

Original Research Article

Tot fixation using customized polypropylene mesh - Safe and effective approach for SUI repair

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Abstract

Introduction: Stress urinary incontinence (SUI) is defined as involuntary loss of urine due to increased intraabdominal pressure and intravesical pressure, which exceeds the pressure that the urethral closure mechanism can withstand and urinary loss results. SUI prevalence increases with age and becoming popular day by day. The tot fixation in SUI repair is a common operation done in Gynaecology Department. Hence it is necessary to evaluate this technique in terms of safety and feasibility in our set up and also to evaluate the feasibility, simplicity, cost effectiveness of trans obturator fixation procedure using propylene mesh of adequate size was placed loose at midurethral level, extending from one paraurethral gutter to the other and was fixed with No.1-0 Vicryl on lateral sides in the management of female stress urinary incontinence (SUI).

Aim and objectives: The objective was to assess safety, efficacy, complication and cost-effectiveness of polypropylene mesh in patients with SUI undergoing tot fixation and to analyze functional results.

Materials and methods: This study included about 25 cases. All of them were examined and investigated after taking their informed consent. This was a retrospective experimental study to see the outcome measures in patients of SUI treated with transobturator sling. It was an experimental design to assess safety, efficacy, complication, and cost-effectiveness of polypropylene mesh in patients with SUI undergoing tot fixation and study intra-operative parameters like mean operative

time, intra- and postoperative complications like bladder injury postoperative urinary retention, and patient satisfaction.

Results: 60% of women were in age group of 51 to 60 years and all were multigravida. Duration of procedure was significantly shorter in patients undergoing Tot fixation with polypropylene mesh for SUI repair.

Conclusion: To conclude, the suburethral transobturator polypropylene mesh sling is a safe, efficient, reproducible and low cost technique for treating SUI. The polypropylene mesh commonly available in the markets with the proprietary brands is very costly and unaffordable for lower socioeconomic groups. Thus an attempt was made to design a technique to make this mesh economical in which we slit the mesh on both sides which prevents the rolling of the upper edge of the central portion of the mesh. The use of this custom-made polypropylene mesh in this way makes the procedure very cost-effective and affordable.

Key words

Tot fixation, Polypropylene mesh, SUI repair.

Introduction

Stress urinary incontinence (SUI) is defined as involuntary loss of urine due to increased intraabdominal pressure and intravesical pressure, which exceeds the pressure that the urethral closure mechanism can withstand and urinary loss results. Stress urinary incontinence (SUI) has a significant impact on the quality of life for many women, although estimates of prevalence vary widely due to inconsistencies in the definitions of SUI and differences in populations studied [1]. An estimated prevalence for urinary incontinence is nearly 30% in women aged 30–60 years, with approximately half of the cases attributed to SUI [2, 3]. The treatment for this problem include initial conservative therapies (i.e. lifestyle interventions, pelvic floor muscle training, and bladder training), followed by surgery, which is an option for women whose quality of life is still impaired after a diagnosis of genuine stress incontinence has been confirmed.

SUI prevalence increases with age and becoming popular day by day. The tot fixation in SUI repair is a common operation done in Gynaecology Department. Hence it is necessary to evaluate this technique in terms of safety and feasibility in our set up and also to evaluate the feasibility, simplicity, cost effectiveness of trans obturator fixation procedure using propylene mesh of adequate size was placed loose at

midurethral level, extending from one paraurethral gutter to the other and was fixed with No.1-0 Vicryl on lateral sides in the management of female stress urinary incontinence (SUI). The mean operative time is significantly shorter in the transobturator sling and risk of bladder injury and of postoperative urinary retention is also considerably lower than other sling procedures [4]. 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 hyper mobility [5].

Aim and objectives

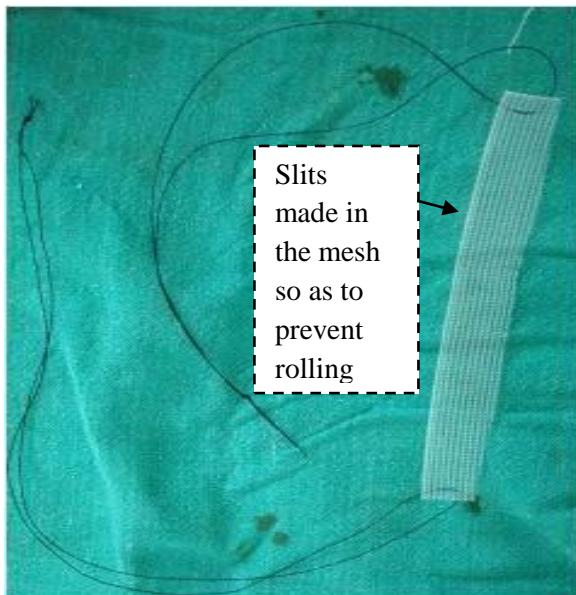
The objective was to assess safety, efficacy, complication and cost-effectiveness of polypropylene mesh in patients with SUI undergoing tot fixation and to analyze functional results.

Materials and methods

The study was done in Dhiraj General Hospital affiliated to S.B.K.S. Medical Institute and Research Centre, Vadodara. This study included 25 cases. All of them were examined and investigated after taking their informed consent. This was a retrospective experimental study to see the outcome measures in patients of SUI treated with transobturator sling. The study population comprised Indian patients attending the Gynecology OPD at a tertiary care teaching

hospital who complained of involuntary passage of urine on coughing, laughing, straining, or any other action suggestive of increase in intra-abdominal pressure excluding medical disorder. It was an experimental design to assess safety, efficacy, complication and cost-effectiveness of polypropylene mesh in patients with SUI undergoing tot fixation and study intra-operative parameters like mean operative time, intra- and postoperative complications like bladder injury postoperative urinary retention, and patient satisfaction. In this study, there were no controls and no comparisons were made: A total of 25 patients in the age group of 50 to 70 years having clinical evidence of stress urinary incontinence with or without various degrees of genital prolapse were included in the study. Patients were evaluated preoperatively by history taking, detailed general and systemic examinations, various clinical tests and investigations including urodynamic studies in some. A polypropylene mesh (**Photo – 1**) of appropriate length of 15x7.5 cm was used in at least 3 patients, which is cost effective and placed at mid-urethral level (**Photo – 2**). Postoperative follow up included physical examination and assessing patient's level of satisfaction who complained of de novo involuntary passage of urine on coughing, laughing.

Photo – 1: Polypropylene mesh.



Inclusion criteria

- All patients attending Gynecology OPD at a tertiary care teaching hospital, who complained of involuntary passage of urine on coughing, laughing, straining, or any other action suggested of increase in intra-abdominal pressure.
- Pelvic organ prolapse or any other gynecological problem

Exclusion criteria

- Patient with urge incontinence.
- Patients who had previously corrective surgery for stress incontinence were also excluded.
- Patients who were pregnant were excluded.
- Patients with any other medical disorder like asthma which increase abdominal pressure.
- Patient who has undergone previous surgery.

Photo – 2: Tot fixation.



Results and Discussion

Majority of the women (60%) were among age group between 51 and 60 years as per **Table – 1**. In our study, we found all multigravida and there was no primigravida as per **Table - 2**. Patients had varying degree of prolapse. There was 1

patient with grade IV uterine prolapse and 1 patient with grade III prolapse as per **Table – 3**.

Table – 1: Case distribution according to age group.

Age in years	Patients	Percentage
40 -50	5	20%
51-60	15	60%
61-70	5	20%
>70	0	0%

Table – 2: Case distribution according to parity group.

Parity	Patients	Percentage
Multipara	25	100%
Primi	0	0

Table – 3: Other status of cases.

Status	Patients
Postmenopausal status	25
Stage 3 prolapse	1
Stage 4 prolapse	1
Medical history	0

Total 25 patients had stress urinary incontinence, 1 patient had constipation and 2 patients had sexual dysfunction as per **Table – 4**.

Table – 4: Distribution of cases according to symptoms.

Symptoms	Patients
Stress urinary incontinence	25
Urgency	0
Bowel symptoms like constipation	1
Sexual dysfunction	2

The analysis of the data showed that the duration of procedure was significantly shorter in patients undergoing Tot fixation with polypropylene mesh for SUI repair as per **Table - 5**. There were 2 patients where time was exceeded as they were associated with cystocolele. There was no assistance required from other surgical faculties

like urology. There was less mean hospitalization time and post catheterization in this surgery which adds benefit to the patient compliance (**Table – 6**).

Table – 5: Distribution of cases according to duration of surgery (minutes).

Duration of surgery	Patients	Percentage
10 min	18	72%
10-15 min	5	20%
>15 min	2	8%

Table – 6: Mean hospitalization time and post catheterization.

Mean post-operative catheterization	3 days
Mean hospitalization time	3 days

No intra operative complications such as bladder injury or/ and bleeding exceeding 100 ml were seen. However, there was 1 case of urinary retention in Tot group that was associated with cystocoele group. There was no postoperative groin pain. Urinary retentions were resolved with a 3 days long catheterization. Postoperative groin pain lasted for 2 days for which analgesics are required and their complaint stopped within 1 month. Postoperative complication like febrile morbidity, local and systemic infection, retention of urine or rejection of mesh was not seen in any of the patients (**Table – 7**).

Table – 7: Complications.

Complications	Patients	%
Bladder injury.	0	0%
Bleeding exceeding 100 ml and requiring blood transfusion	0	0%
Urinary retention	1	4%
Post operative groin pain	1	4%
Rejection of mesh	0	0%
Mesh erosion	0	0%
Vaginal dryness	0	0%

During the preoperative and postoperative assessment period cough stress tests were carried out. Postoperative assessment was carried out at the 6 months follow up. There was no failure rate in postoperative patients in case with polypropylene mesh used in Tot fixation (**Table – 8**).

Table – 8: Pre and postoperative assessment of cough stress test: cure rate.

Cough stress test	Patients	Result
Preoperative assessment of cough stress test	25	25
Postoperative assessment of cough stress test	25	0

Success rate: No recurrence had been recorded. In all the 25 cases, none had reported with failure, thus giving 100% cure rate for SUI.

Conclusion

To conclude, the suburethral transobturator polypropylene mesh sling is a safe, efficient, reproducible and low cost technique for treating SUI. The polypropylene mesh commonly available in the markets with the proprietary brands is very costly and unaffordable for lower socioeconomic groups. Thus an attempt was made to design a technique to make this mesh economical in which we slit the mesh on both sides which prevents the rolling of the upper edge of the central portion of the mesh. The use of this custom-made polypropylene mesh in this

way makes the procedure very cost-effective and affordable. This is because one mesh is costing INR 1950/- can be easily used in three patients, which brings down the cost to not more than INR650/- per patient. The reduction in cost is about 25-30 times with the use of this mesh when compared with commercially available variety.

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