



Complete bulbar urethral transection with penile fracture after a gunshot injury in a child; a rare and challenging case

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ABSTRACT

Urethral injuries are infrequent, and management is challenging. We present a case of urethral transection associated with a penile fracture following gunshot injury. During the initial exploration complete urethral transection revealed with a bleeding penile fracture. With the use of an antegrade guidewire and a catheter, urethral ends aligned, and penile fracture repaired with suturing the tunica albuginea. Post-surgery urethrogram revealed stricture formation at bulbar urethra and detail of a gunshot injury was disclosed. Delayed stricture excision and end-to-end anastomosis was achieved, resulting in satisfactory urethral and penile functions.

1. Introduction

The incidence of urethral injuries in children is rare since the urethra is short, mobile and protected by the pubic bone.¹ Proper treatment is challenging but crucial to avoid life-long urinary complications such as recurrent stricture formation, urinary incontinence, and impotence.² The management of paediatric urethral trauma remains controversial because of the limited expertise of most urologists.³ This report details the clinical aspects & management of an exceedingly rare case of complete urethral transection associated with a penile fracture in a 15-year-old boy following a gunshot injury.

2. Case presentation

This child presented to the Accident & Emergency unit with a penile injury which claimed to be due to a bicycle handle injury and was reluctant to disclose specifics. An entrance wound was noted at the base of the penis which resembled a stab wound but no exit wound was identifiable. Small amount of blood at meatus was noted and patient was taken to theatre for examination under anaesthesia, cystoscopy and suprapubic catheter placement. Since the child had a history of non-accidental injuries, the safeguarding team at the hospital was informed.

Upon exploration, a complete urethral transection and bleeding corporal tear was noted. It was decided to pass a guidewire in antegrade manner and catheter over the guidewire distally. After identifying the

urethral continuity and aligned the urethral ends over the catheter, the corpus cavernosum tear sutured separately and finally a suprapubic catheter was placed.

Following eight weeks post-injury, an antegrade and retrograde urethrogram was performed (Fig. 1). They revealed a stricture formed around 1cm in length at the bulbar urethra. A 14 × 10mm pellet lodged within the obturator interna on the left side closer to femoral vessels was identified during imaging. Only then the patient disclosed information regarding a gunshot injury being the cause for the wound.

The stricture was repaired with end-to-end anastomosis (Fig. 2) in three months' time. Post-operative images (Fig. 3) showed good urethral continuity, normal bladder dynamics with complete emptying and the patient reported normal erectile functions.

3. Discussion

The complete urethral transaction in children is an infrequent clinical entity with only a few cases published in literature. It is even rarer entity to be associated with a penile fracture, especially after a gunshot injury.

The most common clinical feature is blood at the meatus and/or haematuria followed by perineal, scrotal hematoma.¹ In boys, scrotal enlargement is the consequence of extravasated fluids after rupture of Scarpa's fascia. Inability to void with residual urine and a high-riding prostate on rectal examination is suspicious of a traumatic

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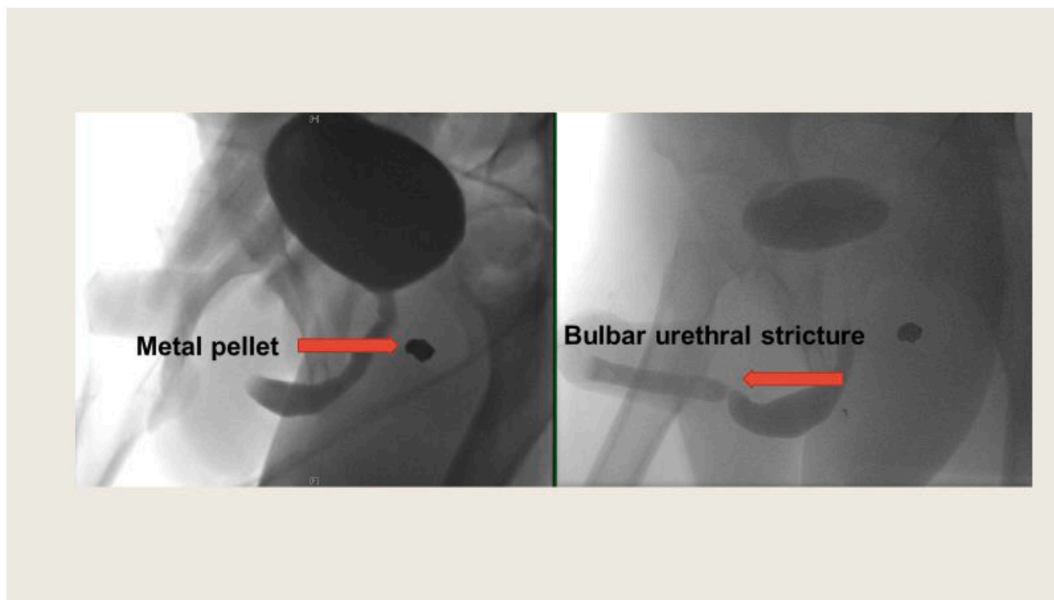


Fig. 1. Urethrogram at 8 weeks - demonstrating the bulbar urethral stricture and the pellet.



Fig. 2. End to end urethral anastomosis.

involvement of the urethra.⁴

Bullet injuries to Penis are associated with urethral injuries and Corporal injuries.⁵ Tissue damage can occur due to direct damage and due to cavitation. It was noted that the civilian gunshot injuries cause minimal tissue damage compared to the military gunshot injuries. The management of the urethral trauma remains controversial because of the limited expertise of most paediatric urologists due to the rarity of these injuries.¹ The aim of therapy is to minimize remote damages, in particularly urethro-cutaneous fistulae, periurethral diverticulae, stricture formation and incontinence. The preferred method of handling gunshot wounds to the penis and anterior urethra includes either primary repair of urethral injury or secondary repair after a suprapubic cystostomy. Retrograde urethrogram is recommended except in very superficial wounds. Initial management is to obtain drainage of the bladder by a suprapubic cystostomy, which assures not only a safe urinary diversion, but also prevents urine extravasation at the site of

injury.¹

In our case due to the penile fracture and bleeding, it was decided to identify and align the urethral ends and repair the corpus cavernosum tear separately, in addition to the suprapubic cystostomy.

A guidewire placement in the urethra in antegrade manner was challenging but allowed easy identification of the proximal and distal ends of the urethra. It also helped to identify the cavernosal tear separately. It is recommended to perform early surgical exploration and reconstruction of the corpora cavernosa to prevent the undesired complications, such as penile deformities/curvature and erectile dysfunction. Retrograde suprapubic catheter placement was not possible in our case because of the bleeding from penile fracture and due to displaced proximal urethral transection. Definitive urethral reconstruction with resection of the stricture was performed later according to available recommendations. As the stricture in this case was around 1cm, end to end urethral anastomosis was performed without much

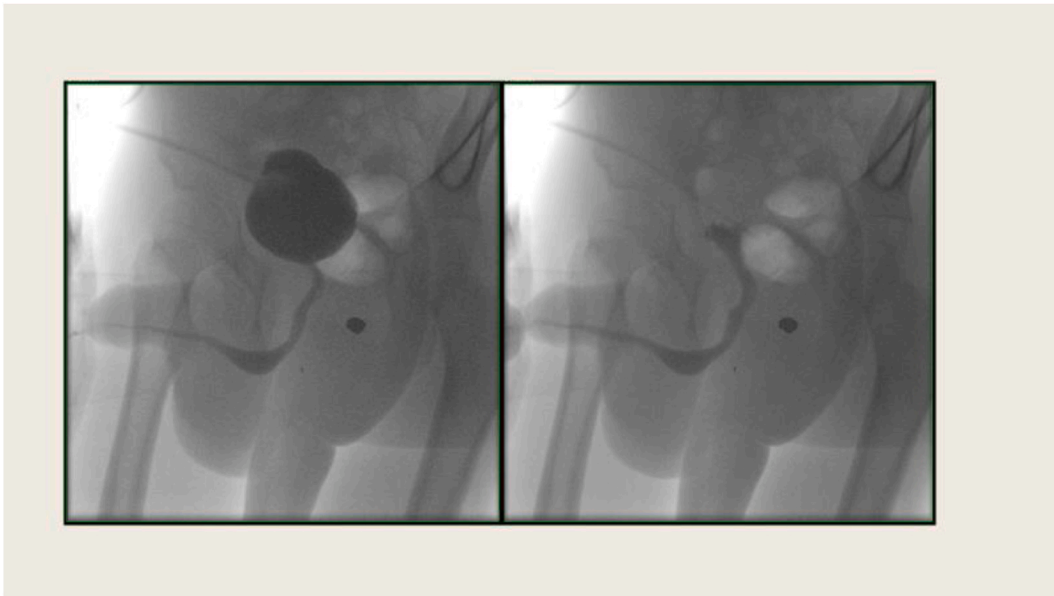


Fig. 3. Post anastomosis urethrogram, showing urethral continuity.

difficulty.

In civilian gunshot injuries, minimal tissue destruction is usually present and when information is not disclosed, they can be easily missed. Making a proper initial assessment is of utmost importance to assess the extent of the injury as delayed intervention can affect the vasculature of the penile shaft which could potentially lead to significant complication/s.

4. Conclusion

The management of paediatric urethral trauma remains controversial largely because of the limited expertise of most paediatric urologists and studies like this will shed light towards this rather uncommon clinical entity.

Consent

Consent was obtained from the patient for medical illustrations and publications.

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Declaration of competing interest

There are no conflicts of interest.

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