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Transobturator Tape for Female Stress Incontinence: Our Experience

M GOPI KISHORE*, SAINADH AV†

ABSTRACT

Aim: The aim of this study was to evaluate the effectiveness of transobturator tape (TOT), patient satisfaction and morbidity in the treatment of female stress urinary incontinence (SUI). **Material and methods:** Forty-eight patients from January 2013 to December 2016 with SUI underwent TOT procedure by outside-in technique. Data related to operative time, postoperative complications and patient acceptance were assessed. **Results:** Mean age of the patients was 41.3 years and 46 (95.8%) were multiparous. The operative time was 26 ± 4 minutes and catheter was removed on 1 ± 2 days postoperatively. Hospital stay was 2 ± 3 days and return to normal activity was 4-7 days for 46 (95.8%) patients and 7-10 days for 2 (4.2%) patients. Of the 48 patients, 45 (93.75%) were continent postoperatively while 3 (6.25%) patients had occasional urine leak that did not influence daily activities. No major intra-/postoperative complication was reported. Quality of life improved significantly. A total of 45 (93.75%) patients were completely cured and satisfied, whereas 3 (6.25%) patients improved and partially satisfied with surgical outcome. **Conclusion:** The TOT sling procedure is an effective treatment for SUI with high success rate, high satisfaction rate, low morbidity and short hospital stay.

Keywords: Transobturator tape sling, stress urinary incontinence, complications, tension free

Stress urinary incontinence (SUI) is an involuntary urine loss due to increased intra-abdominal pressure during exertion, sneezing or coughing. In genuine stress incontinence, there will be hypermobility or lowering of the vesicourethral segment or a combination of two factors but the intrinsic sphincter itself is intact and normal. The estimated prevalence of urinary incontinence is nearly 25-30% in women aged 30-60 years, with approximately half of the cases attributed to SUI. Various factors that may increase the risk of developing incontinence include aging, obesity, smoking, straining, heavy manual labor and chronic obstructive pulmonary disease. The initial treatment for SUI is conservative therapies like lifestyle modifications, pelvic floor muscle training, bladder training and medical treatment. Surgery is indicated for those patients with no improvement in symptoms and quality of life (QOL) after initial treatment. Numerous surgical methods for stress incontinence have been described. The basic principle in treatment of SUI is proper suspension by creating functional kinking of the mid-urethra during increased intra-abdominal pressure. In the past two decades, two major minimally invasive sling procedures have been developed. In 1996, Ulmsten introduced the tension-free vaginal tape (TVT) procedure and reported an initial 2-year cure rate of 84%. TVT is a safe and successful procedure but serious, though rare, complications like bladder perforation, vascular and bowel injuries have been reported with this technique. In order to reduce these complications, Delorme in 2001 reported a transobturator vaginal tape (TOT) approach, which involved placing a mesh through the obturator foramen behind the mid-urethra. This approach is more anatomically correct and a theoretical advantage is less obstruction and postoperative voiding dysfunction. These minimally invasive mid-urethral sling techniques have become the standard procedures for the surgical treatment of SUI.

MATERIAL AND METHODS

This was a prospective study from January 2013 to December 2016, conducted on 48 patients diagnosed with genuine SUI, who were managed with

*HOD
†IMO
Dept. of Urology, ESIC Super Speciality Hospital, Sanath Nagar, Hyderabad, Telengana
Address for correspondence
Dr M Gopi Kishore
HOD, Dept. of Urology,
ESIC Super Speciality Hospital, Sanath Nagar, Hyderabad - 38, Telengana
E-mail:gkmeda@yahoo.com

transobturator sling in the Dept. of Urology, ESIC Super Speciality Hospital, Hyderabad. All patients attending urology OPD, who complained of involuntary passage of urine on coughing, laughing, straining, were subject to a thorough history taking, physical examination and local examination with Bonney's test. All baseline and special investigations, like urodynamic study and cystopanendoscopy were conducted on the patients. Diagnosis of SUI was based on typical subjective symptoms (i.e., involuntary leakage on effort, exertion, coughing, sneezing or laughing) as recommended in 2002 by the International Continence Society and on objective clinical data from the cough stress test, Q-tip test or urodynamic studies.

Excluded were women with recurrent urinary tract infections (UTIs), urge urinary incontinence or mixed urinary incontinence, post-voiding residual (PVR) urine of >150 mL, bladder capacity of <100 mL, co-existing pelvic organ prolapse or any other gynecological problem, previously corrective surgery for stress incontinence, pregnancy and physical or mental impairment.

All the patients diagnosed with SUI were explained about their disease, and the available modes of treatment, including nonsurgical and surgical options. Patients were managed initially with conservative therapies like lifestyle modifications, pelvic floor muscle training, bladder training and medical treatment (imipramine, duloxetine, estrogens) for 6 months. Patients, after failure or not satisfied with conservative management, were recruited in this study. TOT procedure was performed in all these patients.

Surgical Technique

The AMS Monarc TOT sling was inserted through outside-in route by using the technique recommended by Delorme in 2001. After spinal anesthesia, patient is placed in modified lithotomy position and Foley catheter is introduced to empty the bladder. After retracting the labial fold, an incision of 1.5 cm is made 1 cm proximal to the external urethral meatus in the anterior vaginal wall. On both sides, anterior vaginal wall is elevated laterally up to ischiopubic rami taking care of urethra and bladder. Two small skin incisions are made on both sides where the lateral edge of the ischiopubic bone is projected, on the horizontal line that runs through the clitoris. TOT needle is introduced from skin incision and tip of the TOT needle is brought out from the incision in the vaginal wall with finger acting as a guide. TOT tape is fixed to tip of the needle. TOT needle is withdrawn through the same path taking along with it one end of the TOT tape through the incision in groin. Same procedure is repeated on the other side also. The sling is placed under the middle of the urethra, tension-free with little finger gap, the two ends of the sling are sectioned at the level of groin skin incision and the vaginal incision is closed. The Foley catheter is kept 24-48 hours postoperatively and the patients are usually discharged 2 days after surgery.

Assessment

Postoperative assessment, including pain associated with surgery, lower urinary tract symptoms, infection, voiding problem and time to return to normal activity, was done at 1-week, 1-month and 6-month follow-up visits. At 6-month follow-up visit, the patients were evaluated for surgical outcome by cough stress test in full bladder, long-term complications, urinary flow rate, PVR urine, patient satisfaction, QOL index. QOL index was assessed by number of incontinence pads used per day or week (scale 1-5 – none, 1-3/week, >3/week, 1-3/day, >3/day), influence of urinary leak on daily activity (family life, social life, sleep and vacation), frequency of avoiding activities due to fear of urine leak and nonavailability of toilets (scale 1-5 – never, seldom, sometimes, often, always). The surgical outcome was divided into three groups, including cured, improved and failed. Patients were considered cured if they were extremely satisfied, with good QOL, no urine leak, negative cough stress test, no complications, good urine flow rate and <50 mL PVR. Patients were considered to have improved if they were satisfied, with satisfactory QOL, had occasional urine leakage that did not influence daily activities or require any further treatment, no leakage on the cough stress test, mild complications, satisfactory urine flow rate and post-void 50-100 mL. Treatment was considered to have failed if patient was not satisfied, had poor QOL, had urine leak, positive cough stress test, complications, poor urine flow and post-void >100 mL.

RESULTS

The total number of patients evaluated in our study was 48. The age of the patients was in the range of 35-48 years and mean age 41.3 years. Out of the total 48 patients, 46 (95.8%) were multiparous. All patients presented with involuntary loss of urine during straining, 41 (85.4%) patients had Grade 2 and duration of symptoms was more than 3 years in 44 (91.6%) patients. Twelve (25%) patients had mild cystocele preoperatively, which resolved after surgery. Associated problems, like diabetes mellitus/hypertension, were present in

9 (18%) patients. Bonney's test was positive in all cases. Abdominal leak point pressure varied from 96 to 112 cm water. All patients had maximum urine flow rate >20 mL/sec and PVR urine <50 mL. The operative time was 26 ± 4 minutes with minimal blood loss of 60 ± 20 mL, which was calculated by using pre-weighed swabs. No major intraoperative complications, like urethral or bladder injury, was observed. Catheter was removed on 1 ± 2 days postoperatively and hospital stay was 2 ± 3 days. Forty-six (95.8%) patients voided satisfactorily but 2 (4.2%) patients failed to void after catheter removal for which re-catheterization done for 3 more days and the patients voided satisfactorily after catheter removal. Various postoperative complications associated with the procedure, which gradually subsided over few days, are summarized in Table 1. Of the 48 patients, 45 (93.75%) were continent postoperatively while 3 (6.25%) patients had occasional urine leak that did not influence daily activities or require any further treatment and no leakage on the cough stress test. Return to normal activity was 4-7 days for 46 (95.8%) patients and 7-10 days for 2 (4.2%) patients. The QOL index improved from a mean value of 12.6 to a postoperative value of 2.1. Urine flow rate was >20 mL/sec in 39 (81.25%) patients postoperatively and 15-20 mL/sec in 9 (18.75%) patients that improved to >20 mL/sec after 3 months. PVR urine was <50 mL in 41 (85.4%) patients and 50-100 mL in 7 (14.6%) patients. A total of 45 (93.75%) patients were satisfied, whereas 3 (6.25%) patients were partially satisfied with surgical outcome at 6-month follow-up. Table 2 shows the surgical outcome of different patients at follow-up.

Table 1. Postoperative Complications

Complications	Number	Percentage (%)
Postoperative pain	4	8.3
Wound infection	1	2.08
UTI	2	4.16
LUTS - Urgency, dysuria	3	6.25
Hematoma, hematuria	0	0
Urinary retention	2	4.16
Mild obstructive voiding	9	18.75
Vaginal erosion, dyspareunia	0	0

UTI = Urinary tract infection; LUTS = Lower urinary tract symptoms.

Table 2. Surgical Outcome

Outcome	Number	Percentage (%)
Cured	45	93.75
Improved	3	6.25
Failed	0	0

DISCUSSION

The principal objective of the surgical treatment of SUI is to restore continence with minimal morbidity. Surgical procedures for stress incontinence are intended at lifting and supporting the urethrovesical junction. However, over the last few years, the focus has been on suburethral support at the mid-urethral level. Various procedures for suburethral support are TVT and TOT. Delorme in 2001 described the TOT procedure, which involved the tension-free insertion of a polypropylene tape *via* a tunneler in a horizontal plane under the mid-urethra between the two obturator foramina in an "outside-in" technique, which is an excellent alternative to the retropubic approach that reduces complications. There are two basic techniques for performing TOT: "outside-in" as described by Delorme and "inside-out" as described by de Leval. In our cases, trocars were placed from outside-in technique as described by Delorme. Subjective cure is usually regarded as the absence of incontinence during cough stress test.

In this study, the mean duration of surgery was 26 ± 4 minutes with minimal blood loss of 60 ± 20 mL. Taweel et al reported mean surgery duration of 18 minutes and average intra-operative blood loss of 57 mL, whereas Moore et al reported mean duration of 12.4 minutes and blood loss of 36 mL in their study. The average hospital stay of 48 patients in this study was 2.1 days. Isabelle et al reported the mean hospitalization as 2.2 days. Purnichescu et al from France reported mean duration of hospitalization as 1.25 days. In our series of 48 patients, there was no major intraoperative complication like urethral, bladder and neural or vascular injury. Achtari et al showed by cadaveric dissection that TVT-O runs more closely to the obturator canal, making TVT-O more prone to possible injury of the obturator nerve and vessels. Houwert et al prospectively studied 191 women and did not find any obturator nerve or vessel injury. Schanz et al reported 3-year experience with 200 patients, wherein 3 patients had intraoperative complications resulting in bladder injury. Two (4.2%) patients in our study, failed to void after catheter removal in 24 hours, probably due to urethral irritation but voided satisfactorily after 3 days. In the early part of our series, 9 (18.75%) patients showed decreased urine flow rate and 7 (14.6%) patients had 50-100 mL

IJCP SUTRA: "Keep lower blood pressure, low-density lipoprotein (LDL) 'bad' cholesterol, fasting sugar, resting heart rate and abdominal girth all below 80."

PVR urine, which responded to conservative treatment. Sander et al observed the presence of the tape would decrease the urinary flow and offer increase in resistance to urethra, thus resulting in retention. Ingber et al and Romero-Nava et al have reported that there may be an improvement in the outcomes with time. Celik and Harmanlı have reported that voiding disturbance is known to be transient and resolve spontaneously as well. Kim et al reported a similar incidence of retention of urine and voiding dysfunction, which responded to conservative treatment. In our study, return to normal activity was 4-7 days for 46 (95.8%) patients and 7-10 days for 2 (4.2%) patients. Barry et al observed faster return to activity in TOT surgery due to short mean operation time, less dissection and natural suburethral suspension when compared with the TVT. Various postoperative complications were reported, like postoperative pain in 4 (8.3%), lower urinary tract symptoms in 3 (6.25%), wound infection in 1 (2.08%) and UTI in 2 (4.16%) patients that resolved after few days. Schanz et al, Taweel et al and Latthe et al showed similar low postoperative complications ranging from 3% to 8% following TOT surgery, which is comparable with our study. The QOL index in our study improved from a mean value of 12.6 to a postoperative value of 2.1, which is comparable with the study by Paul et al.

TOT application led to cure in 93.75% cases in this study and 6.25% cases improved. Delorme in 2001 reported on 40 patients in whom TOT was applied. Thirty-nine patients had no incontinence post-surgery and 1 patient had improvement in symptoms. In 2007, Latthe et al, quoting their experience in Britain in a series of 135 patients who were applied TOT, reported the subjective level of complete cure and improvement were 89.6% and 8.8%, respectively. In our study, 93.75% patients were satisfied and 6.25% were partially satisfied with the surgical outcome in 6-month follow-up. We found similar satisfaction rates in other studies but subjective cure rate detected in our study was better in comparison with other studies. The results of the present study have confirmed the optimal results in stress incontinence previously reported in short-term studies.

CONCLUSION

The TOT sling procedure is an effective treatment for SUI with high success rate, high satisfaction rate, low morbidity and short hospital stay. TOT surgery is well-tolerated and accepted by the patients and provides a long-term cure for patients of SUI. Considering safety, ease to perform, short operating time, quicker return to activities, minimal complications and high success rate, we recommend TOT as the primary choice for the treatment of SUI.

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COVID-19 Positivity Rate in India Shows Marginal Decline

The positivity rate of COVID-19 infections in India has seen a marginal decline, reveal government data. The government has stated that aggressive testing helped authorities carry out effective treatment and maintain a low fatality rate. Over the past month, the positivity rate of COVID-19 infections came down from 8.52% to 8.32% on Saturday (Oct 4), which has been attributed to significant scaling up of testing. Government data till Saturday (Oct 4) reported that the total number of cases and deaths in the country stood at 55,09,966 and 101,782 respectively. The national case fatality rate is reported to be 1.84%.

The country's testing capacity has been increased to conduct about 1.5 million tests per day and on average, about a million COVID-19 tests have been done per day over the past 1 month… (*HT*)

Olive Oil as HFpEF Treatment

Extra virgin olive oil (EVOO) appears promising as a secondary prevention therapy for heart failure with preserved ejection fraction (HFpEF), reported a small uncontrolled study.

Nine participants with HFpEF and obesity were supplemented with unsaturated fatty acid-rich foods and their EVOO intake was estimated over 12 weeks according to their dietary recall. Daily EVOO intake increased from zero at baseline to 23.6 g on average during the study period. Greater EVOO intake was associated with small but significant improvements in cardiorespiratory fitness on cardiopulmonary exercise testing (CPET). A statistical model indicated that a 40-g increase in EVOO intake resulted in an increased peak VO_2 by just under 2 mL/kg/min, translating to a nearly 6% improvement compared with predicted peak VO_2; oxygen uptake efficiency slope also increased by about 0.1. The findings were presented at the virtual Heart Failure Society of America meeting… (*Medpage Today*)

Remdesivir Effective, Well-tolerated: Final Trial Report

A final report from the multinational ACTT-1 trial has confirmed that remdesivir is effective and well-tolerated for reducing the time to recovery from COVID-19 infection. The newly published ACTT-1 trial data revealed that the median time to recovery was 10 days for those on active therapy compared to 15 days for those on placebo. With a rate ratio of 1.29 ($p < 0.001$), the recovery was about one-third faster. In the final report, the significant advantage of remdesivir over placebo for the trial's primary endpoint was strengthened by efficacy on several secondary endpoints. The benefits on secondary endpoints included a 50% greater odds ratio (OR, 1.5; 95% CI, 1.2-1.9) of significant clinical improvement by Day 15 after adjusting for baseline severity, a shorter initial length of hospital stay (12 vs. 17 days) and fewer days on oxygen supplementation (13 vs. 21 days) for the subgroup on oxygen therapy at enrollment. The findings were published in the *New England Journal of Medicine…* (*Medscape*)

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