Original Article

Concomitant repair of stress urinary incontinence with proximal urethrovaginal fistula: Our experience

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ABSTRACT

Introduction: Proximal urethrovaginal fistula (UVF) located close to the bladder neck may cause extensive sphincter damage and is usually associated with continuous incontinence, which may mask the associated stress urinary incontinence (SUI). Simultaneous correction of SUI avoids a second surgery for SUI, which needs dissection in ischemic fields and carries a high risk of failure. The aim of this study is to describe our technique of concomitant repair of SUI with proximal UVF and our results.

Methods: Between July 2010 and August 2014, 14 patients underwent UVF repair in Jackknife position by the interposition of a Martius flap and simultaneous correction of SUI by modified McGuire pubovaginal autologous fascial sling. The procedure was carried out a minimum of 3 months of presentation and after detailed preoperative evaluation.

Results: After a mean follow-up of 28 months, all 14 patients were continent. None of the patients developed recurrence of the UVF. Two patients presented with retention immediately after catheter removal and clean intermittent catheterization training was given to both of them. Two patients became pregnant during the follow-up period and were advised cesarean section near term.

Conclusions: Repair of proximal UVF and correction of SUI can be performed in the same session to avoid the operation in an ischemic field.

Key words: Autologous fascial sling, McGuire pubovaginal sling, stress urinary incontinence, urethrovaginal fistula

INTRODUCTION

In developing countries, obstructed labor is a common cause of proximal urethrovaginal fistula (UVF).[1] In obstructed labor, prolonged compression of the urethra and bladder base between the fetal head and pubic bone causes necrosis of intervening tissues. The site and extent of injury may vary according to the position of the baby's head and the duration of obstruction. Clinical presentation of fistula in distal one-third of the urethra varies from asymptomatic, splaying of urine to vaginal voiding/pseudoincontinence. Proximal fistulae usually present with urine drainage per vagina during/after voiding.[1,2] If the fistula is located close to the bladder neck or is large, it may cause extensive sphincter damage and is usually associated with continuous incontinence, which may mask the associated stress urinary incontinence (SUI).[2,3] The aim of this study is to describe our technique of simultaneous repair of SUI with proximal UVF and our results.

METHODS

This is an observational analysis of proximal UVF treated in our hospital during 48 months between July 2010 and August 2014. All patients underwent repair of UVF by the interposition of a Martius flap and correction of associated SUI by modified McGuire pubovaginal autologous anterior

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Access this article online

Quick Response Code:

Website: www.indianjurol.com

DOI: 10.4103/0970-1591.185097

How to cite this article: Chodisetti S, Boddepalli Y, Kota MR. Concomitant repair of stress urinary incontinence with proximal urethrovaginal fistula: Our experience. Indian J Urol 2016;32:229-31.

rectus sheath fascial sling.[4] The procedure was carried out after a minimum interval of 3 months of presentation.

All patients with proximal UVF located close to the bladder neck with intact distal urethra were included in this study. The cases with a history of failed repair and with the involvement of bladder neck or trigone were excluded from this study. The preoperative evaluation consisted of detailed history, including history regarding preexisting voiding problems such as SUI, physical examination, routine laboratory work-up, abdominopelvic ultrasonography, intravenous urography, and cystourethroscopy. Cystourethroscopy was done to identify the location and size of the fistula and to identify bladder neck involvement and appearance of the bladder neck. The patients were followed up for at least 24 months. Follow-up included history, physical examination, urinalysis, and pelvic ultrasonography in the assessment of residual urine. Cystography and urodynamic studies were not done. In all cases, concomitant repair of SUI was done with fistula repair as described below. In the postoperative period, all patients were advised to avoid sexual intercourse for 1 month and pregnancy for a minimum of 6 months. A cesarean section near term for future pregnancy was advised.

Our technique of concomitant repair of stress urinary incontinence with proximal urethrovaginal fistula

The initial steps of surgery include cystourethroscopy and ureteric catheterization in the lithotomy position, followed by placing the patient in Jackknife position [Figure 1]. Silk labial retraction sutures were placed to get better exposure of fistula [Figure 1]. Foley catheter was passed into the bladder through the fistula. Circumscribing incision was given around the fistula and vaginal wall flaps were raised proximally, distally, and laterally 2–4 cm from fistula to expose periurethral and perivesical tissues [Figure 2]. Closure of fistula was done in two layers over a per urethrally passed 20 Fr Foley catheter. Edges of fistula were closed transversely with interrupted 3-0 Vicryl as first layer. Periurethral and perivesical tissues were closed as second layer perpendicular to the first layer. Martius flap which is based on posterior labial vessels was interposed over the closed fistula after tunneling it from the labial incision. The patient's position was changed to dorsal lithotomy for pubovaginal sling placement. Vaginal part of this operation includes paraurethral dissection and perforation of endopelvic fascia to enter the retropubic space. Modified McGuire pubovaginal autologous fascial sling is a 8–10 cm length and 1.5 cm width free graft of rectus sheath, which is harvested by giving a Pfannenstiel incision. Dissection was done close to the lateral border of the rectus muscle allowing easy access into retropubic space. A long curved artery forceps was placed into this space abutting the pubic bone to catch the vaginally placed sling suture and pulled into the abdominal incision. This sling was suspended against the bladder neck after tunneling it retropubically by repeating the above procedure on the other side. After adjusting the tension, sutures were tied at both the ends of the graft. Both vaginal wall defect and defect in the rectus fascia were closed. The pack was kept in the vagina for 24 h. 20 Fr Foley catheter was placed perurethra and left *in situ* for 3 weeks. Suprapubic catheter was not placed routinely.

RESULTS

Fourteen cases were operated by following the same principles in the last 4 years. The mean age was 24 years. All cases were postobstetric in origin and presented with a history of continuous leakage of urine. None of them had preexisting voiding abnormalities. In all cases, the fistula was situated within 15 mm of the bladder neck. The maximum diameter of the fistula repaired was about 2.7 cm with a mean diameter of 1.8 cm. The distal edge of fistula was situated at a mean distance of 2.5 cm from the external urethral meatus.

All patients were continent postoperatively without any failure. Two patients presented with retention of urine after catheter removal. CIC was deferred for 2 weeks and the patient was kept on 16 Fr per urethrally passed Foley catheter. All patients had normal sexual activity. No other voiding problem developed during the mean follow-up period of 28 months. One patient developed an abdominal wound infection, and another patient developed an incisional hernia. Cesarean section was advised near term for those two patients, who became pregnant during the follow-up period.

DISCUSSION

Repair of proximal UVF is difficult and challenging as there are extensive soft tissue defects and nonviable tissues. We perform concomitant correction of SUI with fistula repair

Figure 1: Enhanced visualization of fistula in jack knife position

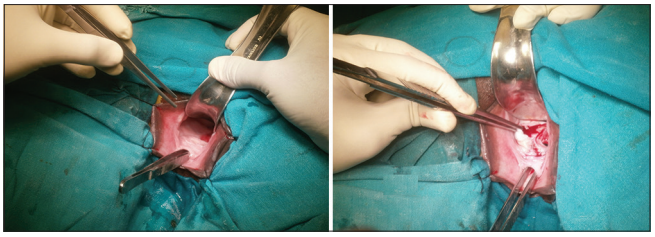

Figure 2: Vaginal wall flaps raised after giving a circumscribed incision around fistula

for all proximal UVF close to the bladder neck. Preoperative cystourethroscopy and ureteric catheterization were useful to avoid ureteric injury during fistula closure. Repair in Jackknife position allows better visualization of the fistula with ample room for repair.

We routinely interpose the Martius flap in every case because of the questionable quality of the local tissues and planned autologous sling procedure.[1] Pushkar *et al*. had reported the development of SUI and requirement of subsequent anti-stress incontinence procedure in 50% of patients when only fistula repair was done.[1] Even after the successful closure of fistula, the patient may consider the fistula repair as a failure because of the stress incontinence. Many patients may not return for further correction of incontinence as they reside in remote villages. Concomitant correction of SUI avoids secondary surgery which involves dissection in an ischemic field and carries high chances of failure.[2] After the closure of fistula, SUI repair can be done with either a synthetic mesh or with an autologous sling like rectus sheath sling, anterior vaginal wall sling or tensor fascia lata sling. However, synthetic slings were not advisable as there is a higher chance of erosion.[5] Among the autologous slings, Blaivas and Jacob modification of McGuire sling with a free graft of rectus fascia with adjustable tension is widely used.[6]

Intraoperative testing for SUI was not done as it is not reliable.[7] Harvesting a rectus sheath sling may contribute to additional morbidity but appears a favored option due to the familiarity with abdominal anatomy. It also allows for easier placement of pubovaginal sling at the level of the bladder neck by dissection under vision, lateral to each rectus muscle which minimizes the adjacent organ injury.

In our series, wound infection and incisional hernia contributed to additional morbidity. Even though there is no associated SUI in approximately 50% cases of proximal UVF, we realize we are over treating them to avoid recurrence and future difficult surgery. However, a detailed preoperative evaluation of each patient with urodynamic studies to predict the particular set of patients likely to develop postoperative SUI may be required to limit the concomitant repair to those who are most likely to need it.

CONCLUSIONS

Repair of proximal UVF and correction of SUI performed in the same session avoids the operation in the ischemic field. Modified McGuire pubovaginal sling can be used with high success and minimal morbidity. With meticulous attention to the principles of fistula repair and sling placement, a successful outcome can be achieved in the majority of patients.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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