

AN ATYPICAL PRESENTATION OF PENILE FRACTURE WITH URETHRAL INJURY

Shiv Sarna¹, Wesam Al-Dhahir², Tariq Sami², Fahd Khan²

¹University College London Hospital, London, UK; ²Birmingham City Hospital, Birmingham, West Midlands, UK

Correspondence author: shiv.sarna@nhs.net

Abstract

Background: Penile fracture is a urological emergency that occurs following a traumatic rupture of the tunica albuginea. Patients experience an audible ‘pop’ and immediate detumescence during sexual activity, followed by pain, swelling and ecchymosis. It is uncommon for patients to present without these typical clinical findings.

Case Presentation: This case report describes a 33-year-old male with an atypical penile fracture and associated urethral injury. He reported mild pain as his penis buckled against his partner’s thigh during sexual intercourse and a sudden detumescence. Examination was unremarkable other than gross blood at the external urethral meatus. MRI identified a 4 mm focal capsular defect at the ventral aspect of the left corpora cavernosum. Flexible cystoscopy identified a 2cm longitudinal tear in the distal urethra. The patient underwent successful surgical repair with no long term sequelae.

Conclusions: The authors of this report wish to highlight the importance of keeping a high index of suspicion for penile fractures in light of a typical history.

Keywords: *Penile, fracture, atypical*

INTRODUCTION

Penile fracture is an uncommon urological emergency that occurs following a traumatic rupture of the tunica albuginea. It typically results from buckling of the penis during vigorous sexual activity; the penis slips out and sustains an abrupt bending force as it strikes against the pubic symphysis or perineum.¹ Less common aetiologies include masturbation, forceful manipulation and lying prone on an erect penis.²

Patients often report an audible “pop”, pain and immediate detumescence. Characteristic signs include swelling and ecchymosis (“aubergine” deformity).³ In up to 38% of patients there is concomitant disruption of the urethra.⁴ Gross blood at the meatus, haematuria, difficulty voiding, or a ‘butterfly-shaped’ haematoma in the perineum are all suggestive of urethral injury.⁵ We present a case of an atypical penile fracture with an associated urethral injury.

CASE PRESENTATION

A 33-year-old male presented to the Emergency Department due to sudden detumescence and urethral bleeding during sexual intercourse. The patient reported mild pain as his penis buckled against his partner’s thigh during penetration, followed by a loss of erection. On examination, there was no evidence of penile swelling, overlying skin changes or penile shaft tenderness. There was no palpable defect in the tunica albuginea. Although there was no fresh bleeding per-urethra, there was evidence of previous bleeding with blood-stained gauze that had been used to tamponade his external urethral meatus. The patient had since passed straw-coloured urine with no associated pain.

Despite an unremarkable examination, magnetic resonance imaging (MRI) was performed to assess for a defect in the tunica albuginea given

the patient's typical history. A 4 mm focal capsular defect was identified at the ventral aspect of the left corpora cavernosum, adjacent to the midline in the distal penile shaft. MRI findings were consistent with a small capsular tear (Figure 1).

As the tear was in close proximity to the distal penile urethra, an associated urethral injury was suspected. Hence, an on-table cystoscopy was carried out prior to surgical exploration. This demonstrated a longitudinal tear in the distal urethra, extending approximately 2 cm (Figure 2).

A 14 French catheter was inserted into the urethra prior to surgery without difficulty. The patient had been previously circumcised, therefore a sub-coronal incision was made to deglove the penis. No haematoma was identified, but on exposing the tunica albuginea, a 1cm tear was visualised. An adjacent 2–3 cm longitudinal tear was confirmed over the dorsolateral aspect of the urethra. Prolene 2-0 interrupted sutures with buried knots were used to repair the tunical defect. 4-0 vicryl interrupted sutures were used to repair the urethra.

Our patient was discharged the following day with a catheter-in-situ and 7 days of oral antibiotics. He was advised to abstain from sexual activity for

8 weeks. An ascending urethrogram was arranged 2-weeks later which demonstrated a normal anterior urethra (Figure 3). At the time of the procedure, he was unable to void freely in the lying position and therefore no images of the posterior urethra on a descending urethrogram were obtained. He did, however, successfully void following the investigation and reported a strong flow with no dysuria, haematuria or discomfort.

The patient was followed up in clinic 3 months later and reported no erectile dysfunction nor penile curvature. Uroflowmetry confirmed satisfactory voiding, recording a Qmax of 38.5 mL/s (volume voided 639 mL and postvoid residual volume 29 mL). Our patient was happy with the outcome and discharged back to his GP.

DISCUSSION

Penile fracture is a rare occurrence, with an incidence of 1 in 175,000.⁶ The condition may, however, be under-reported due to the associated embarrassment in seeking medical attention.

Penile fracture is characterised by a tear in the tunica albuginea. The thickness of this fibrous layer

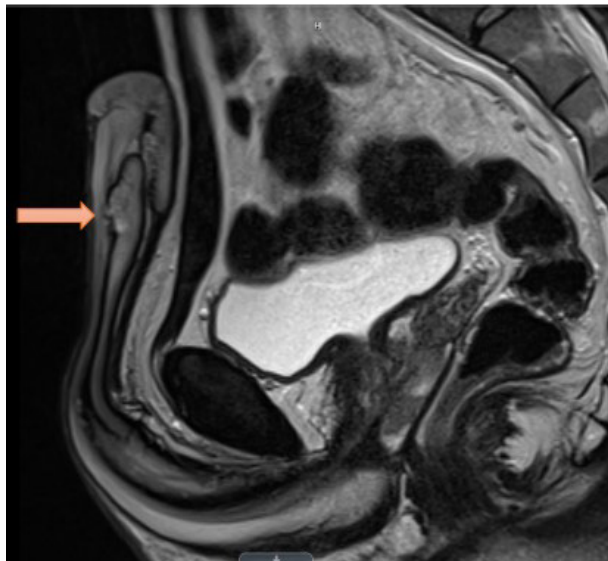


FIGURE 1 MRI image demonstrating a capsular defect at the ventral aspect of the left corpora cavernosum.

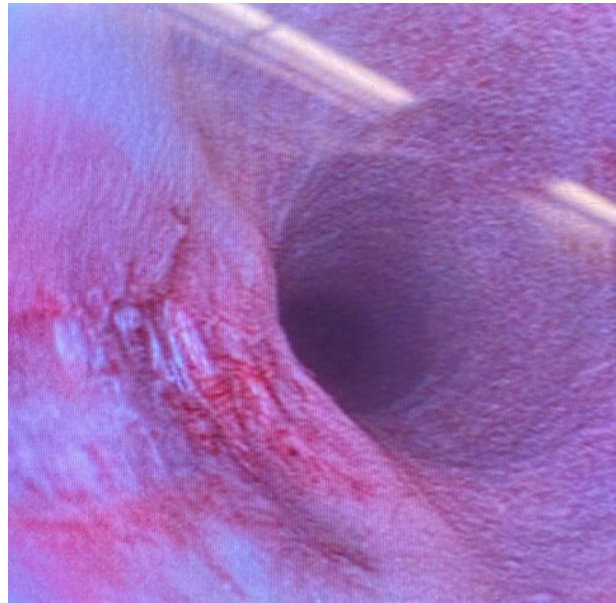


FIGURE 2 Cystoscopy image demonstrating a longitudinal tear in the distal urethra.

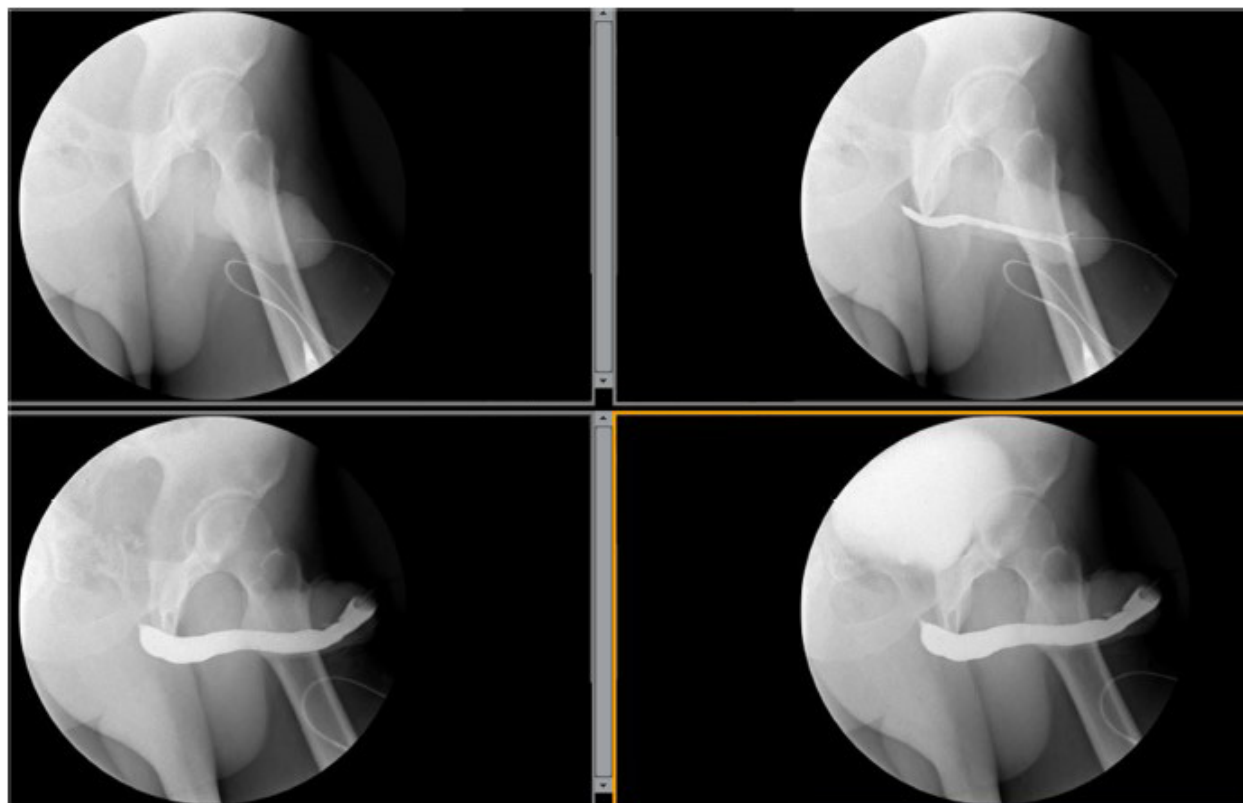


FIGURE 3 Ascending urethrogram images demonstrating a normal anterior urethra.

reduces from 2 mm in the flaccid state to 0.25–0.5 mm as it stretches during an erection.⁷ Thinning of the tunica makes it more susceptible to rupture in the event of a sudden increase in intra-cavernosal pressures. Using cadaveric specimens, Bitsch et al. discovered that a force of 1500 mmHg or greater is required to tear the tunica albuginea in an erect state.⁸ Rose et al. further explained that the pressure within the corpora cavernosa as the penis buckles against the perineum or pubic symphysis can exceed this 1500 mmHg limit, resulting in rupture.⁹ Notably, the tunica is thinnest on the ventro-lateral aspect of the penis, the most common site of fracture.¹⁰

Penile fracture can often be diagnosed clinically given its typical mechanism of injury and examination findings. The British Association of Urological Surgeons (BAUS) recommend penile ultrasonography or MRI in cases of diagnostic uncertainty.³ Our patient presented with a history suggestive of penile fracture, however his examination findings were

atypical. An MRI was therefore performed to investigate for a possible tunical tear. Given the MRI suggested the tear was adjacent to the urethra, coupled with the examination findings of gross blood at the external urethral meatus, the extent and location of urethral injury needed to be investigated prior to surgical intervention.

When suspecting an associated urethral injury, BAUS suggest performing an on-table urethrogram or inserting diluted methyleneblue into the urethra.³ However, sub-optimal patient positioning during an ascending urethrogram has been shown to underestimate urethral disruption.¹¹ Furthermore, overlying blood clots or insufficient contrast medium can result in false-negatives.¹² We therefore decided to perform an on-table cystoscopy to investigate any urethral disturbance. This allowed us to assess the degree, length, and location of urethral pathology, thus aiding our surgical approach. Moreover, cystoscopy is a shorter procedure and eliminates the need for

radiation exposure, thus making it a more favourable investigation compared to ascending urethrogram.

It is interesting that our patient lacked the typical physical findings despite a history and investigations concordant with penile fracture. The MRI and cystoscopy findings, however, may explain the atypical signs our patient presented with. Typically, a tear in the tunica during the tumescent state results in extravasation of blood from the corpora cavernosa to the surrounding tissue. It is this extravasation that results in swelling and ecchymosis. In our patient, the tunical tear extended through to the urethra. This allowed for blood to escape at the meatus as opposed to being contained within the subcutaneous tissue, resulting in an unremarkable examination.

CONCLUSION

Penile fracture is often diagnosed with a characteristic history and examination findings. However as demonstrated in our case, patients may not present with these typical clinical findings. Hence the authors of this report believe a high index of suspicion should be kept for penile fracture given a suggestive history in the absence of typical examination findings.

DISCLOSURE

There were no specific grants, contracts nor financial support for this research.

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

REFERENCES

1. Mirzazadeh M, Fallahkarkan M, Hosseini J. Penile fracture epidemiology, diagnosis and management in Iran: a narrative review. *Translational Andrology and Urology*. 2017;6(2):158–166. <https://doi.org/10.21037/tau.2016.12.03>
2. Barros R, Hampl D, Cavalcanti A, et al. Lessons learned after 20 years' experience with penile fracture. *International Braz J Urol*. 2020;46(3):409–416. <https://doi.org/10.1590/S1677-5538.IBJU.2019.0367>
3. Rees R, Brown G, Dorkin T et al. British Association of Urological Surgeons (BAUS) consensus document for the management of male genital emergencies - penile fracture. *BJU International*. 2018;122(1):26–28. <https://doi.org/10.1111/bju.14135>
4. Barros R, Ribeiro J, Silva H, et al. Urethral injury in penile fracture: a narrative review. *International braz j urol*. 2020;46(2):152–157. <https://doi.org/10.1590/S1677-5538.IBJU.2020.99.02>
5. Lee J, Singh B, Kravets F, et al. Sexually Acquired Vascular Injuries of the Penis: A Review. *The Journal of Trauma: Injury, Infection, and Critical Care*. 2000;49(2):351–358. <https://doi.org/10.1097/00005373-200008000-00029>
6. Amer T, Wilson R, Chlosta P, et al. Penile Fracture: A Meta-Analysis. *Urologia Internationalis*. 2016; 96(3):315–329. <https://doi.org/10.1159/000444884>
7. Asgari M, Hosseini S, Safarinejad M, et al. Penile Fractures: Evaluation, Therapeutic Approaches and Long-Term Results. *Journal of Urology*. 1996;155(1): 148–149. [https://doi.org/10.1016/s0022-5347\(01\)66578-9](https://doi.org/10.1016/s0022-5347(01)66578-9)
8. Bitsch M, Kromann-Andersen B, Schou J, Sjøntoft E. The Elasticity and the Tensile Strength of Tunica Albuginea of the Corpora Cavernosa. *Journal of Urology*. 1990;143(3):642–645. [https://doi.org/10.1016/s0022-5347\(17\)40047-4](https://doi.org/10.1016/s0022-5347(17)40047-4)
9. De Rose A, Giglio M, Carmignani G. Traumatic rupture of the corpora cavernosa: new physiopathologic acquisitions. *Urology*. 2001;57(2):319–322. [https://doi.org/10.1016/s0090-4295\(00\)00926-2](https://doi.org/10.1016/s0090-4295(00)00926-2)
10. Hsu G, Brock G, Martínez-Piñeiro L, et al. Anatomy and Strength of the Tunica Albuginea: Its Relevance to Penile Prosthesis Extrusion. *Journal of Urology*. 1994;151(5):1205–1208. [https://doi.org/10.1016/s0022-5347\(17\)35214-x](https://doi.org/10.1016/s0022-5347(17)35214-x)
11. Maciejewski C, Rourke K. Imaging of urethral stricture disease. *Translational Andrology and Urology*. 2015;4(1):2–9. <https://doi.org/10.3978/j.issn.2223-4683.2015.02.03>
12. Kamdar C, Mooppan U, Kim H, Gulmi F. Penile fracture: preoperative evaluation and surgical technique for optimal patient outcome. *BJU International*. 2008;102(11):1640–1644. <https://doi.org/10.1111/j.1464-410X.2008.07902.x>