Changes in Sexual Function after the Midurethral Sling Procedure for Stress Urinary Incontinence: Long-term Follow-up

Hyeon Chan Jang, Jong Ho Jeon, Duk Yoon Kim

Department of Urology, College of Medicine, Daegu Catholic University, Daegu, Korea

Purpose: It is known that 50% to 68% of women with stress urinary incontinence (SUI) have sexual function impairment and avoid sexual intercourse. Reports of sexual function after SUI surgery vary, with reports of both improved function and deteriorated function. The goal of this study was to evaluate the impact of midurethral sling procedures on the sexual function of women suffering from SUI preoperatively and 36 months postoperatively.

Materials and Methods: Among 75 patients who were diagnosed with SUI and underwent the midurethral procedure, 47 patients who answered the Korean version of the Female Sexual Function Index (FSFI) Questionnaire were analyzed prospectively. The retropubic route (RPR) was used in 26 patients, whereas the transobturator route (TOR) was used in 21 patients. Fifteen patients underwent concomitant posterior colporrhaphy. The FSFI was completed before surgery and 36 months after surgery.

Results: The patients' mean age was 44.9 years (range, 30-59 years) and their mean parity was 2.8 (range, 0-6). There were no significant differences in the individual FSFI domain scores between before surgery and 36 months (36.8±4.57) after surgery. There were no significant differences in sexual satisfaction between the patients with concomitant posterior colporrhaphy and patients with the midurethral sling procedure only. There were no significant differences in domain score between the TOR and the RPR, but patients experienced less pain after the RPR than after the TOR.

Conclusion: There was no significant change in overall sexual function in women undergoing the midurethral sling procedure. Attention must be paid when performing the TOR procedure because it can cause pain during intercourse. **Int Neurourol J 2010;14:170-6.**

Key words: Sexuality, Tape, Stress urinary incontinence, Urologic surgical procedure, Suburethral slings

Introduction

Stress urinary incontinence (SUI) is a common condition that affects 15% to 20% of adult women [1,2]. According to previous studies, sexual dysfunction affects up to 50% to 68% of women with SUI [3-7]. Women with SUI report avoiding sexual intercourse because of wetness at night, leakage during intercourse, embarrassment, and depression [3].Reports of sexual function after SUI surgery vary, with some authors reporting improved function and others reporting deteriorated function [8-13]. The goal of this study was to evaluate the impact of midurethral sling procedures on the sexual function of women suffering from SUI preoperatively and 36 months postoperatively.

Corresponding Author: Duk Yoon Kim
Department of Urology, College of Medicine, Daegu Catholic University,
3056-6 Daemyung-4 dong, Nam-gu, Daegu 705-718, Korea
Tel: +82-53-650-4663 / Fax: +82-53-623-4660 / E-mail: dykim@cu.ac.kr

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Table 1. FSFI domain scores and full scale score.

Domain	Questions	Score Range	Factor	Minimum Score	Maximum Score	Score
Desire	1, 2	1-5	0.6	1.2	6.0	
Arousal	3, 4, 5, 6	0-5	0.3	0	6.0	
Lubrication	7, 8, 9, 10	0-5	0.3	0	6.0	
Orgasm	11, 12, 13	0-5	0.4	0	6.0	
Satisfaction	14, 15, 16	0 (or 1)-5	0.4	0.8	6.0	
Pain	17, 18 19	0-5	0.4	0	6.0	
	Full Scale Score Range			2.0	36	

The individual domain scores and full scale (overall) score of the FSFI can be derived from the computational formula outlined in the table above. For individual domain scores, add the scores of the individual items that comprise the domain and multiply the sum by the domain factor (see above). Add the six domain scores to obtain the full scale score. It should be noted that within the individual domains, a domain score of zero indicates that the subject reported having no sexual activity during the past month. Subject scores can be entered in the right-hand column.
FSFI: female sexual function index

Materials and Methods

Of 75 patients who were diagnosed with SUI and underwent the midurethral procedure between September 2005 and September 2006, 47 patients who answered the Korean version of the Female Sexual Function Index (FSFI) Questionnaire were analyzed prospectively. The FSFI was completed before surgery and 36 months after surgery. Preoperative data included age, parity, and concomitant posterior colporrhaphy.

This was a prospective study of subjects undergoing the midurethral sling procedure for SUI. All women undergoing the midurethral sling procedure were instructed to complete the FSFI [14] before and after surgery. The FSFI is an anonymous questionnaire developed by Rosen et al, who demonstrated its reliability and validity [15], and is a 19-question, self-report measure of female sexual function. The instrument is organized into 6 domains, including desire, subjective arousal, lubrication, orgasm, satisfaction, and pain. Each domain is assigned a minimum and a maximum score, and the total score for sexual function is determined from all domains (table 1). Two recently published studies support the validity of the FSFI in assessing female sexual function [16,17], and a Korean translation of the FSFI has been validated for linguistic accuracy [18].

Patients were evaluated preoperatively and 36 months postoperatively for medical history, physical examination, and FSFI. Operative methods were divided into 2 groups, including the transobturator route (TOR) and the retropubic route (RPR). Cystoscopy was performed to rule out bladder perforation. The 47 women who completed the FSFI preoperatively and postoperatively were included for further analysis, but the 28 women who did not complete the postoperative FSFI were excluded. To account for the possible effect on sexual function of concomitant vaginal surgery, and because concerns still exist that operative methods might affect sexual function, we compared preoperative and postoperative sexual function.

The data were analyzed at the end of the study by using statistical software (SPSS v13.0, Chicago, IL). Descriptive statistics were used to report demographic data. Student's t-test (unpaired) was used to compare the same observation between groups, and the paired version of the t-test (paired) was used to compare observations within groups. The level of significance was 0.05.

Results

The mean age of the women who answered the FSFI was 44.9±6.6 years (table 2). Of these pa-

tients, 32 patients (68.1%) underwent only a midurethral sling procedure and 15 patients (31.9%) underwent concomitant posterior colporrhaphy. The RPR was used in 26 patients (55.3%), whereas the TOR was used in 21 patients (44.7%).

No significant difference was found in the total score for sexual function between preoperatively and postoperativelyamong the individual domains (table 3). There was no significant difference of preoperative and postoperative sexual function between the group with only the midurethral sling procedure and the group with both the midurethral sling procedure and posterior repair. Furthermore, patients who underwent concomitant posterior repair did not experience a higher incidence of dyspareunia (table 4). Comparing the group with TOR with the group with RPR, there was no significant sexual function improvement after the surgery. The group with RPR had same results (table 5). Comparing the group with TOR with the group with RPR after the surgery, domains except for pain did not differ between the groups. However, the group with RPR showed a significantly higher pain score than did the group with TOR (table 6, 7).

Table 2. Pre-operative characteristics of the patients.

Characteristics	Patients (n=47)
Age (years)	44.9±6.6 (30-59)
Parity	2.8±4.1 (0-6)
No. of posterior colporrhaphy (%)	15 (31.9)

Data were given as mean±standard deviation(SD).

Discussion

Several studies have assessed sexual function in women following surgery for SUI, and these studies have suggested that sexual function can be positively or negatively affected. Surgical procedures and psychosocial issues likely contribute to altered sexual function following vaginal surgery. Improvements in sexual function follow-

Table 3. Overall sexual function of patientsundergoing midurethral sling procedure according to the FSFI instrument.

Parameter	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
Pre-op	2.8±1.0	3.3±1.1	3.8±1.1	3.3±1.1	3.5±0.9	4.8±1.2	21.5±4.8
Post-op (36 months)	2.8±1.3	3.2±0.9	4.0±1.0	3.4±0.8	3.7±1.5	4.5±1.0	21.6±4.3
p value	0.84	0.88	0.64	0.59	0.66	0.34	0.94

Data were given as the mean±standard deviation(SD).
FSFI: female sexual function index, Pre-op: pre-operative, Post-op: post-operative

Table 4. Comparison of pre-operative and post-operativesexual function of patients undergoing midurethral sling procedure with and without posterior colporrhaphy.

P-repair	FSFI	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
(+) (n=15)	Pre-op	2.7±1.0	3.2±1.1	3.7±1.1	3.1±1.1	3.7±0.9	4.7±1.2	21.2±4.8
	Post-op	2.6±1.3	3.4±0.9	4.1±1.0	3.5±0.8	3.5±1.5	4.7±1.1	21.7±4.4
	p value	0.792	0.612	0.358	0.346	0.748	1.000	0.807
(-) (n=32)	Pre-op	3.0±1.0	3.4±1.1	4.0±1.1	3.4±1.2	3.4±0.9	4.9±1.2	21.8±4.9
	Post-op	3.0±1.3	3.1±0.9	3.8±1.0	3.3±0.8	3.9±1.5	4.4±1.0	21.5±4.5
	p value	0.990	0.468	0.794	0.850	0.356	0.310	0.892

Data were given as the mean±standard deviation(SD).
FSFI: female sexual function index, P-repair: posterior colporrhaphy, (+): with, (-): without,
Pre-op: pre-operative, Post-op: post-operative

Table 5. Comparison of sexual function (pre-operative vs. post-operative).

	TOR (n=21)			RPR (n=26)		
FSFI	Pre-op	Post-op	p value	Pre-op	Post-op	p value
Desire	2.9±1.0	2.8±1.3	0.844	2.8±1.0	2.8±1.3	1.000
Arousal	3.4±1.0	3.3±0.9	0.812	3.2±1.1	3.2±0.9	1.000
Lubrication	3.6±1.2	3.8±1.0	0.681	4.0±1.0	4.1±1.0	0.805
Orgasm	3.2±1.3	3.3±0.8	0.829	3.3±1.0	3.5±0.8	0.583
Satisfaction	3.6±0.8	3.7±1.5	0.844	3.5±1.0	3.7±1.5	0.693
Pain	4.6±1.5	4.2±1.0	0.472	4.9±0.9	4.8±1.0	0.795
Total	21.3±6.8	21.0±6.5	0.929	21.7±2.2	22.1±0.9	0.525

Data were given as the mean±standard deviation(SD).
FSFI: female sexual function Index, Pre-op: pre-operative, Post-op: post-operative,
TOR: transobturator route, RPR: retropubic route

Table 6. Comparison of sexual function by operative route of midurethral sling procedure in preoperation.

FSFI	TOR (n=21)	RPR (n=26)	
	Pre-op	Pre-op	p value
Desire	2.9±1.0	2.8±1.0	0.851
Arousal	3.4±1.0	3.2±1.1	0.597
Lubrication	3.6±1.2	4.0±1.0	0.427
Orgasm	3.2±1.3	3.3±1.0	0.814
Satisfaction	3.6±0.8	3.5±1.0	0.831
Pain	4.6±1.5	4.9±0.9	0.482
Total	21.3±6.8	21.7±2.2	0.531

FSFI: female sexual function index, TOR: transobturator route, RPR: retropubic route,
Pre-op: pre-operative, Data were given as the mean±standard deviation(SD).

ing vaginal surgery are believed to be due to the cessation of incontinence during intercourse, whereas worsening sexual function is believed to be caused by dyspareunia following perineorrhaphy. Although it is hoped that sexual function would improve following surgery for SUI, particularly among those women who had either dyspareunia or leakage during intercourse preoperatively, it is possible that vaginal surgery could be detrimental to sexual activity. Some investigators have evaluated the effects of mid to distal polypropylene slings on sexual function [19,20]. For example, in a retrospective study using an unvalidated questionnaire evaluating the effects of TVT on sexual function, 72% of the patients reported no change in sexual function after surgery but 14% reported worsening of sexual function with loss of libido, rather than dyspareunia, as the main reason [19]. In another study comparing sexually active women undergoing the TVT procedure with healthy, sexually active controls using the Index of Female Sexual Function, no difference was found in the overall scores preoperatively and postoperatively. However, the investigators reported a statistically significant worsening of orgasm, pain, and satisfaction after TVT compared with controls [20]. We evaluated the effect of the midurethral sling on sexual function by using the FSFI. Because no defined values have been accepted regarding normal sexual function, we reported changes in overall scores. In the present study, total scores of the FSFI

Table 7. Comparison of sexual function by operative route of midurethral sling procedure in postoperation.

FSFI	TOR (n=21)	RPR (n=26)	p value
Desire	2.8±1.30	2.8±1.33	1.000
Arousal	3.3±0.90	3.2±0.92	0.710
Lubrication	3.8±1.00	4.1±1.02	0.317
Orgasm	3.3±0.80	3.5±0.82	0.404
Satisfaction	3.7±1.5	3.7±1.53	1.000
Pain	4.2±1.00	4.8±1.02	0.049
Total	21.0±6.51	22.1±0.92	0.414

FSFI: female sexual function index, TOR: transobturator route, RPR: retropubic route,
Data were given as the mean±standard deviation(SD).

were not significantly different preoperatively and postoperatively; atrend toward slight overall improvement was noted for the RPR and a slight deterioration in the case of the TOR. Because we did not account for the possibility that urine loss during intercourse contributes to sexual dysfunction, it is not certain whether the correction of incontinence might support this trend toward improvement or not. Kim et al identified improvement in sexual function among their patients and stated that the solution of incontinence was strongly associated with improvement in sexual activity [21]. However, other possible sources must be considered. There is constant concern regarding the possibility of interfering with vaginal sensitivity resulting from the fact that the principal site of innervation is the location for incision in midurethral sling procedures. Psychological changes due to fear of dyspareunia, altered sensation, diminished lubrication, and orgasmic dysfunction have been suggested as potential contributors to postoperative sexual dysfunction [22]. Nonetheless, this surgery should not have a negative effect on patients' sexual function. There was no statistically significant difference between midurethral sling with concomitant posterior colporrhaphy and midurethral sling along. Colpoperineorrhaphy can result in dyspareunia due to narrowing of the vagina [12]. However, vaginal narrowing may not be entirely responsible for altered sexual functioning and sexual dissatisfaction after vaginal surgery. Porter et al reported that posterior colporrhaphy alone or with other vaginal surgery does not adversely affect sexual function and in fact may aid in the resumption of sexual activity, significantly improving quality of life and social aspects of daily living [23]. There was no change in vaginal dryness, orgasm ability, sexual desire, sexual frequency, or sexual satisfaction. Lemack and Zimmern reported that the percentage of women who were sexually active did not appear to be affected by a vaginal suspension procedure for incontinence [24]. Symptomatic vaginal narrowing was rare even in women undergoing simultaneous posterior repair. There were no statistically significant differences in our study according to operative routes of sling procedures in overall sexual function, except for pain. It is notable that women treated via the RPR were more likely than those treated via the TOR to have pain during their sexual activities in our study. The reason for this result was not clear. Vaginal injury and neuronal or vascular damage to the anterior vaginal wall and clitoral region may resultin sexual pain disorder, as well as consequent arousal and orgasmic disorders. In addition, vaginal innervation, which appears to be concentrated on the anterior and distal aspect of the vaginal wall [25], may be affected by operations for SUI, most of which are typically directed toward this region. The suburethral sling procedure by the TOR is associated with a higher risk of vaginal injury than is the PRP [26]. Further clinical studies are needed to evaluate the specific risks associated with this approach.

A major limitation of this study was the small

sample size. It is possible that the results were overestimated or underestimated by using the overall effects of midurethral slings on sexual function. Additional studies using larger sample sizes are needed to confirm these results.

Conclusions

It is evident that the midurethral sling procedure had little effect on female sexual function as rated by the FSFI. The midurethral sling procedure for urinary incontinence does not appear to positively or negatively affect overall sexual function, although individual parameters of sexual function scores may vary. Patients who underwent concomitant posterior repair did not experience a higher incidence of dyspareunia. Both the TOR and the RPR showed no significant difference insexual function improvement, but patients experienced less pain with the RPR than with the TOR. Women undergoing treatment of SUI with midurethral sling procedures should be informed that neither a deleterious effect nor a significant improvement has been found in sexual desire, arousal, lubrication, orgasm, satisfaction, or pain compared with the preoperative baseline values after midurethral sling procedures.

Conflicts of Interest:

The authors have nothing to disclose.

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