



Transobturator Tape- a Novel Surgical Procedure for Stress Urinary Incontinence: our Experience

KEYWORDS

STRESS URINARY INCONTINANCE, NOVEL SURGICAL TREATMENT
TRANSOBTURATOR TAPE

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ABSTRACT *OBJECTIVES: 1. To verify the objective and subjective cure rates at the end of 1 year and 5 years. 2 To evaluate the safety of the procedure. MATERIALS AND METHODS: study included 100 consecutive patients with SUI underwent the TOT procedures from 2007. The patients were assessed at the end of 1 year, 5 years and 7 years where applicable from the day of surgery. The patients were prospectively evaluated, for following factors: Incontinence-related quality of life- assess by the king's health Questionnaire, Objective and Subjective cure in urinary incontinence and Complications includes Palpable tape or erosion. RESULTS: Overall satisfaction of the patient with TOT was 88% with a significant improvement in the quality of life and Subjective cure rate always better than the objective cure. CONCLUSIONS: The TOT procedure is a simple, safe, easy, convenient effective technique for the treatment of SUI with no major intra or postoperative complications and good cure rate.*

INTRODUCTION:

Urinary incontinence (UI) is a prevalent condition that affects approximately 27% of women worldwide and prevalence of this disease among women increases with aging¹.

Urodynamic stress incontinence, detrusor overactivity, mixed incontinence and overflow incontinence are the common causes of incontinence. Stress incontinence accounts for approximately 50% of cases, detrusor overactivity for around 40% and overflow incontinence for most of remaining 10%.

Stress urinary incontinence (SUI) represents the involuntary loss of urine along with increased intra-abdominal pressure (cough, laugh, sneeze etc.) in absence of detrusor contraction. In Genuine stress incontinence, intrinsic structure sphincter itself is intact and normal but it loses efficiency because of

- excessive mobility
- Loss of support.

Thus the anatomic feature of genuine SUI is consistent with hyper mobility or lowering of the position of the vesico-urethral segment or a combination of these two factors.

Detrusor overactivity is an Urodynamic observation characterized by involuntary detrusor muscle contraction either spontaneously or due to provocation during bladder filling phase.

Women with a family history of SUI are twice as likely to have SUI compared to those without family history. The predisposition gene for pelvic floor disorders including SUI was recently described²

There are numerous risk factors involved in the etiology of incontinence like: vaginal delivery, menopause, chronic constipation, obesity, pelvic surgical procedures (through

denervations, scaring), pelvic irradiation, and neuro-muscular sphincter dysfunction. (TABLE NO 1) Incontinence has been found to reduce health-related quality of life roughly to the same degree as chronic conditions such as depression and Type I diabetes³. Personal consequences include restriction of physical and social activity, self-imposed social isolation⁴.

In 1995 Tension free vaginal Tape (TVT) was introduced which is based on the Integral theory of Urinary Incontinence. Anatomical defect in anterior vaginal wall results in pubo-urethral ligament and urethral/bladder neck closure dysfunction. TVT aims to reinforce functional pubo vaginal ligaments (neoligament) as well as vaginal hammock. TVT raise urethral pressure to prevent a leak.

It has revolutionized the surgical management of urinary incontinence.

Delorme initiated the TOT technique in France in 2001- which is based on outside in technique.

In 2003, De Leval introduced inside out

In TOT, tape passes through obturator foramen and do not need intra-operative cystoscopy

TOT has a significantly lower complication rate with efficiency similar to TVT and superior to Burch type indirect colpo-suspension, perineal repair surgery or other invasive open surgery techniques.

OBJECTIVES:

1. To verify the objective and subjective cure rates at the end of 1 year, 5 years, 7 years where applicable.
2. To evaluate the safety of the procedure.

MATERIALS AND METHODS:

A total of 100 consecutive patients with stress urinary in-

continence underwent the TOT procedure from 2007 were assessed at the end of 1 year, 5 years and 7 years where applicable from the day of surgery.

1. Patients were evaluated on the basis of detailed history, physical examination, Abdomino-pelvic ultrasound and bladder scan was also done preoperatively and post operatively.
2. Cases with genuine or mixed incontinence with predominantly stress urinary incontinence were selected. Those with mixed incontinence were initially treated with antimuscarinics like Tolterodine ER 4 mg/day for 2-3 weeks
3. Urodynamic studies were not done routinely, but done in case like unreliable history, voiding disorders.
4. All kind of urinary infection was treated with antibiotics pre operatively.

The polypropylene monofilament tape used was of the same type in all cases. Outside –in technique was used.

PROCEDURE

Patients were catheterized with a Foleys self retaining catheter to empty the bladder. After giving spinal anesthesia patient was placed in modified lithotomy position (hyper abduction and flexion) and parts were painted and draped. Two vertical lines were drawn on each side of the labial fold. At the base of the clitoris a horizontal line was drawn. The points at which these lines intersect each other correspond to the obturator membranes and subsequent entry point of the TOT needle through the obturator foramen. After retracting the labial fold an incision of 1.5 cm was made about 1 cm proximal to the external urethral meatus in the anterior vaginal wall. Just behind urethra lateral dissection was made on both sides elevating the vaginal wall and taking care not to injure urethra and bladder.

Any bleeding during procedure was controlled by pressure only. Ischio-pubic rami is felt with the index finger and tunneler device (TOT needle) was introduced from outside in with finger acting as a guide. Tip of the TOT needle was brought out from the incision in the vaginal wall and threads of the TOT tape are fed through the eye of the TOT needle. TOT needle was withdrawn through the same path taking along with it one end of the TOT tape through the incision in groin. Same procedure was repeated on the other side also. The urethral segment was correctly placed in relation to the second part of the urethra, maintaining the distance of one mayo scissor thickness between the tape and the urethra. Both ends of the TOT tape were cut just beneath the skin incisions in the groin. Mid urethral placement of sling was achieved by identifying external meatus and U-V sphincter, tension-free

The surgical procedures were performed under antibiotic protection - third generation cephalosporin, analgesics. Vaginal cavity was packed with betadine soaked gauze, which was removed on 1st postoperative day. The Foley catheter was kept for 24 hours post operatory and the patients are usually discharged 3 days after surgery after a ultra sound for post void residual urine (<100ml).

Patients were advised to start normal daily routine activities after discharge from hospital, to maintain local hygiene, to avoid straining and lifting heavy weights for 3 – 4 weeks, to avoid sexual activity for 4 – 6 weeks.

RESULTS:

Out of the 100 cases who underwent TOT-

82 cases were evaluated at the end of 1 year
42 cases were evaluated at the end of 5 years
14 cases at the end of 7 years

The outcomes were analyzed considering the postoperative aspects in terms of –

- Subjective cure rates based on Quality of life (QoL) questionnaire
- Objective cure rate
- Subjective cure rate
- Palpable tape or erosion
- Complications

Incontinence-related quality of life- Assess by the king's health Questionnaire ⁵.

Objective urinary incontinence: The proportion of patients "cured" (demonstrable leaking on coughing) at 1 year, 5 years, 7 years where applicable following index surgery.

Subjective urinary incontinence: the proportion of patients reporting no or little problematic stress incontinence in the past at 1 year, 5 years, and 7 years following surgery will be compared.

In the past 7 days, have you leaked urine when you coughed, laughed, sneezed, lifted, exercised, etc [] No [] Yes

Palpable tape or erosion: The proportion of patients with palpable tape or erosion compared between groups.

TABLE NO 2: Complications during TOT procedure

The cure rate thus observed was-

92% at the end of 6 weeks (92/100)

92% at the end of 1 year (92/100)

80% at the end of 5 years (in 26 cases that were evaluated)

Procedure Failure was observed in 2 patients

Overall satisfaction of the patient with TOT was 88% with a significant improvement in the quality of life.

Subjective cure rate always better than the objective cure.

DISCUSSIONS

Minimally invasive surgical procedures used for the treatment of patients with stress urinary incontinence were well received worldwide due to good rate of patient's postoperative comfort and the short hospitalization period and fast social reinstatement

In our study, we treated patients of genuine stress incontinence with outside to in TOT technique. Success rate of TOT application was 92% at the end of six weeks and one year, 80% at the end of five years.

Procedure failure was observed in two patients out of 100.

In a series of 40 patients, Delrome in 2001 reported 100% success rate, 39 patients had no incontinence post-procedure and 1 patient had improvement in symptoms of incontinence⁶.

There were no women with intra operative hemorrhage in our study. Similar result obtained by junnare etal in there study done in 2012⁷.

Overall objective and subjective cure-rates were different in our study population. This result could be due to the fact that frequency or urge incontinence is not demonstrated on stress test.

In our study 2 patients had bladder injury and one patients had vaginal erosion

The most important step to avoid erosion and voiding dysfunction was found to be tape adjustment without any tension or any contact with the urethra⁸.

We did not have any complaints of thigh pain in our series, which confirms recent findings of a meta-analysis that the outside-in technique is usually not associated with thigh pain⁹.

CONCLUSIONS:

The TOT procedure is a simple, safe, easy, convenient effective technique for the treatment of stress urinary incontinence with no major intra or postoperative complications and a good cure rate.

TOT significantly improves quality of life of suffers.

TABLE NO 1: Possible Mechanisms of Stress urinary incontinence

Factor	Possible Mechanisms
Childbirth	Disruption of normal anatomy, pelvic nerve injury
Aging	Estrogen deficiency, peripheral neuropathy
Iatrogenic after surgery	Disruption of normal anatomy, pelvic nerve injury, loss of tissue elasticity, loss of vascular cushion
COPD, chronic heavy lifting, chronic constipation	Straining causing stress on normal anatomy and pelvic nerve injury
Pelvic radiation	Peripheral neuropathy, loss of tissue elasticity, loss of vascular cushion
Obesity	Increased intra-abdominal pressure causing stresses on normal anatomy and pelvic nerve injury
Neurogenic disease	Loss of normal reflexes, pelvic floor tone, and urethral tone
Congenitally poor tissues:	Poor anatomic integrity
Connective tissue disorder	Loss of tissue elasticity

TABLE NO 2: Complications during TOT procedure

Immediate complications	Late complications
1. Major intra-operative bleeding – Nil	1. Groin pain -7% (7/100)
2. Bladder injury - 2% (2/100) during dissection	2. Vaginal erosion -1%(1/100)
3. Need for cystoscopy- 2% (2/100)	3. Voidal dysfunction At 6 weeks -14% , At 1 year -8%
4. Reintroduction/re placement of needle –Nil	4. Bladder erosion – seen in 1 patient but outside study as procedure done in urge incontinence.
5. Postoperative urinary retention –Nil	

REFERENCE

1. Minassian V, Drutz H, Al-Badr A: Urinary incontinence as a worldwide problem. *Int J Obstet Gynecol* 2002, 82:327-338. | | 2. Physiological factors include anatomical defects in pelvic support structures and/or neuromuscular dysfunction affecting urethral pressure responsible for SUI. Allen-Brady K, Norton PA, Farnham JM, Teerlink C, Cannon-Albright LA: Significant linkage evidence for a predisposition gene for pelvic floor disorders on chromosome 9q21. | | 3. Stach-Lempinen B, Sintonen H, Kujansuu E: The relationship between clinical parameters and health - related quality of life as measured by the 15D in incontinent women before and after treatment. | | 4. Papanicolaou S, Hunskaar S, Lose G, Sykes D: Assessment of bothersomeness and impact on quality of life of urinary incontinence in women in France, Germany, Spain, and the UK. *BJU Int* 2005, 96:831-838 | and sexual dysfunction⁴ (4. Oh SJ, Ku J, Choo MS, Yun J, Kim D, Park WH: Health-related quality of life and sexual function in women with stress urinary incontinence and overactive bladder. *Int J Urol* 2008, 15:62-67. | | 5. Matthew parsons, Linda Cardozo; female urinary incontinence Page no-107. | 6. Delorme E. Trans-obturator urethral suspension: mini-invasive procedure in the treatment of stress urinary incontinence in women. *Prog Urol* 2001;11:1306-13. | 7. Ketaki junnare, Durga Karne etal; a novel surgical approach for treatment of SUI TVT Obturator tape: *Indian journal of applied research* Feb2012; vol: 1; issue: 5 page no.170. | | 8. Boldelsson G, Henriksson L, Osser S, et al. Short term complications of the tension free vaginal tape Operation for stress urinary incontinence in women. *BJOG* 2002;109:566-8. | | 9. Latthe P, Foon R, Toozs-Hobson P. Transobtrator and retropubic tape procedures in stress urinary incontinence:a systematic review and meta-analysis of effectiveness and complications. *BJOG* 2007;114:522-31. |