

Original Article

Meshplasty: Treatment for stress urinary incontinence: a preliminary report

Saraogi RM¹, Khopkar K², Mundada P³, Purandare N⁴, Gulati S⁵.

Department of Obstetrics and Gynecology, Dr. R.N. Cooper Hospital, Vile Parle, Mumbai.

Abstract

Objectives: To evaluate the feasibility, simplicity, effectiveness of meshplasty procedure using polypropylene mesh in the management of female stress urinary incontinence (SUI). **Methods:** A total of 75 patients in the age group of 35 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 of appropriate length was placed at mid-urethral level. Simultaneous repair of pelvic floor defect and/or vaginal hysterectomy was performed in the same sitting. Postoperative follow up included physical examination and assessing patient's level of satisfaction. In some cases urodynamic studies were carried out. **Results:** None of the patients had intraoperative or postoperative complications. **Conclusions:** Our meshplasty for the correction of stress urinary incontinence is simple, quick, easy to perform, and cost effective.

Key words: stress urinary incontinence, meshplasty, polypropylene mesh

Introduction

Stress urinary incontinence (SUI) is defined as involuntary loss of urine due to increased intra abdominal pressure and intravesical pressure, which exceeds the pressure that the urethral closure mechanism can withstand and urinary loss results. It is a social and hygienic problem more commonly seen in peri-menopausal and menopausal women². SUI can be due to either anatomic hypermobility of the urethra that produces faulty urethral closure under stress or due to intrinsic sphincter weakness. The former type is prevalent and

responsible for SUI in majority of the patients.

Understanding of SUI has undergone evolution over time and so has the management. We have older methods like Kelly's repair and abdominal bladder neck suspension surgeries. The newer techniques are surgeries, Tensionfree vaginal tape (TVT), Transobturator tape (TOT) and meshplasty.

Meshplasty is the placement of appropriate size prolene mesh at midurethral level to prevent the displacement of urethra along with its facial coverage. Hence the urethra remains closed during increased intra abdominal pressure. Placement of prolene mesh at midurethra also provides good support to the urethra, which is also the mechanism for other sling procedures (TVT, TOT and TSUIT).

Methods

We report cases in which meshplasty was performed as

Paper received on : 12/02/2008 accepted on : 08/02/2010

Correspondence:
Dr. Saraogi R.M.
Saraogi Maternity & General Hospital
Khetan Apts, S.V.Road,
(Opp) Telephone Exchange
Malad (W), Mumbai – 400 064

a choice of surgery for SUI correction.

Fifty-five women in the group of 35 to 70 years were included in the study. Forty were postmenopausal. All the patients complaining of SUI were having clinically demonstrable urinary leakage. In 10 cases it was confirmed by urodynamic studies.

All the patients were multiparous. Thirty-five patients had associated varying degrees of pelvic floor defects, and 12 patients had only clinically demonstrable SUI with no pelvic floor defect.

All the patients were thoroughly evaluated by detailed history, urogynecological symptoms questionnaire, and complete physical examination. All had positive Marshall Test and Bonney test.

In all patients polypropylene mesh of adequate size was placed loose at midurethral level, extending from one paraurethral gutter to the other and was fixed with No.3-0 Vicryl on lateral sides.

Postoperatively the catheter was removed from day one or day three depending on the other ancillary procedures that had been performed and the residual urinary volume was measured. We also looked for any leak with Valsalva's maneuver.

The patients were called at weekly intervals for one month and monthly till date. During each weekly visit, a mild vaginal douche was given with hydrogen peroxide and betadine and the process of healing was studied. We looked out for signs of mesh rejection. During each visit they were questioned regarding recurrence of previous symptoms.

The cure of SUI was based on absence of urinary complaints and no urinary leakage with Valsalva's maneuver.

The criteria for failure of surgery were any patient complaining of recurrence of previous symptoms, or having demonstrable urinary leakage.

Surgical Technique

Surgeries in other patients were performed under spinal anesthesia in lithotomy position. Twelve patients with only SUI were operated under local anesthesia. Injection cefotaxim 1g intravenously was given to all the pa-

tients just prior to the anesthesia.

Saline adrenaline infiltration (1:2,00,000) was used in all the cases.

In patients with uterine prolapse, vaginal hysterectomy was performed first, followed by dissection of anterior vaginal wall away from the underlying pubo-vesico-cervico-vaginal fascia as laterally as possible. (Fig 1)

The indwelling Foley's catheter helped to define the midurethra & location of bladder neck.

A polypropylene mesh used in hernia repair measuring approximately 3-4cm X 1 cm is placed at midurethral level. This mesh is fixed laterally by anchoring its angles to the pubocervical fascia along with vagina using polyglatin No.3-0 suture (Fig 1). Mesh is fixed in a tension free way so that a small forceps can be easily passed beneath it. After placement of this mesh anterior colporrhaphy is performed.

In patients with only SUI, the mesh was kept (no fixation sutures taken) in the dissected space at mid urethral level and vagina was closed above it. A roller pack left in the vagina till next morning.

In the patients with anterior colporrhaphy, Foley's catheter was removed on Day 3 of surgery. In the patients with only meshplasty, catheter was removed the evening of surgery or the next morning.

All patients were checked for residual urinary volume, which was less than 50 mL.

At the time of discharge patients were instructed to avoid strenuous physical activities and sexual inter-

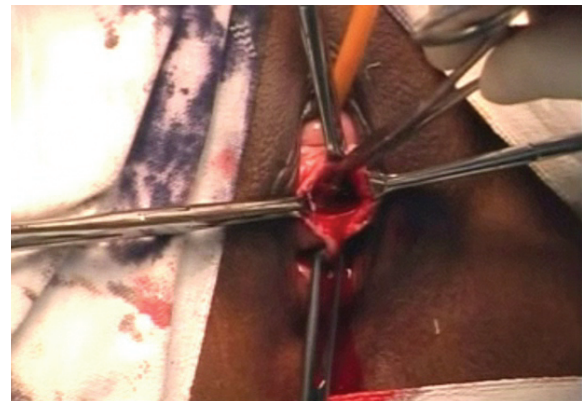


Fig 1 : Mesh at mid urethral area

course for 6 weeks.

Patients were called weekly for first one month and then monthly till date. All the patients were given a symptoms questionnaire regarding recurrence of previous symptoms, which also asked for improvement in their quality of life after surgery.

Discussion

Kelly designed an operation to cure SUI by using a peri-urethral plication suture at the bladder neck. However the long term success rate of Kelley's plication is 35-40%. Hence this is not the technique of choice today¹⁻³.

Observation

At the end of 15 months follow up of meshplasty surgery for SUI, following observations were made.

- 1) Duration of procedure: It is very quick procedure. Isolated meshplasty procedure required a time period of 10-15 minutes.
- 2) Intra operative complications: None of these patients had any hemorrhage, injury to bladder, urethra, etc.
- 3) Assistance from other surgical faculties like urology was not required.
- 4) Postoperative complication like febrile morbidity, local and systemic infection, retention of urine or rejection of mesh was not seen in any of the patients.
- 5) Success rate: No recurrence has been recorded till date. In all the fifty-five cases, none have reported with failure, thus giving 100% cure rates for SUI.
- 6) Cost effectiveness: Meshplasty is cost effective in comparison to other corrective surgery like sling surgeries (TVT, TOT, T-SUIT and retro pubic colposuspension).

Principle of meshplasty

Recent advances in the mechanism of SUI show that the support at midurethral level is weak resulting into sagging of midurethra. Thus the intravesical and the proximal urethral pressure becomes more than that in the midurethra resulting into dribbling of urine (SUI)

whenever intra abdominal pressure rises.

It will be irrational to use this already weak and torn fascia to support the urethra. It may give temporary relief but not long term success as seen in Kelly's plication suture. Hence these supports should be enhanced and reestablished by using synthetic material like polypropylene mesh, to provide a permanent solution.

We innovated the technique of meshplasty for SUI correction in which the lost fascial support of mid urethra was reestablished by simply fixing the flexible, non-absorbable, non-reactive polypropylene mesh at midurethral level. The polypropylene mesh provides mechanical support at the place of the torn and detached pubocervical fascia. The mesh gets interpenetrated by fibrous tissue, creating a tough scar and so causing permanent elevation of the midurethra.

Complications like enterocele⁴, which are very common following bladder neck suspension surgeries, cannot occur following meshplasty.

The present preliminary report is very encouraging. Long term follow up and large studies would prove its worth.

Conclusion

This preliminary report shows that our innovative procedure of meshplasty is simple, easy to perform, efficient and cost effective. Every gynecologist can do it independently without the help of urologists.

References

- 1) Colombo M, Vitobello D, Proietti F et al. Randomized comparison of Burch Colposuspension v/s anterior colporrhaphy in women with SUI and anterior vaginal wall prolapse. BJOG 2000;107:544-51.
- 2) Shawn A, Lewis L. Incontinence, prolapse a disorder of pelvic floor. In: Jonathan S. Berek (Ed), Novak's Gynecology, 13th Edition. New York, Lippincott Williams & Wilkins 2002;671-2.
- 3) Lee RA. Vaginal hysterectomy with repair of enterocele, cystocele and rectocele. Clin Obstet Gynecol 1993;36:967-75.
- 4) Wall LL. Urinary stress incontinence. In: Rock JA, Thompson JD (eds.), Te Linde's Operative Gynecology, 9th Edition. Philadelphia, Lippincott William and Wilkins, 1997:1071.