



Case report

Difficult management of posterior urethra gunshot wound combined with urethro-rectal fistula



Walid Kerkeni^a, Ahmed Saadi^{a,*}, Mohamed Hédi Rebai^a,
 Abderrazak Bouzouita^a, Mohamed Cherif^a, Amine Derouiche^a,
 Tahar Khalfallah^b, Mohamed Riadh Ben Slama^a, Mohamed Chebil^a

^a Urology Department, Charles Nicolle University Hospital, Tunis, Tunisia

^b Surgery Department, Mongi Slim University Hospital, Marsa, Tunisia

Received 28 December 2014; received in revised form 11 March 2015; accepted 12 March 2015

KEYWORDS

Penetrating trauma;
 Gunshot wound;
 Posterior urethra;
 Urethro-rectal fistula

Abstract

Posterior urethra gunshot wounds are poorly described in the literature. They are often associated with pelvic vital lesions making difficult early repair of urethral injuries. They can be complicated by urethro-rectal fistula, which makes their management more complicated. We report a new case of posterior urethra disruption due to a gunshot wound and complicated by urethro-rectal fistula.

© 2015 Pan African Urological Surgeons' Association. Production and hosting by Elsevier B.V. All rights reserved.

Introduction

Urogenital gunshot wounds often occur during penetrating abdominal trauma involving other vital lesions and reducing the chances of immediate management of urological wounds. Given the violence of gunshot injuries to the pelvis, the severity of concomitant lesions

usually impedes immediate and definitive urethral reconstruction in case of disruption [1]. Anterior urethra gunshot wounds have been reported in 17–22% of cases [2], while those of the posterior urethra were very little described [3].

We report a new case of ballistic trauma to the urethra complicated by urethro-rectal fistula.

Case report

A 44 year old man presented with a gunshot wound. The inlet port was located at the left hemi scrotum; no outlet orifice has been identified (Fig. 1). This trauma has led to immediate hemodynamic failure with peritoneal syndrome requiring urgent surgical

* Corresponding author at: Urology Department, Charles Nicolle University Hospital of Tunis, Boulevard 9 Avril 1938, Tunis 1006, Tunisia. Tel.: +21698513698.

E-mail address: dr.saadi.ahmed@gmail.com (A. Saadi).

Peer review under responsibility of Pan African Urological Surgeons' Association.

<http://dx.doi.org/10.1016/j.afju.2015.03.004>

1110-5704/© 2015 Pan African Urological Surgeons' Association. Production and hosting by Elsevier B.V. All rights reserved.



Fig. 1 Inlet orifice of the bullet located at the left hemi scrotum.

exploration. A rectal wound causing stercoral peritonitis was identified with no other digestive damage or associated vascular lesion. Urinary bladder was unhurt and the bullet was not found in the abdomen.

A peritoneal toilet and a lateral colostomy were performed. A combined urethral disruption was suspected as transurethral catheterization was impossible preoperatively with an abutment of the catheter at the posterior urethra. A cystostomy was set up at the end of the intervention. The postoperative course was uneventful and the patient was referred to our specialized urological department at the tenth post traumatic day for further management.

Scrotal ultrasound showed the integrity of both testicles. The opacification by the cystostomy catheter confirmed urethral rupture with massive contrast extravasation at the prostatico-membranous urethra (Fig. 2).

A deferred surgical treatment at three months of urethral rupture has been decided with prolongation of bladder drainage. The preoperative retrograde urethrocytography with antegrade bladder



Fig. 2 Opacification by the cystostomy catheter at the 12th post-traumatic day: contrast extravasation at prostatico-membranous urethra confirming urethral disruption.



Fig. 3 Preoperative retrograde urethrocytography at 3 months showing urethro-rectal fistula.

opacification showed a significant defect involving almost all prostatico-membranous urethra, as well as rectal opacification suggesting urethro-rectal fistula (Fig. 3).

An exploration by a perineal and transpubic approach confirmed complete rupture of membranous urethra, as well as urethro-rectal fistula. The 1 cm rectal orifice was located 5–6 cm from the anal margin. End-to-end urethrorraphy was performed, which was protected by a transurethral catheter. The urethro-rectal fistula could not be repaired. Therefore, colostomy terminalisation was performed with cystostomy maintaining in a view to remote repair of the uro-digestive fistula. Transurethral catheter was removed on the 15th postoperative day and urethrocytography showed urethral continuity restoration with persistent urethro-rectal fistula (Fig. 4).

The treatment of this fistula was postponed for two months to promote urethral healing. Meanwhile, the cystostomy catheter was left in place and transurethral catheterization was performed once a



Fig. 4 Postoperative result: urethral continuity restoration and persistent urethro-rectal fistula.

week. Surgical treatment was subsequently realized by a perineal incision. Inter-urethro-rectal dissection was performed individualizing the fistula. Urethral and rectal edges were then trimmed and closed with interposition of testicular tunica vaginalis between the two plans. Postoperative urethrocytography performed after transurethral catheter removal confirmed total repair of the fistula. The patient regained spontaneous micturition after cystostomy removal. At three months of the surgery, the patient had still normal voiding with few leaks. He kept no motor sequelae of transpubic surgery and had also spontaneous erections. Restoration of intestinal continuity is foreseen within few weeks.

Discussion

Urethral contusions account for over 90% of posterior urethra injuries, while penetrating trauma are extremely rare [4]. Findings at patient's examination in posterior urethra gunshot wounds are the same as for contusions, i.e. urethral bleeding, acute urinary retention with bladder distension, impossible transurethral catheterization as was the case in our patient, ascended prostate on DRE and perineal or scrotal hematoma [3]. The severity of visceral or vascular injuries during pelvic firearm wounds often makes it difficult to perform immediate and definitive repair of urethral disruption [1,3]. Moreover, complexity and variability of posterior urethra gunshot wounds not also facilitates any immediate repair [5]. Thus, an effective urine drainage using a suprapubic catheter should be promptly performed deferring the final repair of the urethral injury. Such an attitude has the advantage of minimizing blood loss in the short term, reducing the risk of pelvic abscess by surinfection of the urohematoma as well as the potential risk of postoperative erectile dysfunction [3]. Early endoscopic realignment may be also an interesting alternative; postoperative incontinence and erectile dysfunction rates are similar to those after early urethrorraphy, while urethral stenosis rate was lower than that in case of prolonged suprapubic drainage according to some studies [6,7]. Indeed, the optimal management of urethral gunshot wounds remains controversial. In a series of 59 cases, Kunkle et al. reported that 73% of patients had immediate reconstruction versus 27% who had initial suprapubic drainage before deferred urethrorraphy, with 6 times higher urethral stricture rate in the second group [8]. In another series of 19 patients, Tausch et al. reported a high success rate (87%) in case of initial bladder drainage with 8-month delayed urethral repair [3]. As was the case in our patient, penetrating injuries of the pelvis involving urinary and rectal lesions may be complicated by uro-digestive fistulas. Fistula rate in such trauma was 24% in the series of Franko et al. [9] and 8% in that of Crispen et al. [10]. Because of their rarity, treatment of urethro-rectal fistulas is complex, based mainly on the surgeon's preference [11]. Because of their location at the bottom of the sacral concavity near the striated sphincter and the anal sphincter, surgical access to these fistulas is difficult [12]. Treatment general principles are those for any other fistula, i.e. resection of the fistulous tract, sutures in healthy tissues, and sometimes tissue interposition [13]. In our case, the interposed tissue was testicular tunica vaginalis. Bukowski et al. reported 3 cases of proximal urethro-rectal fistula due to pelvic gunshot wounds. In the first case, a posterior trans-sphincteric approach was successfully achieved after 6 months of conservative treatment. In the second case, omentum interposition at the 18th post-traumatic

month did not prevent the recurrence of the fistula. In the third case, suprapubic drainage allowed spontaneous healing of the fistula after 6 weeks [11].

Conclusion

The management of posterior urethra gunshot wounds is difficult, especially when it involves an urethro-rectal fistula. Within a context of associated pelvic or abdominal critical lesions, we should perform initial drainage of the bladder and differ urethral repair. This attitude may lead to sequelae sometimes more important than in case of early urethral surgery.

Conflict of interest

The authors declare that they have no conflict of interest related to this article.

References

- [1] Wettlaufer JN, Weigel JW. Wounds of the posterior urethra and prostate. In: *Urology in the Vietnam war: Casualty management and lessons learned*. Washington, DC: Department of the Army; 2006. p. 137–58 [Chap 7].
- [2] Salvatierra Jr O, Rigdon WO, Norris DM, Brady TW. Vietnam experience with 252 urological war injuries. *J Urol* 1969;101:615–20.
- [3] Tausch TJ, Cavalcanti AG, Soderdahl DW, Favorito L, Rabelo P, Morey AF. Gunshot wound injuries of the prostate and posterior urethra: reconstructive armamentarium. *J Urol* 2007;178:1346–8.
- [4] Diagnosis and acute management of posterior urethral disruptions. Dixon CM, McAninch JW, editors. *Traumatic and reconstructive urology*. Philadelphia: W.B. Saunders; 1996. p. 347–55 [Chap 25].
- [5] Cinman NM, McAninch JW, Porten SP, et al. Gunshot wounds to the lower urinary tract: a single-institution experience. *J Trauma Acute Care Surg* 2013;74:725–30.
- [6] Koraitim MM, Marzouk ME, Atta MA, Orabi SS. Risk factors and mechanism of urethral injury in pelvic fractures. *Br J Urol* 1996;77:876–80.
- [7] Kotkin L, Koch MO. Impotence and incontinence after immediate realignment of posterior urethral trauma: result of injury or management? *J Urol* 1996;155:1600–3.
- [8] Kunkle DA, Lebed BD, Mydlo JH, Pontari MA. Evaluation and management of gunshot wounds of the penis: 20-year experience at an urban trauma center. *J Trauma* 2008;64:1038–42.
- [9] Franko ER, Ivatury RR, Schwalb DM. Combined penetrating rectal and genitourinary injuries: a challenge in management. *J Trauma* 1993;43:347–53.
- [10] Crispen PL, Kansas BT, Pieri PG, et al. Immediate postoperative complications of combined penetrating rectal and bladder injuries. *J Trauma* 2007;62:325–9.
- [11] Bukowski TP, Chakrabarty A, Powell IJ, Frontera R, Perlmutter AD, Montie JE. Acquired rectourethral fistula: methods of repair. *J Urol* 1995;153:730–3.
- [12] Nouri M, Tazi K, El Fassi J, Ibn Attya A, Hachimi M, Lakrissa A. Traitement des fistules uréthro-rectales. A propos de 5 cas. *Prog Urol* 1999;9:137–41.
- [13] Mottet N, Louis JF, Costa P, Navratil H. Les fistules prostatorectales post-opératoires. A propos de deux cas. *Revue de la littérature. Prog Urol* 1992;2:442–9.