

Transpubic Urethroplasty for Recurrent Urethral Strictures in Pelvic Fracture Urethral Distraction Defects: A Tertiary Care Centre Experience

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Abstract

Background: Posterior pelvic fracture urethral distraction defect (PFUDD) is a challenging urologic problem that may result in complications, such as urinary incontinence and inability to void due to recurrent stricture leading to a lifelong disabling condition. The principal indication of transpubic urethroplasty is lengthy (3cms) recurrent (failed) repairs of posterior urethral stricture. **Subjects and Methods:** We reviewed case records of patients who presented with recurrent urethral stricture secondary to pelvic fracture urethral distraction defects from 2005 to 2010. **Results:** All 8 such cases were followed up for a period of 1-3 years. Overall stricture free rate was 75%. **Conclusion:** Transpubic urethroplasty appears to be an optimal substitute for recurrent stricture due to pelvic fracture urethral distraction defects (PFUDDs).

Keywords: Transpubic Urethroplasty, Urethral Strictures.

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Introduction

Posterior pelvic fracture urethral distraction defect (PFUDD) is a challenging urologic problem that may result in complications, such as urinary incontinence and inability to void due to recurrent stricture leading to a lifelong disabling condition.^[1] As the understanding of the disease process has improved with evolution of better imaging in the form of magnetic resonance imaging (MRI) and Doppler ultrasound, and with better surgical techniques, the success rates of posterior anastomotic urethroplasty have improved worldwide. Urethral distraction injuries occur in upto 10% pelvic fracture cases.^[2] The principal Indication of transpubicurethroplasty is lengthy (3Cms) recurrent (Failed) repairs of Posterior-urethral stricture. Transpubicurethroplasty said to offer the best results when compared to other procedures like primary anastomotic Urethroplasty, rerouting the urethra under the corpora, urethral substitution with tubularised flaps especially when repeat procedures are performed. In this article, we review our experience in 8 cases of recurrent urethral strictures in pelvic fracture urethral distraction defects in whom we offered transpubicurethroplasty as a surgical management.

Subjects and Methods

We reviewed case records of 8 such patients who presented with recurrent urethral stricture secondary to pelvic fracture urethral distraction defects from 2005 to 2010. All the patients were males, whose age ranged from 20 to 47 years.

Pre-op evaluation included X-ray KUB, ultrasound abdomen and pelvis, RGU, MCU, cystoscopy, urine culture and renal biochemical parameters. Urethra was approached through progressive perineal and abdominal approach with total pubectomy, followed by excision of fibrosed stricture and end to end anastomosis. In 3 cases omentum was wrapped. Post operatively pericatheteral RGU was carried out after 4 weeks and catheter removed if there was no leak. RGU, MCU, uroflometry with PVR were done one month after removal of catheter. Subsequently UFR, PVR were done 6 monthly.



Figure 1: Preop RGU of previous failed posterior urethral stricture repair

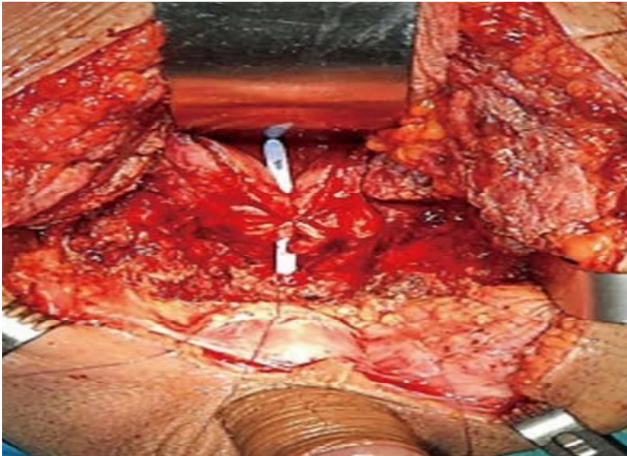


Figure 2: Intraoperative photograph of transpubic urethroplasty



Figure 3: Pericatheter RGU showing free flow of contrast into posterior urethra and bladder



Figure 4: Pericatheter RGU showing extravasation of contrast

Results

All 8 Cases were followed up for a period of 1-3 years. Out of 8 cases, 6 cases maintained UFR with insignificant PVR. 2 cases had pericatheter leak, with decreased urinary flow and significant PVR and were followed up with CICS. Overall stricture free rate was 75%. Of the 8 patients who underwent surgery 1 patient (12.5%) developed infection. Restenosis occurred in 2 (25%) patients, incontinence in 2 (25%) patients, impotence in 3 (36%) patients and pubectomy related waddling gait in 4 (50%) of patients.

Discussion

The incidence of urethral injury in men with pelvic fracture varies widely. The results of 2 extensive reviews have shown that the incidence of posterior urethral injury varied from 1.6% to 25% (mean 9.9%).^[1] The incidence of posterior urethral injuries in pelvic fractures in another series has been estimated to be 10%.^[2] This variation is due to the differences in age group and the type of pelvic fracture in different series and due to the prospective and retrospective nature of different series.

Mechanism of urethral injury

Traditionally, it has been accepted that urethral rupture in men occurs at the prostatomembranous junction by the shearing forces that avulse the prostatic apex from the urogenital diaphragm.^[3] But recent evidence from various cadaveric studies has shown that there is no distinct superior membrane of the urogenital diaphragm separating the sphincter muscle from the prostate. The urethral sphincter extends from the bladder base to the perineal membrane and is associated throughout the prostate although the bulk of the sphincter is displaced distally as the prostate grows, especially during puberty.^[4] The muscles lining and surrounding the membranous urethra are directly continuous with similar muscles of the prostatic urethra, which end at the perineal membrane and are not in the bulbar urethra. Hence, it is the bulbomembranous junction, which is the weak spot at which the posterior urethra is prone to injury.^[5] This is observed intraoperatively as the fibrous process of posterior urethral disruption involves the proximal bulbar and membranous region. Uncommonly, the prostatic urethra and the bladder neck are directly lacerated by the sharp edges of bone fragments, which are seen in young boys due to the insufficient protection offered by the small prostate.^[6] In 1977, Colapinto and McCallum proposed a classification for posterior urethral injuries comprising 3 types.^[7] Recently, Goldman et al. have proposed a new classification system, which allows us to compare different therapeutic strategies and their outcomes.^[8] But these classifications do not have a role in determining the management strategies of these injuries at present.

Posterior urethral injuries often take a low priority in the management of patients with pelvic fracture injuries as these individuals almost always have multiple injuries of

more serious consequence. Most patients are best treated by a suprapubic catheter initially followed 3 months later by an end-to-end anastomotic urethroplasty in those who have developed urethral occlusions. Although there are roles for delayed primary repair and for endourologic management in selected patients, these procedures require considerable technical expertise that may not be available in all centers. Their exact roles have yet to be defined.

Management of failed urethroplasty

Gupta et al. have reported a large retrospective series comparing outcomes in fresh cases and in redo cases. The success rate in both the groups were similar (excellent or acceptable result in 95%), but the redo cases required a longer operative time due to the more frequent need for the transpubic approach and the need for meticulous dissection and additional maneuvers to achieve successful urethroplasty.^[9] Similar conclusions were drawn by Singla et al. in their series of pediatric anastomotic urethroplasties.^[10] Culty and Boccon-Gibod in a series of 51 patients, reported a satisfactory outcome of 95% in primary cases compared with 60% in patients with previous failed urethroplasty. Singh et al. concluded that previous intervention in the form of railroading and urethroplasty affected the outcome of redo urethroplasty but previous core through internal urethrotomy did not affect the outcome significantly.^[11] Lumen et al. also concluded that the failures and complications were higher after reconstruction following failed urethroplasty.^[12] These studies indicate that in cases of failed anastomotic urethroplasty, redo anastomotic urethroplasty is the treatment of choice giving the best and most durable results in terms of urethral patency. However, these redo cases require greater expertise and often need an approach with a greater need for pubectomy than primary anastomotic urethroplasty. The patency results in redo cases, although very good, are marginally inferior to primary anastomotic urethroplasty in most series thereby emphasizing the need to do as good a urethroplasty as far as possible in the first attempt itself.

Conclusion

Transpubic urethroplasty appears to be optimal substitute for recurrent stricture due to pelvic fracture urethral distraction defects (PFUDDs). Pericatheter leak seems to be an important factor in determining the successful outcome.

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