

**FERTILITY OUTCOMES AFTER CONSERVATIVE  
MYOMECTIONY: DIAGNOSTIC ASSESSMENT OF  
POSTOPERATIVE COMPLICATIONS IN WOMEN OF  
REPRODUCTIVE AGE**

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**Annotation.** This original research was conducted to evaluate fertility-related outcomes and the diagnostic significance of uterine elastography in women of reproductive age with uterine fibroids examined at the Urogynecology and Polyclinic Departments of the Multidisciplinary Clinic of Samarkand State Medical University. A total of 40 women of reproductive age were included in the study: 20 patients underwent conservative myomectomy, 10 patients received medical treatment for uterine fibroids, and 10 healthy women without fibroids served as controls. All participants underwent clinical and anamnestic assessment, gynecological examination, complete blood count, and transvaginal ultrasound combined with uterine elastography. Magnetic resonance imaging was not performed. In patients after myomectomy, special attention was paid to the condition of the postoperative uterine scar, myometrial elasticity, and indirect signs of complications that could affect fertility.

According to the diagnostic findings, localized changes in myometrial elasticity in the scar zone were detected in 7 out of 20 patients (35.0%) after conservative myomectomy, while 13 patients (65.0%) demonstrated satisfactory uterine wall elasticity and homogeneous myometrial structure. Minor ultrasound signs of localized fibrosis without clinically significant cavity deformation were observed in 5 patients (25.0%) in the myomectomy group. In the medically treated fibroid group, preserved

uterine elasticity parameters were found in 8 out of 10 patients (80.0%), whereas slight focal stiffness associated with fibroid nodes was noted in 2 patients (20.0%). All healthy controls demonstrated homogeneous myometrial elasticity and normal ultrasound findings. During follow-up, regular menstrual cycles and favorable early reproductive indicators were observed in the majority of patients without significant elastographic abnormalities.

The obtained results indicate that conservative myomectomy may be associated with localized changes in myometrial elasticity that can potentially influence fertility. Uterine elastography proved to be an informative non-invasive diagnostic method for detecting postoperative uterine alterations and assessing myometrial integrity. Incorporation of uterine elastography into routine postoperative monitoring may improve early diagnosis of complications and support fertility-preserving management in women of reproductive age.

**Keywords:** conservative myomectomy, uterine fibroids, fertility outcomes, uterine elastography, postoperative complications, reproductive age, ultrasound diagnostics, myometrial elasticity, uterus-sparing surgery

Uterine fibroids (leiomyomas) are the most common benign tumors of the female reproductive system and are diagnosed in up to 30–40% of women of reproductive age. They often manifest with abnormal uterine bleeding, pelvic pain, and reproductive dysfunction, including infertility and pregnancy complications. In women who wish to preserve fertility, conservative (uterus-sparing) myomectomy remains one of the main surgical treatment options. This procedure allows removal of fibroid nodes while maintaining the anatomical and functional integrity of the uterus; however,

postoperative structural changes in the myometrium and uterine scar formation may influence subsequent reproductive outcomes.

Despite the widespread use of conservative myomectomy, the impact of postoperative complications on fertility potential remains a subject of ongoing clinical interest. Local fibrosis, scar defects, intrauterine adhesions, and altered myometrial contractility can negatively affect implantation, uterine receptivity, and pregnancy course. Early identification of such changes is therefore essential for predicting reproductive outcomes and optimizing follow-up strategies in women of reproductive age.

Modern diagnostic approaches for assessing uterine condition after myomectomy include transvaginal ultrasound, hysteroscopy, and magnetic resonance imaging. However, in routine clinical practice, especially in outpatient settings, there is a need for accessible, non-invasive, and cost-effective methods capable of detecting subtle structural and functional alterations of the myometrium. In this context, ultrasound-based uterine elastography has emerged as a promising diagnostic tool. By assessing tissue stiffness and elasticity, elastography enables evaluation of myometrial integrity, scar remodeling, and localized fibrotic changes that may not be clearly visualized on conventional ultrasound alone.

The diagnostic value of uterine elastography in assessing postoperative uterine condition and its potential role in predicting fertility outcomes after conservative myomectomy have not been sufficiently studied, particularly in clinical settings without routine use of magnetic resonance imaging. Therefore, further investigation of elastographic parameters in women after myomectomy compared with medically treated

fibroid patients and healthy controls may provide important insights into postoperative uterine recovery and reproductive prognosis.

**The aim of this study** was to evaluate fertility-related uterine changes and postoperative complications in women of reproductive age after conservative myomectomy and to determine the diagnostic significance of uterine elastography in assessing myometrial condition and fertility potential.

**Materials and Methods.** This original clinical study was carried out at the Urogynecology and Polyclinic Departments of the Multidisciplinary Clinic of Samarkand State Medical University. The study included 40 women of reproductive age (18–40 years) who were examined and followed in outpatient and inpatient settings.

Participants were divided into three groups. **The main group** consisted of 20 women who had previously undergone conservative myomectomy for uterine fibroids with preservation of the uterus. **The comparison group** included 10 women diagnosed with uterine fibroids who received non-surgical (medical) treatment. **The control group** comprised 10 healthy women without uterine fibroids or known gynecological pathology and with preserved reproductive function.

*Inclusion criteria* were reproductive age, confirmed diagnosis of uterine fibroids (for groups I and II), and informed consent to participate in the study. *Exclusion criteria* included pregnancy at the time of examination, malignant gynecological disease, severe endocrine or systemic disorders affecting fertility, and previous hysterectomy. Magnetic resonance imaging was not used in this study.

All participants underwent a standardized clinical and anamnestic assessment, including evaluation of menstrual function, reproductive history, and previous

gynecological interventions. A gynecological examination and complete blood count were performed for all patients. Instrumental diagnostics included transvaginal ultrasound and ultrasound-based uterine elastography. Ultrasound examination assessed uterine size, myometrial structure, presence of fibroid nodes, endometrial thickness, and, in the postoperative group, the condition of the myomectomy scar.

Uterine elastography was used to evaluate myometrial stiffness and elasticity. Particular attention was paid to the postoperative scar area in women after conservative myomectomy. Elastographic findings were categorized as homogeneous elasticity, moderately increased stiffness, or localized high stiffness suggestive of fibrotic changes. In patients receiving medical therapy, elastography assessed myometrial elasticity in relation to fibroid location. Healthy controls were examined to establish reference elastographic patterns.

During follow-up, fertility-related indicators were assessed, including menstrual cycle regularity, presence of pelvic pain, ultrasound signs of intrauterine abnormalities, and early reproductive outcomes where available. The obtained clinical, ultrasound, and elastographic data were comparatively analyzed across the three groups.

Statistical analysis was performed using standard descriptive methods. Quantitative data were expressed as mean  $\pm$  standard deviation, and categorical variables were presented as percentages. Comparative evaluation between groups focused on differences in myometrial elasticity parameters and the frequency of ultrasound signs suggestive of postoperative complications that could potentially influence fertility.

Results. The study included 40 women of reproductive age divided into three groups: 20 women after conservative myomectomy, 10 women receiving medical

treatment for uterine fibroids, and 10 healthy controls. All participants completed clinical assessment, ultrasound examination, and uterine elastography.

**1. Post-myomectomy group (n = 20):** Uterine size was within normal limits in all patients, with localized changes corresponding to the scar area. Elastography revealed moderate to localized increased stiffness in the myomectomy scar in 7 patients (35%), while 13 patients (65%) demonstrated homogeneous myometrial elasticity. Conventional transvaginal ultrasound detected minor localized fibrosis in 5 patients (25%), but elastography identified subtle stiffness changes in 2 additional patients not evident on standard ultrasound. No significant uterine cavity deformities or adhesions were detected. During follow-up, 16 patients (80%) maintained regular menstrual cycles and reported no reproductive complications; 4 patients (20%) showed mild menstrual irregularities, correlating with localized increased stiffness in the scar zone.

**2. Medically treated fibroid group (n = 10):** Ultrasound showed stable fibroid size without significant cavity distortion. Elastography demonstrated preserved myometrial elasticity in 8 patients (80%), while 2 patients (20%) exhibited slight focal stiffness at fibroid sites. All patients maintained regular menstrual cycles and reported no fertility-related complications during follow-up.

**3. Healthy control group (n = 10):** Both ultrasound and elastography showed homogeneous myometrial structure and elasticity. No menstrual or reproductive abnormalities were observed.

Comparison of elastography findings: Post-myomectomy patients had a higher incidence of localized myometrial stiffness (35%) compared with medically treated fibroid patients (20%) and controls (0%). Elastography demonstrated higher sensitivity

than conventional ultrasound in detecting subtle changes in myometrial elasticity, particularly in postoperative scar regions.

**Discussion.** Uterine fibroids are a common cause of reproductive dysfunction in women of reproductive age, and conservative (uterus-sparing) myomectomy is the preferred surgical option for women wishing to preserve fertility. Despite the benefits of uterus preservation, postoperative changes in the myometrium, such as scar formation, localized fibrosis, or altered tissue elasticity, may potentially influence reproductive outcomes. Therefore, accurate and timely assessment of the uterine condition after myomectomy is essential for optimizing fertility management.

In this study, 35% of women after conservative myomectomy exhibited localized increases in myometrial stiffness at the scar site, as detected by uterine elastography. These findings were largely consistent with previous reports suggesting that surgical intervention can induce focal myometrial fibrosis, even in the absence of clinically significant adhesions or cavity deformities. The majority of patients, however, maintained regular menstrual cycles and early reproductive function, indicating that mild elastographic changes do not necessarily translate into clinically significant fertility impairment.

Uterine elastography proved to be a sensitive non-invasive diagnostic tool capable of detecting subtle myometrial alterations that were not clearly visualized on conventional transvaginal ultrasound. In the medically treated fibroid group, slight focal stiffness corresponding to fibroid nodes was observed in 20% of patients, whereas healthy controls showed homogeneous elasticity throughout the myometrium. These findings highlight the ability of elastography to differentiate between postoperative changes, fibroid-related tissue alterations, and normal uterine tissue.

The clinical significance of elastographic changes in the myometrium remains a subject of ongoing research. While severe fibrosis, extensive scar formation, or intrauterine adhesions are clearly associated with impaired fertility, the prognostic value of mild localized stiffness is less certain. Nevertheless, early detection of such alterations allows clinicians to provide individualized counseling and implement preventive strategies, such as careful monitoring during assisted reproductive techniques or targeted postoperative rehabilitation.

The study is limited by a relatively small sample size and the absence of long-term fertility outcome data, including conception rates and pregnancy complications. Magnetic resonance imaging, which could provide additional structural information, was not performed due to practical constraints. Despite these limitations, the findings support the use of uterine elastography as a complementary tool in the postoperative assessment of women after conservative myomectomy, particularly in resource-limited settings where non-invasive and accessible diagnostics are preferred.

In conclusion, localized changes in myometrial elasticity may occur after conservative myomectomy, but they are generally mild and do not substantially impair early reproductive function. Uterine elastography enhances the sensitivity of postoperative evaluation, allowing early identification of subtle structural changes and supporting fertility-preserving management in women of reproductive age. Future studies with larger cohorts and long-term reproductive follow-up are needed to further clarify the prognostic value of elastographic findings.

**Conclusion.** Conservative myomectomy in women of reproductive age may lead to localized changes in myometrial elasticity, particularly at the postoperative scar site. These alterations are generally mild and do not significantly compromise menstrual

function or early fertility indicators in most patients. Uterine elastography is a valuable, non-invasive diagnostic tool that enables early detection of subtle myometrial changes not always visible on conventional ultrasound. Incorporating elastography into routine postoperative follow-up can improve assessment of uterine integrity, guide individualized fertility management, and support preservation of reproductive potential. Overall, the study highlights the clinical relevance of elastography in monitoring postoperative uterine recovery and reinforces the safety and fertility-preserving benefits of conservative myomectomy in women of reproductive age.

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