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Efficacy of trans-Obturator tension-free vaginal tape by using inside-out technique for stress urinary incontinence: A retrospective study

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Abstract
Background: Stress urinary incontinence (SUI) is defined as involuntary urine leakage on effort or exertion or on sneezing or coughing. Trans obturator tape provides a firm platform support, but without any tension, under the midurethra have become very successful. The aim of the study is to evaluate the effectiveness of transobturator tension free vaginal tape in the treatment of female stress urinary incontinence.
Methods: This retrospective study was conducted on 50 patients from 2010 to 2017 who underwent transobturator tension free vaginal tape repair with inside out technique for stress urinary incontinence.
Results: The mean age was 52 years in study group. Post-operative assessment done by cough stress test and measuring residual volume, voiding volume. There was no stress incontinence noted on tests. Success rate was seen in 50 patients.
Conclusion: Transobturator tension free vaginal tape repair is an effective management for stress urinary incontinence with high success rate.

Keywords: midurethra, Transobturator, urinary, management

Introduction
Urinary incontinence is a common distressing condition which affects women of all ages and can have a profound impact on quality of life.
Stress urinary incontinence (SUI) is defined as involuntary urine leakage on effort or exertion or on sneezing or coughing, usually caused by weak or damaged muscles in the pelvic floor or sphincter [1]. Stress urinary incontinence has an observed prevalence between 4% and 35% [2].
Numerous risk factors for SUI have been identified. Aging, obesity and smoking appear to have consistent causal relationships with the condition, where as the role of pregnancy and child birth remain controversial [3]. Postmenopausal atrophy also causes stress incontinence and urethral syndrome [4].
Several techniques which are based on providing a firm platform support, but without any tension, under the midurethra have become very successful. Two techniques for TOT (trans–obturator tape) operation have been described, the original technique as described by Delorme is based on insertion of tape through the obturator foramen from outside-to-inside (skin to vaginal) direction [5] and the second technique is inside-to-outside approach described by De Leval. In this technique the tape is passed from the vaginal incision to the obturator foramen [6].
In TOT placement a small incision is placed in the groins, in the vagina and in the urethra and the mesh is placed under the urethra in correct position without having to pass the needle blindly through the retro-pubic space [7]. The TOT is a tension free sling as the resting urethral angle is not changed by the procedure, nor is it necessary to correct urethral hypermobility [8]. The operative time is significantly shorter in the TOT sling and the less risk of bladder injury, bowel perforation, vascular injury, major hemorrhage.

Objectives of the study
The objective of the study is to describe effectiveness of transobturator tension free vaginal tape by using inside-out technique.
The effectiveness is assessed by
1. Postoperative symptomatic relief,
2. Post-operative cough stress test with full bladder.
3. Post-operative voiding assessment.

Aim
The aim of the study is to evaluate the effectiveness of transobturator tension free vaginal tape in the treatment of female stress urinary incontinence.

Materials and methods
Sources of Data
It is a retrospective study. Women who were managed for SUI in Department of Obstetrics & Gynecology, KVGMCH, Sullia from 2010 to 2017.

Method of collection of data
This retrospective study was conducted on 50 patients clinically and investigations proven stress urinary incontinence, who were managed in Department of Obstetrics & Gynecology, KVGMCH, Sullia from 2010 to 2017.
The patients under study are underwent a thorough history taking, general physical examination, systemic and local examination. All patients in our study underwent a site specific vaginal examination using a cusco's speculum and sim's speculum with maximum straining with full bladder.
All baseline and special investigations like midstream urine sample to rule out urinary tract infection and pad test was done to rule out urge incontinence.

All patients undergoing TOT sling procedure were informed about the ease, simplicity and safety of procedure. TOT procedure is performed under general or spinal anaesthesia. Patient kept in dorsal lithotomy position with thighs flexed at a 120° angle. Three incisions are made: 2small incisions in the groin lateral to inferior pubic ramus, and one vaginal incision in the midurethral area. For the TOT procedure, the needles are inserted in the groin incision and passed into the midurethral incision. The needles are passed from the vaginal incision to the thigh incision. Once the tape is in place it is adjusted to the appropriate tension. The excess mesh trimmed from surgical site and the incisions closed with sutures.
Patients were adviced to start normal daily routine activities after discharge from hospital to maintain local hygiene to avoid sexual activity for 6 weeks, and avoid straining and lifting heavy weights for 6 weeks.
Observation made regarding the postoperative results assessed by clinical examination, cough stress test (full bladder), and post-operative voiding assessment.
Post-operative voiding assessment includes oral fluid intake, measurement of urinary output, post-voiding residual urine volume assessment using bladder scan. Satisfactory voiding achieved by voided volume >200ml & post voiding residual urine volume <100ml on 2 occasions.

Sample size: 50

Study design: Retrospective study

Inclusion criteria
Women who diagnosed as having SUI and who underwent TOT

Exclusion criteria
Patients who are having
1. Urinary tract infections
2. Urge incontinence
3. Patients of SUI WHO had been previously operated.

Results
The total number of patients evaluated in our study was 50. The age of the patients operated for SUI under this study is ranged from 30-72 years and the mean age is 52.6± 8.96yrs, most of the patients are under between 50-59years (46%).

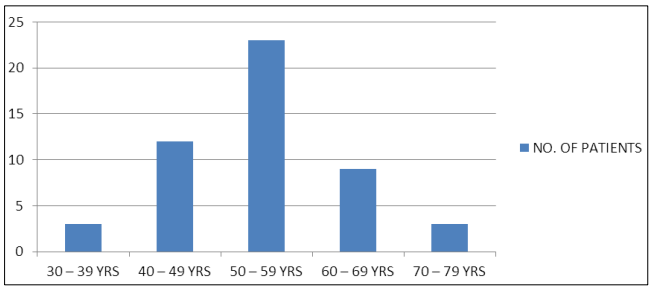

Fig 1: Distribution of patients based on their age

All the patients admitted are married and had children. In those 4 (8%) patients were primiparous and 46 (92%) patients were multiparous.

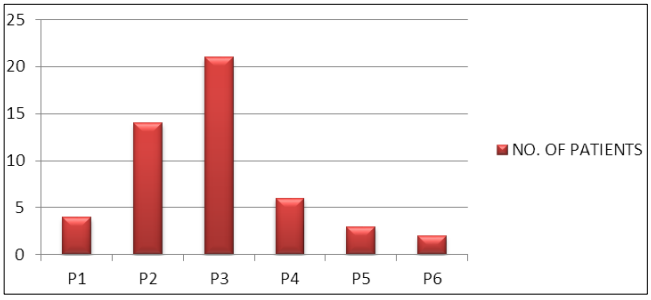

Fig 2: Distribution of patients based on their parity

Among 50 patients 11 patients (22%) are hypertensives, 3 (6%) patients are diabetics, 1 (2%) patient is having both hypertension and diabetes mellitus, 4 (8%) patients are underwent hysterectomy.

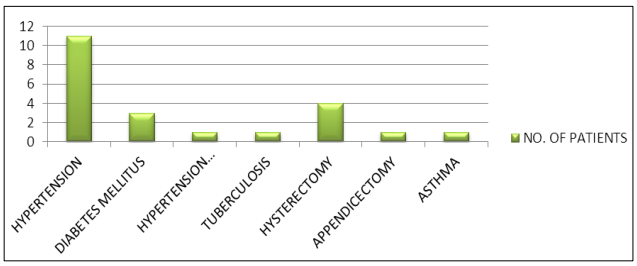

Fig 3: Past history in patients who underwent surgery

In our study group 50 patients underwent TOT mesh repair by inside-out technique and additional pelvic surgical procedures were performed according to presence of other pelvic defects. Prevalence of prolapse is high as 56% in our study group.

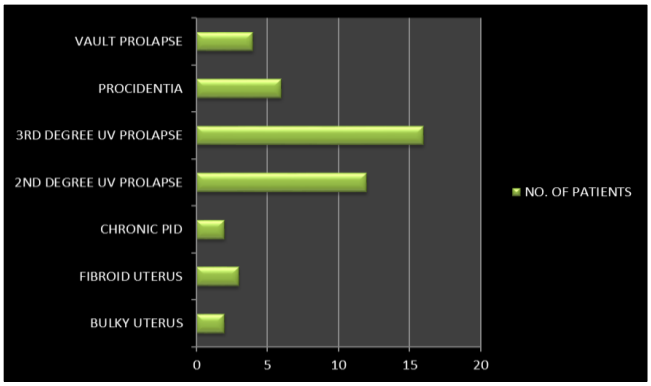

Fig 4: distribution of patients based on their diagnosis

In our study group 4 (8%) patients underwent only TOT repair and remaining 46 (92%) patients underwent TOT with additional procedures. Among 46 (92%) patients 30 (60%) underwent vaginal hysterectomy with TOT and 13 (26%) underwent total laparoscopic hysterectomy with TOT, 3 (6%) underwent vault repair with TOT

Table 1: Distribution of patients based on the surgery performed

S NO.	Surgery performed	No. of Patients	Percentage
1	Transobtruator tape operation	4	8 %
2	transobtruator tape with additional procedures	46	92 %
3.	vaginal hysterectomy with pelvic floor repair	18	36 %
	vaginal hysterectomy	9	18%
	vaginal hysterectomy with anterior colporrhaphy	3	6%
	total laproscopic hysterectomy with bilateral salphingectomy	6	12 %
	total laproscopic hysterectomy with bilateral salphingoophorectomy with pelvic floor repair	5	10 %
	total laproscopic hysterectomy with anterior colporrhaphy	2	4 %
	vault repair	3	6 %

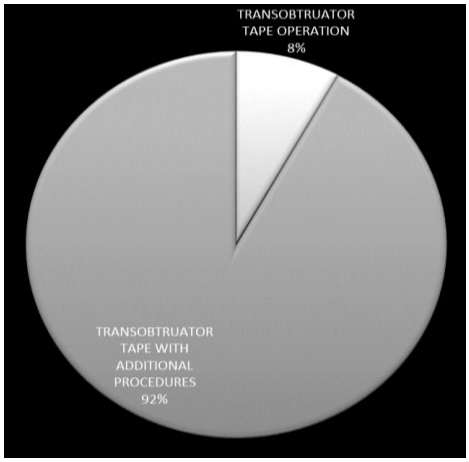

Fig 5: distribution of patients based on the surgery performed

During the surgery no intra-operative complications noted. None of the patients suspected bladder injury or urethral injury intraoperatively. In immediate postoperative period transient urinary retension observed in 3 (6%) patients for them catheterization done and remaining 47 patients post voiding volume >200ml is observed. In that 3 patients foleys catheter is removed after 3-4 days and after removing catheter their voiding volume is also >200ml. Among 50 cases 3 patients developed post-operative UTI and relieved after antibiotic course. Post-operative assessment is done by stress provocation test like cough stress test with full bladder. There was no stress incontinence on stress provocation tests. In all patients postoperative USG done for residual volume on 5th day and it is <100ml. All patients discharged on 5-10days of post-operative period. There is no mesh erosion was seen in any woman.

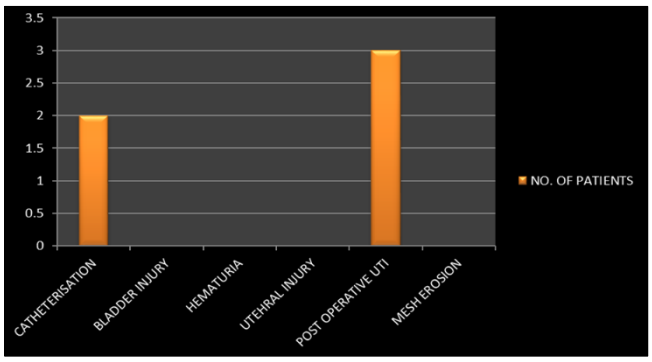

Fig 6: Post-operative complications

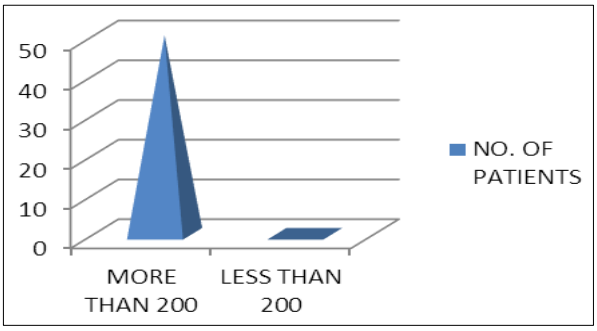

Fig 7: Post-operative voiding volume in patients who underwent tot

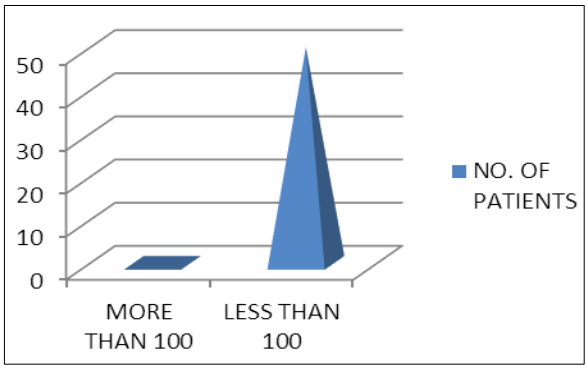

Fig 8: Residual volume of urine in patients who underwent tot

Among 50 patients 4 (8%) patients complained groin pain, 4 (8%) patients complained pricking sensation, 2 (4%) patients complained increased frequency of micturition, 1 (2%) patient complained dysuria.

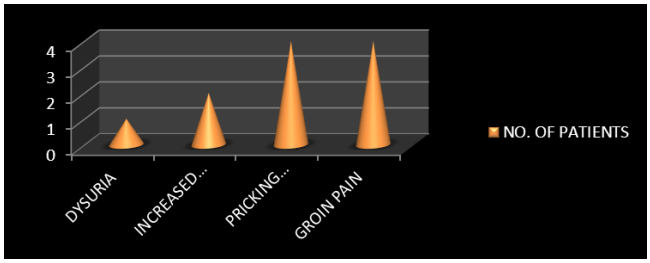

Fig 9: Postoperative complaints by the patients on follow up

The overall subjective success rate was 94% and in 4% of patients symptoms were not relieved completely and in 2% of patients symptoms are not relieved.

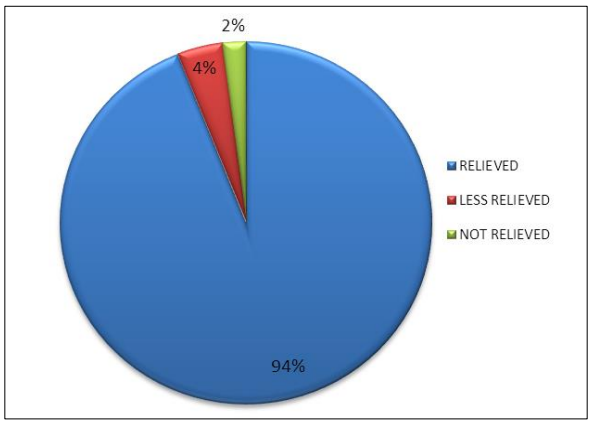

Fig 10: Distribution of patients based on the relief of symptom

There are no readmissions in the study group.

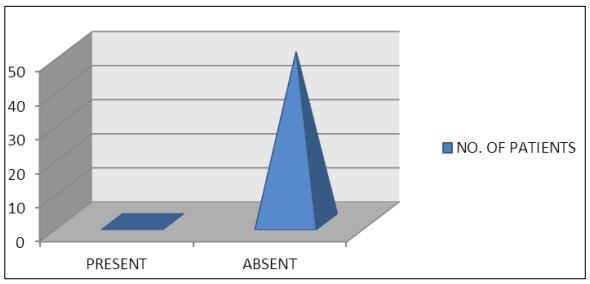

Fig 11: Distribution of patients based on readmissions

Discussion

The incidence of urinary incontinence is mostly seen in older patients and surgical risk among older women can be high because of presence of co-morbid conditions such as DM, HTN. These risk factors alone do not increase surgical morbidity or mortality when surgical procedures for incontinence are compared with other major surgeries. In our study group DM, HTN patients there is no impact on postoperative morbidity.

In TOT technique it avoids the Space of Retzius and thereby reducing the risk of bladder injury. In our study intraoperatively no suspected bladder injury occurred in all 50 patients. Transient urinary retention and delayed resumption of voiding is noted in 4% of women who underwent surgery. Catheterization done in these patients removed after 2-4 days after clamping. Post catheterization voiding volume is >200. This lower rate of urinary retention is consistent with a sling that is less obstructive and it is a distinct advantage of the obturator approach. The rate of lower urinary tract infection is seen in only 6% of the women and they were cured with oral antibiotics.

Postoperatively stress provocation tests like cough tests is done in all patients in study group there was no stress incontinence. Post-operative residual volume is normal in all patients in our study group. But on follow up 1 patient complained of nocturia and increase in frequency of micturition and symptoms were not relieved after surgery, and in 2 patients symptoms are not completely relieved in those patients for them there is no specific cause found, and in remaining 47 patients symptoms are completely relieved. There were no readmissions in our study group. This data is in consistent with previous clinical trials which suggested that complications rates can be decreased significantly with the obturator approach. Furthermore, temporary or persistent urinary retention after the surgery is less with TOT because tape is placed in a horizontal direction than in TVT procedures [9].

The overall success rate was 94% in our study.

Conclusion

The current study presents outcomes of the TOT operation for stress urinary incontinence is safe and efficient in improving quality of life with high success rate with low intra operative and postoperative morbidity. This study is limited by small number of women and its retrospective nature, to better validate findings from this study randomized prospective studies with larger patient cohorts are required.

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