

Penile fracture at the Crus of the Penis: An uncommon site of fracture reported in literature

Saddaf Hina¹, Chitranjan Shukla²

ABSTRACT

Penile fracture is an uncommon acute surgical emergency, most commonly sustained during sexual intercourse, self-manipulation and at times, may be accidental. This 39-year-old male, who presented to the emergency department with swelling and bruising of the scrotum and penis. Clinical examination shows a diffuse abdominal and perineal ecchymosis. Imaging confirmed a crural penile fracture. Operative fixation was performed appropriately and satisfactory erectile function was reported at the follow-up. To our knowledge, this is among the few documented cases of a penile fracture involving the crus of the penis and its management.

Keywords: Penile fracture, Crus, Sexual intercourse, Surgical emergency, Operative repair, Erectile dysfunction

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INTRODUCTION

Penile fracture (PF) is defined as tunica albuginea disruption along with corporeal tear as a result of blunt trauma over erect penis¹. Penile fracture is an uncommon urological emergency, and an under reported condition in literature^{2,3}. Historically, the first documented case of PF was reported by an Arab physician Abu al-Qasim from Cordoba more than 1000 years ago. From modern medical literature, the Malis and Zur has reported the first case of PF in 1924⁴. So far, more than 1600 cases of penile fracture involving tunica albuginea has been reported in the medical literature to date¹. literature search show that only few case reports on fracture crus of penis were reported^{5,6}.

Geographically, the PF incidence higher in Middle east and Northern Africa as compared to America and Europe⁷. The PF is considered a rare event in Western countries which occur usually during sexual intercourse but in the Middle East, this is more common due to the “Taghaadan” maneuver^{3,8}.

The most common site of Penile fracture (PF) is penile shaft and so fracture occurring at the level of the crus of the cavernosa is

1. Associate Urologist
2. Consultant Urologist

Western General Hospital, Edinburgh, United Kingdom.

Correspondence:

Saddaf Hina
Associate Urologist,
Western General Hospital, Edinburgh, United Kingdom.
Email: saddafhina88@gmail.com

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very rare event. Fracture typically occurs mechanically when the penis hits the perineum or pubic bone during sexual act or intercourse⁹. The patient history and typical clinical examination findings usually reveal the diagnosis. In majority of the cases the additional imaging methods are usually not required and are unnecessary except, when other causes of such injuries or unusual mechanism of such injuries occur in patients, especially who present with penile swelling, ecchymosis, and rapid detumescence after blunt penile trauma. The US scan or imaging is necessary to identify any other associated pathology, presence of intra-corporeal fibrosis and assess the exact location of fracture^{9,10}. The Magnetic Resonance Imaging (MRI) is considered as having much better soft tissue imaging quality and is more helpful in doubt full cases or where diagnosis is not clear, because it give better assessment of tunical tears non-invasively before surgery^{9,11}. An inappropriate or late surgical repair can cause serious complications such as penile curvature and erectile dysfunction^{2,3,12}. In literature review, mostly the penile shaft fractures are reported but only few case reports on fracture crus of penis were reported^{5,6}. So, to best of our knowledge, this is a rarely reported case of penile fracture involving crus without urethral involvement. This case report will highlight the significance of early diagnosis among those patients who has reported with an unusual clinical presentation and importance of early surgical intervention to achieve better outcome.

CASE REPORT

A 39-year-old male, presented to the emergency department with swelling and bruising in scrotum, penis and lower abdomen for 03 days which he noticed as a sudden onset of painful bruising and swelling. The patient denied any history of trauma and sexual intercourse. He was able to void well and admitted achieving early morning erection normally since the onset of the bruising. Physical examination revealed a swollen, ecchymotic,

and deviated uncircumcised penis without blood at the meatus along with significant butterfly pattern of bruising, which is usually typical of a perineal injury such as that associated with a urethral disruption from a pelvic trauma (Figure-1). Bruising was more marked in the perineum and extending to suprapubic region towards the inguinal region.



Figure-1; Demonstrating the distribution of echymosis in this patient. The pattern is typical of the “butterfly pattern” associated with pelvic trauma and urethral disruption.

Due to the very unusual distribution of the bruising and history, an MRI penis/pelvis was performed. This revealed a defect in tunica at the base of the right corpora cavernosa, with evidence of hematoma extending from here into the right hemiscrotum (Figure-2 and 3).



Figure-2: Defect at the base of the right corpora cavernosa (arrowhead) and hematoma extending into right hemiscotum.

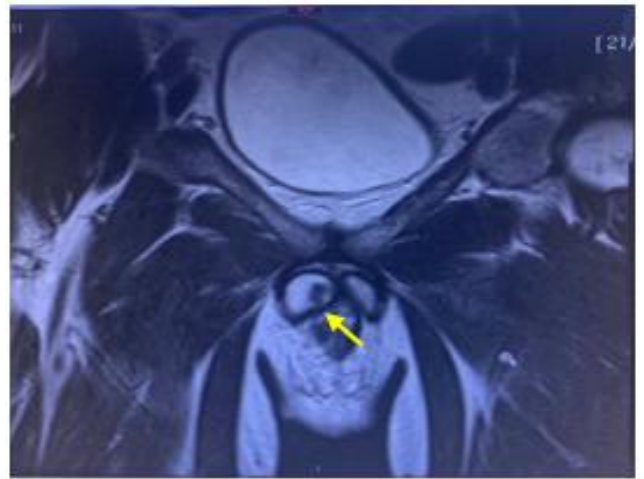


Figure-3: Defect at the base of the right corpora cavernosa (arrowhead).



Figure- 4: Intra-operative demonstration of the site of injury at the base of the right crus with the forceps showing the tunica disruption.

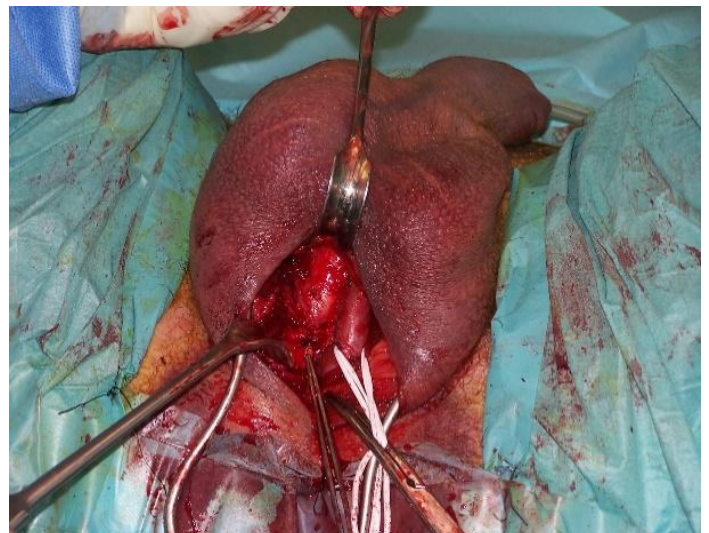


Figure-5: Demonstrating the closure of the tunica disruption.

A decision was made to surgically repair this injury with an unknown/undisclosed mechanism.

Intraoperatively, after urethral catheterization, a midline perineal incision was made down to bulbar urethra. After evacuation of a large size hematoma on right side, a significant defect was noticed on the right crus of penis just as it terminates at the crural separation (Figure 4 and 5). The urethra was mobilized and was found to be intact. The defect was repaired with 3-0 Poly-dioxanone suture in a continuous fashion. The midline incision was closed and the patient discharged the following day with the advice to avoid intercourse for six weeks. The patient shows satisfactory painless erections without any defect in penile curvature and had an International Index of Erectile Function (IIEF) score¹² of 25 after 3-month follow-up visit.

DISCUSSION

Penile fracture (PF) is an emergency caused by blunt trauma to the erect penis that necessitates acute surgical intervention in order to mitigate the risks of intra-cavernosal fibrosis and its consequences of erectile dysfunction and curvature^{2,13}.

Anatomically, tunica albuginea overlying corpora cavernosa is 2 mm thick in flaccid position and decreased in thickness up to 0.25 mm to 0.5 mm during erection. This is among the toughest fascia found in body which can endure rupture pressures of up to 1500 mmHg. Due to reduced thickness of fascia during erection, this becomes vulnerable to sudden raise in intra-cavernosal pressure^{6,14}.

The commonest mechanism of PF includes erect penis acute bending while thrusting against the partner's perineum in intercourse or during masturbation and rarely due to snapping and kneading of the erected penis to achieve detumescence^{5,6}. Literature review shows that statically 46% PF occur during sexual intercourse, followed by forced flexion (21%), and masturbation (18%). Whereas rarely in 8 – 9.5% of cases the rolling over in the bed is the cause of PF is also reported^{15,16}. It has been reported that the PF are more likely to occur during stressful condition like extramarital affairs and sexual interaction at unusual location i.e., outside bed room, somewhere out door⁷.

Anatomically, up to 60% of the PF occurred over proximal parts and right sided corpus cavernosum fracture is more common (59.5%) than left-side fracture (29%) and in 11.5% cases the fracture involve both sides^{13,17}.

The diagnosis of PF is primarily clinical. The patient often complains of a "popping" sound during act or injury, followed by pain, rapid detumescence, penile bruising and swelling. The late presentation is mostly common due to fear of embarrassment, which results in delayed functional and cosmetic recovery^{18,19}. The PF mainly involves the rupture of tunica albuginea. This tear in the tunica albuginea enclosing the corpora cavernosa leads to the formation of hematoma and a classical deformity called 'aubergine' deformity. Concomitant urethral injury is rare, with reported frequencies in the 9% to 20% range⁷. Blood at the urethral meatus, urinary retention, or blood in urine are distinctive features of urethral injury^{7,13}.

In literature, majority of the cases of PF, reported involving the penile shaft. Only a few reports of penile fracture occurring over the crus of the corpora cavernosum has been reported so far in the literature. The mechanism of this injury remains unclear except direct trauma in one case⁵. In others the patient categorically denying any such mechanism of injury commonly responsible for PF^{5,6}.

In most instances, the history and physical exam are suggestive and are sufficient to diagnose the penile fracture. Imaging may only be required in selected cases, particularly among those patients who had atypical clinical presentation or presented with severe local swelling and pain which limits or prohibits a detailed clinical examination of the penis¹⁹. Almost all imaging modalities like Ultrasound scan, MRI scan, Cavernoso-graphy and retrograde urethrography were found helpful in diagnosis confirmation, assessment of the anatomical site of injury, evaluation of the extent of damage and in exclusion of urethral injury associate with PF^{7,20,21}. Other than this, these investigations may be time consuming and not cost effective. Therefore, these investigations are not definitive in diagnosis and should not replace clinical assessment and leads to delay in surgical exploration. The MRI and Ultrasonography are usually used not only in the evaluation of the extent and site of penile trauma but also helpful in deciding which surgical approach is most appropriate in the patient^{20,21}.

In treatment of PF, the conservative management was usually considered in past as the standard for PF which comprises of cold compress application, antibiotics, anti-inflammatory drugs and anti-androgens^{5,19}. But there was high incidence of complications (up to 50%), like infected hematoma, palpable nodule, abnormal penile curvature and erectile dysfunctions were reported among the patients. In addition to these complications, the prolonged recovery time and hospital stay has also reported²². The literature review has proved that the surgical repair is the treatment of choice in patients with penile fracture due to fewer complications reported on long term follow up. Muentener et al²³ has observed that the 92% of their patients treated surgically shows good outcomes as compared to only 59% who were treated conservatively. Regarding timing of surgery, the El-Assmy et al²⁴ has reported no considerable difference in recovery time after surgery based on early or delayed hospital reporting or treatment of the patients with PF. Whereas, in a meta-analysis of 58 studies on PF, which comprises of a total of 3,213 patients, it has been observed that the early surgery is preferable with significantly less complication but there were no statistically significant differences in erectile dysfunction rates¹⁵. Similarly, the Amer et al²⁵, in their metanalysis has observed that overall fewer complications (p < 0.00001) in early surgery as compared to delayed surgery.

The Principles of surgical treatment should be to optimize the surgical exposure, haematoma evacuation, Identification of injury site, correction of the defect and repair of any urethral injury. The most common incision used during surgical approach is the subcoronal circumferential degloving incision. Other techniques include direct longitudinal incision over tunical defect, ventral penoscrotal incision and midline

incision. A pen-oscrotal incision is usually an adequate approach in nearly two-thirds of penile fractures which are located proximally^{2,9}. The perineal approach tailored to this patient's injury obviates need for surgical degloving, circumcision and difficulties with access to the defect of the penis that would have been encountered if imaging had not been performed and if the traditional surgical approach would have been utilized^{10,17}. Recently, Shaeer et al²⁶ has observed that intra-operative methylene blue injection in the corpora is helpful to reveal the site of tunical injury and thereby in minimizing the unnecessary tissue dissection and less operative time and in simplifying the repair.

An International Index of Erectile Function (IIEF) score¹² is used as follow up tool to assess postoperative erectile function at 3 months and urethrogram is needed only if there is associated urethral injury.

Our case highlights the importance of clinical suspicion based on atypical history and clinical findings, the role of imaging to diagnose the defect and allowing planning for an unusual surgical approach necessary for early diagnosis and surgical repair.

CONCLUSION

Penile fracture is a common urological emergency. The ideal management remains largely surgical intervention. Pre-operative imaging should not cause delay in the surgical repair. However, in atypical presentation imaging does help in diagnosis and surgical planning of optimal approach. In order to avoid serious complications immediate operative intervention is recommended.

AUTHOR'S CONTRIBUTION

Hina S: Literature Search and manuscript writing.

Shukla C: Manuscript final reading and approval

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REFERENCES

- Srinavas BV, Vasan SS, Mohammed S. A case of penile fracture at the crura of the penis without urethral involvement: Rare entity. *Indian J Urol.* 2012; 28:335-337.
- Kati B, Akin Y, Demir M, Boran OF, Gumus K, Ciftci H. Penile fracture and investigation of early surgical repair effects on erectile dysfunction. *Urologia.* 2019;86(4):207-210. doi: 10.1177/0391560319844657. Epub 2019 Apr 22. PMID: 31010389
- Zafer K. An update of Penile Fractures: Long-term significance of the number of hours elapsed till surgical repair on long-term outcomes. *Turkish J of Urol.* 2017; 43(1):25-29. doi:10.5152/tud.2016.39129.
- Malis J, Zur K. Der fractura penis. *Arch Klin Chir.* 1924;129.
- Srinivas BV, Vasan SS, Mohammed S. A case of penile fracture at the crura of the penis without urethral involvement: Rare entity. *Indian J Urol.* 2012;28(3):335-337. doi:10.4103/0970-1591.102718: 10.4103/0970-1591.102718
- Harada J, Shida Y, Gono S. Rare case of penile fracture caused by an injury to the crus penis: Delayed repair using the trans-perineal approach. *Int JUrol Case Rep.* 2021; 4:36-38.
- Naouar S, Boussaffa H, Braiek S, al Kamel R. management of penile fracture, can we wait? *Afr J of Urol.* 2018; 24:56-59.
- Amer T, Wilson R, Chlosta P. Penile fracture: a meta-analysis. *Urol Int.* 2016; 96:315-329.
- Saglam E, Tarhan F, Hamarat MB, Can U, Coskun A, Camur E, et al. Efficacy of magnetic resonance imaging for diagnosis of penile fracture: A controlled study. *Investig Clin Urol* 2017; 58:255-260.
- Morey AF, Dugi DD. Genital and lower urinary tract trauma. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. *Campbell-Walsh urology.* 10th ed. Philadelphia: Saunders; 2012; p. 2379-2392.
- Guler I, Ödev K, Kalkan H, Simsek C, Keskin S, Kiliç M. The value of magnetic resonance imaging in the diagnosis of penile fracture. *Int Braz J Urol* 2015; 41:325-328.
- Rosen R, Cappelleri J, Gendrano N. The International Index of Erectile Function (IIEF): a state-of-the-science review. *Int J Impot Res.* 2002; 14:226-244. <https://doi.org/10.1038/sj.ijir.3900857>
- Mathew J, Parmar K, Chandna A, Kumar S. Penile fracture associated with complete urethra and bilateral corpora cavernosa transection. *Ann R Coll Surg Engl.* 2021; 103(3):e88-e90. doi:10.1308/rcsann.2020.7042
- Yonguc T, Bozkurt IH, Ors B, Kozacioglu Z, Arslan B, Yonguc NG. Penile fracture with bilateral corporeal rupture without urethral involvement. *Can Urol Assoc J.* 2014; 8(1-2):E51-E53. doi:10.5489/cuaj.1226
- Kati B, Akin Y, Demir M, Boran OF, Gumus K, Ciftci H. Penile fracture and investigation of early surgical repair effects on erectile dysfunction. *Urologia.* 2019; 86(4):207-210. doi: 10.1177/0391560319844657.
- Rees RW, Brown G, Dorkin T, Lucky M, Pearcy R, Shabbir M, et al. BAUS Section of Andrology and Genitourethral Surgery (AGUS). British Association of Urological Surgeons (BAUS) consensus document for the management of male genital emergencies - penile fracture. *BJU International* 2018; 122:1.
- Zargooshi J. Sexual function and tunica albuginea wound healing following penile fracture: an 18-year follow-up study of 352 patients from Kermanshah, Iran. *J Sex Med* 2009; 6:1141-1150.
- Amer T, Wilson R, Chlosta P, AlBuheissi S, Qazi H, Fraser M, et al. Penile fracture: a meta-analysis. *Urol Int* 2016; 96:315-329.
- Morey AF, Brandes S, Dugi DD 3rd, Armstrong JH, Breyer BN, Broghammer JA, et al. rotrauma: AUA guideline. *J Urol.* 2014.192 (2):327-335.
- Nizamani WM, Ali SI, Vaswani AK, Shahani BK. Ultrasound Diagnosis of Penile Fracture. *J Coll Physicians Surg Pak.* 2015;25 (10 Suppl):S12-13.

21. Parker RA, Menias CO, Quazi R, Hara AK, Verma S, Shaaban A, et al. MR Imaging of the Penis and Scrotum. *Radiographics*. 2015; 35 (4):1033-1050.
22. Garnal WM, Osman MM, Hammady A, Aidahshoury MZ, Hussein MM, Saleem M. Penile fracture: long-term results of surgical and conservative management. *J Trauma*. 2011; 71: 491-493.
23. Muentener M, Suter S, Hauri D, Sulser T. Long-term experience with surgical and conservative treatment of penile fracture. *J Urol*. 2004; 172(2):576-579.
24. El-Assmy A, El-Tholoth HS, Mohsen T, Ibrahim el HI. Does timing of presentation of penile fracture affect outcome of surgical intervention?. *Urology*. 2011; 77(6):1388-1391.
25. Amer T, Wilson R, Chlosta P, AlBuheissi S, Qazi H, Fraser M, et al. Penile Fracture: A Meta-Analysis. *Urol Int*. 2016; 96(3):315-329.
26. Shaeer O. Methylene blue-guided repair of fractured penis. *J Sex Med*. 2006;3(2):349-354.