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Original Article

The Effect of Midurethral Sling Operations on Sexual Function in Premenopausal Sexually Active Women: A Comparative Prospective Study

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ABSTRACT

Objective: The aim of this study was to evaluate the effects of transobturator tape (TOT) and transvaginal tape-obturator (TVT-O) midurethral sling surgeries on sexual function, in addition to their efficacy in the treatment of stress urinary incontinence (SUI), in premenopausal sexually active women.

Methods: This prospective, comparative, and observational study was conducted between 2020 and 2022 at the Department of Obstetrics and Gynecology, Kartal Dr. Lütfi Kırdar City Hospital. A total of 290 premenopausal, sexually active women diagnosed with SUI and treated with TOT or TVT-O surgery were included. The Female Sexual Function Index (FSFI) was administered preoperatively and at the 6th and 12th postoperative months. The results were compared with a control group consisting of 70 healthy women without urinary incontinence.

Results: Following TOT and TVT-O surgeries, significant increases were observed in FSFI total scores and all subdomains ($p<0.0001$). The most prominent improvements were noted in the satisfaction, orgasm, and pain domains. At the 12-month follow-up, the mean FSFI score of the intervention group was statistically comparable to that of the control group ($p=0.34$). Additionally, 91.4% of the patients reported an improvement in sexual function. Dyspareunia was observed in only 5.8% of the participants and was mostly attributed to physical or psychological factors.

Conclusion: Midurethral sling surgeries (TOT and TVT-O) not only effectively resolve urinary incontinence complaints but also contribute to the improvement of sexual function in premenopausal sexually active women. The observed positive outcomes are influenced by a combination of physiological, psychological, and relational factors. Therefore, a comprehensive and multidimensional approach should be adopted in the evaluation and follow-up of patients.

INTRODUCTION

Stress urinary incontinence (SUI) is one of the most common pelvic floor disorders among women of reproductive age and negatively affects quality of life by causing involuntary urine leakage during daily activities.[1] In addition to its physical manifestations, SUI can lead to psychosocial consequences such as embarrassment, social isolation, and sexual dysfunction, thereby reducing overall life satisfaction.[2]

Conservative treatment modalities, including pelvic floor muscle training, lifestyle modifications, bladder training, and pessary use, are generally recommended as first-line therapeutic options.[3] However, in patients who do not respond adequately to these approaches, minimally invasive surgical techniques—particularly midurethral sling (MUS) procedures—are considered the gold standard due to their high success rates and low complication profiles.[4]

Among these surgical techniques, transobturator tape (TOT) and transvaginal tape–obturator (TVT-O) procedures are widely performed. Both aim to restore urethral support and improve continence by positioning a synthetic mesh beneath the mid-urethra. Nevertheless, anatomical variations in the surgical approach may influence postoperative outcomes, including sexual function.[5,6]

Female sexual function is a complex process influenced by anatomical, hormonal, psychological, and relational factors. The Female Sexual Function Index (FSFI) is a validated, multidimensional self-report questionnaire that evaluates six domains—desire, arousal, lubrication, orgasm, satisfaction, and pain.[7] In recent years, interest in assessing the effects of MUS procedures on sexual function has increased. While some studies have reported significant improvements in sexual satisfaction and orgasm scores following surgery,[8] others have highlighted potential adverse outcomes such as dyspareunia or mesh-related discomfort.[9]

Given these conflicting results, there remains a need for prospective and comparative studies to elucidate the true impact of MUS techniques on female sexual health.

Therefore, the present study aimed to evaluate the effects of TOT and TVT-O midurethral sling procedures on sexual function in premenopausal, sexually active women using FSFI scores as an objective and standardized measurement tool.

MATERIALS AND METHODS

Study Design and Ethical Approval

This comparative and observational study was conducted between January 2020 and December 2022 at the Department of Obstetrics and Gynecology of a tertiary care center. The study protocol was reviewed and approved by the Kartal Dr. Lütfi Kırdar City Hospital Ethics Committee (Date: 15/11/2023, No: 2023/514/261/18). Written informed consent was obtained from all participants in accordance with the principles of the Declaration of Helsinki.

Participants

A total of 290 premenopausal, sexually active women aged 30–55 years with a clinical and urodynamic diagnosis of anatomical stress urinary incontinence were included. All participants underwent either TOT or TVT-O midurethral sling surgery.

Exclusion criteria included postmenopausal status, absence of a sexual partner, previous pelvic surgery, psychiatric or neurological disorders, and evident vaginal atrophy. Women with pelvic organ prolapse (POP-Q stage ≥2) were excluded because pelvic floor descent may independently influence sexual function and FSFI scores.

Surgical Techniques

All procedures were performed under regional anesthesia by the same experienced surgeon using standardized techniques.

• TOT procedure: A polypropylene mesh tape was inserted through an outside-in route via the obturator foramen and positioned under the mid-urethra without tension.

• TVT-O procedure: The same mesh material was placed using an inside-out approach through the obturator membrane.

Prophylactic antibiotics were administered perioperatively, and patients were instructed to abstain from sexual intercourse for six weeks postoperatively.

Control Group

For comparison, a control group consisting of 70 healthy premenopausal women aged 30–55 years without urinary incontinence or pelvic floor dysfunction was included. These participants were selected from individuals attending routine gynecological examinations at outpatient clinics. Although randomization was not performed, the groups were comparable in terms of mean age, parity, and sexual activity level.

Assessment of Sexual Function

Sexual function was evaluated using the Female Sexual Function Index (FSFI), which measures six domains: Desire, arousal, lubrication, orgasm, satisfaction, and pain.[5] All participants completed the FSFI questionnaire preoperatively and at the 6th and 12th postoperative months. Total FSFI scores range from 2 to 36, with scores below 23 indicating sexual dysfunction.

Statistical Analysis

Statistical analyses were performed using SPSS software (version XX; IBM Corp., Armonk, NY, USA). The normality of data distribution was assessed using the Kolmogorov–Smirnov test. Continuous variables were expressed as mean±standard deviation (SD). Pre- and postoperative FSFI scores were compared using paired t-tests, while changes at 6 and 12 months were analyzed using repeated-measures ANOVA with Bonferroni correction. A p-value <0.05 was considered statistically significant.

RESULTS

Participant Characteristics

A total of 290 premenopausal, sexually active women underwent midurethral sling (MUS) surgery for stress urinary incontinence (SUI). The mean age of the participants was 42.0±6.0 years. According to the surgical technique, 145 women (50%) underwent the transobturator tape (TOT) procedure and 145 (50%) the transvaginal tape–obturator (TVT-O) procedure.

The control group consisted of 70 healthy women with a mean age of 41.8±5.9 years. There was no significant difference in mean age between the intervention and control groups ($p>0.05$).

FSFI Total Scores

The mean preoperative FSFI total score in the intervention group was 20.96±3.1, which increased to 25.94±3.2 at six months and 26.2±3.1 at twelve months postoperatively, representing an overall 25% improvement from baseline.

This change was highly statistically significant (t=20.02; p<0.001).

When the two surgical subgroups were compared, postoperative improvement was observed in both TOT and TVT-O groups, with no significant difference between the techniques (p>0.05).

Comparison with the Control Group

The mean FSFI score in the control group was 26.4±2.8. At twelve months, the postoperative FSFI score in the intervention group (26.2±3.1) showed no statistically significant difference compared with the control group (p=0.34).

This finding indicates that MUS surgeries restored sexual function to levels comparable to those of healthy women without urinary incontinence.

FSFI Subdomain Analysis

Analysis of the six FSFI domains-desire, arousal, lubrication, orgasm, satisfaction, and pain-revealed significant improvements between baseline and twelve-month follow-up (p<0.001 for all).

The most prominent improvements were observed in satisfaction, pain, lubrication, and orgasm domains, suggesting that the benefits of MUS surgery extend beyond continence restoration to include physical and psychosexual dimensions.

A summary of pre- and postoperative FSFI domain scores is presented in Table 1.

Patient-Reported Outcomes

At twelve months postoperatively, subjective feedback from participants revealed the following:

• 91.4% (n=265) reported a noticeable improvement in sexual function, including enhanced libido, arousal, lubrication, and orgasm frequency.

• 3.4% (n=10) experienced mild superficial dyspareunia related to limited mesh exposure.

• 2.4% (n=7) reported deep dyspareunia attributed to vaginal scarring and narrowing.

• 2.8% (n=8) reported no notable change in sexual function.

In cases of dyspareunia, both anatomical (mesh exposure, scarring, tissue rigidity) and psychological factors (body image concerns, performance anxiety) were considered contributing elements.

General Evaluation

Overall, the results demonstrated that midurethral sling procedures, including both TOT and TVT-O, are not only effective for managing stress urinary incontinence but also significantly enhance female sexual function.

Postoperative normalization of FSFI scores highlights the positive impact of MUS surgery on both physical and emotional aspects of women's health.

Minor complications such as mesh erosion, vaginal scarring, and dyspareunia in a small subset of patients underline the importance of thorough preoperative counseling and careful postoperative monitoring.

Although postoperative continence and coital incontinence rates were not systematically recorded, this limitation was acknowledged. Future multicenter, long-term studies are warranted to further clarify sexual outcomes following MUS surgery.

DISCUSSION

This prospective comparative study demonstrated that midurethral sling (MUS) surgeries-specifically the transobturator tape (TOT) and transvaginal tape–obturator (TVT-O) techniques-performed in premenopausal, sexually active women significantly improved both total Female Sexual Function Index (FSFI) scores and subdomain values. These results indicate that MUS procedures provide not only anatomical correction of stress urinary incontinence (SUI) but also substantial recovery in sexual function through physiological and psychosocial mechanisms.[1]

The observed improvement in sexual function following MUS surgery is likely multifactorial. Restoration of continence reduces coital anxiety and embarrassment,

Table 1. Comparison of preoperative and postoperative FSFI scores in the study group

FSFI Domain	Preoperative (Mean±SD)	6th Month (Mean±SD)	12th Month (Mean±SD)	p Value*
Desire	3.1±0.7	3.8±0.6	3.9±0.5	<0.001
Arousal	3.2±0.8	4.0±0.7	4.1±0.6	<0.001
Lubrication	3.3±0.9	4.2±0.8	4.3±0.7	<0.001
Orgasm	3.2±0.8	4.1±0.7	4.2±0.6	<0.001
Satisfaction	3.1±0.8	4.3±0.6	4.4±0.5	<0.001
Pain	3.0±0.9	4.2±0.8	4.3±0.7	<0.001
Total FSFI	20.96±3.1	25.94±3.2	26.2±3.1	<0.001

*Paired t-test; statistically significant at p<0.05. FSFI: Female Sexual Function Index; SD: Standard Deviation.

while improved pelvic floor support and enhanced self-confidence contribute to greater sexual satisfaction and arousal.[2] Particularly, the marked postoperative increases observed in the satisfaction, lubrication, and orgasm domains suggest that these effects extend beyond urinary control and positively influence both physical and emotional aspects of female sexuality.[3]

Our findings are consistent with previous reports in the literature. Pace et al.[4] observed more than 90% improvement in FSFI scores after TOT and retropubic sling procedures, highlighting the beneficial impact of midurethral support on sexual function. Similarly, Wadie et al.[5] and Liang et al.[6] reported significant postoperative improvements in sexual satisfaction and orgasmic function following MUS surgery, although the latter found a slightly higher incidence of dyspareunia with the TOT technique, likely due to differences in the surgical route and periurethral dissection.

In the present study, both TOT and TVT-O techniques resulted in comparable FSFI improvements at 12 months, with no significant intergroup difference. This supports the notion that, when properly performed, both approaches yield equally favorable outcomes for sexual function recovery.

Although the majority of patients reported improvement, a small proportion (approximately 5–6%) experienced postoperative dyspareunia. These cases were primarily attributed to mesh exposure, vaginal scarring, or tissue retraction. Psychological factors, such as altered body image, fear of pain, or relationship anxiety, may also contribute to persistent discomfort.[7] Therefore, postoperative follow-up should not be limited to anatomical success but should also include psychosexual evaluation and counseling when necessary.

A systematic review and meta-analysis by Jha et al.[8] reported that approximately one-third of women experienced improvement in sexual function after incontinence surgery, whereas around 12% reported deterioration. These findings highlight the variability of outcomes and underscore the importance of adopting a patient-centered and multidisciplinary approach that integrates both physical and psychological aspects of recovery.

In the current study, postoperative FSFI scores at 12 months were comparable to those of healthy control women, suggesting that MUS procedures can restore sexual function to levels similar to those in women without urinary incontinence. This normalization of sexual health not only reflects continence restoration but also an enhancement in overall quality of life.[9]

Recent Literature and Clinical Implications

Recent studies have continued to support the positive effects of MUS surgeries on female sexual function. Yildiz et al.[9] demonstrated significant improvements in arousal and satisfaction scores following MUS, emphasizing the psychological benefit of regained continence. Moreover, it's been found no significant long-term differences between TOT and TVT-O techniques, although transient dyspareunia was slightly more frequent in the TOT group. These findings strengthen the notion that postoperative sexual improvement after MUS is the result of both functional recovery and psychosexual adaptation. Similarly, Bağlar et al.[10] reported that the mode of delivery influences sexual function through anatomical mechanisms, supporting the idea that the improvement in sexual function following MUS procedures may occur via similar anatomical and psychosexual pathways.

Strengths and Limitations

The main strengths of this study include its large sample size (n=290), prospective design, use of a validated tool (FSFI), and incorporation of subjective patient-reported outcomes, all of which enhance the reliability of the findings.

However, several limitations should be acknowledged. This was a single-center, non-randomized study, which may introduce selection bias. Additionally, psychological variables such as anxiety and depression were not evaluated. The absence of systematic documentation of coital incontinence rates represents a limitation of this study. Moreover, the one-year follow-up period, although adequate for short-term evaluation, may not capture long-term outcomes. Future multicenter randomized studies with extended follow-up and inclusion of psychosexual parameters would provide a more comprehensive understanding of postoperative sexual recovery after MUS procedures.

Conclusion

This study demonstrated that midurethral sling (MUS) surgeries, including transobturator tape (TOT) and transvaginal tape-obturator (TVT-O) techniques, are not only highly effective in the treatment of stress urinary incontinence (SUI) but also lead to significant and sustained improvements in female sexual function.

The postoperative increase observed in both total Female Sexual Function Index (FSFI) scores and its subdomains reflects substantial improvements across physical, emotional, and relational dimensions. The finding that FSFI scores at the one-year follow-up were comparable to those of healthy women without urinary incontinence suggests that MUS procedures are effective in restoring sexual function to normal levels.

MUS surgeries not only achieve continence but also reduce sexual dysfunctions commonly associated with SUI, such as decreased sexual desire, difficulty in achieving orgasm, and loss of self-confidence caused by coital urinary leakage. This underscores the multidimensional nature of female sexual health and emphasizes the importance of considering psychosocial as well as anatomical factors in patient assessment and counseling.

Minor complications such as dyspareunia, mesh exposure, or scar formation were observed in a small number of pa-

tients; however, these were manageable and did not significantly affect overall patient satisfaction.

In conclusion, TOT and TVT-O midurethral sling procedures can be considered safe, effective, and patient-satisfying surgical options that not only restore continence but also enhance female sexual health and overall quality of life.

Ethics Committee Approval

The study was approved by the Kartal Dr. Lütfi Kırdar City Hospital Ethics Committee (Date: 15.11.2023, Decision No: 2023/514/261/18).

Informed Consent

Retrospective study.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: T.T., C.O.K.; Design: T.T., C.O.K.; Supervision: T.T., C.O.K., M.A.; Fundings: T.T.; Materials: T.T., C.O.K.; Data collection &/ or processing: T.T., C.O.K.; Analysis and/or interpretation: T.T., C.O.K., M.A.; Literature search: T.T.; Writing: T.T.; Critical review: T.T., M.A.

Conflict of Interest

None declared.

REFERENCES

1. Hannestad YS, Rortveit G, Sandvik H, Hunskaar S. A community-based epidemiological survey of female urinary incontinence: The Norwegian EPINCONT study. J Clin Epidemiol 2000;53:1150–7. [CrossRef]
2. Delorme E. Transobturator urethral suspension: A minimally invasive procedure in the treatment of stress urinary incontinence in women. Prog Urol 2001;11:1306–13.
3. De Leval J. Novel surgical technique for the treatment of female stress urinary incontinence: Transobturator vaginal tape inside-out. Eur Urol 2003;44:724–30. [CrossRef]
4. Pace G, Lauretti S, Vicentini C. Prospective evaluation of sexual function after transobturator and retropubic midurethral slings. Int Urogynecol J 2008;19:513–7.
5. Wadie BS, El-Hefnawy AS, Nabeeh A. TVT versus TVT-O for treatment of female stress urinary incontinence: A prospective randomized study. J Urol 2009;182:1344–9.
6. Liang CC, Chang YL, Chang SD. Comparison of TVT-O and Monarc procedures in the treatment of female stress urinary incontinence. Int Urogynecol J 2009;20:303–7.
7. Cornu JN, Sèbe P, Ciofu C, Peyrat L, Beley S, Tligui M, et al. AdVance transobturator male sling for postprostatectomy incontinence: clinical results of a prospective evaluation after a minimum follow-up of 6 months. Eur Urol 2009;56:923–7. [CrossRef]
8. Jha S, Ammenbal M, Metwally M. Impact of incontinence surgery on sexual function: A systematic review and meta-analysis. J Sex Med 2012;9:34–43. [CrossRef]
9. Yildiz G, Yilmaz E, Kaya AE. Impact of midurethral sling surgery on female sexual function: A prospective cohort study. Int Urogynecol J 2023;34:1012–8.
10. Bağlar I, Keleş E, Bayık RN. Effect of mode of delivery on postpartum sexual function: A cross-sectional study. South Clin Ist Euras 2025;30:109–13. [CrossRef]

Premenopozal Seksüel Aktif Kadınlarda Midüretral Sling Operasyonlarının Cinsel Fonksiyon Üzerine Etkisi: Karşılaştırmalı Prospektif Bir Çalışma

Amaç: Bu çalışmanın amacı, premenopozal ve seksüel olarak aktif kadınlarda uygulanan transobturator tape (TOT) ve transvaginal tape-obturator (TVT-O) midüretral sling cerrahilerinin, stres tipi üriner inkontinans (SÜİ) tedavisindeki etkinliğinin yanı sıra cinsel işlev üzerindeki etkilerini değerlendirmektir.

Gereç ve Yöntem: Çalışma, 2020–2022 yılları arasında Kartal Dr. Lütfi Kırdar Şehir Hastanesi Kadın Hastalıkları ve Doğum Kliniği'nde prospektif, karşılaştırmalı ve gözlemsel olarak yürütülmüştür. SÜİ tanısı almış ve TOT veya TVT-O cerrahisi uygulanmış, premenopozal ve cinsel olarak aktif 290 kadın çalışmaya dahil edilmiştir. Tüm katılımcılara cerrahi öncesinde ve postoperatif 6. ile 12. aylarda Kadın Cinsel İşlev İndeksi (FSFI) uygulanmıştır. Bulgular, üriner inkontinansı olmayan 70 sağlıklı kadından oluşan kontrol grubuyla karşılaştırılmıştır.

Bulgular: TOT ve TVT-O operasyonlarını takiben FSFI toplam skorlarında ve tüm alt boyutlarda istatistiksel olarak anlamlı düzeyde artış gözlenmiştir ($p<0.0001$). En belirgin iyileşme tatmin, orgazm ve ağrı alt başlıklarında saptanmıştır. Müdahale grubunun 12. ayda ulaştığı ortalama FSFI skoru, kontrol grubuyla istatistiksel olarak benzer bulunmuştur ($p=0.34$). Ayrıca, hastaların %91.4'ü cinsel fonksiyonda iyileşme bildirmiştir. Disparoni yalnızca %5.8 oranında görülmüş ve bu durum çoğunlukla fiziksel veya psikolojik faktörlerle ilişkilendirilmiştir.

Sonuç: Midüretral sling cerrahileri (TOT ve TVT-O), yalnızca idrar kaçırma şikayetlerini gidermekle kalmayıp, premenopozal dönemdeki seksüel aktif kadınlarda cinsel işlevin iyileştirilmesine de katkı sağlamaktadır. Bu olumlu etkinin fizyolojik, psikolojik ve ilişkisel bileşenleri birlikte etkilediği göz önünde bulundurulmalı; hasta değerlendirmeleri bu çok yönlü çerçevede ele alınmalıdır.

Anahtar Sözcükler: Cinsel fonksiyon; FSFI; midüretral sling; stres üriner inkontinans; TOT; TVT-O.