

UNIVERSITATEA DE MEDICINĂ, FARMACIE, ȘTIINȚE ȘI TEHNOLOGIE  
„GEORGE EMIL PALADE” DIN TÎRGU MUREŞ

**ȘCOALA DE STUDII DOCTORALE**

**Advancing Pelvic Floor Surgery Outcomes: Linking Quality of Life,  
Patient Adherence, and Innovations in Stress Urinary  
Incontinence Management**

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**TÎRGU MUREŞ 2025**



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Stress Urinary Incontinence (SUI) and endometriosis are two of the most prevalent pelvic floor disorders that have a considerable influence on the health and quality of life of women, and when we look at SUI it is considered to be the most common type of urinary incontinence, impacting about 15–30% of women worldwide in Europe and North America, which is frequently associated with factors such as pregnancy, obesity, increasing age, and physical trauma to the pelvic floor, while in comparison, endometriosis is a disease that affects 8–10% of women of reproductive age and leads to chronic pelvic pain, dysmenorrhea, dyspareunia, and infertility. Both these conditions are also correlated with significant healthcare costs, and the prevalence of impaired psychosocial functioning, sexual health, and work impairments are very high. Some of the treatments pertain to surgical management for SUI, such as the TTVT operation, and for endometriosis, the laparoscopic excision. This surgical procedure is established as a standard of care; however, long-term results with regard to compliance, recurrence, and QoL are insufficiently evaluated. Cognitive-behavioral variables like self-efficacy and coping have been shown to influence recovery, but are only rarely present in clinical pathways, psychological stores, or psychosocial determinants of recovery. Similar potential is apparent for other technologies, e.g., imaging, biomarkers, stem cell therapies, and AI, but these technologies are not systematically linked to patient-centered outcomes data.

. In order to do this, this thesis took three core questions: 1) what are the clinical and QoL results after TTVT surgery for SUI?; 2) when it comes to laparoscopic excision of endometriosis, what is compliance as well as long-term effects?; and 3) What is the position of innovative diagnostic and treatment applications in pelvic floor disorders?

The first study examined outcomes following surgery using the globally accepted standard for SUI management, TTVT. Women undergoing TTVT were followed as a cohort and compared for clinical outcomes and patient-reported measures, with an emphasis on symptom control, quality of life, sexual health, and psychological function. The results are consistent with large-scale registry data, demonstrating high effectiveness: in 70–90% of women, symptom control or significant improvement was observed in the short to mid-term; Major reductions in symptom distress, as well as social and functional domains, were demonstrated by pelvic organ prolapse-specific measures: Pelvic Floor Distress Inventory (PFDI-20); Pelvic Floor Impact Questionnaire (PFIQ-7); and the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire (PISQ-12). TTVT is effective when it comes to restoring continence, the outcomes depend a lot on the psychological support as well as counselling.

The second study was focused on women having laparoscopic excision for endometriosis. The use of this approach is recognized to provide a therapeutic modality and diagnostic capability that are associated with improvement in pain, daily functioning, and also fertility, which is considered a critical issue in the past. Adherence to long-term follow-up likewise confirmed sustained improvements in QoL. In selected patients, a follow-up was done seven years later, and the clinical benefits show that the physical and psychological health persisted, which included relief of pain, sexual well-being, and daily activities. The obtained data indicated favorable outcomes with respect to fertility, showing a tendency toward improvement following laparoscopic excision. However, compliance with long-term follow-up was low: fewer than 15% of patients remained under observation for up to seven years, and participation rates declined progressively after the first year. The reasons cited for discontinuing follow-up included geographic distance, treatment fatigue, and resolution of symptoms. Recurrence rates were variable and higher in cases of advanced disease or incomplete excision. All patients completed the same standardized questionnaire preoperatively, postoperatively, and during follow-up. No significant differences were

observed between the evaluated groups with respect to mental status or psychiatric disorders. The majority of patients who completed the postoperative questionnaires were diagnosed with stage IV endometriosis according to the rAFS classification (Table 1). Likewise, no significant differences were found during follow-up between patients with primary and secondary infertility. Overall, 51.01% of patients expressed a desire to conceive prior to surgery, with no differences between groups.

Among these, approximately one fifth achieved pregnancy at the 1-year postoperative evaluation and about one quarter at the 3-year evaluation, suggesting that surgical intervention may contribute to improved reproductive outcomes to some extent. However, precise interpretation is difficult, as the potential use of assisted reproductive procedures by some patients during the follow-up period could not be fully accounted for. At the 1-year postoperative evaluation, no significant differences were observed between groups in achieving spontaneous or assisted pregnancies.

The third paper presented a narrative review of recent innovations in the diagnosis and treatment of stress urinary incontinence (SUI). Novel diagnostic methods included high-resolution 3D/4D ultrasound and magnetic resonance imaging (MRI), which allow both detailed anatomical visualization and the dynamic assessment of pelvic floor function. A wide range of noninvasive biomarkers, such as microRNAs, cytokines, proteomic profiles, and markers of oxidative stress, are under investigation, although none have yet reached routine clinical application. Advances in artificial intelligence (AI), particularly in imaging analysis and predictive modeling, show promise for improving lesion detection, reducing interobserver variability, and forecasting recurrence or treatment adherence.

On the therapeutic side, regenerative and minimally invasive approaches are being actively explored. These include stem cell–based therapies, platelet-rich plasma (PRP) injections, low-intensity extracorporeal shockwave therapy (LiESWT), low-intensity pulsed ultrasound (LIPUS), pulsed electromagnetic field (PEMF) stimulation, and novel biomaterials, all of which are currently under evaluation for their ability to restore urethral function. Laser therapy has demonstrated short-term effectiveness, although its long-term utility remains limited. Robotic-assisted surgery is also emerging as an option for complex pelvic floor procedures, offering enhanced visibility and ergonomics, albeit at the expense of higher costs and longer operative times. In parallel, digital health solutions — such as mobile health applications, wearable devices for urinary leakage, and AI-driven predictive models — have introduced new opportunities for patient-centered and personalized care.

Overall, these innovations hold considerable promise, but rigorous, long-term clinical validation will be required before their widespread adoption.

All three studies present methodological limitations, including retrospective design components, heterogeneity in treatment protocols, absence of control groups, and poor long-term follow-up. Nevertheless, the TVT study confirmed high continence rates with sustained improvements in quality of life; the large endometriosis cohort demonstrated reductions in pain, functional improvement, and a positive trend in fertility, albeit constrained by limited follow-up; and the SUI review outlined emerging innovations that remain to be validated in rigorous, long-term studies. Overall, surgical outcomes in pelvic floor disorders depend not only on anatomical reconstruction but also on psychosocial support, adherence, and the integration of multidisciplinary, patient-centered care.