

“Horrendoplasty” – A case of total perineal destruction by agricultural implement

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Abstract

Although posterior urethral injury occurs almost always in association with pelvic fracture, it may result from severe trauma to the perineum with its associated potential lethality and severe morbidity. Early primary endoscopic realignment over a urethral catheter can be attempted, although an immediate suprapubic tube placement remains the standard of care. Definitive treatment consists of elective open posterior anastomotic urethroplasty through a perineal approach. The authors present a 53-year-old man who sustained total, massive perineal destruction resulting from work accident with an agricultural implement. Immediate suprapubic tube placement was performed followed by delayed elective transperineal anastomotic posterior urethroplasty. A major multidisciplinary approach was necessary in the management strategy, including orthopedic, general, plastic, vascular surgeries, and reconstructive urology teams. At a later stage, with the patient stabilized and recovered from major, life-threatening lesions dealt with by a multidisciplinary team, urethral reconstruction can be undertaken with ultimate good functional outcomes.

Keywords: Multiple fractures, pelvic bones, posterior urethral stricture, reconstructive surgery, surgical anastomosis, trauma

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INTRODUCTION

Posterior urethral injuries (PUI) typically occur in conjunction with multisystem trauma from traffic or industrial accidents and falls.^[1] PUI occurs exclusively in pelvic fractures with disruption of the pelvic ring. Management options include immediate or deferred treatment.^[2] Although primary endoscopic realignment may be attempted in very select situations, immediate suprapubic tube placement remains the standard of care, followed by delayed elective bulbomembranous anastomotic repair with high cure rates without the need for multiple procedures.^[1,2] Nevertheless, erectile dysfunction, urinary

incontinence, and recurrence of stricture are possible complications. There is no established treatment protocol for the management of failed anastomotic urethroplasty, with urethral dilation or open reconstruction being used arbitrarily. However, most patients can be effectively and safely managed by redo urethroplasty.^[3]

We report a case of PUI in the setting of traumatic total devastation of the perineum by an agricultural implement, which required a sequential multidisciplinary management approach, including initial life-saving manoeuvres, intra-abdominal surgery for hemodynamic stabilization, and deferred urologic and plastic surgical reconstruction.

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CASE REPORT

A 53-year-old man was taken to the Emergency Department, poly-traumatized by an agricultural implement, resulting in pelvic fracture, right leg fracture, left hip disarticulation, massive perineal soft tissue destruction, and bulbomembranous urethral injury [Figures 1 and 2]. On examination, he presented with blood at the meatus, inability to urinate, and a palpable full bladder. An immediate retrograde urethrogram was not performed due to hemodynamic instability associated with life-threatening injuries, and the patient was taken immediately to the operating room (OR) where he underwent exploratory laparotomy, hemostatic measures, protective colostomy, fixation of fractures, and suprapubic tube placement.

Once he recovered from the initial trauma, urological evaluation for urethral injury was initiated. Retrograde and antegrade urethrogram (through suprapubic tube) showed complete urethral obliteration at the level of bulbomembranous urethra [Figure 3]. Pelvic MRI showed bulbomembranous urethral disruption with both stumps separated by a 4-cm gap [Figure 4].



Figure 1: Operating room in the emergency department before agricultural implement disengagement

separated by a 4-cm gap [Figure 4]. Three months after the initial trauma, the patient underwent transperineal posterior anastomotic urethroplasty with resection of extensive fibrotic tissue. Intraoperatively, the proximal urethral stump was encased in a significant amount of dense, hard, fibrotic tissue, making its identification and mobilization extremely difficult. Both urethral stumps faced abnormal, unusual directions, the proximal stump lying horizontally and facing the perineal wall alongside the anterior rectal wall, with extensive fibrosis between them, which made dissection and tissue resection a laborious task. The total bulbar urethra was mobilized and the two crural bodies were separated up to the base of the penis. After mobilizing both stumps and resecting all scar tissue, about 2 cm of urethral length were lost. Both ends of the urethra were then spatulated on opposite sides, six 5/0 absorbable full-thickness sutures were placed, and a tension-free anastomosis was performed, leaving a 16F silicone Foley urethral catheter *in situ* for



Figure 2: Left hip disarticulation

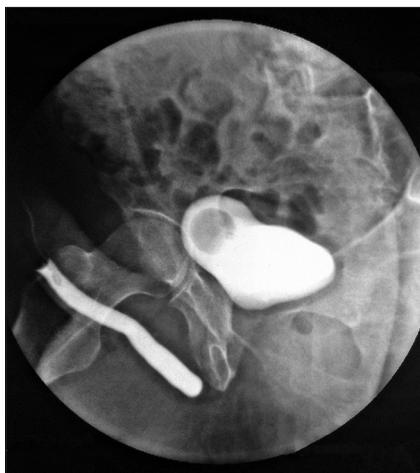


Figure 3: Urethrogram showing complete urethral obliteration at the level of bulbomembranous urethra



Figure 4: Pelvic magnetic resonance imaging showing bulbomembranous urethral disruption with both stumps separated by a 4-cm gap

3 weeks. One month later, flexible urethroscopy showed recurrent stenosis with complete urethral obliteration at the level of the anastomosis [Figure 5]. The patient underwent excision of fibrosis with primary re-anastomosis, losing about 1 cm more of urethral tissue. A 14F silicone Foley urethral catheter was left for 3 weeks. Three months later, retrograde urethrogram showed a patent urethra [Figure 6], and uroflowmetry showed maximum flow rate of 21 ml/s. Ultimately, the patient had a normal voiding pattern with his urinary continence preserved, although erectile dysfunction was unavoidable.

DISCUSSION

We describe a 53-year-old male who sustained a catastrophic accident caused by an agricultural implement. This type of perineal injury is associated with a high level of mortality or permanent disability and present complex management issues. Identification and treatment of life-threatening injuries are critical and should precede initial perineal wound care.^[4] Fracture of the anterior pelvic ring or pubic diastasis is almost universally present when urethral disruption occurs.^[1]

Because of hemodynamic instability and multiple fractures, our patient was taken to the OR immediately after a large-bore vascular access (central line), and airway control were established.

Due to the gravity of the clinical situation, radiographs, and other tests deemed superfluous should be limited or avoided until after hemorrhage is controlled and the patient has been adequately resuscitated. Once patients have survived the initial critical resuscitation and all life-threatening injuries have been addressed, attention should turn to the management of the perineal injuries.

At this stage, our patient was examined for evidence of anorectal and genitourinary injuries and a suprapubic catheter placement and a protective colostomy were instituted. Adequate debridement of necrotic tissue and distal rectal washout were performed as frequently as necessary to avoid fecal contamination and pelvic sepsis, which are known to be the most common source of late morbidity and mortality.^[5]

Posterior urethral reconstruction

In patients with PUI, there are two options for initial management: (1) early primary endoscopic realignment, and (2) placement of a suprapubic catheter with delayed urethroplasty of the inevitable stricture. We could not find any safe advantage or benefit of early primary urethral realignment for our patient due to the hemodynamic instability and the severity and magnitude of the multiple life-threatening injuries. In our opinion, early urethral realignment has no place in hemodynamically unstable patients with complex perineal injuries. Moreover, our patient sustained disarticulation of the left hip and contralateral femur fracture, making him an unsuitable candidate to be placed in the lithotomy position for early endoscopic realignment. However, in a more appropriate setting and adequately selected patients, some authors have reported good success rates surpassing 70%, with potential for improvement with more experience.^[6] Our patient was initially managed with a suprapubic cystostomy during open exploratory laparotomy for other concomitant pelvic injuries. It is generally agreed that the definitive urethral repair should be delayed until 3–6 months after the initial injury, thus allowing for tissue healing.^[7] As a consequence, an obliterative bulbomembranous urethral stricture of variable length is inevitable. However, most of these strictures are nearly always amenable to

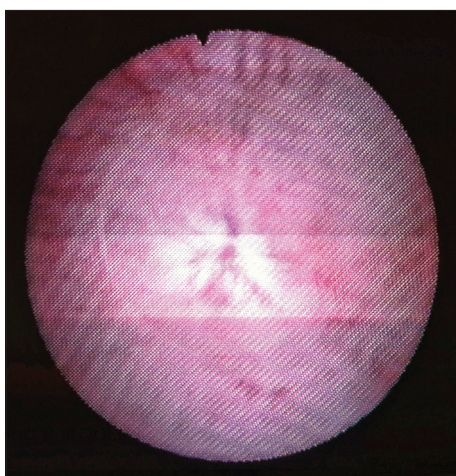


Figure 5: Flexible urethroscopy showing recurrence of stenosis with complete urethral obliteration at the level of the previous anastomosis



Figure 6: Retrograde urethrogram showing a patent urethra three months after re-anastomosis

elective anastomotic urethroplasty. In our patient's first reconstructive attempt, identification and safe mobilization of the proximal urethral stump were extremely difficult due to the dense scar tissue involved resulting from significant areas of necrotic perineal tissues and a difficult plane of dissection between the abnormally orientated urethra and the anterior rectal wall.

The surgical repair of these posterior urethral defects has a rich history. In the early 1950s, Johanson was the first urethral surgeon to express his concerns with immediate intervention and realignment for pelvic fracture urethral injury, because of the high operative morbidity and mortality rates, thereby encouraging the use of initial suprapubic catheter placement with delayed urethroplasty.^[8] Improved access to the proximal urethra using abdominal pubectomy (transpubic) was described in the 1970s by Turner-Warwick.^[9] This approach was reserved to cases where the anastomosis could not be made perineally, or in cases of associated pelvic abscess, urorectal fistulae, all of which he considered formal indications for an abdominoperineal approach, facilitated by pubectomy.^[9]

In 1985, Webster reported a four-step modified approach that avoided abdominal exposure and total pubectomy for long urethral defects, involving only a limited wedge inferior pubectomy via the perineum, this following other surgical steps that allowed for improved perineal exposure of the apex of the prostate for anastomosis and straightening of the bulbar urethra for a tensionless anastomosis, currently known as the "Webster's elaborated perineal approach."^[10] Despite this ability to now address even the longest posterior urethral defects, an abdominoperineal approach can still be necessary to address the intrapelvic complications, such as pelvic cavity and abscess and urorectal fistula. In our patient, we managed to achieve a patent posterior urethral anastomosis at a second attempt using urethral mobilization and corporal separation for approximately 5 cm in length. Because of the symphysis pubis diastasis, there was no need for inferior pubectomy to reduce distance and anastomotic tension.

In the setting of complex, vast destruction of the perineum with lower abdomen and lower limb orthopedic complications, we believe that the optimal approach to urethral reconstruction is early suprapubic cystostomy followed by delayed transperineal anastomotic posterior urethroplasty using the Webster's elaborated perineal approach with high success rates. Redo posterior urethroplasty is associated with good functional outcomes. The urethral reconstructive surgeon should include a wide array of manoeuvres and techniques in his armamentarium, particularly where injuries are more complex, and thus avoid excessive anastomotic tension or conversion to a more morbid transpubic approach.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Morey AF, Zhao LC. Genital and lower urinary tract trauma. In: Wein AJ, Kavoussi LR, Partin AW, Peters CA, editors. *Campbell-Walsh Urology*. 11th ed., Vol. IV, Ch. 101. Philadelphia: Elsevier; 2016. p. 2379-92.
2. Kitrey ND, Djakovic N, Gonsalves M, Kuehhas FE, Lumen N, Serafetinidis E, *et al.* EAU guidelines on urological trauma. Arnhem, The Netherlands: EAU Guidelines Office; 2016.
3. Gupta NP, Mishra S, Dogra PN, Hemal AK, Seth A, Kumar R. Does a previous end-to-end urethroplasty alter the results of redo end-to-end urethroplasty in patients with traumatic posterior urethral strictures? *Int J Urol* 2008;15:885-8.
4. Kudsk KA, Hanna MK. Management of complex perineal injuries. *World J Surg* 2003;27:895-900.
5. Kusminsky RE, Shbeeb I, Makos G, Boland JP. Blunt pelviperineal injuries. An expanded role for the diverting colostomy. *Dis Colon Rectum* 1982;25:787-90.
6. Leddy LS, Vanni AJ, Wessells H, Voelzke BB. Outcomes of endoscopic realignment of pelvic fracture associated urethral injuries at a level 1 trauma center. *J Urol* 2012;188:174-8.
7. Tausch TJ, Morey AF. The case against primary endoscopic realignment of pelvic fracture urethral injuries. *Arab J Urol* 2015;13:13-6.
8. Johanson B. Reconstruction of the male urethra in strictures. *Acta Chir Scand* 1953;176:3-88.
9. Turner-Warwick R. Complex traumatic posterior urethral strictures. *J Urol* 1977;118:564-74.
10. Webster GD, Ramon J. Repair of pelvic fracture posterior urethral defects using an elaborated perineal approach: Experience with 74 cases. *J Urol* 1991;145:744-8.