

Urinary and Sexual Outcomes After Anastomotic Urethroplasty Performed For Posterior Urethral Distraction Defect

Urinary and Sexual Outcomes After Anastomotic Urethroplasty

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ABSTRACT

Objective: Posterior urethral distraction defects are frequently related with pelvic fracture with prevalence varies from 5% to 10%. It remains a surgical difficulty in reconstructive urology. Therefore, the current investigation mainly focused on the urinary and sexual outcomes after anastomotic urethroplasty performed for posterior urethral distraction defects.

Study Design: A retrospective study

Place and Duration of Study: This study was conducted at the Department of Urology, Federal Polyclinic Hospital, Islamabad from January 2019 to December 2022.

Methods: This study was conducted on 24 male patients aged 15-63 years with distraction defects. All the patients underwent anastomotic urethroplasty and suprapubic cystostomy. Cystourethroscopy and retrograde urethrogram were performed for preoperative evaluation of the patients.

Results: A total 24 distraction defect patients were categorized into two groups: Group-I (primary surgery) and Group-II (redo surgery). About 20 (83.3%) patients underwent surgery for the first time (group-I). In 7 patients, a perineal approach without pubectomy was performed, as well as an inferior pubectomy in 11 patients. Due to a lengthier deformity, a transpubic approach was used on two patients in the primary group. In group-II, a perineal approach with inferior pubectomy was used in two patients whereas the remaining two underwent transpubic urethroplasty. The overall success rate was 91.7% whereas the anastomotic urethroplasty without any ancillary procedures was 83.3%.

Conclusion: The present study found that anastomotic urethroplasty is the ideal treatment for posterior urethral distraction defects. Most of the patients were treated using a transperineal technique, although a few required a transpubic approach, with satisfactory outcomes.

Key Words: Posterior urethral distraction defect, Urinary outcomes, Sexual outcome, Anastomotic urethroplasty

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INTRODUCTION

Posterior urethral distraction defects are frequently related with pelvic fracture with prevalence varies from 5% to 10%^{1,2}. It remains a surgical difficulty in reconstructive urology. PFPUI (pelvic fracture posterior urethral injury) remains an operating difficulty in reconstructive urology.³

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Pelvic fractures leading to posterior urethral injuries mechanism and their treatment varies globally^{4,5}. These injuries necessitate a better grasp of all current reconstructive urology techniques⁶. Else, it might result in potentially fatal complications such as restenosis, urethracutaneous fistula, and urinary incontinence⁷. Although the cases of posterior urethral distraction defect among the young age population is rare, it poses a significant surgical challenge for pediatric urologists. The frequency of pediatric pelvic fracture following blunt trauma is 2.3-4.7%. About 4.3% of them are related to urethral damage⁸.

A distraction defect is caused by two ends malalignment and urethral rupture separation injured or damaged by traumatic posterior injury. The urethral lumen is continuously obliterated in real urethral stricture. Adults are more susceptible to distraction defects and disruption of complete urethral caused by prostatic urethra significant displacement off the pelvic floor⁹. Many factors that contribute to challenges of distraction defect treatment and access to posterior urethra among children, initially, the fragile fractures

and underdeveloped pelvic bones of children significantly dislocated prostatic urethras. Second, due to a child's bladder's relative intra-abdominal location, there is a significant frequency of urethral trauma, sphincter complex injury, and concurrent bladder neck¹⁰. Lastly, the tissue fragility and calibres of urethra had a narrow limit among children with narrow pelvic limits¹¹. Given these variations, the posterior urethral defect treatment is challenging and needs anastomotic urethroplasty in most cases, but a substantial gap should be treated with a comprehensive transpubic approach¹². The present investigation mainly focused on the urinary and sexual outcomes after anastomotic urethroplasty performed for posterior urethral distraction defect.

METHODS

This retrospective study was conducted on 24 male patients aged 15-63 years with distraction defects in the Department of Urology, Federal Polyclinic Hospital, Islamabad from January 2019 to December 2022. All the patients underwent anastomotic urethroplasty and suprapubic cystostomy. Cystourethroscopy and retrograde urethrogram were performed for preoperative evaluation of the patients. In a few cases, additional operations were performed prior to urethroplasty. An adult urologist performed 'rail-roading' and catheter insertion on several patients. A plastic surgeon used a groyne flap on one youngster who had suffered severe injuries and had lost scrotum and both his testis. Written informed consent was taken from each individual before urethroplasty. Under general anesthetic, all boys were operated on in the conventional lithotomy position with sufficient leg support. The surgery began with a median raphe perineal inverted 'Y' incision. By incising the bulbospongiosus muscles and dissecting proximally until the destroyed portion was exposed, the bulbar urethra was revealed. The entire defect was removed. All the patients underwent 3 years of follow-up assessments. These evaluations encompassed an examination of their urinary stream, uroflowmetry, a routine analysis of their urine, and ultrasonography to scrutinize their kidneys, ureters, and bladder, while also assessing any remaining urine.

RESULTS

A total 24 distraction defect patients were categorized into two groups: Group-I (primary surgery) and Group-II (redo surgery). About 20 (83.3%) patients underwent surgery for the first time (group-I). In 7 patients, a perineal approach without pubectomy was performed, as well as an inferior pubectomy in 11 patients. Due to a lengthier deformity, a transpubic approach was used on two patients in the primary group. In group-II, a perineal approach with inferior pubectomy was used in two patients whereas the remaining two underwent transpubic urethroplasty. The overall success rate was

91.7% whereas the anastomotic urethroplasty without any ancillary procedures was 83.3%. Distribution of patients who underwent primary surgery depending on operative technique are illustrated in Figure-1. Length of stricture was measured as shown in Table-I. Table-2 represents the overall success rate of anastomotic urethroplasty.

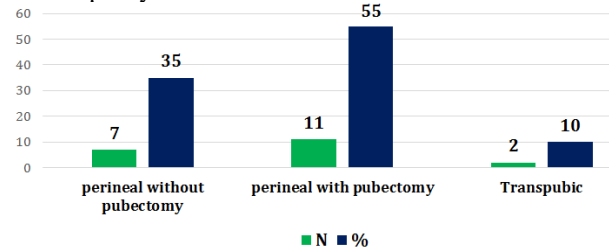


Figure No.1: Operative techniques in primary surgery (N=20)

Table No.1: Length of stricture (N=24)

Length of stricture (cm)	Frequency (N)	Percentage (%)
1-2.5	8	33.3
2.6-4.0	12	50
4.1-7.0	4	16.7

Table No.2: overall success rate of anastomotic urethroplasty

Criterion	Total patients N (%)	Overall Success Rate % (N)
Stricture	24 (100)	83.3 (20)
Permissible	24 (100)	91.7 (22)

DISCUSSION

The present study mainly focused on the urinary and sexual outcomes after anastomotic urethroplasty performed for posterior urethral distraction defect and reported that anastomotic urethroplasty is the ideal treatment for posterior urethral distraction defect. Most of the males were treated using a transperineal technique, though a transpubic approach was used in few patients, but their outcomes were satisfactory. Children's posterior urethral distraction abnormalities are challenging issue. Majority of techniques used for children distraction defects are similar with those used for adults except their structure, severity, and intricacy that varies. There is still no agreement on the best way to address these traumatic distraction deficits in youngsters.

Following a pelvic fracture, one of the most difficult challenges for a reconstructive urologist is posterior urethral disruption. Because of the difficulty of access, posterior urethral defect surgery has numerous complications such as small urethral diameter, restricted urethral length, and surrounding fibrosis that leads to ischemic insults¹³. The sort of operation depends on the place, the duration of the stricture, and any previous surgery that patients have had¹⁴⁻¹⁷. These surgery includes elaborated perineal, VIU,

abdominoperineal urethral reconstructive procedures, dilation, and perineal urethral anastomosis¹⁸⁻¹⁹.

The urethra vasculature maintenance through defect excision and anastomosis (tension free) are all important factors to prevent recurrence²⁰. Hafez et al²¹ reported that the success rate of anastomotic urethroplasty for posterior urethral defect was 88%. According to their study the comprehensive preoperative anatomical examination and intraoperative cautious manipulation could prevent the perineal anastomosis challenges and complications in the majority of cases²². With delayed first perineal anastomosis, we observed a comparable success rate of 91.7%. Likewise, another study by Feng et al²³ found that anastomotic urethroplasty for posterior urethral defects were 100% successfully done. Another study by Fu et al²⁴ conducted their study on 109 patients and found that the prevalence of recurrent urethral complication was 5% after anastomotic urethroplasty. The mobilizations of urethra and defect's excision insufficiently were the major causes for stricture recurrence during urethroplasty.

The selection, prognosis, and continence of surgical treatment for urethral distraction defects mainly rely on bladder neck competency and stricture extent evaluation preoperatively. The contrast scan of antegrade and retrograde is done in majority of cases but did not provide sufficient information especially in cases where no delineation and expansion of posterior urethra and bladder neck happened and defects appeared lengthier²⁵. Cystourethroscopy and preoperative ureteroscopy was done among children undergoing SPC tract for addressing these technical issues which is the visualization of posterior urethra and bladder neck. In all of these individuals, we discovered a patent bladder neck and posterior urethra²⁶.

Pfalzgraf et al²⁷ reported a 6% recurrence rate which is lower than the 14% re-stricture rate reported by Podesta et al²⁸. Numerous parameters such as underlying etiology, spongiobrosis, stricture initial length, and para-urethral abscess characterized the stricture recurrence^{29,30}. Helmy et al³¹ reported a recurrence in seven cases of their study on 65 patients who underwent perineal urethroplasty. Mouraviev et al³², as well as Whitson et al³³, reported good continence outcomes following perineal and transpubic urethroplasty. Blaschko et al³⁴ reported that nine patients experienced UI following urethroplasty, with six having SUI and one having complete UI. The pelvic fracture severity and concomitant bladder neck damage is more likely to be the cause of UI than surgical trauma.

CONCLUSION

Anastomotic urethroplasty is the ideal treatment for posterior urethral distraction defects. Most of the patients were treated using a transperineal technique, although a few required a transpubic approach, with satisfactory outcomes.

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