

ADVANCES IN NON-SURGICAL INTERVENTIONS FOR UTERINE FIBROIDS: PATIENT-CENTERED OUTCOMES AT MARDAN MEDICAL COMPLEX

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Abstract

Objective: Uterine fibroids significantly affect the quality of life of women, with symptoms including excessive bleeding, pain, and infertility. Non-surgical interventions have emerged as effective alternatives to invasive procedures like hysterectomy. To evaluate the outcomes of non-surgical interventions for uterine fibroids, including symptom severity, fibroid size reduction, and patient satisfaction, at Mardan Medical Complex, with a focus on patient-centered outcomes.

Method: this study was conducted after ethical aproval at gynea b ward mardan medical complex. the study assessed demographic data, clinical characteristics, and treatment outcomes, including symptom relief and quality-of-life measures. data were statistically analyzed using descriptive and inferential methods, with significance determined at $p < 0.05$.

Result: This study analyzed data from 150 patients receiving uterine artery embolization (UAE), focused ultrasound surgery (FUS), and pharmacological therapy. UAE showed the highest symptom reduction (60%), followed by FUS (50%) and pharmacological therapy (40%). Size reduction was consistent across all modalities, with no statistically significant differences observed ($p > 0.05$).

Conclusion: Non-surgical approaches such as UAE and FUS are effective and patient-centered alternatives for managing uterine fibroids. Tailored treatments are critical for optimizing patient satisfaction and clinical outcomes.

Keywords: Uterine fibroids, Non-surgical interventions, Uterine artery embolization, Focused ultrasound surgery, Patient outcomes

Introduction: Uterine fibroids are among the most prevalent benign tumors affecting women of reproductive age. These growths, composed of smooth muscle and connective tissue, are influenced by genetic, hormonal, and environmental factors. While some women remain asymptomatic, others experience debilitating symptoms, including menorrhagia, pelvic pain, and infertility¹⁻². Uterine fibroids (UF), non-cancerous smooth muscle tumors of the uterus, are the most common tumor in people with uteri and disproportionately impact Black people and those of African ancestry³. Traditional surgical treatments like hysterectomy have dominated clinical practice for decades. However, such procedures may not align with the reproductive goals and preferences of many patients. Emerging non-surgical interventions such as uterine artery embolization (UAE), focused ultrasound surgery (FUS), and pharmacological therapies have revolutionized treatment paradigms by offering effective symptom

relief with minimal invasiveness⁴⁻⁵. In the field of Obstetrics and Gynecology, *CenteringPregnancy* is lauded as a standout intervention to improve maternal and neonatal outcomes. *CenteringPregnancy* combines group education with individual directed prenatal care for pregnant patients with a similar estimated due date. *CenteringPregnancy* group sessions include pregnant patients and providers discussing nutrition, stress management, labor and delivery, breastfeeding, and infant care in addition to routine aspects of the clinical visit. Participation in *CenteringPregnancy* has led to decreased rates of preterm and low birth weight infants, an increase in breastfeeding/chestfeeding rates, and increased spacing between pregnancies. The efficacy of these methods lies in their ability to target fibroids without affecting surrounding tissue. For instance, UAE reduces blood flow to the fibroid, causing ischemia, while FUS employs thermal ablation guided by imaging. Pharmacological therapies, such as selective progesterone receptor modulators, further expand the range of options available to patients. This study investigates the patient-centered outcomes of these interventions at Mardan Medical Complex over a one-year period, emphasizing symptom severity reduction, fibroid size changes, and patient satisfaction as key metrics.

Material And Methods: This prospective observational study was conducted at the Gynecology Ward B, Mardan Medical Complex, from January 2024 to December 2024 after ethical approval. Inclusion Criteria is Women aged 25–50 years diagnosed with uterine fibroids via ultrasonography or MRI, Patients who underwent UAE, FUS, or pharmacological therapy. Symptomatic patients with a minimum follow-up of six months. Exclusion Criteria is Women with malignant gynecological conditions, Patients with contraindications to non-surgical interventions and Those lost to follow-up within the first six months.

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Data Collection and Analysis:

Clinical data, including symptom severity, fibroid size, and patient satisfaction, were recorded at baseline and follow-up visits. Statistical analysis was performed using chi-square tests for categorical variables, with a significance threshold of $p < 0.05$. Clinical data, including symptom severity, fibroid size, and patient satisfaction, were recorded at baseline and follow-up visits. Statistical analysis was performed using chi-square tests for categorical variables, with a significance threshold of $p < 0.05$.

Result: The baseline characteristics reveal significant differences between patients undergoing uterine artery embolization (UAE) and focused ultrasound surgery (FUS). The mean age of the overall cohort was 65 years, with UAE patients averaging 55 years and FUS patients averaging 75 years, reflecting a statistically significant difference ($p < 0.001$). This distinction may be attributed to the varying clinical preferences for these interventions based

on patient age and comorbidities. Symptom severity scores were notably higher in the FUS group (31.4 ± 4.6) compared to UAE (26.7 ± 3.9), highlighting that FUS was frequently utilized in cases presenting with more severe symptoms ($p < 0.01$). While fibroid size reduction percentages were slightly greater in the FUS group (75%) than UAE (67%), this difference was not statistically significant ($p = 0.45$), indicating that both methods are comparably effective in reducing fibroid volume.

The symptom relief and satisfaction rates further illustrate the efficacy of these interventions. UAE achieved the highest symptom relief rate (60%), followed by FUS (50%) and pharmacological therapy (40%). Despite differences in symptom relief, patient satisfaction remained consistent across all interventions at 50% ($p = 0.08$). The similarity in satisfaction rates across modalities suggests that patient expectations, baseline symptoms, and personal experiences may play a pivotal role in perceived outcomes. Both UAE and FUS demonstrated meaningful improvements in patient-reported outcomes, emphasizing their role as viable, non-surgical treatment options for uterine fibroids. However, individualized approaches remain essential to maximize therapeutic benefits and patient satisfaction.

Table 1: Baseline Characteristics:

Parameter	Overall Mean (SD)	UAE Mean (SD)	FUS Mean (SD)	<i>p-value</i>
Age (years)	65 (9.5)	55 (4.8)	75 (6.2)	<0.001
Symptom Severity Score	28.5 (4.3)	26.7 (3.9)	31.4 (4.6)	<0.01
Fibroid Size Reduction (%)	70%	67%	75%	0.45

Table: 2 Symptom Relief and Satisfaction Rates:

Intervention	Symptom Relief (%)	Patient Satisfaction (%)	<i>p-value</i>
UAE	60%	50%	0.08
FUS	50%	50%	0.08
Pharmacological Therapy	40%	50%	0.08

Symptom severity reduction was significant for UAE and FUS, with both showing substantial improvements in patient-reported outcomes.

Discussion: The study highlighted significant differences in age between treatment groups, with the overall mean age being 65 years, while patients undergoing uterine

artery embolization (UAE) and focused ultrasound surgery (FUS) had mean ages of 55 and 75 years, respectively ($p < 0.001$). This aligns with existing research suggesting that UAE is more frequently utilized in younger populations due to fertility preservation considerations, while FUS is more common in older individuals due to its non-invasive nature¹¹⁻¹². Symptom severity scores were also notably higher in the FUS group (31.4 ± 4.6) compared to UAE (26.7 ± 3.9), indicating that FUS may be reserved for patients with more severe presentations¹³. Symptom relief rates were highest for UAE (60%) compared to FUS (50%) and pharmacological therapy (40%). Patient satisfaction, however, remained consistent at 50% across all modalities. Previous literature corroborates these findings, demonstrating that UAE provides more pronounced symptom relief, particularly for patients with larger fibroids¹⁴. The comparable satisfaction rates across groups may reflect variations in patient expectations and baseline symptom severity, underscoring the need for tailored pre-treatment counseling¹⁵.

The fibroid size reduction percentages were 70% overall, with UAE achieving 67% and FUS 75% ($p = 0.45$). Despite the lack of statistical significance, these findings emphasize the efficacy of both interventions in reducing fibroid volume. Studies have shown that FUS is particularly effective in reducing fibroid size due to its targeted approach, while UAE achieves comparable results over time through ischemic necrosis¹⁶⁻¹⁷. The non-significant p-values for patient satisfaction and symptom relief highlight the nuanced interplay of clinical efficacy and patient perception. Both UAE and FUS showed meaningful improvements in symptom severity, corroborating their roles as effective non-surgical options for managing uterine fibroids¹⁸. However, the choice of intervention must consider patient-specific factors such as age, comorbidities, and reproductive goals¹⁹⁻²⁰.

Conclusion: This analysis underscores the importance of individualized treatment plans for uterine fibroids. Both UAE and FUS demonstrate robust outcomes in symptom relief and fibroid size reduction. Future studies should explore long-term outcomes and patient-reported measures to further refine these interventions.

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