

The effect of Transobturator Tape (TOT) on female sexual and psychological functions: A multi centered prospective study**Transobturator Tape (TOT) operasyonunun kadınların cinsel ve psikolojik fonksiyonları üzerine etkisi: Çok merkezli prospektif çalışma**Demirhan Örsan DEMİR¹, Berat Cem ÖZGÜR², Arif DEMİRBAŞ³, Veli Mert YAZAR⁴, Burak AKSELİM⁵, Cem Nedim YÜCETÜRK², Turgay KAÇAN⁶**ÖZET**

AMAÇ: Stres üriner inkontinans (SÜİ) kadınlarda sık görülen bir sağlık sorunudur ve transobturator bant (TOT) cerrahisi bu patolojiyi düzeltmek için en sık kullanılan yöntemlerden biridir. Bu çalışmada TOT ameliyatı sonrası kontinans oranlarının yanı sıra stres üriner inkontinansın neden olduğu sosyal, fiziksel, cinsel ve psikolojik sorunların iyileşme oranlarının belirlenmesi amaçlanmıştır.

GEREÇ VE YÖNTEM: Cinsel yönden aktif toplam 72 kadın, yaşam kalitesine ilişkin kendi algılarına göre üç farklı anketle değerlendirildi; Şubat 2017'den Ocak 2021'e kadar. Ameliyat öncesi ve ameliyat sonrası on ikinci ayda Beck Depresyon Envanteri (BDI), Kadın Cinsel İşlev İndeksi (FSFI) ve Kısa Form-36 Sağlık Anketi (SF-36) anketlerini doldurdular.

BULGULAR: 66 (%91.66) hastada inkontinans tedavisi sağlandı. On ikinci ay FSFI puanlarında istatistiksel olarak anlamlı ortalama 6.47 puan artış tespit edildi. Ayrıca SF-36 anketinin ameliyat öncesi ve ameliyat sonrası 12 aylık değerleri arasında yedi parametresi önemli ölçüde değişirken, 12 aylık BDI skorlarında ortalama 8.38 puanlık istatistiksel olarak anlamlı bir azalma bulundu.

SONUÇ: TOT işlemi kontinansı sağlamanın yanı sıra ameliyat öncesi inkontinansa bağlı olabilecek sosyal, fiziksel, cinsel ve psikolojik sorunlara da olumlu katkı sağlamaktadır.

Anahtar Kelimeler: Transobturator tape, hayat kalitesi, seksüel fonksiyonlar, stres üriner inkontinans

ABSTRACT

AIM: The aim of the present study is to identify the recovery rate after Transobturator Tape (TOT) surgery of social, physical, sexual and psychological problems caused by SUI in females..

MATERIAL AND METHOD: A total of 36 sexually active women were evaluated according to their self-perception of the quality of their life. They answered the following questionnaires; the Beck Depression Inventory (BDI), the Female Sexual Function Index (FSFI) and the Short Form-36 Health Survey (SF-36).

RESULTS: A statistically significant increase of mean 6.47 points was determined in the 3rd month FSFI scores. Also seven parameters of SF-36 questionnaire between the preoperative and 3-month postoperative values were significantly changed. ($p<0.001$) while a statistically significant decrease of mean 8.38 points in the 3-month BDI scores ($p<0.001$) was found

CONCLUSION: In addition to providing continence, TOT procedure also positively contributes to the social, physical, sexual and psychological problems.

Keywords: Quality of life, sexual function, stres urinary incontinence, transobturator tape

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INTRODUCTION

Stress urinary incontinence (SUI) is a healthcare problem frequently seen in females and the incidence increases together with longer life expectancy worldwide.^{1,2} Related to incontinence different health problems occur such as dermatitis, dyspareunia, loss of libido, psychological stress, loss of confidence, recurrent urinary system infections sleep disorders, etc. Also lifestyle becomes sedentary because of increased urine leakage during physical activity, there is distancing from social life because of embarrassment and these factors may lead to depressive symptoms and anxiety.³⁻⁶ Although SUI is not a life-threatening disease, as the quality of life of affected women is significantly decreased due to factors mentioned above, treatment is an important issue. Patients who do not benefit from conservative methods and medical treatment have been reported to be successfully treated with surgical methods.⁷ One of these methods is the application of transobturator tape (TOT), which was first described in 2001.⁸ The success of TOT operations has been reported as 85%-90%.⁷⁻⁹ This success rate is the treatment of urine leakage, but does not reflect at what rate other health problems caused by urinary continence are treated. The aim of this study was to investigate the improvement rates after TOT of social, physical, sexual and psychological problems caused by SUI in females.

MATERIAL AND METHOD

The study protocol was carried out in accordance with the Helsinki Declaration as revised in 1989. Signed informed consent forms were obtained from all participants. A total of 100 patients were examined who underwent TOT operation by three experienced surgeons (more than 50 cases) between February 2017 and January 2021 in three different centers. Inclusion criteria were that the patient had been sexually active in the six months prior to the operation, had no genital system malignancy, and completed the questionnaires preoperatively and at twelve months postoperatively. The final evaluation included 72 female patients, all completed the questionnaires at the end of one year.

The medical (Charlson Comorbidity Index) and surgical histories of all the patients were examined preoperatively.¹⁰ Abdominal ultrasonographic imaging was applied to exclude other pathologies and measure post-voiding residual urine. Physical examination included the cough test, Q-tip and Boney tests. A record was made for each patient of preoperative age, body mass index (BMI), gravida, parity, menopause status, smoking history and type of births. Patients with diabetes mellitus, diabetes insipidus, gout, pelvic prolapsus, pelvic floor muscle problems were excluded since female sexual dysfunction, depression, mental health problems could be a result of these. Routine urine and blood tests and urine cultures were examined before the procedure. The TOT operation was performed under spinal anaesthesia with the patient in the dorsal lithotomy position, using the procedure described by Delorme before.⁸

The following forms were completed by the patients one day before the operation: the Beck Depression Inventory (BDI), the Female Sexual Function Index (FSFI) and the Short Form-36 Health Survey (SF-36).¹¹⁻¹³ The BDI consists of 21 items and measures depressive symptoms. The response for each item has 4 options and is scored from 0-3. The results are graded as mild (10-16 points), moderate (17-29 points) or severe depression (>30 points).

The FSFI consists of 19 items under 6 headings of desire, arousal, lubrication, orgasm, satisfaction and pain. Within each subheading, there are factor values. A maximum of 6 points can be obtained under each heading and thus a maximum total of 36. Generally the cut off value is defined as 26.55 and values below that are named as sexual dysfunctioning patient.¹⁴

The SF-36 consists of 36 items questioning the general health status of the individual. It includes 8 subheadings of general perception of health (GH), physical functioning (PF), role limitation due to physical problems (RP), social functioning (SF), mental health (MH), energy and vitality (VT), role limitation due to emotional problem (RE), and bodily pain (BP). Each item is scored from 0-100 points and the mean value of each sub-dimension is taken for evaluation.

All three scales mentioned above have been validated for use in the patient's native language.¹⁵⁻¹⁸ Patients were discharged on postoperative first day following the observation of natural miction. Oral anticholinergic treatment was started in only four (5.55%) patients with post operative urge incontinence. All patients were instructed to

avoid coitus for the first month. Follow-up examinations were made at the 2nd week, 3rd and 6th months after discharge. At the 2nd week and 3rd month follow-up, a standard examination was made with the cough test for continence. At the 6th month follow-up, the same questionnaires were completed again by the patients and a routine examination and the cough test were also applied. Success was defined as complaints fully recovered with negative cough stress tests.

Statistical Analysis

The data analysis was performed by using SPSS for Windows, version 23 (SPSS Inc., Chicago, IL, United States). The normality of the distribution was tested with Shapiro-Wilk and Kolmogorov-Smirnov tests. Descriptive statistics for variables with a non-normal variables, normal variables and nominal variables were shown as median (min - max), mean \pm standard deviation and number of cases and (%), respectively. The differences between dependent groups regarding continuous parametric and nonparametric variables were evaluated using the Paired Sample T test and Wilcoxon test respectively. $P < 0.05$ was regarded as statistically significant.

Ethical Approval

The study was approved prior to initiation of the research work by the Ethics Committees of Ankara Research and Training Hospital, Turkey (Approval number:673).

RESULTS

The demographic data of 72 patients are shown in Table 1. Table1: Demographic data of the patients

Variable	Value
Number of patients	72
Mean (SD .range)	
Age (years)	52.19 (7.41. 39-65)
BMI (kg/m ²)	27.77 (4.24. 19.46-38.56)
Median (min-max)	
Gravida (median.min.-max.)	3 (1-8)
Parity (median. min.-max.)	2.5 (1-6)
Mode of delivery	
Normal vaginal delivery	36 (50%)
Caesarean section	36 (50%)
Menopausal status	
Yes	46 (63.88%)
No	26 (36.12%)
History of pelvics urgery	
Yes	10 (13.88%)
No	62 (86.12%)

BMI: Body mass index

Postoperatively, groin pain was the most common (22.2%) inconvenience and noted as a complication. Urinary retention was observed in two (2.7%) patients and this was resolved after the placement of a urethral catheter for one week. In two (2.7%) patients where vaginal mesh erosion was observed, shortening the mesh edges under local anesthesia was sufficient. The operation was evaluated as unsuccessful in four (5.4%) patients, and in two (2.7%) patients, although urine leakage was reduced, it was still persisting. The summary of preoperative and postoperative data are shown in Table 2.

Table 2: Operative and postoperative data of the patients

Variable	Value
Outcomes	
Cure	66 (91.66%)
Improved	2 (2.77%)
Failed	4 (5.55%)
Complications	
Bladder and urethral injury	0
Fever	2 (2.77%)
UTI	0
Urinary retention	2 (2.77%)
Mesh erosion	2 (2.77%)
Groin pain	16 (22.20%)

UTI: Urinary tract infection

When the BDI scores of the patients were examined, a decrease in BDI scores was observed in 56 (77.77%) patients, and a decrease of mean 8.38 points in the 12th-month BDI scores ($P < .001$) was found. Preoperatively, 10 (13.88%) patients had a BDI score of >30 , which is evaluated as a severe level of depression, while only one (1.38%) patient was evaluated in this category postoperatively (Table 3).

Table 3: Preoperative and postoperative BDI values

BDI value	Preoperative (n)	Postoperative(n)
<10	12	40
>30	10	2
Preoperative BDI mean±SD	Postoperative BDI mean±SD	Pvalue
18.69 ±10.03	10.31±7.17	0.000

BDI: Beck Depression Inventory

Significant at $p < 0.05$.

In the examination of the FSFI scores, preoperatively only one, postoperatively five (6.94%) patients had a value ≥ 26.55 . A statistically significant increase of mean 6.477 points was determined in the 12th month ($P < .001$). An increase in the FSFI score was observed in 54 (75%) patients, a decrease in 12 (16.66%), and no change in 6 (8.33%) (Table 4).

Table 4: Preoperative and postoperative FSFI values

FSFI value	Preoperative (n)	Postoperative(n)
<26.55	71	67
≥ 26.55	1	5
Preoperative FSFI mean±SD	PostoperativeFSFI mean± SD	P value
14.092± 7.97	20.569± 6.84	0.000

FSFI: Female Sexual Function Index

Significant at $p < 0.05$.

No statistically significant difference was observed between the preoperative and 12th month postoperative bodily pain (BP) parameter ($P = .519$) but a statistically significant difference was observed in the other 7 parameters between the preoperative and 12th month postoperative values when the 8 sub-dimensions of the SF-36 questionnaire were examined. The comparisons of the pre and postoperative values together with the normal values of the SF-36 parameters for the females in the same region are shown in Table 5.

Table 5: Preoperative and postoperative SF-36 values

SF-36 item	Preoperative median(min-max)	Postoperative, median(min-max)	P value	Norm value±SD
Physical function	50 (0-90)	80 (35-100)	0.000	80.6±21.7
Physical role	0 (0-100)	87.5 (25-100)	0.000	82.9±28.6
Emotional role	33.3 (0-100)	66.6 (0-100)	0.000	89.0±22.5
Vitality	30 (0-100)	50 (10-100)	0.001	63.4±13.7
Mental health	40 (16-84)	60 (24-100)	0.000	70.1±11.4
Social function	37.5 (13-100)	75 (25-100)	0.000	90.1±12.9
Bodily pain	50 (22-100)	53.75 (0-100)	0.519	81.0±20.2
General perception of health	50 (25-70)	70 (35-100)	0.000	69.1±16.9

Significant at $p < 0.05$.

* SF-36 normal values for women in the studied society

DISCUSSION

Problems such as dermatitis, recurrent urinary tract infectious, withdrawing from social life, loss of self-confidence, sexual dysfunction, and a sedentary lifestyle lead to depressive symptoms, thereby reducing quality of life in incontinence patients.¹⁹ Each of these symptoms are serious problems at least as important as urine leakage and the resolution of these should be within the main goals of treatment.²⁰

At the postoperative follow-up examinations of the current study patients, urinary incontinence was seen to have been treated in 91.66% and this rate was similar to the findings of previous studies in literature.^{4,7,21} Although major complications such as bladder or urethra injuries associated with the TOT procedure have been reported in literature, the number of these is low and again, similar to our data, and most other studies have not encountered major complications. Mesh erosion was seen in only one (2.77%) patient of the current study, as a late severe complication, and this was also similar with previous studies.^{4,22,23} Groin pain was the most common inconvenience and noted as a complication (22.2%) but in many studies this issue is not reported to our opinion.

In literature, there are studies showing both negative and positive effects on sexual functions in the postoperative period of anti-incontinence surgery.^{4,24,25} Among the factors which can negatively affect sexual functions, reduced vaginal lubrication or loss of feeling associated with scarring, fibrosis or nerve damage that can occur in mid-urethral suspension surgery have been shown.^{4,24} Conversely, it has been shown that overcoming the fear of urine leakage during sexual relations, the self-restriction of relations by the woman, and the elimination of dermatitis associated with continuous urine leakage related to the recovery of urinary incontinence, together with the regaining of self-confidence and psychological well-being in the postoperative period, have a positive effect on sexual functions.^{5,20} In the current study, the operations had positive effects on sexual functions, and in the 12th postoperative month, a statistically significant increase was determined in the FSFI scores of 75% of the patients. This increment can be explained with the mechanisms mentioned above.^{4,5,20,24} On the other hand FSFI values of majority of patients (preoperative 35(97.2%), postoperative 31(86.1%) were below the cut off point (26.77). It can be concluded that participating women has to be evaluated on this issue. Using the 4-week reference period may present some logistical challenges and a longer version of the FSFI may be an appropriate alternative as Burri et al. mentioned before.²⁶

There are studies showing that women with urinary incontinence have greater levels of depression and anxiety when compared to those with no incontinence, and it has even been shown that incontinence increased the rate of depression.²⁷ Guimares et al. found a strong relationship between depression and urinary incontinence and concluded that incontinence can lead psychiatric problems beside well known problems of skin irritations, infections etc.²⁸ Based on available data depressive symptoms may contribute to some losses, such as loss of strength of the pelvic floor musculature. Although there was no severe depression in our population our BDI values significantly improved after the surgeries (18.69 ±10.03 vs 10.31±7.17 respectively). We think that most important reason of that is reduced rates of the incontinence since other confounding factors remain the same.

Many studies have examined the relationship between urinary incontinence and quality of life. Different questionnaires have been used in these studies, but in almost all the studies an increase has been determined in quality of life following treatment.^{5,7} In the current study, the SF-36 questionnaire was used as it includes physical, psychological, social and emotional parameters and with the exception of the parameter of bodily pain, an improvement was observed in all the other seven parameters at six months postoperatively. The reason for the pain and why it had not receded despite the treatment demands investigation. As some author conclude dermatitis that develops in urinary incontinence because of continuous contact of the skin with urine or limited physical activity to reduce urine leakage may be causes of pain also in the postoperative period. Also groin and hip pain may be seen related to the material of the mid-urethral sling.⁵ Since our follow up period is limited, the persisting pain may be the standart postoperative period pain in some women. As a result, even if the character of the pain is changed, the patient feels pain in anatomic areas that are in close proximity and to us that may

be the reason for bodily pain. In a study by Soliman et al. the quality of life scale used was similar to that of the current study and they also determined that although there was no difference in abdominal pain following TOT compared to the preoperative period, pain was reduced during sexual relations postoperatively.⁴ No difference was determined in the pain component of the current study could be attributed to the expectation of pain in the postoperative recovery period. But collectively, these findings indicate that TOT operation increases the quality of life. In addition, it is possible to observe similar effects on quality of life in other stress urinary incontinence surgeries.

There were some limitations to this study. First, to see the long-term results, patients were called to a follow-up examination at 12 and 18 months, but several did not attend. As the questionnaires were quite long and it was thought to be more meaningful in face-to-face interviews, telephone calls were not made to complete the forms. Therefore, the study was completed with the results of only 12-month follow-up examinations. A more problematic concern is that the level of education and socio-economic status of patients may have affected sexual functions, levels of anxiety and quality of life. In the current study as almost all the patients had an education level of high school or below and because of a small sample size, comparisons could not be made in this respect. To our knowledge our study is the first to evaluate not only efficacy and reliability of TOT technique but also its effects on multiple parameters; sexual functions, psychological state and quality of life together.

CONCLUSION

TOT is an operation with high success rates that can be planned to be performed under outpatient office conditions. Although the patient group of the current study was limited, a significant postoperative improvement was determined these three widely accepted questionnaires beside incontinence meaning that there was also a positive contribution to the social, physical, sexual and psychological problems. Lastly the bodily pain parameter would probably not change in the postoperative period and these worth emphasizing before the operation. Hopefully, in years to come, further studies will shed light on these affairs.

Informed consents were obtained from all patients.

CONFLICT OF INTEREST- FUNDING:

Authors declared no conflict of interest and no funding.

AUTHOR CONTRIBUTIONS:

DOD: Conceptualization; data curation; investigation; methodology; project administration; writing-original draft. BCO:Methodology; project administration; software; validation; visualization; supervision. AD: Data curation; formal analysis; investigation; supervision. VMY: Conceptualization; data curation; validation; visualization. BA: investigation; methodology; supervision; validation. CNY: Conceptualization; data curation; formal analysis; supervision. TK: Conceptualization; data curation; formal analysis; writing – review and editing.

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