

The Effect of Stress Incontinence Operations on Sexual Functions: Laparoscopic Burch versus Transvaginal Tape-O

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Abstract

Aim: Stress urinary incontinence (SUI) has some negative emotional and physical effects on sexual functions. In this study, we aimed to question the effects of surgical treatment of stress incontinence on sexual function using the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12) form.

Materials and Methods: A total of 77 sexually active women who were surgically treated for SUI between 2014 and 2015 at a university hospital. Tension-free transvaginal tape (TVT-O) operation and the laparoscopic Burch procedure were performed on 42 and 35 patients, respectively. Patients with isolated stress incontinence were included in this study. All patients enrolled were invited to fill out the PISQ-12 questionnaire before surgery and 6 months after surgery.

Results: The mean total postoperative PISQ-12 score in both TVT-O and Burch groups was significantly increased compared to the preoperative period ($P < 0.001$ and $P < 0.001$, respectively). When the PISQ-12 scores were evaluated according to the subgroups, physical and partner-dependent scores significantly increased in the postoperative period compared to the preoperative period in the TVT-O group ($P < 0.001$ and $P = 0.004$, respectively).

Conclusions: Rate of the surgery success for SUI is positively correlated with the improvement of sexual functions. Minimally invasive methods in SUI surgery has been progressively increasing day-by-day. The lesser invasive approaches seem to replace the more invasive approaches in the near future.

Keywords: L/S Burch, Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire 12, sexual functions, stress urinary incontinence, transvaginal tape-O

INTRODUCTION

Stress urinary incontinence (SUI) was defined in the joint statement by the International Urogynecological Association/International Continence Society in 2010 as the “involuntary loss of urine on effort, physical exertion, or on sneezing or coughing.”^[1] SUI prevalence in females is reported to range between 29% and 75% depending on age.^[2] It is difficult to decide how much these numbers reflect the actual prevalence since half of the female patients with an incontinence problem do not provide information about this to their physicians either because of embarrassment or consider it as a natural problem of aging or not being informed about the existence of any treatment for this problem.^[3,4]

SUI has negative emotional and physical effects on sexual functions.^[5] The main sexual problems in patients who were

questioned for stress incontinence were reported to have low levels of libido, vaginal dryness, dyspareunia, coital incontinence, and anorgasmia.^[6] Since some other factors such as pelvic floor disorders accompanying age and stress incontinence contribute to this data to various extents, it is difficult to define the prevalence of these problems.

Many studies have been performed to evaluate sexual activity following treatment for incontinence. It is seen that different operations were compared with each other

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in these studies using various questionnaires. Witek *et al.* evaluated the results of the surgery they performed using minimal invasive techniques in 2013 and found significant improvement in sexual functions.^[7] Dursun *et al.* similarly reported improved sexual functions following transobturator tape (TOT) application.^[8] These results are contradictory to the study performed by Cayan *et al.* that compared Burch colposuspension and vaginal sling in 2007, in which impaired sexual function was found following both operations.^[9] Jha *et al.* evaluated sexual functions following TOT and found unchanged or improved sexual functions.^[10] Rogers *et al.*, on the other hand, reported impaired sexual functions following stress incontinence surgery in 2004.^[11]

In these studies, questionnaires including many questions were used such as female sexual function index, pelvic organ prolapse/urinary incontinence sexual questionnaire (PISQ)-31, and The International Consultation on Incontinence Questionnaire. PISQ-12 form, on the other hand, is an interview form with fewer questions on sexual functions, providing a higher patient compliance and a good correlation with longer forms of questionnaires.^[12]

The aim of this study was to question the effects of surgical treatment of stress incontinence on sexual function using the PISQ-12 form. This present study is the first study comparing the results of a long-term gold standard technique, L/S Burch colposuspension procedure,^[13] and the minimally invasive transobturator method,^[14] which has become the gold standard surgery in recent years using the PISQ-12 questionnaire.

MATERIALS AND METHODS

A total of 77 sexually active patients who were surgically treated for stress incontinence between February 2014 and December 2015 at a university hospital were included in this prospective cohort study. Tension-free transvaginal tape (TVT-O) operation and the laparoscopic Burch procedure were performed on 42 and 35 patients, respectively. Patients were assigned these two study groups according to their desire and clinicians preference.

Patients with pure stress incontinence were included in this study. Patients who had detrusor overactivity or hysteroptosis or prolapse complicated by neurogenic bladder or necessitating additional surgery were excluded from the study. Patients with systemic diseases (hypertension, diabetes, liver function test abnormality, renal disease, hypertension, endocrine abnormalities such as hypo/hyperthyroidism, hyperprolactinemia, diabetes insipidus, Cushing syndrome, and congenital adrenal hyperplasia), who were on drug therapy (therapy with glucocorticoids, androgens or oral contraceptives, muscle relaxing drugs or alpha or beta-adrenergic agonist or antagonist drugs), who had malignancy, prior pelvic radiotherapy, and patients with known psychiatric problems were excluded from the study. If

the patient had vaginal atrophy vaginal estrogen gel applied at least 3 months before the procedure.

A detailed clinical evaluation, physical examinations of the pelvis and abdomen, and ultrasonographic evaluations were performed in all patients included in this study. Selecting the type of the operation was based on the preference of the physician and the patient. The TVT-O procedure was performed using an inside to outside approach using a tension-free mesh (TVT-O, Gynecare, Johnson, and Johnson). The L/S Burch procedure was performed through a 10 mm umbilical and two suprapubic median 5 mm throcars and paravaginal tissues were approximated with Vicryl (Ethibond, Ethicon Co., USA) sutures to the Cooper ligament. General anesthesia and regional anesthesia were administered in the L/S Burch and TVT-O groups, respectively, and all patients received intraoperative antibiotic prophylaxis. No perioperative or postoperative gross complications developed. Six patients had uroinfection, two had pelvic hematoma which spontan resolved. Urinary catheters remained in the patients for 12–18 h postoperatively.

All women were asked to provide informed consent. The study was approved by the Local Ethics Committee. All patients enrolled were invited to fill out the PISQ-12 questionnaire before surgery and 6 months after surgery. The PISQ-12 questionnaire form is a self-administered, appropriately structured, and standardized survey for the evaluation of sexual function in women with urinary incontinence and/or pelvic organ prolapse^[12]). The adapted form of the questionnaire in Turkish is easy to understand and answer by Turkish speaking societies.

Questions of PISQ-12 form:

1. How frequently do you feel sexual desire? This feeling may include wanting to have sex, planning to have sex, and feeling frustrated because of lack of sex
2. Do you climax (have an orgasm) when having sexual intercourse with your partner
3. Do you feel sexually excited (turned on) when participating in sexual activity with your partner
4. How satisfied are you with the variety of sexual activities in your current sex life
5. Do you feel pain during sexual intercourse
6. Are you incontinent (leak urine) during sexual activity
7. Does fear of incontinence (either stool or urine) restrict your sexual activity
8. Do you avoid sexual intercourse because of bulging of the vagina (either bladder, rectum, or vagina falling out?)
9. When you have sex with your partner, do you have negative emotional reactions such as fear, disgust, shame, or guilt
10. Does your partner have a problem with erections that affects your sexual activity
11. Does your partner have a problem with premature ejaculation that affects your sexual activity
12. Compared to orgasms you have had in the past, how intense are the orgasms you have had in the past 6 months?

Each answer to the questions in each section was scored between 0 and 4. Scores are calculated by totaling the scores for each question. Responses are graded on a 5-point Likert scale from “never” to “always”. Reverse scoring is used for items 1–4. The maximum total score of this questionnaire form, consisting of 12 questions, was 48 and higher scores indicate better functioning. It was grouped under three subheadings. The questions on the questionnaire form were divided into subgroups as 1–4: emotional, 5–9: physical, and 10–12: partner dependent.

Statistical analysis

The Statistical Package Program for the Social Sciences (SPSS 15.0; SPSS Inc., Chicago, IL, USA) was used for the statistical analysis. Normal distribution was evaluated using the Shapiro–Wilk test. Continuous data with normal distribution were expressed in mean \pm standard deviation, while data with nonnormal distribution was expressed in median (minimum–maximum) and categorical data were expressed in numbers and percentages. A comparison of dependent and independent groups were performed using the student *t*-test in normally distributed data. The Mann–Whitney U-test and Chi-square test were used to analyze the data with nonnormal distribution and categorical data, respectively. $P < 0.05$ was considered statistically significant.

RESULTS

Overall, 77 patients were included in the study, 42 in TVT-O group and 35 in L/S Burch group. The median age, gravidity, and parity were 52 years (39–74), 3 (1–8), and 3 (1–5), respectively. When the groups were compared regarding demographics, age was found to be statistically significantly higher in Burch patients ($P = 0.014$), while the numbers of gravidity, parity, and abortus were higher in the TVT-O group ($P < 0.05$). The number of births with intervention was significantly higher in TVT-O group ($P = 0.017$), while the rate of cesarean section (C/S) was higher in patients who underwent the Burch operation ($P = 0.007$). Demographics of the groups are presented in Table 1.

The mean total postoperative PISQ-12 score in both TVT-O and Burch groups were significantly increased compared to the preoperative period ($P < 0.001$ and $P < 0.001$, respectively). The scores of the postoperative period were significantly higher in the Burch group ($P = 0.039$); however, no differences in the amount of change in the preoperative and postoperative values by time were found between the groups ($P = 0.111$) [Table 2].

Questions 0–4, 5–9, and 10–12 analyze emotional factors, physical factors, and factors related to the partner, respectively. According to these measures, PISQ-12 scores were evaluated and groups were compared under three subheadings.

When the PISQ-12 scores were evaluated according to the subgroups, physical and partner-dependent scores significantly increased in the postoperative period compared to the preoperative period in the TVT-O group ($P < 0.001$ and $P = 0.004$, respectively). On the other hand, emotional

Table 1: Distribution of demographic data according to the group

	TOT (n=42)	Burch (n=35)	P
Age (year)	48 (39-74)	55 (42-68)	0.014
Gravidy (n)	3 (1-8)	3 (1-5)	0.037
Parity (n)	3 (1-5)	2 (1-5)	0.068
Abortus (n)	0 (0-5)	0 (0-2)	0.182
Delivery (n%)	18 (%42.9)	20 (%57.1)	0.009
Vaginal			
Operative vaginal	19 (%45.2)	5 (%14.3)	
Caesarean section	5 (%11.9)	10 (%28.6)	
Previous operation (%)			0.647
No	24 (%57.1)	22 (% 62.9)	
Yes	18 (%42.9)	13 (%37.1)	
Previous incontinence operation (%)			0.369
No	38 (%90.5)	34 (%97.1)	
Yes	4 (%9.5)	1 (%2.9)	

Table 2: Comparison of PISQ-12 score who underwent TOT and L/S Burch

	PISQ-12 score			P
	Pre-operative	Post-operative	Difference	
TOT	37.48 \pm 3.77	43.21 \pm 2.90	-5.74 \pm 4.27	<0.001*
L/S Burch	37.71 \pm 4.39	44.77 \pm 3.47	-7.06 \pm 2.87	<0.001*
P	0.799	0.039*	0.111	

$P < 0.05$ statistically significant

scores were significantly decreased and the physical and partner-dependent scores significantly increased ($P = 0.004$, $P < 0.001$, and $P < 0.001$, respectively). When the score changes between the preoperative and postoperative periods were evaluated, the change in the physical scores were significantly higher in the Burch group compared to the TVT-O group; however, no significant difference was found in the emotional and partner-dependent score changes ($P = 0.028$, $P = 0.338$ and $P = 0.676$) [Table 3].

DISCUSSION

This study was undertaken using the PISQ-12 form, which analyzes sexual functions and sexual quality of life. When preoperative and postoperative 6 month's functions were compared, both groups of patients who underwent L/S Burch colposuspension and TVT-O procedures for stress incontinence reported positive effects of the operations on sexual functions. The mean total postoperative PISQ-12 score in both TVT-O and Burch groups were significantly increased compared to the preoperative period ($P < 0.001$ and $P < 0.001$, respectively). No increase was found in emotional factors; a significant increase was observed in physical and partner-dependent scores.

In a study by Ghezzi *et al.*, the effect of TVT on sexual functions in isolated SUI was evaluated using the PISQ-12

Table 3: Comparison of PISQ-12 score parameters

	TOT		Difference	P*	L/S Burch		Difference	P*	P†
	Pre-op.	Post-op.			Pre-op.	Post-op.			
Emotional	11.88±4.35	11.69±4.43	-0.19	0.490	11.43±2.34	10.91±2.19	-0.51	0.004	0.338
Physical	16.12±4.66	21.19±2.63	5.07	<0.001	15.03±2.89	21.89±1.55	6.86	<0.001	0.028
Partneral	9.48±2.42	10.33±2.63	0.86	0.004	11.26±1.79	11.97±1.79	0.71	<0.001	0.676

P<0.05 significant. P* Comparison of preoperative and postoperative values. P† Comparison the difference of preoperative and postoperative values between TOT and L/S Burch

form, as was the case in our study and increased in overall sexual functions.^[15] In another study by Jha *et al.* in 2007, the effects of TVT and TVT-O operations on sexual function were questioned using the PISQ-12 form and overall sexual functions were improved, as was the case in our study. Physical and partner-dependent scores increased, while emotional scores were unchanged in that study.^[10] The results of those studies and ours are contradictory to the study performed by Rogers *et al.* in 2007, in which the overall score in sexual functions was found to be lower following incontinence surgery.^[11] Furthermore, in that study, the scores decreased, especially due to emotional factors, while physical score and especially coital incontinence were detected to significantly improve.

All of the factors such as the relationship between the partners, age, level of education, and psychosocial factors have an effect on the evaluation of the emotional state (desire, orgasm, excitement, and satisfaction) of an individual. Nevertheless, emotional factors would be expected improve following incontinence surgery since physical factors such as pain during coitus and fear of incontinence and some partner-dependent factors such as embarrassment from the partner improved. In the present study, no improvement in emotional factors was detected and even a regression of these scores was encountered in the L/S Burch group. Helström *et al.* reached this result in their study in 2005 and attributed this condition to the easily damaged nature of vaginal nerves after vaginal surgery and to the decreased blood flow to the vaginal mucosa, and thus a loss of lubrication and stimulation.^[16] Furthermore, surgical damage to the pelvic autonomous nerves at the proximal level after the L/S Burch procedure can be a factor decreasing the vaginal blood flow response.^[17]

The physical scores increased in both groups in this present study. The results of the studies in the literature on the effects of incontinence surgery on physical factors among sexual functions are controversial.^[18] Surgery for pelvic prolapse and SUI are occasionally reported to increase coital pain due to the vaginal narrowing or changes in the vaginal innervation.^[19] Other studies have supported the findings of decreased coital pain by vaginal reconstruction.^[20,21] A consensus in the literature seems to be reached among the physical factors of coital incontinence. Incontinence surgery, in patients with coital incontinence, significantly increases the postoperative sexual function scores.^[22-25] Sexual function scores in patients with coital incontinence were demonstrated to be significantly

higher in the postoperative period compared to those without coital incontinence.^[26,27]

In the present study, partner-dependent factors improved postoperatively in both groups. The elimination of fear from incontinence is thought to be a significant factor here; however, the elimination of factors negatively affecting the sexual functions such as smell, infections, positional limitations, and negative affectivity accompanying incontinence also improve the sexual functions of the partner. All factors stated above are factors that can prevent the woman from reaching orgasm, as well.^[28]

In addition to a large number of studies evaluating the effects of SUI surgery on sexual functions, many comparative studies about abdominal and vaginal operations and their effects on sexual functions have also been performed. Most of those studies were performed retrospectively, and prospective study series have recently been published. The first group of researchers prospectively evaluating the effects of using abdominal and vaginal approaches on sexual functions in SUI surgery was Cayan *et al.* in 2008.^[9] They demonstrated that both methods impaired sexual functions and impairment was even greater in the Burch group. Demirkesen *et al.* also compared TVT and Burch groups and found a decrease in sexual functions in both groups, though to a greater extent in the TVT group; this difference was not statistically significant.^[29] Ward and Hilton, in their multicenter, randomized and controlled study, followed their patients for 5 years and reported significantly improved sexual functions in both groups.^[30]

A great number of studies have been performed comparing various transvaginal approaches. Sexual functions were reported to improve with no significant differences between the groups in the comparative studies performed by Murphy *et al.* on TVT and TVT-O,^[31] Pace and Vicentini on TVT and TOT,^[32] Kim *et al.* on TOT and retropubic suburethral sling,^[33] and Elzevier *et al.* on TVT-O and TOT.^[34]

Although the success rate of incontinence surgery was high, many studies presented in the literature at the beginning of the 2000s demonstrated no improvement in sexual functions.^[35,36] Toward the end of the decade and today, the results of the studies point to the fact that incontinence surgery improves sexual functions.^[27] These more satisfactory results might be due to the improvement of the gynecologic surgical techniques to preserve sexual functions (such as staying away from the clitoral dorsal nerve and not performing

large excisions on the vaginal mucosa) and to the developed minimally invasive techniques. Similar results were also obtained in our study. The superior aspects of the present study are its prospective nature, the presence of the same operating team in all cases, and a study sample composed of isolated stress incontinence.

Mesh erosion, sometimes accompanied by severe complications is; one of the most common long-term complications of the TVT-O.^[37] We did not encounter mesh erosion during 2-year follow-up period after surgery.

The most important limitation of the present study is that the diagnosis of SUI was performed not by urodynamic evaluation but only by examination findings. Our main outcome was improvement of sexual functions so we ignored cure rate of incontinence. Another strong limitation is that the study was not randomized and important differences exist between the two groups. Finally we did not do a sample size calculation as part of our study planning.

CONCLUSIONS

The rate of success of the surgery for SUI is positively correlated with sexual functions. The success rate of minimally invasive methods in SUI surgery has been progressively increasing day-by day. Recently, less invasive approach with transvaginal route replaced the abdominal approach. The lesser invasive methods such as pulsed magnetic stimulation, Vesair intravesical balloon, pelvic physiotherapy, biofeedback, and serious gaming seems to replace surgery for SUI in the future. This conversion of preferences seems to be inevitable with future, well-planned, randomized, and controlled studies demonstrating the supportive effects of these operations on the improvement of sexual functions.

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Conflicts of interest

There are no conflicts of interest.

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