Original Article

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The Effect of TVT Bladder Neck Suspension on Quality of Life in Women with Stress Urinary Incontinence

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ABSTRACT

BACKGROUND AND OBJECTIVE: Stress urinary incontinence (SUI) occurs in 35% of women and about 30% of them will require a second surgery. This illness has negative effects on patients' quality of life. Since TVT (Tension-free vaginal tape) bladder neck suspension is a minimally invasive procedure for curing patients with stress urinary incontinence, the present study was conducted to investigate the effect of TVT bladder neck suspension on quality of life in these patients.

METHODS: This analytical study was conducted to assess the quality of life in 50 patients with stress urinary incontinence, using Kings Health Questionnaire in various fields, before TVT surgery, one month after surgery, and six month after that. This questionnaire has a 4-point grading system. Each field is graded from 0 (best) to 100 (worst). Decline in scores indicates increase in quality of life.

FINDINGS: Every field that influenced the quality of life in women with stress urinary incontinence was improved significantly, one and six month after TVT surgery compared with the situation before the surgery ($p<0.05$). Intensity of symptoms increased from 14.10±3.77, before the surgery to 8.16±2.35, one month and 8.26±2.3, six month after the surgery ($p<0.001$). After TVT surgery, 14 patients (28%) experienced fever, 5 patients (10%) experienced urinary retention, 3 patients (6%) experienced urinary infection and 1 patient (2%) experienced bleeding.

CONCLUSION: Results of the study demonstrated that TVT bladder neck suspension improves the quality of life in patients with stress urinary incontinence.

KEY WORDS: *Stress urinary incontinence, Quality of life, TVT Surgery.*

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Introduction

Nowadays, one of the major problems of women in the world is pelvic floor disorders with several complications including urinary stress incontinence, which affects their quality of life. Urinary stress incontinence is defined as loss of bladder control after activities like coughing, sneezing, lifting heavy objects, etc. as a result of pressure on the bladder (1, 2). The major risk factors for stress urinary incontinence include femininity, maternity, obstetric history, lifestyle, chronic cough in bronchitis and asthma, older age, estrogenic status, obesity and a history of previous pelvic surgery (3, 4).

Urinary incontinence has various complications for women including urinary tract infections, skin irritation and psychological effects which results in alienation, social isolation, feelings of worthlessness and depression (5). Investigations revealed that one in every nine American women undergo surgery due to pelvic floor disorders and stress urinary incontinence occurs in 35% of women and about 30% of them will require a second surgery (6, 7).

TVT (Tension-free Vaginal Tape) bladder neck suspension has been used as a minimally invasive procedure for curing patients with stress urinary incontinence since 1995 and the procedure includes using a tension-free vaginal tape polypropylene tape in the middle of the urethra (8).

Based on several studies, TVT is accompanied with faster recovery, less pain and shorter operation time compared with traditional methods of urinary incontinence surgery such as Burch (9, 10). However, TVT results are not the same for all patients and the effect of menopause on the incidence of urinary incontinence was reported to be different. Svenningsen in his study mentions age of 56 and above (a few years after menopause) as a risk factor for stress incontinence (11).

According to Truthnovsky, postmenopausal hormone deficiency plays no significant role in the incidence of urinary incontinence (12). Several studies have been dedicated to the effect of TVT bladder neck suspension on quality of life in women with stress urinary incontinence and the positive effect of TVT on their quality of life was confirmed (13-20). As of yet, no study in Iran has been dedicated to this issue. Due to increasing incidence of stress urinary incontinence and its complications in Iranian women and since TVT bladder neck suspension was confirmed by most experts to be a minimally invasive procedure for the treatment of patients with stress urinary incontinence and considering that the effect of this surgery on quality of life in these patients has not been investigated in Iran. The present study was conducted to investigate the effect of TVT bladder neck suspension on quality of life in women with stress urinary incontinence.

Methods

This analytical study (before and after) based on convenience sampling method was conducted among 50 women with stress urinary incontinence for six months after being approved by Research Committee of Kermanshah University of Medical Sciences. In the absence of contraindications for TVT bladder neck suspension, patients whose urologist decided to start the surgery for them were first referred to Imam Reza Hospital. The aim of the research was fully explained to the referred patients and if interested, written informed consent was obtained from patients.

At the initial visit, a questionnaire containing demographic information (age, parity, body mass index) and history of illness was completed by the researcher. In case of having stress urinary incontinence, age of 35-75 years, having enough children or unwillingness to get pregnant after surgery and failure to respond to conservative treatments, patients were included in the study and in case of being heavier than 100 kg, smoking, simultaneous existence of emergency incontinence, using diuretics and anti-depression drugs, using oral or topical estrogen drugs and diabetes, metabolic diseases, urinary tract and dermal infections, patients with urgent urinary incontinence, severe prolapse of the uterus and bladder and coagulopathy, pregnancy and history of previous incontinence surgery, patients were excluded from the study. Patients underwent operation by two TVT experts (a urologist and a gynecologist). In cases where stress urinary incontinence could not be diagnosed with simple tests such as Q tip test or where differentiation from emergency incontinence was not easily possible, Urodynamic test was used.

The patient was placed in a lithotomy position and a 1 to 2 cm incision was made on the anterior vaginal wall after spinal anesthesia or general anesthesia. Tissue around the urethra was released. After identifying the bladder neck and the middle of the urethra, TVT was inserted and the incision was repaired. Cystoscopy was done to ensure proper

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placement of tape. Urinary catheter was kept for 24 hours after surgery and the patient was hospitalized for 24 hours. Urinary catheter was removed the next day and the patient was allowed to urinate normally. In this operation, a rectus fascia strip (10×15 cm) was used. After opening vaginal mucosa, this strip was passed under the urethra and then, the two ends of strip were sewn and fixed on rectus fascia by non-absorbable suture. This way, more protection is created for below urethra part without extra tension.

One and six months later, a midwifery assistant called the patients and asked them to refer to the clinic for a free visit and patients were examined regarding surgery complications and quality of life by an interview conducted by researcher. Quality of life was assessed by Kings Health Questionnaire (KHQ), which is a valid questionnaire approved by research centers. KHQ is a valid and reliable tool to assess quality of life in women with urinary incontinence.

The final version of the questionnaire is the result of six different pilot studies and its validity and reliability was approved by standard psychometric techniques. KHQ is a self-report questionnaire that includes 3 sections and 21 items. The first section includes general health perception (1 item) and the effect of urinary incontinence (1 item). The second section includes activity limitations (2 items), physical limitations (2 items) and social restrictions (3 items). The third section includes personal relationships (2 items), emotions (3 items), sleep / energy (2 items) and symptom severity scale (5 items). This questionnaire has a 4-point grading system. Each area is graded from 0 (best) to 100 (worst).

Decline in scores indicates increase in quality of life (21). KHQ was previously used in medical and surgical studies and proved to be highly sensitive to changes in urinary signs (22). Diagnosing stress urinary incontinence in women was confirmed by urologist and ultimately by urodynamic studies according to patient's history and physical, pelvic and neurologic examinations (23).

Demographic variables such as age, number of previous natural deliveries, number of previous cesarean deliveries, menopause, duration of menopause, body mass index and surgical complications were assessed. The gathered data were analyzed by SPSS V22. First, the normality of quality of life scores was assessed based on Kolmogorov-Smirnov test and was not confirmed. Therefore, to compare quality of life scores in various areas, before the surgery, one month after surgery, and six months after that, Friedman test was used and $p<0.05$ was considered significant.

Results

50 women with stress urinary incontinence and mean age of 55.64 ± 8.71 who underwent mid-urethral sling surgery were investigated in this study (table 1). There was a significant difference between areas that affect the quality of life in women with symptoms of stress urinary incontinence before TVT surgery, one month after surgery, and six months after that ($p<0.05$). As such, the number of areas that affect the quality of life in women with symptoms of stress urinary incontinence before TVT surgery was more than the number of areas that affect the quality of life in women with symptoms of stress urinary incontinence one month after TVT surgery and six months after that (table 2).

Table 1 Demographic properties of patients with stress urinary incontinence who underwent mid-urethral sling surgery

Variable	Descriptive property N(%)
Age (years)-Mean±SD	55.64±8.71
Range	35-65
BMI(Kg/m^2)-Mean±SD	27.52±4.1
Range	20.76-38.37
Menopausal duration (years)-Mean±SD	7.91±4.95
Range	1-18
History of natural delivery	
Once	1(2)
2-3 times	18(36)
4-6 times	28(56)
7 times and more	3(6)
History of cesarean delivery	
No history	33(66)
Once	15(30)
2-3 times	2(4)
Menopause	
Has	37(74)
Does not have	13(26)
Surgical complications	
Fever	14(28)
Urinary retention	5(10)
Urinary infection	3(6)
Bleeding	1(2)

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Table 2 Comparing areas that affect the quality of life in women with symptoms of stress urinary incontinence before TVT surgery, one month after surgery, and six months after that

Time of surgery Area	Before Mean±SD	One month after Mean±SD	Six months after Mean±SD
General health perception	79±11.96	23±23.28	27.5±23.28
The effect of urinary incontinence	78±19.76	37.33±29.84	40.66±31.07
Activity limitations	69±19.92	33.33±25.72	31.97±24.01
Physical limitations	68.33±21.88	31±24.51	33.33±23.08
Social restrictions	59.55±19.92	28.66±24.29	25.33±19.95
Personal relationships	49.33±32.11	23.66±26.95	23.33±26.93
Emotions	68.88±19.31	36.05±24.16	36.66±25.32
Sleep/energy	46.33±17.26	27.66±22.48	30.33±24.67
Symptom severity scale	14.10±3.77	8.16±2.35	8.26±2.3

$p<0.001$

Discussion

Results of the study demonstrated that TVT surgery improves the quality of life in women with stress urinary incontinence. As such, significant improvements were observed in every area that affects the quality of life in women with stress urinary incontinence. Result of this study are in line with the study of Lautenschlager et al. who reported significant improvements in 9 areas of quality of life based on King Health Questionnaire, one year after TVT surgery (24).

Contrary to our results, Domingo et al. observed a significant decline in quality of life scores after following the condition of 93 women with stress urinary incontinence after TOT (transobturator tape insertion) surgery. Nevertheless, 97% of patients recovered according to the tests of urinating while coughing (25). Investigating the quality of life in 100 women with stress urinary incontinence using quality of life questionnaire after one year follow up, alternatively divided into two groups of ‘inside-out’ TVT and ‘outside-in’ TVT, Lee at al. found that after undergoing each of the two methods of TVT surgery, all parameters of quality of life improved, which was in accord with our study.

However, there was no significant difference between the two methods of TVT surgery in terms of quality of life (13). In a clinical trial, which was in accord with our results, Schierlitz et al. proved the efficiency of TVT surgery regarding quality of life in 164 patients with stress urinary incontinence during 6 months and they emphasized on adherence and continuation of effective treatment using TVT surgery (14). In a study that was in accord with our results, Nerli et al. found that after 12 months, TVT surgery improved the quality of life in patients with stress urinary incontinence significantly (15).

Investigating the quality of life in 341 women with stress urinary incontinence using King Health Questionnaire after one year follow-up and randomly divided into two groups of ‘inside-out’ TVT and ‘outside-in’ TVT, Abdel-Fattah et al. in 2010 found that after undergoing each of the two methods of TVT surgery, all parameters of quality of life improved, except for general health parameter, which was in accord with our study. However, there was no significant difference between quality of life in the two methods of TVT surgery (16).

Investigating 164 women with stress urinary incontinence, Schierlitz et al. found that patients' quality of life improved significantly 3 years after TVT surgery, which was in accord with our study (17). Athanasiou et al. also found similar results; the quality of life in women with stress urinary incontinence improved significantly at least 7 years after TVT surgery according to King Health Questionnaire (18). Achieving similar results, Keshvari Shirvan et al. found that the quality of life in women with stress urinary incontinence improved in 18 months after TVT surgery (19).

In another study with similar results, Aigmüller et al. investigated the quality of life in 480 patients with stress urinary incontinence according to various questionnaires, particularly King Health Questionnaire, and observed significant improvements 3 months after surgery (20). Dissimilarity between our study and some other studies may be due to different samples, design of the study, duration of follow-up and scales for assessing the quality of life. However, it is clear that stress urinary incontinence impairs motor and sensory abilities, increases anxiety and exacerbates patients' physical and mental problems over time (26). Therefore, using methods such as TVT surgery can decrease these complications and improve their quality of life (27).

TVT bladder neck suspension increases the consistency of urinary systems, modulates the autonomic nervous system, increases physical stability, increases body resistance and modulates immune

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system. Therefore, it can affect general health of the body (28) and if the patient feels healthy, all areas of his life will be affected and his quality of life will improve (29). Overall, we can say that TVT bladder neck suspension can be used as the first-line therapy for patients with stress urinary incontinence, since it is accompanied by physical reinforcement and improved mental condition, which results in improved quality of life and life satisfaction.

Limitations of this study: There is no control group in this study. It is suggested that future studies of quality of life in people with stress incontinence be compared in two groups of TVT bladder neck suspension and routine surgery. This study relies on self-reporting; therefore, it may be prone to reporting bias. Because of the subjective nature of quality of life, each interviewee may have different perceptions about the concept of quality of life and consequently give different responses.

According to the results of this study, the quality of life in people with stress urinary incontinence improved during 6 months after TVT bladder neck suspension. Therefore, this method can be recommended as a first-line therapy for patients with stress urinary incontinence.

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