
Factors Contributing to a Successful Outcome of Combined Abdominal Transpubic Perineal Urethroplasty for Complex Posterior Urethral Disruptions

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Purpose: We present our results of and operative principles essential for a successful outcome of complex posterior urethral disruption management.

Materials and Methods: A total of 25 patients underwent abdominal transpubic perineal urethroplasty for complex posterior urethral disruption. Preoperative voiding cystourethrogram with retrograde urethrogram and cystourethroscopy were done to evaluate the stricture and bladder neck. Followup consisted of symptomatic and radiological assessment.

Results: Patient age was 22 to 57 years. Average followup was 24 months (range 11 to 39). Four patients had previously undergone failed perineal urethroplasty. A rectourethral fistula was present in 8 patients, of whom 2 required colonic diversion, while there were false passages in 3, a periurethral cavity with abscess in 6 and bladder neck laceration in 20. Mean stricture length $\pm$ SD was 6.5 ± 2.5 cm (range 4 to 9). Four of the 25 patients had previously undergone failed perineal urethroplasty. The mean period between original trauma/failed repair and definitive repair was 11.5 ± 4.4 months. Urethroplasty could be achieved through the normal subpubic route in 19 patients, while 6 required suprapubic rerouting. A total of 20 patients underwent simultaneous bladder neck repair. In 24 of 25 patients (96%) postoperative cystourethrography showed a wide, patent anastomosis. Postoperatively incontinence developed in 1 of 25 patients (4%). Ten of the 25 patients (40%) were impotent after the primary injury. Potency status in our patients did not change after urethroplasty. The overall urethroplasty success rate was 92%.

Conclusions: Hostile conditions in the perineum of patients with complex posterior urethral disruption mitigate against a good result. However, the safety and success of combined abdominal transpubic perineal urethroplasty make it the procedure of choice for these difficult strictures.

Key Words: urethra, urethral stricture, wounds and injuries, bladder

Complex posterior urethral disruption represents 5% of all urethral injuries.¹ It is characterized by a stricture gap exceeding 3 cm, previous failed repair, associated perineal fistulas, rectourethral fistulas, periurethral cavities, false passages or an open bladder neck. Complex strictures continue to represent a genuine challenge and they pose one of the most difficult management problems in urology. As a group, the results of CPUD reconstruction have been reviewed infrequently because these strictures are peculiar to areas with a predominance of war injuries and explosive trauma.^{2,3} We reviewed our results and the operative principles adopted for a successful outcome of CPUD reconstruction.

MATERIALS AND METHODS

We reviewed the medical records of patients who underwent combined abdominal transpubic perineal urethroplasty for surgical correction for CPUD from January 2000 to January

2006. CPUD was defined as a stricture gap exceeding 3 cm long, previous failed repair or associated perineal fistulas, rectourethral fistulas, periurethral cavities, false passages or an open bladder neck.

Preoperative and Operative Procedures

Immediate treatment in patients with urethral injury was suprapubic cystostomy tube placement with no attempt at primary realignment. Preoperative evaluation included history, physical examination, laboratory investigations such as full blood count, serum urea, electrolytes and creatinine, urinalysis, urine microscopy, culture and sensitivity. Voiding cystourethrogram with retrograde urethrogram and urethroscopy with antegrade cystourethroscopy were performed to evaluate the bladder neck, and stricture site and length. In patients with rectourethral fistula the need for colostomy was determined according to fistula size.

Patients were hospitalized 72 hours before definitive surgery and started on intravenous antibiotics and povidone-iodine saline irrigation through the suprapubic tube twice daily. A soap and water enema was given a day before surgery.

The patient was placed in the standard lithotomy position. Restoration of urethral continuity was first attempted

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through a midline, λ -shaped perineal incision. The bulbar urethra was dissected down to the proximal end of the strictured segment. If scar tissue extended above the supramontanal prostate, combined abdominal perineal exposure was created through a midline infraumbilical incision. The periosteum over the pubic bone was excised and a wedge of pubic bone was resected approximately 2 cm on each side of the symphysis pubis. After the retropubic space was formed excision of the rectourethral fistula was performed. The fistula core was dissected to the rectum and excised. The urethral and the rectal ends were closed in 2 layers. The bladder was then opened through the cystostomy site and the bladder neck was examined for any scarring. The scar was removed until healthy, supple tissue was reached. If this meant disrupting the bladder neck, a proximally based anterior bladder tube was constructed simultaneously to provide continence. The bulbar urethra was then mobilized distal from the perineal membrane, usually up to but not beyond the penoscrotal junction.

Two options were available to accomplish a tension-free anastomosis. If anterior urethral length was adequate, the anterior urethra was routed through the normal subpubic route. However, if routing through a subpubic route resulted in chordee, the crura were separated in the midline and supracrural rerouting was done. A tension-free end-to-end mucosa-to-mucosa urethral anastomosis was created using 4-zero polyglactin over a Foley catheter. A suprapubic catheter was inserted through the bladder dome. The bladder was anchored to the pubic bone on each side using nonabsorbable No. 1 polypropylene suture. To obliterate the perianastomotic dead space a pedicled belly of gracilis muscle was mobilized from the medial aspect of the thigh and slid into the pelvis. The urethral anastomosis was wrapped by a pedicled cremaster muscle flap or dartos flap from the scrotum. The suspensory ligament was repaired in cases that required supracrural rerouting.

A suprapubic tube was placed for urinary diversion and 2 suction drains were placed in the retropubic space. The urethral catheter was removed if extravasation was absent on retrograde urethrography 3 weeks after repair. Following a successful voiding trial the suprapubic catheter was removed.

The first followup visit was 3 weeks after suprapubic catheter removal, when voiding cystourethrography was done to assess the anastomosis and bladder neck competence. Radiological studies were repeated at 6-month intervals for 1 year and repeated when indicated during followup. For symptomatic assessment direct questioning was done with regard to urine stream, incontinence and erection.

Outcome Analysis

Postoperative results were classified as success—normal voiding and continence or failure—poor stream and/or incontinence. Urinary incontinence was defined as mild when no protective padding was used and severe when protective padding or treatment was necessary. The need for dilation, optical urethrotomy or repeat surgery was also considered failure. Complications were also noted, such as pubic osteomyelitis, gait abnormality, recurrent periurethral cavity, false passage and fistulas.

RESULTS

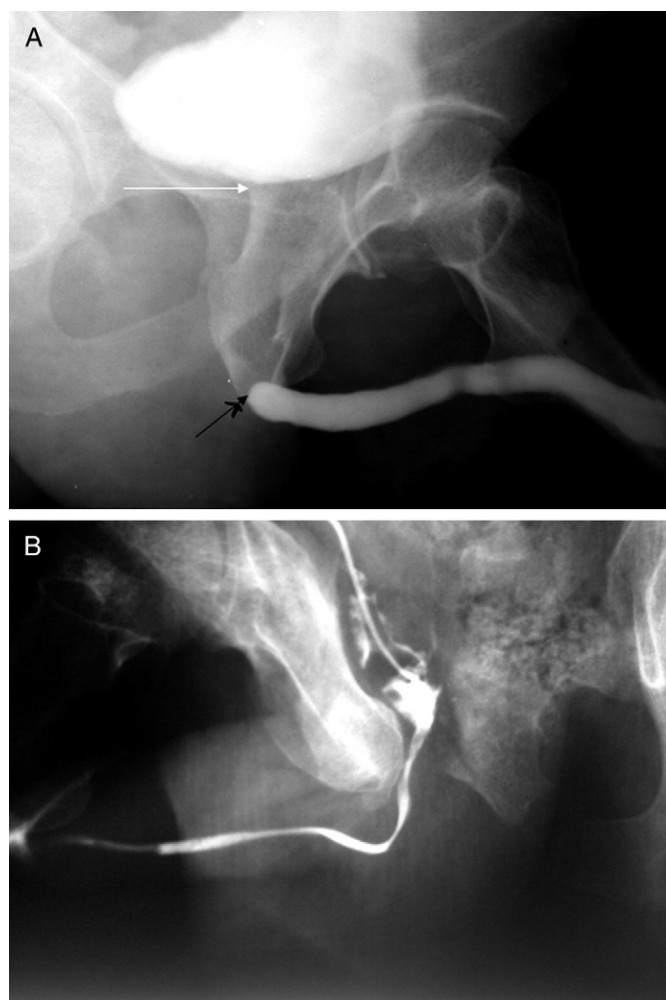
There were 25 patients with an average followup of 24 months (range 11 to 39).

Injury Characteristics

Primary injury was explosive blast in 19 patients and perineal gunshot injury in 6. Pelvic fracture was present in 12 patients. Four of the 25 patients had previously undergone failed perineal urethroplasty. A rectourethral fistula was present in 8 cases, while there were false passages in 3, a periurethral cavity with abscess in 6 and bladder neck laceration in 20.

Urethral Reconstruction

Mean stricture length $\pm$ SD was 6.5 ± 2.5 cm (range 4 to 9) (part A of figure). The mean interval between original trauma and repair in new cases and since the last repair in recurrent cases was 11.5 ± 4.4 months. Preoperative urine culture was sterile in 21 of 25 patients (84%). Average operative time was 7 hours, average blood loss was 800 ml and average hospital stay was 16 days (range 10 to 25). Urethro-



Urethrogram. A, combined antegrade and retrograde view shows long gap between distracted ends of prostatic (white arrow) and bulbar (black arrow) urethra. B, antegrade view in same patient reveals wide bulboprostatic anastomosis, smooth distal flow and no post-void residual urine.

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