particles resulted in better imaging results and fewer repeat interventions.⁵⁵ TAGM particles can also be a great embolic agent for adenomyosis. One study showed that using microspheres ranging from 500 to 700 μm in size achieved a necrosis rate of 44.1%.⁵⁶

A recent deep learning-based study on predicting UAE outcomes found that there was no significant difference in UAE treatment response between fibroids' locations.⁵⁷ Similar to this finding, Firouznia et al⁵⁸ found that lesion location is not a factor in determining the clinical outcome of UAE. However, a study by Katsumori et al⁵⁹ showed that fibroid location within the uterus affects the likelihood of infarction after embolization. More specifically, they found that the anteriorly located fibroids and cervical fibroids have a lower infarction rate after UAE. The reasons for incomplete infarction of fibroids at these locations are unclear, but could be related to collateral arterial supply. One possible explanation for this phenomenon is that it may be linked to either the distribution of microspheres influenced by gravity during procedures performed while the patient is supine or hormonal changes resulting in shifts between watershed regions of the uterus, ovaries, or vagina based on the menstrual cycle phase.⁶⁰ The location of the fibroids is also important, as discussed earlier, due to the potential risk of expulsion. Sher et al³¹ also found that submucosal location and pain are predictors of symptom recurrence.

During the initial workup, the total volume and bulk of the fibroids are considered as part of the treatment decision making. Current evidence supports UAE as a safe and effective option to treat giant fibroids (volume ≥ 700 cc) causing bulk symptoms. However, the limited available data indicate a relatively higher risk of complications and reinterventions when compared with nongiant fibroids. Patients should be selected, counseled, and managed in a multidisciplinary fashion, as bulk symptoms take longer to improve after UAE.⁶¹

While patients receive an extensive workup to rule out malignancy as described in the workup section, it may be difficult to differentiate leiomyoma from leiomyosarcoma on MRI. In a study that reviewed more than 300 patients who had follow-up after UAE, 4 were found to have leiomyosarcoma after UAE for presumed fibroids.⁶² This study highlights that patients should be carefully assessed for underlying leiomyosarcoma and counseled accordingly.

Fertility and UAE

Unlike hysterectomy, minimally invasive interventions such as UAE may help preserve fertility, especially in cases of symptomatic adenomyosis and large fibroids, according to recent studies.⁶³ In fact, research indicates that even patients with larger uteri and fibroids greater than 10 cm do not experience significantly higher complication rates, suggesting that fibroid size should not be a contraindication

for UAE.⁶³ However, one study found that miscarriage rates were highest in the UAE group compared to other minimally invasive techniques like HIFU and transcervical radiofrequency ablation.⁶⁴ Nonetheless, this study identified maternal age as a confounding variable that could have contributed to the odds of fetal and maternal complications.⁶⁴ Another systematic review was conducted on a cohort of 2,000 women, out of which 1,575 underwent myomectomies, while 424 underwent UAE, as reported by Zanolli et al.⁶⁵ The study revealed that the birth rate outcome was 60.6% for both UAE and myomectomies, compared to 75.6% for the latter. There was a higher rate of spontaneous abortion of 27.4% for the UAE, as opposed to 19.0% for myomectomies.⁶⁵ Again, the study indicated that the patients who underwent UAE were older and had smaller fibroids when compared to those who underwent laparoscopic myomectomy.⁶⁵ On the other hand, a meta-analysis of 189 patients, of which 44 became pregnant (23.3%) after UAE, found that the live birth rate was estimated to be 88.6% among patients aged 24.5 to 33 years, indicating that UAE does not significantly affect birth rates compared to the general population.⁶⁶ A meta-analysis by Jiang et al⁶⁷ investigated the overall pregnancy outcomes after uterus-sparing nonexcisional treatments such as UAE and ablation in patients with adenomyosis. Between January 2000 and 2022, 13 studies with 1,319 patients with adenomyosis were included. The pregnancy and miscarriage rates after nonexcisional treatments were 51 and 22%, respectively, without a statistically significant difference compared to adenomyosis excision outcomes. Overall, recent literature suggests that UAE on a young cohort does not have a negative impact on fertility or pregnancy outcomes when compared to the general population.

Conclusion

Endovascular treatments are promising and effective for both adenomyosis and uterine fibroids. While traditional surgical approaches have been successful in the past, there was an increase in complications and longer hospital times associated with them. Endovascular treatments like uterine artery embolization are minimally invasive with very few complications. It is important to note that some patients prefer less invasive treatment options. Therefore, healthcare providers should provide comprehensive counseling on all available treatment options, which may include conservative, medical, minimally invasive, surgical, or a combination thereof, to help patients make informed decisions about their care. In conclusion, endovascular treatment is expected to play a more significant role as a management tool for both fibroids and adenomyosis in the future.

Conflict of Interest

None declared.

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