Original Article

Outcome of Anastomotic Urethroplasty for Stricture Urethra

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ABSTRACT

Objective: To evaluate the outcome of end-to-end urethroplasty for stricture urethra and need for ancillary procedures. **Material & Methods:** Prospective, study was carried out in Department of Urology Allied Hospital Faisalabad from Oct, 2007 to April, 2010 to see the outcome for anastomotic urethroplasty in 40 patients. Simple perineal urethroplasty was done in 30 patients. Perineal urethroplasty with separation of corporal bodies was done in 06 patients and inferior pubectomy was required in 02 patients according to indication. Age, length of stricture and ancillary techniques required during reconstruction were combined. Success was considered when there was no need for redo anastmosis, IOU or patient was cured by dilatation. **Results:** Out of 40 patients that underwent end-to-end urethroplasty, 35 (87.5%) were successful. Simple perineal urethroplasty showed a success rate of 93.75%. Perineal urethroplasty with separation of corporal bodies had a success rate of 66.66%. Patients in which inferior pubectomy was required had success rate of 50%. **Conclusion:** End-to-end urethroplasty is an excellent option for treatment of stricture urethra and majority of failures occurs in children and those having very proximal membranoprostatic urethral strictures. **Key Words:** Perineal urethroplasty, Urethral stricture, Ancillary procedures.

INTRODUCTION

Anterior urethral injuries are usually caused by blunt trauma to the perineum [1]. Posterior urethral injury most commonly occurs as a consequence of pelvic fracture and may occur up to 10% of cases [2]. In 1977, Turner-Warwick popularized a distinction between simple and complex posterior urethral stricture resulting from pelvic fracture. Most post-traumatic strictures are simple and are suitable for one stage transperineal bulboprostatic anastomosis. Complex stricture associated with fistula, false passage, chronic periurethral abscess, osteomyelitis or damages to bladder neck may require a more extensive abdominoperineal approach [3]. The aim of surgical reconstruction for urethral stricture is to provide an adequate caliber, compliant and stable urethra. In 1983, Webster and Raman popularized an elaborated perineal approach for the reconstruction of pelvic fracture related urethral distraction injury in which urethral mobilization is augmented by progressing through additional steps of corporal splitting, inferior pubectomy and supracrural urethral rerouting, as needed, to bridge long or complex urethral defect. [4] In 1990s, this approach became the gold standard for the treatment of traumatic posterior urethral stricture [5]. In 2003, Flynn et al. reported the long-term results of this progressive one stage perineal anastomosis in 120 patients with pelvic fracture and urethral distraction defect (PFUDD).[5] This technique was successful in 95% of adults, 73% of prepubescent boys and 86% of patients undergoing secondary repair.

Conversely, Kizer et al. suggested that ancillary procedures such as corporal splitting, inferior pubectomy and supracrural rerouting are seldom required for successful posterior urethral reconstruction.[6.] Earlier reports regarding the role of ancillary maneuver in transperineal bulboprostatic anastomotic repair of PFUDD are not uniform. Some authors recommended this procedure while others suggested that the ancillary procedures are seldom required for successful posterior urethral reconstruction. Also, records of most of the previous studies on measurement of outcome after urethroplasty relied on qualitative data in follow up rather than quantitative data and there are very few studies from developing countries, where incidence of PFUDD is more than those from developed countries. Therefore we planned to see our outcome of anastomotic urethroplasty at Allied Hospital Faisalabad in respect

of site of stricture, stricture length, patient age and need for ancillary procedures.

MATERIALS AND METHODS

A prospective study was conducted in Urology Department Allied Hospital Faisalabad from Oct. 2007 to April 2010. A total number of 40 patients with stricture urethera were treated with end-to-end anastomotic urethroplasty. Average patient age was 15(07-35) years. Length of the stricture was measured by retrograde urethrography + MCUG and confirmed by the urethroscopy and cystourethroscopy simultaneously at the time of surgery. Delayed end-to-end urethroplasty was done after 3 months in case of direct trauma or fracture pelvis. Patients with history of urethroplasty more than one time, urethrorectal fistula, bladder neck involment and age blew 7 years were excluded from the study. Patients were divided into 3 groups according to length of stricture site of stricture and need of surgical techniques required for urethroplasty. Operative procedure was decided according to indication. Group 1 included stricture length upto 2 cm. Group 2 stricture length upto 4 cm. Group 3 stricture more than 4 cm or involving membranoprostatic area Broad spectrum antibiotics were given before induction of anesthesia in every case.

Urethral Reconstruction Techniques

All the patients were placed in exaggerated lithotomy position. The operative technique comprises four sequential maneuvers to achieve a tension-free Anastomosis.

Group1 Simple perineal anastomosis (32 patients)

.All the patients underwent vertical perineal incision. The bulbar urethra was completely mobilized and transected at the distal extent of the stricture. The stricture was excised under the guidance of metallic sound in the proximal urethra through the suprapubic cystostomy tract. Periurethral fibrosis was accessed. All scars and fibrotic tissue occupying the distraction defect were excised with a scalpel blade.

Group II Perineal anastomosis with corporal separation (6 patients,).

Cavernosa septum was incised in midline plane beginning from crus to approximately 4-5 cm and distal urethra was inserted through the septum. This maneuver reduced the tension of end-to-end anastomosis.

Group III Perineal anastomosis with inferior pubectomy (2 patients).

In this maneuver, after displacing the dorsal vein. a wedge of bone was excised from the inferior aspect of the pubis. This allows the urethra to be redirected cephalad resulting in an additional 1-2 cm of apparent urethral length. Hemostasis was achieved with bone wax.

OUTCOME ANALYSIS

Postoperative retrograde urethrogram was performed at 4 weeks and 3 months. Patients were followed for 6 months regarding surgical outcome and need for subsequent procedures like repeated dilatation, Internal Optical Urethrotomy or need for redo end-to-end Urethroplasty. Urethroplasty was considered successful when the patient was voiding well either with out any intervention or needed only dilatation.

Urethroplasty was considered as failure if the stricture persisted or if there was recurrent stenosis.

RESULTS

In this study 40 patient were treated by end-to-end Urethroplasty. Blunt urethral trauma was seen in 18 (45%) patients. Pelvic fracture in 7 (13.5%) cases. Stricture was because of iatrogenic trauma in 8 (20%) patients. Infection was cause of stricture in 5 (12.5%) cases. No apparent cause was found in 2 (5%) patients. History of Internal Optical Urethrotomy was positive in 9 (22.5%) cases (Table No 1). Results of this procedure were poor in children.

Table-1:
Causes of Stricture

Cause of Stricture	No of patients	Percentage
Trauma	25	62.5%
Iatrogenic Injury	8	20%
Infection	5	12.5%
Unknown	2	5%

Simple perineal end-to-end Urethroplasty was done in 32 patients. There was success in 30 (93.75%) patients. During urethroplasty, separation of corporal bodies was done in 6 cases. Successes was seen in 4(66.66%) cases. Inferior pubectomy was required in 2 patients and we were successful in 1 (50%) case. Table No 2.

We required repeated dilatation in 6 (15%) cases. Overall success rate was (87.5%). There was complete failure of the procedure in 5 patients. No patient was incontinent after Urethroplasty.

Table 2:
Success rate by various techniques

Group	No. of patients	Procedure	Success Pts	%age
1	32	Simple perineal Anastmosis	30	93.75%
2	6	Separation of corporal Bodies + Urethroplasty	4	66.66%
3	2	Inferiorpube-pubectomy/ Urethroplasty	1	50%

DISCUSSION

Perineal Urethroplasty is difficult to perform and had been a challenge since long. It is evolving continuously. There is no universal consensus on single method for urethroplasty. First end-to-end urethroplasty was performed by Heusner [7] in 1883, initial success with stricture excision and sutured anastomosis was poor. Waston and Cunningham [8] reviewed 13 patients in 1908 more than 1 year after surgery and found only five patients who had satisfactory results. In 1895 Rochet [9] recommended urinary diversion in conjunction with the stricture surgery. This was applied by Marion [10] in 1912 and Heitz-Boyer [11] in 1922. Excision of the traumatized segment, end-to-end Anastomosis, and suprapubic cystostomy improved long-term success with stricture surgery. Success by European Surgeons like Marion and Heitz-Boyer made continues effort to apply this approach to urethral stricture despite opposition by their United States counterpart, who favored urethrotomy [12]. Surgery for posterior urethral stricture is difficult with problems of access, limited urethral length, surrounding fibrosis and the small caliber of the bulbar urethra that is susceptible to ischemic insult. [13] Recently, Koraitim determined the influence of bulbar urethral length on the outcome of bulboprostatic anastomosis [14.]

Different methods are used to deal with stricture urethra. Park et al in 2004 managed straddle injuries by different techniques and concluded that early suprapubic cystostomy should be done to reduce morbidity[15]. It is as done in our study. Gorraz Ortizma et al evaluated long term results of end-to-end Urethroplasty and obtained 92% results [16]. In our study overall success was 87.5%.

Berger AP et al compared one stage procedure for post traumatic urethral stricture repair and concluded that longterm results were 85% with end-to-end Urethroplasty and 95% with Doral onlay Urethroplasty [17]. Austoni E et al in 2005 used transperineal prerectal approach in posterior Urethroplasty with success in 12 patients with failure in only one patient [18].

Nazir et al compared internal Urethrotomy versus perineal Urethroplasty and concluded that internal Urethrotomy is an acceptable alternative to Urethroplasty in short stricture [19].

Orabis S. did Urethroplasty in children with good result. In our study results were poor in children as compared to adults. Dakum et al had vast experience of urethroplasty and had recurrent stricture in 34.4%[20].

In our study recurrent stricture rate was 12.3 %. Gupta reviewed outcome of end-to-end urethroplasty with success rate of 82.6 % and concluded end-to-end Urethroplasty the ideal procedure for anterior and posterior stricture [21]. It is in accordance with our study.

Recurrence of stricture is troublesome during follow up. The major cause of recurrence is the incomplete excision of the scar tissue around the urethra during surgery. In our study, most recurrences were short in length, occurred at the anastomotic site and responded to optical urethrotomy in four patients. Similarly, other investigators have reported successful endoscopic management of recurrent anastomotic strictures and attributed this success to the short length of the stricture as well as a decrease in periurethral fibrosis after perineal repair [22, 23].

CONCLUSION

Perineal end to-end urethroplasty is an excellent procedure for anterior as well as posterior urethral stricture repair. It may require ancillary techniques for long strictures. Majority of failures occur in prepubescent boys, long stricture and secondary repair.

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