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Original Research Article

Quality of life improvement following trans-obturator tape procedure in stress urinary incontinence: a prospective observational study

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ABSTRACT

Background: Stress urinary incontinence (SUI) is a common but under reported condition in women that adversely affects day to day activity and overall well-being. The transobturator tape (TOT) procedure has emerged as a minimally invasive surgical option with favorable outcomes. This study aimed to assess improvement in quality of life (QoL) following TOT using a validated questionnaire.

Methods: A prospective observational study was conducted in the department of obstetrics and gynecology, on 68 women diagnosed with SUI at a tertiary care institution. All participants underwent TOT surgery. Quality of life was evaluated using the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) before surgery and at 6 months follow-up. Surgical success and complications were also analyzed.

Results: The average age of participants was 46.2 ± 8.5 years. The mean ICIQ-SF score showed a significant reduction from 16.8 ± 2.3 preoperatively to 3.2 ± 1.6 postoperatively ($p < 0.001$). Successful outcomes were observed in 66 patients (97.1%), with 2 cases categorized as failures. Most women (95.6%) reported marked improvement in QoL. Minor complications included transient groin discomfort (8.8%) and short-term urinary retention (2.9%).

Conclusions: TOT is an effective and safe surgical modality for SUI, resulting in substantial improvement in quality of life with a high success rate and low complication profile.

Keywords: ICIQ-SF, Quality of life, Stress urinary incontinence, Trans obturator sling

INTRODUCTION

Stress urinary incontinence, is defined as involuntary leakage of urine during activities such as coughing, sneezing, exertion or positional change, is a prevalent disorder among women, especially in middle and later life. The main cause is hypermobility of urethra due to connective tissue weakness and most of the time associated with pelvic organ prolapse (POP). The condition significantly disrupts physical comfort, emotional health, and social participation.¹

Surgical intervention is often required when conservative measures fail. Mid-urethral sling procedures are currently considered the standard treatment, among which the trans

obturator tape (TVT-O) technique has gained wide acceptance.^{2,3} This approach minimizes the risks associated with the retropubic route by avoiding entry into the retropubic space.

Modern evaluation of treatment outcomes increasingly emphasizes patient-centered measures. The International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) is a widely accepted tool that quantifies both symptom severity and its impact on quality of life.

The present study was designed to evaluate the effectiveness of TOT in improving quality of life among women suffering from stress urinary incontinence.

METHODS

Study design and participants

This prospective observational study was conducted over a period of 18 months in a Gynecology department of LLRM Medical college Meerut, Uttar Pradesh from January 2018 to July 2019. A total of 68 women diagnosed with stress urinary incontinence were enrolled.

Inclusion criteria

Inclusion criteria were women aged 30-65 years, confirmed diagnosis of SUI, positive stress test, and consent for surgery and follow-up.

Exclusion criteria

Inclusion criteria were predominant urge or mixed incontinence, prior anti-incontinence surgery, significant pelvic organ prolapse ($\geq$ stage II), and neurological bladder dysfunction.

Surgical technique

All participants underwent the trans-obturator tape procedure using the standard outside-in method under regional anesthesia by single experienced surgeons (outside in technique) with or without vaginal hysterectomy and perineal floor repair. Foley's catheter was retained for 1-3 days. A standard TOT polypropylene mesh (Lotus-freedom TOT) was used in all patients. The final data was analyzed as per the standard statistical method. All patients undergoing TOT sling procedure were informed about the ease, simplicity and safety of the procedure compared to other previous surgeries and complications associated with those. All the patients in our study have TOT sling procedure performed under spinal anaesthesia, though general or local anaesthesia can also be used. The patients were placed in the modified lithotomy position with the feet placed squarely in the boots of the Allen stirrups. Patients were catheterized with a Foleys self-retaining catheter to empty the bladder. After giving spinal anaesthesia patient is placed in modified lithotomy position and parts are draped. Two vertical lines are drawn on each side of the labial fold. At the base of the clitoris a horizontal line is drawn. The points at which these lines intersect each other correspond to the obturator membranes and subsequent entry of the TOT needle through the obturator foramen. 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. Just behind urethra lateral dissection is made on both sides elevating the vaginal wall and taking care not to injure urethra and bladder. Any bleeding can be controlled by pressure only. Ischiopubic rami are felt with the index finger and TOT needle (from Lotus) is introduced from outside in with finger acting as a guide. Tip of the TOT needle is brought out from the incision in the vaginal wall TOT tape (TOT Freedom) are fed through the eye of the

TOT 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 urethral segment is correctly placed in relation to the second part of the urethra maintaining the distance of one instrument thickness between the tape and the urethra. Both ends of the TOT tape are cut just beneath the skin incisions in the groin. ASD is applied on skin incisions in groin. Vaginal cavity is packed with betadine-soaked gauze, which is to be removed on 1st postoperative day. 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. After that the patients were discharged from the institute. Quality of life was evaluated using the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) before surgery and at 6 months follow-up. Surgical success and complications were also analyzed.

Assessment of quality of life

Quality of life was measured using the ICIQ-SF questionnaire, a validated instrument for urinary incontinence assessment. The tool includes frequency of leakage, volume of leakage, impact on daily activities, and a non-scored self-diagnostic question.

The cumulative score ranges from 0 to 21, categorized as 0: No impact, 1-5: Mild, 6-12: Moderate, 13-18: Severe, 19-21: Very severe.

Patients completed the questionnaire prior to surgery and at 6 months follow-up.

Significant improvement was defined as a decrease of ≥ 5 points or a final score ≤ 5 .

Outcome measures

Outcome measures were categorized as cure (complete resolution of symptoms), improvement (noticeable reduction in symptoms), and failure (persistent incontinence)

Statistical analysis

Data analysis was performed using SPSS version 25. Continuous variables were expressed as mean $\pm$ standard deviation. Pre- and postoperative scores were compared using paired t-test. A p-value < 0.05 was considered statistically significant

RESULTS

The mean age of participants was 46.2 ± 8.5 years. Most women were multiparous (91.2%), and the average duration of symptoms was 3.8 ± 1.6 years (Table 1).

There was a substantial decline in ICIQ-SF scores following surgery, decreasing from 16.8±2.3 preoperatively to 3.2±1.6 postoperatively (Table 1).

Table 1: Patient characteristics.

Variable	Value
Number of patients	68
Mean age (years), mean±SD	46.2±8.5
Multiparous (%)	91.2
Duration of symptoms (years), mean±SD	3.8±1.6

Table 2: Quality of life outcomes.

Parameter	Mean±SD
Preoperative score	16.8±2.3
Postoperative score	3.2±1.6
P value	<0.001

Table 3: Surgical outcomes.

Outcome	Number (%)
Cure/improvement	66 (97.1)
Failure	2 (2.9)

Table 4: Complications.

Complication	Number (%)
Groin pain	6 (8.8)
Urinary retention	2 (2.9)

Table 2 shows a marked reduction in mean ICIQ-SF score from 16.8 preoperatively to 3.2 at 6 months postoperatively, indicating significant improvement in quality of life. This difference was statistically highly significant ($p<0.001$).

Among the 68 patients, 66 (97.1%) achieved either cure or improvement, whereas 2 (2.9%) were classified as treatment failures (Table 3).

Postoperative complications were infrequent and included groin discomfort in 6 patients (8.8%) and temporary urinary retention in 2 patients (2.9%). All complications were managed conservatively (Table 4).

DISCUSSION

The findings of this study confirm that the trans obturator tape procedure is highly effective in improving quality of life in women with stress urinary incontinence. The significant reduction in ICIQ-SF scores demonstrates both clinical and patient-perceived benefits.

Urinary incontinence has a well-documented negative effect on daily functioning and emotional well-being. Therefore, assessment tools like the ICIQ-SF are essential for evaluating treatment success from the patient's

perspective. Avery et al validated this questionnaire as a reliable and sensitive instrument for measuring symptom severity and impact.¹

The success rate observed in this study (97.1%) is consistent with previously reported study outcomes ranging between 85% and 95%.²⁻⁴ Slightly higher success in this series may be attributed to careful selection of patients and exclusion of mixed incontinence cases.

Compared to retropubic sling procedures, the TOT technique offers improved safety due to avoidance of the retropubic space. This reduces the likelihood of serious complications such as bladder or bowel injury.⁵ De Leval further refined this approach and demonstrated its safety and effectiveness.⁶

Complication rates in this study were low and comparable to existing literature. Groin pain was the most common issue but resolved without intervention.⁷ Evidence from systematic reviews indicates that TOT procedures have fewer major complications compared to retropubic methods while maintaining similar efficacy.⁸

The small proportion of failures (2.9%) aligns with previously published data. Factors such as intrinsic sphincter deficiency and improper tape placement may contribute to unsuccessful outcomes.⁹ Long-term studies suggest that while short-term results are excellent, ongoing follow-up is necessary to assess durability.¹⁰

Improvement in quality of life is a crucial endpoint. Studies have shown that patient satisfaction correlates more closely with symptom relief and QoL enhancement than with objective measures alone.¹¹

The strengths of this study include its prospective design and use of a standardized assessment tool. Limitations include lack of a control group and relatively short follow-up duration.

CONCLUSION

The trans obturator tape procedure is a reliable and minimally invasive treatment for stress urinary incontinence. It offers excellent success rates and leads to substantial improvement in quality of life with minimal complications.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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