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Female sexual function outcomes in patients operated for pelvic floor dysfunction: Comparison of synthetic mesh with native tissue repair

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ABSTRACT

Objectives: We aimed to evaluate the impact of urogynecologic mesh implantations on sexual function using female sexual function index (FSFI) questionnaire

Materials and Methods: In this cross-sectional retrospective study, a total of 187 patients which found to have pelvic organ prolapse or stress urinary incontinence (SUI) surgery were investigated between 2015 and 2022. Patients whose main complaint was SUI and had tension free vaginal tape operation (n=21) or transobturator tape operation (n=17) constituted the "Midurethral mesh group" (n=38). Those who had cystocele repair with double obturator trapezoid mesh formed the "Cystocele repair with mesh" group (n=35). Patients who had cystocele repair with natural tissue repair without any mesh implant in the vagina or elsewhere in the pelvis constituted the "Natural tissue repair" group (n=79). The patients were informed about the study and their consent was obtained.

Results: The mean time elapsed since surgery till FSFI measurement was 32±6.5 months in Midurethral Mesh group; 34±7.1 months in the "Cystocele repair with mesh group and 33±7 months in the natural tissue repair group (p>0.05). Total FSFI scores 22.8±6.8, 22.2±7.5, 22.5±7.9 and the frequency of patient with scores lower than 26.5, which is the cut-off for disfunction, was 27 (71.1%), 20 (57.1%) and 47 (59.5%) similar in the three groups (p>0.05). The FSFI subdomain scores such as desire, arousal, lubrication, orgasm, satisfaction, pain was similar in the three groups (p>0.05 for all comparisons).

Discussion: Our study demonstrated that surgical repair of symptomatic pelvic organ prolapse and SUI surgery using mesh implants or natural tissue repair had similar results of major parameters of sexual function after surgery.

Keywords: Female sexual function after vaginal surgery; pelvic organ prolapse; quality of life; transobturator mesh implants

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INTRODUCTION

Female pelvic floor disorders such as urinary incontinence and pelvic organ prolapse have life altering impact on women's lives. One in four women present any one of the symptoms of pelvic floor disorders.[1] Aging women has increase in pelvic floor disorders and decrease in sexual activity.[2,3] Women with pelvic organ prolapse feel less feminine and sexually attractive and 31% report that symptoms of pelvic organ prolapse interfere with sexual activity.[4,5] Urinary incontinence has 25% prevalence among women and one out of five women is worried about urine loss during sexual activity.[6,7]

Female sexuality is related to age, education, social network, marital status and presence of gynecologic pathology such as pelvic floor disorders.[8] The treatment of pelvic floor disorders includes surgical approach using synthetic mesh or native tissue. There has been debate on safety of transvaginal mesh use since 2008 warning of Food and Drug Administration and resulted in classification of mesh use as high risk for impaired sexual function and *de novo* dyspareunia.[9,10]

In the present study female sexual function index (FSFI) form developed by Rosen et al.[11] and validated for the Turkish community was used.[12] We assessed and compered the sexual function of women after mesh surgery for urinary incontinence and pelvic organ prolapses compared to women with native tissue repair surgery for pelvic organ prolapses.

MATERIALS AND METHODS

In this cross-sectional study, woman who had pelvic organ prolapse surgery or stress urinary incontinence (SUI) surgery were called for control visit for pelvic examination and applied FSFI. The patient files of patients were searched between 2015 and 2022 in Alanya Training and Research Hospital and Private Aktif Kocaeli Hospital. A total of 187 patients were found to have pelvic organ prolapse or SUI surgery. The patients were informed about the study and their consent was obtained. Those with isolated posterior rectocele repair only (n=9), concomitant malignant disease (n=7), no sexual partner (n=11) and lost to follow-up (n=8) were excluded and 152 women were included in the study. Local ethical approval was obtained (ALKÜ-KAEK-28/12/22.15-04)

The descriptive data, patient history, operative outcomes, concomitant procedures were obtained from the patient and patient files. All patients had complete gynecological pelvic examination with pelvic ultrasound scan transvaginally. Patients whose main complaint was SUI and had tension free vaginal tape (TVT) operation (n=21) or transobturator tape operation (n=17) constituted the midurethral mesh group (n=38). Those who had cystocele repair with double obturator trapezoid mesh formed the "Cystocele repair with mesh" group (n=35). Patients who had cystocele repair with natural tissue repair without any mesh implant in the vagina or elsewhere in the pelvis constituted the "Natural tissue repair" group (n=79). In all procedures macroporous polypropylene meshes were used (Duzey SUT cystocele and Duzey SUT vaginal tape meshes, Duzey Medical, Türkiye).

The primary outcome measure of our study is sexual function. FSFI is a clinical tool to assess sexual function in the general population. It consists of domains such as desire, lubrication, orgasm, sexual contentment and pain. The questionnaire is not planned to be used as a diagnostic tool. Moreover, it cannot surpass a holistic sexual evaluation since it does not measure sexual experiences, knowledge or interpersonal differences. The gained results are directly proportional to sexual function that provide an evaluation window. The higher the score the better sexual function. Only pain domain uses an inverse relation as to the less pain yielding higher score. The results are displayed within the range of 2 to 36 points.

The secondary outcome measure was evaluation of efficacy of pelvic floor repair by mesh, clinical performance and, complication rates. All women in the study were evaluated preoperatively for general medical history, sexual history, physical examination, urodynamic studies and FSFI questionnaires. Pelvic organ prolapse was measured by POP-Q system. POP-Q system consists of 9 measurements. The anterior compartment is characterized by Aa and Ba, the vaginal apex by C and D and the posterior compartment by Ap and Bp. According to this classification, stage 0 is defined as nearly perfect anatomic support with no prolapse. Stage I is defined as Aa, Ba, Ap, Bp and C being 1 cm above the hymen. Stage II is defined as the leading edge of the prolapse being within 1 cm of the hymen. Stage III is defined as the leading edge of the prolapse being 11 cm beyond the hymen, with the difference between the leading edge and the total vaginal length being less than 12 cm. Stage IV is defined as a difference of more than 12 cm between the leading edge and the total vaginal length. All examinations were done at dorsal lithotomy position. Bladder was emptied before vaginal examination. Sims speculums were used.

Statistical Analysis

Statistical analysis was performed using SPSS software version 21 (SPSS Inc. Chicago, IL, USA). Data are expressed as means and standard deviation of the mean or as numbers and percentages. One-Way ANOVA and Tukey test as post-hoc test was used for continuous variables. Pearson chi-square or likelihood ratio was used to compare percentages wherever appropriate.

RESULTS

Selected demographic data, voiding abnormality frequency previous hysterectomy and current status of pelvic organs are summarized in Table 1. The age, gravida and parity were similar in all groups. In preoperative findings anterior vaginal wall prolapse, uterine prolapse and history of hysterectomy was less frequent in the Midurethral mesh group compered to Cystocele repair with mesh or natural tissue repair groups. The frequency of posterior vaginal wall was similar in the three groups.

The pelvic organ prolapses classification prior to surgery is presented in Table 2. According to POP-Q classification none of the patients in cystocele repair groups either with mesh or with normal tissue had a case with POP-Q stage 0 or 1.

Concomitant surgeries in the three groups are presented in Table 3. No midurethral sling was done Natural tissue repair group, no Burch operation was done in Midurethral sling group and Cystocele repair with mesh group.

The clinical and functional outcomes after operation for pelvic organ prolapse is presented in Table 4. The frequency of acute urine retention, vaginal infections, voiding dysfunction, dyspareunia and constipation were similar in the three groups.

Table 1. Demographics of the patient's population

Variables	Midurethral mesh n=38	Cystocele repair with mesh n=35	Natural tissue repair n=79	p
Age (mean ± SD)	52.5±9.7	54.3±12.9	56.3±11.3	0.23
Gravida (mean ± SD)	4.1±2.4	3.9±2.1	4.2±2.3	0.7
Parity (mean ± SD)	3.4±2.1	3.0±1.4	3.4±2.0	0.6
Surgical history (%), and preoperative findings:				
Prolapse of the anterior vaginal wall	21 (55.3)	35 (100)	56 (70.9)	<0.05
Prolapse of the posterior vaginal wall	11 (28.9)	17 (48.6)	32 (40.5)	0.2
Uterine prolapse	5 (13.2)	12 (34.3)	46 (58.2)	<0.05
Hysterectomy	5 (13.2)	11 (31.4)	47 (59.5)	<0.05
Voiding abnormality, (%):				
SUI	38 (100)	14 (40)	19 (24.1)	<0.05

SD: standard deviation; SUI: stress urinary incontinence

Table 2. Pelvic organ prolapses classification prior to surgery

POP-Q, (%)	Midurethral mesh n=38	Cystocele repair with mesh n=35	Natural tissue repair n=79
0-1	10 (26.3)	0	0
2	20 (52.6)	12 (34.3)	26 (32.9)
3	4 (10.5)	11 (31.4)	8 (10.1)
4	4 (10.5)	12 (34.3)	45 (57)

Table 3. Characteristics of the surgery

Concomitant procedure, (%)	Midurethral mesh n=38	Cystocele repair with mesh n=35	Natural tissue repair n=79
Vaginal hysterectomy	**7 (18.4)**	12 (34.3)	32 (40.5)
Posterior colporrhaphy	5 (13.2)	2 (5.7)	12 (15.2)
Midurethral sling	38 (100)	2 (5.7)	0
Uterine/vaginal vault suspension	5 (13.2)	11 (31.4)	47 (59.5)
Sacrospinous ligament fixation	0	18 (51.4)	47 (59.5)
Perineal correction	6 (15.8)	7 (20)	11 (13.9)
Burch	0	0	9 (11.4)

None of the groups had inadvertent bladder entry and only one case in Cystocele with Mesh repair experienced mesh exposure.

The FSFI scores after surgery for pelvic organ prolapse is presented in Table 5. The mean time elapsed since surgery till FSFI measurement was 32±6.5 months in midurethral Mesh group; 34±7.1 months in the natural tissue repair group (p>0.05). The subdomain scores such as desire, arousal, lubrication, orgasm, satisfaction, pain was similar in the three groups. Total FSFI scores and frequency of patient with scores lower than 26.5 which is the cut-off for dysfunction was similar in the three groups.

The anatomical outcomes and overall patient satisfaction are given in Table 6. The mean patient satisfaction over 5 Likert scale was 4±1.3 in midurethral mesh group, 3.8±1.3 in cystocele repair with mesh group and 4±1.3 in natural tissue repair group. Repeat pelvic organ prolapsus was 7.9%; 8.6% and 10% percent respectively in the three group and SUI was 10.5%; 14.3% and 13.9%.

Table 4. Clinical and functional outcomes after operation for pelvic organ prolapse

Post-operative complication, (%)	**Midurethral mesh n=38**	**Cystocele repair with mesh n=35**	**Natural tissue repair n=79**	***p***
Acute urine retention	7 (18.4)	6 (17.1)	7 (8.9)	0.26
Inadvertent bladder entry	0	0	0	-
Vaginal infections	3 (7.9)	3 (8.6)	6 (7.6)	0.94
Mesh exposures	0	1 (2.9)	0	0.9
Voiding dysfunction	1 (2.6)	4 (11.4)	7 (8.9)	0.34
Dyspareunia	3 (7.9)	3 (8.6)	6 (7.6)	0.9
Constipation	4 (10.5)	4 (11.4)	10 (12.7)	0.94

Table 5. Follow-up of FSFI after surgery for pelvic organ prolapse

Variable (mean ± SD)	**Midurethral mesh n=38**	**Cystocele repair with mesh n=35**	**Natural tissue repair n=79**	***p***
Desire	3.2±1.1	3.6±1.3	3.6±1.5	0.3
Arousal	3.5±1.4	3.8±1.7	3.8±1.7	0.7
Lubrication	3.4±1.3	2.8±1.4	3.0±1.6	0.2
Orgasm	3.7±1.7	3.3±1.9	3.5±1.8	0.6
Satisfaction	4.0±1.3	3.8±1.3	4±1.3	0.8
Pain	4.7±1.7	4.5±2	4.4±1.9	0.8
Total score	22.8±6.8	22.2±7.5	22.5±7.9	0.6
FSFI <26.5, (%)	27 (71.1)	20 (57.1)	47 (59.5)	0.39

SD: standard devation; FSFI: female sexual function index

Table 6. Anatomical outcomes and overall patient satisfaction evaluated according to Likert scale

%	**Midurethral mesh n=38**	**Cystocele repair with mesh n=35**	**Natural tissue repair n=79**	***p***
Very unsatisfied	3 (7.9)	3 (8.6)	7 (8.9)	
Unsatisfied	5 (13.2)	4 (11.4)	5 (6.3)	
Neutral	1 (2.6)	2 (5.7)	10 (12.7)	
Satisfied	12 (31.6)	12 (34.3)	22 (27.8)	
Very satisfied	17 (44.7)	14 (40)	35 (44.3)	0.7
Mean satisfaction score ± SD	4±1.3	3.8±1.3	4±1.3	0.8
POP-Q ≥3-4	3 (7.9)	3 (8.6)	8 (10.1)	0.91
SUI	4 (10.5)	5 (14.3)	11 (13.9)	0.85

SD: standard deviation; SUI: stress urinary incontinence

DISCUSSION

The main finding of this study is similar FSFI scores of women after midurethral mesh placement or cystocele repair with mesh compared to native tissue repair group in cases with pelvic floor dysfunction. These outcomes will be discussed cautiously as our study group has no FSFI scores preoperatively. Also, there are many confounding variables such as menopausal status, age, the presence of pelvic floor dysfunction, concomitant procedures like hysterectomy that might affect the 57 to 71% sexual dysfunction rate in our study population.

The FSFI scale based sexual dysfunction was reported to affect between 43 to 71% of women in different populations.[13,14] As sexuality might be affected by cultural values, taboos and social norms Turkish women showed that. Overall incidence of sexual dysfunction ranges between 46.9 to 78% in different regions of Türkiye with different study populations.[15-18] A closer look at the subgroup of patients between 45-57 years revealed a more uniform incidence of 65.9%, 67.9%, 70.9%, 72.7%, 78% of in the mentioned studies.[15-18] The women with a history of premature menopause or surgical induction of menopause had the highest incidence of female sexual dysfunction of 783.[18] The mean age of our patient population is early fifties and sexual dysfunction incidences we report as 57.1 and 59.5% in mesh or native tissues repair of cystocele are lower than the background population where as 71% in midurethral mesh group is similar to background population incidence. We can assume that the sexual dysfunction incidence after operations for pelvic floor dysfunction are in accordance or lower than the reported population studies.

The prevalence of dyspareunia has been reported to be 7.8-47.2% in Turkish studies.[19,20] The latter higher incidence is a specialized sexual problem clinic-based study. The reported dyspareunia rate of 7.6%, 7.9% and 8.6% after operations in our study group is similar to each other and the population based reports.[19] The dyspareunia after pelvic floor dysfunction was related vaginal narrowing, mesh exposure or levator plication.[21] The reported incidence of denova dyspareunia was 7% after mesh surgery for anterior comportment compared with 4% dyspareunia with native tissue repair which was not statistically significant.[21,22] None of the patients in our study had levator plication and we have found 2.9% prevalence of mesh exposure in cystocele repair with mesh group.

Regarding the concomitant procedures applied in our study group. It is hard to say which of the specific procedure might cause dyspareunia.

Another source of concern is the effect of hysterectomy is high in our study population with a significantly higher rate in native tissue repair group compared to mesh groups. Several randomized controlled trials found improvement in sexual function after either total or subtotal hysterectomy.[23,24] In another study found an improvement in orgasm after hysterectomy for pelvic organ prolapses.[25]

Study Limitations

The limitations and warnings on transvaginal mesh surgeries need to be revaluated. In a systemic review of 26 studies. Antosh et al.[26] compared transvaginal mesh use with native tissue repair and found no difference in preoperative and postoperative sexual activity, dyspareunia, sexual function assessed via PISQ-12 scores.

CONCLUSION

Our study yielded similar results with FSFI based evaluation of sexual function which is validated and well studies in Turkish women. The sexual dysfunction in our study group is similar to the women population. Ageing, presence of pelvic floor dysfunction are more profound factors to affect the postoperative sexual dysfunctions rather than the surgical technique used to treat pelvic floor dysfunction.

ETHICS

Ethics Committee Approval: The patient files of patients were searched between 2015 and 2022 in Alanya Training and Research Hospital and Private Aktif Kocaeli Hospital. Local ethical approval was obtained (ALKÜ-KAEK-28/12/22.15-04).

Informed Consent: The patients were informed about the study and their consent was obtained.

Peer-review: Externally peer-reviewed.

Contributions

Concept: E.Ç., E.K.; Design: E.Ç., E.A.; Data Collection or Processing: B.A.; Analysis or Interpretation: E.Ç., G.K.; Literature Search: B.A.; Writing: E.Ç., E.K.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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REFERENCES

1. Nygaard I, Barber MD, Burgio KL, et al. Prevalence of symptomatic pelvic floor disorders in US women. JAMA 2008; 300: 1311-6.
2. Lindau ST, Gavrilova N. Sex, health, and years of sexually active life gained due to good health: evidence from two US population based cross sectional surveys of ageing. BMJ 2010; 340: c810.

3. Olsen AL, Smith VJ, Bergstrom JO, Colling JC, Clark AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. Obstet Gynecol 1997; 89: 501-6.

4. Jelovsek JE, Barber MD. Women seeking treatment for advanced pelvic organ prolapse have decreased body image and quality of life. Am J Obstet Gynecol 2006; 194: 1455-61.

5. Weber AM, Walters MD, Schover LR, Mitchinson A. Sexual function in women with uterovaginal prolapse and urinary incontinence. Obstet Gynecol 1995; 85: 483-7.

6. Hung KJ, Awtrey CS, Tsai AC. Urinary incontinence, depression, and economic outcomes in a cohort of women between the ages of 54 and 65 years. Obstet Gynecol 2014; 123: 822-7.

7. Barber MD, Visco AG, Wyman JF, Fantl JA, Bump RC; Continence Program for Women Research Group Sexual function in women with urinary incontinence and pelvic organ prolapse. Obstet Gynecol 2002; 99: 281-9.

8. Ratner ES, Erekson EA, Minkin MJ, Foran-Tuller KA. Sexual satisfaction in the elderly female population: A special focus on women with gynecologic pathology. Maturitas 2011; 70: 210-5.

9. Words of wisdom. Re: FDA public health notification:Serious complications associated with transvaginal placement of surgical mesh in repair of pelvic organ prolapse and stress urinary incontinence. Issued October 20, 2008. Google Scholar 2008 p.1-3.

10. FDA news relase: FDA strengthens requirements for surgical mesh for transvaginal repair of pelvic organ prolapse to address safety risks. Silver Springs MD. US Food and Drug Administrarion: January 4, 2016.

11. Rosen R, Brown C, Heiman J, et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther 2000; 26: 191-208.

12. Sonbahar AE, Culha MG, Jannini E. The validity and reliability of the Turkish version of the 6-item female sexual function index (FSFI-6) and the relationship between climacturia and female sexual dysfunction. Int J Impot Res 2022; 34: 610-13.

13. Laumann E, Paik A, Rosen R. Sexual dysfunction in the United States: prevelance and predictors. JAMA 1999; 281: 537-44.

14. Amidu N, Owiredu WK, Woode E, et al. Incidence of sexual dysfunction: a prospective survey in Ghanaian females. Reprod Biol Endocrinol 2010; 8: 106.

15. Cayan S, Akbay E, Bozlu M, Canpolat B, Acar D, Ulusoy E. The prevalence of female sexual dysfunction and potential risk factors that may impair sexual function in Turkish women. Urol Int 2004; 72: 52-7.

16. Oksuz E, Malhan S. Prevalence and risk factors for female sexual dysfunction in Turkish women. J Urol 2006; 175: 654-8; discussion 658.

17. Bayoğlu Tekin Y, Ural ÜM, Üstüner I, Balık G, Güvendağ Güven ES. Evaluation of female sexual function index and associated factors among married women in North Eastern Black Sea region of Turkey. J Turk Soc Obstet Gynecol 2014; 3: 153-8.

18. Calişkan E, Corakcı A, Doger E, Coskun E, Ozereren S, Coragcioglu A. Evaluation of sexual function and quality of life in menapausal transition and menapause in a cohort of Turkish Women. Turkiye Klinikleri J Med Sci 2010; 30: 1517-23.

19. Dogan S. Vaginismus and accompanying sexual dysfunctions in a Turkish clinical sample. J Sex Med 2009; 6: 184-92.

20. Şimşek F, Özdemir Ö, İncesu C, Karakoç B, Özkardeş S. Çoğul disiplinli bir cinsel işlev bozuklukları merkezine başvuran 1002 olgunun sosyodemografik ve klinik özellikleri. Üroloji Bülteni 2003; 14: 137-44.

21. Verbeek M, Hayward L. Pelvic Floor Dysfunction And Its Effect On Quality Of Sexual Life. Sex Med Rev 2019; 7: 559-64.

22. Weber AM, Walters MD, Piedmonte MR, Ballard LA. Anterior colporrhaphy: a randomized trial of three surgical techniques. Am J Obstet Gynecol 2001; 185: 1299-304.

23. Flory N, Bissonnette F, Amsel RT, Binik YM. The psychosocial outcomes of total and subtotal hysterectomy: A randomized controlled trial. J Sex Med 2006; 3: 483-91.

24. Berlit S, Tuschy B, Wuhrer A, et al. Sexual functioning after total versus subtotal laparoscopic hysterectomy. Arch Gynecol Obstet 2018; 298: 337-44.

25. Gé P, Vaucel E, Jarnoux M, Dessaux N, Lopes P. [Study of the sexuality of women after a total hysterectomy versus subtotal hysterectomy by laparoscopy in Nantes CHU]. Gynecol Obstet Fertil 2015; 43: 533-40.

26. Antosh DD, Dieter AA, Balk EM, et al. Sexual function after pelvic organ prolapse surgery: a systematic review comparing different approaches to pelvic floor repair. Am J Obstet Gynecol 2021; 225: 475.e1-475.e19.