ORIGINAL ARTICLE

IMPROVISING OUR TECHNIQUE OF END TO END URETHROPLASTY

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ABSTRACT

Objective — *To assess the outcome of improvised technique of urethroplasty.*

Study design — Descriptive study.

Place & Duration of study — *Department of Urology, Jinnah Postgraduate Medical Center Karachi, from 2004 to 2008.*

Patients and Methods — *All patients undergoing posterior urethroplasty were included. One stage transperineal urethroplasty was done in all cases. All patients underwent simultaneous antegrade and retrograde urethrogram and endo-evaluation, before definitive surgery, to assess magnitude of urethral separation and bladder neck competence. Success was defined as no or mild / moderate recurrence following definitive urethoplasty, managed successfully with single to thrice internal urethroplasty procedures respectively.*

Results — *Thirty two patients were included in the study. Mean age of the patients was 35 years. In all cases, delayed end to end urethroplasty was performed. These cases remained under follow up. All patients had history of trauma. Twenty two patients suffered road traffic accident and 10 patients had history of fall and sustained trauma to perineum or urethra. Fifteen patients had associated pelvic fracture. One patient developed epididymo-orchitis postoperatively and managed conservatively. Three patients had erectile dysfunction which persisted. One patient developed erectile dysfunction after surgery. All patients remained continent at follow up.*

Average interval between initial injury and urethroplasty was five months. Post operatively pericatheter urethrogram was done after 03-04 weeks and Foley catheter removed. Fifteen patients (46.8%) required no further treatment after catheter removal. Eight patients (25%) needed single internal urethrotomy within 4-8 weeks of Foley catheter removal. Six patients (18.7%) underwent internal urethrotomy twice in 4-8 weeks of catheter removal. They were kept on clean intermittent self catheterization for few months. Three patients (12.7%) had frequent multiple internal urethrotomy sessions considered as complete failure, and they were planned for re do urethroplasty.

Conclusion — *Anastomotic urethroplasty offers good long term results to patients with posterior urethral trauma and stricture disease.*

Key words — *Urethral injuries, Stricture urethra, Distraction defects.*

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INTRODUCTION:

Posterior urethral stricture is an obliterative process in the posterior urethra that results in fibrosis is the effect of distraction in that area caused by trauma. By consensus of the World Health Organization conference, the term stricture is limited to the anterior urethra; distraction defects are processes of the membranous urethra associated with pelvic fracture. Also included is the narrowing of the posterior urethra, urethral contractures, or stenosis.[1]

Posterior urethral injury complicates up to 25% of pelvic fractures resulting from blunt pelvic trauma.[2] These injuries pose a significant management challenge. There is a potential of extensive fibrotic response in such cases which distorts anatomy of the region. Other factors like associated organ injuries, initial medical instability of many patients, urinary extravasation etc further affect the treatment outcome.[3] Erectile dysfunction is also a part of problem in some cases.[4]

Primary endoscopic realignment of urethra can obviate the need for further intervention, but suprapubic cystostomy, with delayed anastomotic perineal urethroplasty remains the gold standard with long term success rates exceeding 90%.[5]

Some cases may warrant extra maneuvers to bridge the distraction defect. We found that two steps are necessary for success of urethroplasty; eversion of the mucosa of prostatic urethra and tension free anastomosis. Success rate in our previous series was 60%. Here we present a new series and stress is on eversion of the proximal mucosa and placement of the sutures symmetrically to avoid jumbling with each other.

PATIENTS AND METHODS:

This study was conducted at the Department of Urology, Jinnah Postgraduate Medical Center (JPMC), Karachi during 5 years period from 2004 to 2008. The acute treatment of patients presenting at A & E Department was placement of suprapubic cystostomy catheter with no attempt at immediate realignment. Urethroplasty was performed at minimum of 3 months interval after initial trauma.

One stage transperineal urethroplasty was done in all cases. Patients underwent simultaneous antegrade and retrograde urethrogram and endo-evaluation, before definitive surgery, to assess the magnitude of urethral separation and bladder neck competence. Stricture length varied between 03- 05cms. Conventional urethral lengthening maneuvers were implied when needed. Complete excision of stricture segment was mandatory until healthy pliable tissue reached. This often needed infra verumontenal prostate excision. Lateral spatulation and eversion of proximal urethral mucosa was done with polyglycolic 3/0 sutures. A tension free bulboprostatic anastomosis was done with 6-8 sutures of 3/0 polygylactin over silicon Foley catheter. Placement of sutures was done in a symmetrical fashion, initially at 9,12 and 3 O'clock position. They were clearly demarcated so that no jumbling occurred, then rest of the sutures applied at 4,6 and 8 O'clock position. Perineal body stitched with urethra to provide support. Bulbospongiosis muscle closed over urethra, while taking few stitches through seromuscular layer of urethra to support it. Vacuum drain was placed. Patients kept on limited mobility for 3-4 days post operatively and anticholenergics given in immediate postoperative period. All patients kept on mild laxatives to minimize straining during defecation.

Success was defined as no or mild / moderate recurrence managed successfully with single to thrice internal urethrotomy procedures respectively.

RESULTS:

Thirty two patients were included in this study. Mean age of the patients was 35 years. In all cases delayed end-to-end urethroplasty was performed. All patients had history of trauma (22 with road traffic accident and 10 had history of fall and other trauma to perineum or urethra). Fifteen patients had associated pelvic fracture. One patient developed epididymo-orchitis postoperatively and managed conservatively. Three patients had erectile dysfunction which remained postoperatively. One patient developed erectile dysfunction after surgery. Average interval between initial injury and urethroplasty was five months.

Fifteen patients required no further treatment after catheter removal. Eight patients had single internal urethrotomy within 4-8 weeks of catheter removal while six patients underwent internal urethrotomy twice in 4-8 weeks of catheter removal. They were kept on clean intermittent self catheterization for few months. Three patients had frequent multiple internal urethrotomy sessions and considered as complete failure.

DISCUSSION:

Posterior urethral disruption is one of the most challenging injuries to manage following urological trauma. In addition to appropriate initial management,

careful selection of the operative technique and the experience of the urologist in urethral reconstructive surgery are crucially important for successful repair of post-traumatic urethral stricture. The decision as to which operative technique should be used is determined by various factors, including stricture length and location, and the general health and age of the patient.[4] Early intervention may be complicated by bleeding, huge pelvic hematoma, concomitant injuries to other organs. After a more prolonged delay these issues settle down but at the expense of extensive fibrosis. Therefore, significant controversy continues regarding the best time and approach to this issue. There are many who advocate suprapubic catheterization and urethroplasty after 03months.[6,7] Other advocate early so called endoscopic realignment. The latter used to be achieved in the past by the open surgical procedure of rail road.[8,9] Currently it is more commonly performed endoscopically by variety of endourological maneuvers, of which the commonest is probably to pass flexible cystoscope though a supra pubic tract, a rigid cystoscope into the urethra and then guide wire between them, so that a catheter can be passed over the guide wire.[10]

Placement of a catheter across a urethral disruption may rarely allow healing without stricture, but in most of the patients, mild stenosis 1 to 2 cm in length develops. Those managed with suprapubic tubes alone virtually always (96%) develop complete stenosis requiring posterior urethroplasty. Whereas realignment may not prevent symptomatic stenosis, it may ease the difficulty of open posterior urethroplasty by bringing the prostate and urethra closer.[1]

Open rail road procedure was associated with higher incidence of complications such as impotence, incontinence and bleeding, but this may simply have reflected the selection of patients undergoing this procedure.[11] Certainly suprapubic catheterization and delayed urethroplasty cause the least harm in early stage of management. This approach is associated with 10 year stricture free survival of more than 90%.[12]

Nearly all post-traumatic posterior urethral stenosis or obliteration in adults, regardless of length, can be corrected by one-stage transperineal end-to-end anastomotic urethroplasty.[13] In adults, transperineal anastomotic urethroplasty is the treatment of choice for urethral strictures secondary to pelvic fractures, which are usually located at the membranous urethra.[14-15]

The key to anastomotic urethroplasty lies in two anatomical points, first that bulbar urethra is elastic and can be stretched for 2-4cm to overcome a defect and allow an overlapping spatulated anastomosis. Second that natural course of bulbar urethra is nearly semicircular so that by straightening out the natural curve even longer defects can be bridged this by elasticity. The viability of the bulbar urethra and mobilized segment of corpus spongiosum is maintained as long as it is not placed under too much tension. Some 2-4 cm of elastic lengthening can be gained by bulbar urethral mobilization, but 1 cm will be lost from this because of need to spatulate the ends of urethra for anastomosis to the similarly spatulated prostatic urethra. This spatulation is important because it means that even if there is some contraction of the anastomosis after surgery, as would be expected, the caliber will remain adequate.

For longer defects, which are in the majority, bulbar urethral mobilization will not be enough and urethra will require straightening. Fortunately, the proximal 5-7cm of the fused crura can be separated in an avascular plane. If splitting the corpora is not sufficient to allow the two urethral ends come together without tension, then a wedge of the inferior pubic arch can be taken out to straighten the course of the bulbar urethra further. If these two maneuvers together fail then urethra can be re-routed around the shaft of the penis.

In our study success rate was good (about 70%). If we include moderate failure cases it reaches up to 90% in long term. Complication rate was also low. We improved our techniques of surgery by eversion of proximal urethral mucosa, stabilization of urethra by stitching it with perineal body and use of anticholinergics in immediate post operative period. These techniques improve results as compared to our previous study.

CONCLUSIONS:

Anastomotic posterior urethroplasty is an effective and durable approach to the treatment of men with traumatic posterior urethral disruption**.** Recurrent strictures are uncommon and most can be effectively managed with optical internal urethroplasty.

REFERENCES:

1. Morey AF, Rozanski TA. Urethral injuries, Campbell-Walsh Urology 9th ed.Philedelphia, Saunders,2007:2658-60.
2. Cooperberg MR, McAninch JW, Alsikafi NF, Elliott SP. Urethral reconstruction for traumatic posterior urethral disruption: Outcomes of a 25-year experience. J Urol 2007;178:2006-10.
3. Reynard J, Brewster S, Biers S. Trauma to urinary tract. Oxford handbook of urology, Oxford University press; 2006.
4. Berger AP, Deibl M, Bartsch G, Steiner H, Varkarakis J, Gozzi C. A comparison of one-stage procedures for post-traumatic urethral stricture repair. Br J Urol 2005;95:1299–302.
5. Levine J, Wessells H. Comparison of open and endoscopic treatment of posttraumatic posterior urethral stricture. World J Surg 2001; 25:1597-601.
6. Webster GD, Mathes GL, Selli C. Prostatomembranous urethral injuries: a review of the literature and a rational approach to their management. J Urol 1983; 130: 898-902.
7. Mundy AR. Pelvic fracture injuries of the posterior urethra. World J Urol 1999; 17: 90-5.
8. Follis HW, Kock MO, McDouglas WS. Immediate management of prostatomembranous urethral disruptions. J Urol 1992;147:1259-62.
9. Elliott DS, Barrett DM. Long-term follow up and evaluation of primary realignment of posterior urethral disruptions. J Urol 1997;157: 814-6.
10. Ghelier EL, Frontera JR. Immediate primary realignment of prostatomembranous urethral disruptions using endourologic techniques. Urology 1997;49:596-9.
11. Koraitim MM. Pelvic fracture urethral injuries: Evaluation of various methods of management. J Urol 1996;156:1288-91.
12. Morey FA, McAninch JW. Reconstruction of posterior urethral disruption injuries: outcome analysis in 82 patients. J Urol 1997;157:506-10.
13. Webster GD, MacDiarmid SA. Posterior urethral reconstruction. In: Webster G, Kirly R, King L, Goldwasser B, eds. Reconstructive Urology Boston: Blackwell Scientific 1993;2:687–702.
14. al-Rifaei MA, Gaafar S, Abdel-Rahman M. Management of posterior urethral strictures secondary to pelvic fractures in children. J Urol 1991;145:353–6.
15. Jordan GH, Devine PC. Management of urethral stricture disease. Clin Plast Surg 1988;15:493–505.