International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Chaudhari MA et al. Int J Reprod Contracept Obstet Gynecol. 2025 May;14(5):1473-1477
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20251226

Original Research Article

Study of outcomes of transobturator tape fixation in management of stress urinary incontinence

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Received: 15 February 2025
Revised: 10 April 2025
Accepted: 11 April 2025

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ABSTRACT

Background: Stress urinary incontinence (SUI) is one of the most chronic conditions significantly impacting the quality of daily life of 15-40% of female population because of the involuntary escape of urine on exertion due to sudden rise in intraabdominal pressure. Transobturator tape (TOT) fixation is the leading surgical intervention in managing SUI if the conservative management fails because of its lesser postoperative complications, shorter hospital stay, lesser recurrence rate and easy to perform compared to other surgical interventions available hence enhancing the quality of life with women with SUI. TOT fixation therefore has the full potential to be the gold standard in the management of SUI.
Methods: It is a prospective observational study conducted in the Gyanecology ward of SKNMCGH, Pune for 3 years with apparatus and material available in the institute on 32 patients based on the inclusion criteria; all females with stress urinary incontinence willing for surgical management. Women not willing for surgical intervention, also women with mixed urinary incontinence and patients who had previous corrective surgery for stress urinary incontinence were excluded. The TOT procedure was performed by outside in technique.
Results: Success rate of TOT fixation was 96.9%. A total of 31 patients (96.9%) were cured whereas 1 (3.1%) experienced surgical failure.
Conclusions: Transobturator tape fixation is an effective method of management for SUI as it is associated with low morbidity, lesser postoperative complications and therefore has full potential to be the new gold standard for treating SUI.

Keywords: Stress urinary incontinence, Transobturator tape

INTRODUCTION

Stress urinary incontinence (SUI) is a prevalent condition affecting approximately 15-40% of the female population, characterized by involuntary urine leakage during exertion due to sudden increases in intra-abdominal pressure. This condition significantly impacts the quality of life, leading to physical, emotional, and social distress. Transobturator tape (TOT) fixation has emerged as a leading surgical intervention for SUI when conservative management fails. he TOT procedure was safer and caused less frequent bladder outlet obstruction.[1,2] The procedure is associated with fewer postoperative complications, shorter hospital stays, and lower recurrence rates compared to traditional surgical methods, making it a compelling option for women seeking relief from SUI. As such, TOT fixation has the potential to be considered the gold standard in SUI management. This research aims to provide valuable insights into the efficacy and safety of TOT fixation for improving the quality of life in women suffering from SUI.

This study aimed to evaluate the outcomes of Transobturator Tape (TOT) fixation in women with stress

urinary incontinence. Also, to assess postoperative outcomes, including complications.

METHODS

This prospective observational study was conducted in the Gynaecology Ward of Smt. Kashibai Navale Medical College and General Hospital, Pune. The study spanned a period of three years, from July 2021 to July 2024. A total of 32 participants were enrolled during this period to observe and analyze relevant clinical parameters within the defined scope of the study.

Inclusion criteria

All women diagnosed with stress urinary incontinence who were willing to undergo surgical management.

Exclusion criteria

Women not willing for surgical intervention, women with mixed urinary incontinence, and patients who had previous corrective surgery for stress urinary incontinence were excluded.

Procedure

This study aimed to evaluate parameters like mean operative time, postoperative complications, complexity of surgical skills required and duration of hospital stay based on the data collected from the 32 participants fitting the inclusion criteria.

Figure 1: Transobturator tape needle.

They were treated preoperatively with antibiotics for 10 days as per urine culture report. After preanaesthetic fitness patients diagnosed with demonstrable SUI were posted for midurethral sling surgery by TOT fixation by outside in technique with or without vaginal hysterectomy and pelvic floor repair.

In this procedure, patient was given hyperflexed abducted lithotomy position. A mid-urethral vertical incision was made, followed by dissection to create the paraurethral space while ensuring the urethra remains intact. Two stab incisions were then made at the clitoral plane, allowing for the insertion of a needle that pierces the obturator membrane to deliver the tape through the paraurethral space. The TOT tape made up of polypropylene mesh was introduced and guided through the same path, with one end brought out through the groin incision. The urethral segment was positioned correctly, maintaining a specified distance from the tape, before the ends of the tape were cut just beneath the skin incisions in the groin.

Ethical approval

Ethical approval from institutional ethical committee, SKNMCGH taken. Written informed consent was obtained from all participants prior to their inclusion in the study. All data collected during the study was kept confidential.

Statistical analysis

Data collected was analyzed using excel and IBM SPSS statistics software version 20.0. Statistical tests: Descriptive statistics have been reported as frequencies (percentages). Results have been expressed in relevant tables and graphs.

RESULTS

The majority of women in the study are in the 40-50 age range, while the under-40 group has the least representation. This distribution highlights a significant concentration of women in the middle age categories (Table 1).

Table 1: The age distribution of women in the study.

Age in years	Frequency	Percent
<40	4	12.5
40-50	13	40.6
50-60	7	21.9
60-70	8	25.0
Total	32	100.0

Table 2: Risk factors in women.

Risk factors	Frequency	Percent
Previous pelvic surgery	7	21.9
Obesity	3	9.4
Diabetes and hypertension	2	6.3
Chronic cough and previous pelvic surgery	1	3.1
Diabetes	1	3.1
Diabetes and previous pelvic surgery	1	3.1
Hypertension	1	3.1
Hypertension and previous pelvic surgery	1	3.1
None	15	46.9
Total	32	100.0

The Table 2 presents the distribution of risk factors among 32 participants, revealing that 46.9% reported no risk factors. The most common individual risk factor was previous pelvic surgery, affecting 21.9% of participants, followed by obesity at 9.4%. Other conditions, such as diabetes (3.1%), hypertension (3.1%), and combinations of these factors, were less prevalent (Table 2).

In our study, 62.5% women have Stress Urinary Incontinence (SUI). Additionally, 21.9% are diagnosed with 2nd degree Uterine Vaginal (UV) prolapse with SUI, and 15.6% have 3rd degree UV prolapse with SUI (Table 3).

Table 3: Diagnosis of patients.

Diagnosis	Type of surgery		Total
	Concurrent	Only TOT	
SUI	0	20	20
2nd degree UV prolapse with SUI	7	0	7
3rd degree UV prolapse with SUI	5	0	5
Total	12	20	32

62.5% (20 women) underwent exclusive surgery, while 37.5% (12 women) had concurrent surgery (Figure 2).

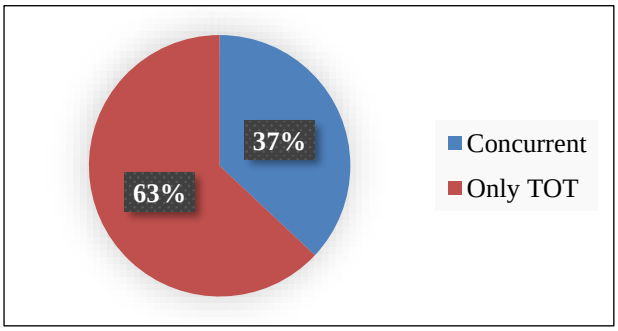

Figure 2: Type of surgery.

Table 4: Intraoperative time of patients.

Intraoperative time (in mins)	Type of surgery		Total
	Concurrent	Only TOT	
<30	0	9	9
30-60	0	11	11
60-90	0	0	0
>90	12	0	12
Total	12	20	32

The Table 4 presents the intraoperative time for surgeries performed on 32 participants, with varying durations. The most common time recorded was >90 minutes in concurrent type of surgery, and 3060 mins in TOT type of surgery.

Overall, the intraoperative times varied significantly, with a concentration around the shorter and longer extremes in TOT and concurrent type of surgery respectively.

Among the 32 surgeries performed, 78.1% (25 women) were conducted by a professor, while 21.9% (7 women) were performed by a resident in which no intraoperative complications were reported, with 100% of the cases having no complications. This highlights a strong performance record in the surgeries, particularly under the supervision of experienced personnel.

Table 5: Postoperative complications in patients.

Postoperative complications	Type of surgery		Total
	Concurrent	Only TOT	
Acute retention of urine	0	2	2
Fever	1	1	2
Persistent SUI	1	0	1
None	10	17	27
Total	12	20	32

The Table 5 details the postoperative complications among 32 participants. The majority, 84.4% (27 women), experienced no complications. However, 6.3% (2 women each) reported acute retention of urine and fever, respectively. Additionally, 3.1% (1 woman) experienced persistent Stress Urinary Incontinence (SUI). Overall, the data indicates a low incidence of complications following surgery, with most participants recovering without any complications.

The majority, 84.4% (27 women), had no specific management recorded (NA). Among the other management strategies, 6.3% (2 women) received conservative treatment, while 3.1% (1 individual each) underwent Burch colposuspension, experienced loosening of the transobturator tape (TOT), or were relieved through Foley catheterization. This distribution suggests that most patients did not require further intervention post-surgery, with a small number needing specific management (Table 6).

Table 6: Management done in patients.

Management	Frequency	Percent
BURCH colposuspension	1	3.1
Conservative	2	6.3
Loosening of TOT	1	3.1
Relieved on foleys catheterization	1	3.1
Not applicable	27	84.4
Total	32	100.0

The Figure 3 outlines the discharge timing for 32 participants following surgery. The majority, 53.1% (17 women), were discharged on postoperative day 2, indicating a swift recovery process. Additionally, 28.1%

(9 women) were discharged on day 5, and 12.5% (4 women) on day 7. A small number of patients, 3.1% (1 woman), were discharged on days 9 and 20. Overall, the data reflects a trend toward early discharge for most patients, highlighting effective recovery post-only TOT surgery.

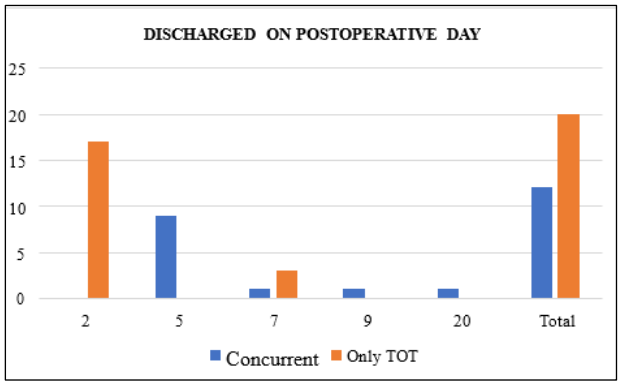

Figure 3: Day of discharge.

A total of 96.9% (31 individuals) were cured, while only 3.1% (1 individual) experienced a failure. This data highlights the effectiveness of the surgical intervention, as nearly all patients achieved positive results following the procedure.

Patients were followed up till 6 months and 31 patients treated with TOT fixation were successfully treated and 1 failed and her follow-up was lost.

DISCUSSION

In our prospective study we evaluated the main surgical outcome of the study group to assess the advantages and limitations of TOT fixation in management of SUI.

Maximum patients in our study belonged to the age group of 40-50yrs. No statistical significance was found related to age and risk factors associated in our study.

The operative time in our study was averagely 90 minutes in concurrent type of surgery, and 30-60 mins in TOT type of surgery. In a study conducted by Pankaj et al, it was recorded as 30-40 mins.[4] The operative time in study by Pardo Schanz et al for the TOT sling procedure was 15 mins.[6]

In this study, 84.4% cases had no complications while 6.3% reported acute retention of urine and fever, respectively. 3.1% experienced persistent symptoms of SUI. Similarly, in a study conducted by Isabelle et al reported complications like worsening of preexisting urgencies (10.2%), perineal pain (2.2%), de novo dyspareunia (9%), and vaginal erosion (7.6%).[8]

In our study success rate of TOT fixation was 96.9% whereas in a study done by Domingo et al in 2005, the TOT success rate was found as 96.8%.[9] While Grise et al reported the success rate of the procedure as 80% in their study.[10]

TOT fixation has certain limitations as it demands technique, skills and a need for extensive surgeon training.

In summary, in this study, 62.5% (20 women) underwent exclusive surgery, while 37.5% (12 women) had concurrent surgery. The intraoperative time was shorter in only TOT patients as compared to concurrent type of surgery with longer duration of surgery. In concurrent type of surgery complication rate was16.66% (2/12), whereas in TOT only type, complication rate was 15% (3/20). Average recovery time post exclusive TOT surgery was 2 days and for concurrent type was up to 7 days. Success rate of TOT fixation in this study is.96.9%.

CONCLUSION

The highlight of our study is successful surgical performance of this procedure by residents in this institute under supervision of experienced faculty with no complications indicating successful introduction of this technique during residency as our study shows that TOT fixation has full potential to be a gold standard for management of SUI owing to its shorter intraoperative time, lesser postoperative complications, shorter hospital stay and high success rate.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Chaudhari MA, Darawade SP, Sasane AA, Medankar N. Study of outcomes of transobturator tape fixation in management of stress urinary incontinence. Int J Reprod Contracept Obstet Gynecol 2025;14:1473-7.