

When trauma breaks more than skin: a case series of penile fracture

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Abstract

Background: Penile fracture is an uncommon urological emergency resulting from sudden bending of an erect penis, causing rupture of the tunica albuginea with extravasation of blood into surrounding tissues. Prompt recognition and surgical management are essential to minimize complications and preserve functional outcomes.

Case Series: Two cases of penile fractures were managed surgically in our institution. The first case involved a 24-year-old male who developed acute penile pain, swelling, deformity, ‘pop’ sound and immediate detumescence following nocturnal erection. The second case involved a 31-year-old male who sustained penile and scrotal trauma, presenting with pain, bleeding, and difficulty in micturition. Emergency exploration and repair of tunica albuginea and Buck’s fascia were performed.

Conclusion: Penile fracture is primarily a clinical diagnosis. Classical findings such as a popping sound, acute pain, detumescence, swelling, and eggplant deformity should prompt urgent evaluation. Early surgical exploration with evacuation of hematoma and repair of the tunica albuginea is advocated to reduce long-term complications, particularly penile curvature and erectile dysfunction.

Keywords: Urological Emergency, Popping Sound, Acute Pain, Nocturnal Erection.

Introduction

- Fracture of the penis usually occurs when the erect penis is bent suddenly. It leads to rupture of the tunica albuginea with extravasation of blood within the penis.
- Usually, the patient feels a cracking or popping sound. It is associated with pain and detumescence.

Clinically, there is bruising and penile hematoma. There may be occasionally an associated urethral injury.

- Early surgical exploration of the penis with repair of the ruptured tunica albuginea is the recommended treatment.
- Penile fracture is uncommon, but it is essential to promptly identify this specific urogenital injury.

Case Series: Two Cases of Penile Fracture

Case 1

- A 24 year old male presented with complaint of sudden onset of acute penile pain, penile swelling and deformity of penis following nocturnal erection.
- He presented to hospital 6 hours following the incident.
- Upon injury, he heard a “pop” from his penis with acute penile pain and detumescence.
- Patient had difficulty in micturition
- No history of hematuria

Clinical Examination

- General condition stable.
- PR – 80 bpm, BP – 112/74 mmHg, RR – 16 cpm

Local Examination of External Genitalia

- Swelling noted over the shaft of the penis. There was no blood at the meatus.
- Classic “eggplant (aubergine) deformity” present
- Tenderness present
- No hematuria noted
- External urethral meatus and scrotum was found to be normal.



Figure 1



Figure 2

Systemic examination

Central nervous system: no focal neurological deficit
Cardiovascular system: S1 and S2 heard, no murmurs
Respiratory system: Bilateral air entry equal
Per abdomen: soft, nontender.

Provisional diagnosis: Fracture Penis

- Eggplant/aubergine deformity is a near-pathognomonic sign
- USG penis – Focal defect of 1cm noted in tunica albuginea of corpus cavernosum with heterogeneous hypoechoic collection noted in the penile soft tissues, suggestive of hematoma.
- Decision was made for emergency surgical exploration.

Penile Exploration

- Patient was prepared and taken up for emergency exploration.
- Anaesthesia: spinal

- Position: supine.

Surgery: Penile Exploration and Repair of Buck's Fascia

Foley's catheterization was performed.

- Incision: circumferential subcoronal incision placed over the palpable defect.
- Degloving: penile skin and dartos reflected down upto the root of the penis to expose Buck's fascia circumferentially.

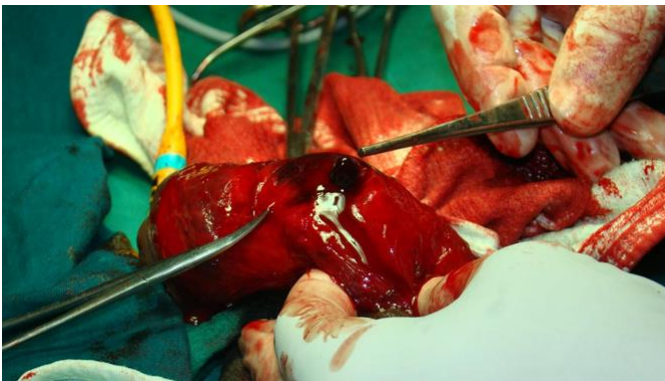


Figure 3

Repair of tunica albuginea and buck's fascia

- Buck's fascia incised over the region of hematoma for evacuation.
- Evacuation of hematoma: clot evacuated to clearly visualize tunica albuginea.

Intra-operative findings

Defect of size 1cm on the dorsal aspect of tunica albuginea with breach of buck's fascia noted. No urethral injury identified.

- Tunica albuginea was repaired with interrupted absorbable sutures.
- Buck's fascia was closed in separate layer over the tunical repair using prolene 3-0.
- Gittes test performed and no leakage or tears noted
- Dartos and skin closed in layers.
- Catheter retained post operatively for 2 weeks, analgesics and antibiotics were given.

Post Operative Course

- Postoperative period was uneventful
- Vitals remained stable throughout the hospital stay.
- Urethral catheter was retained for 2 weeks post operatively.
- Advised abstinence from sexual activity or masturbation for 6 weeks.
- Discharged in stable condition with foley's catheter insitu with outpatient follow-up.

POD14



Figure 4 and 5

Case 2:

- 31 year old male presented with alleged history of trauma to penis and scrotum while working, at his residence and sustained injury to penis and scrotum.
- History of pain and bleeding over the penis.
- There was history of difficulty in micturition.

Local Examination

- Laceration noted on the ventral aspect of corona of size 6x1cms with active frenular artery bleeding.
- Edema of the penis proximal to the corona and hematoma at the laceration site noted.
- USG of penis : laceration involving ventral surface of penis at corona glandis with focal tear in tunica

albuginea of corpus cavernosum and underlying minimal hematoma.



Figure 6



Figure 7



Figure 8

Surgery

- Immediate arrest of active frenular artery bleed with ligation using absorbable sutures in emergency medicine minor OT. Patient was prepared and taken up for emergency exploration.
- Emergency penile exploration and repair of buck's fascia was done.

Discussion & Key Learning Points

Surgical Anatomy of Penis

Penis is composed of two corpora cavernosa and one corpus spongiosum. Each corpus cavernosum enclosed by the tunica albuginea. Buck's fascia envelops the corpora, deep to the penile skin. Superficial (dartos) fascia lies beneath the skin, external to Buck's fascia. Deep dorsal vein, dorsal arteries and nerves lie beneath Buck's fascia. Colles' fascia (perineum) is continuous with Scarpa's fascia of the abdomen.

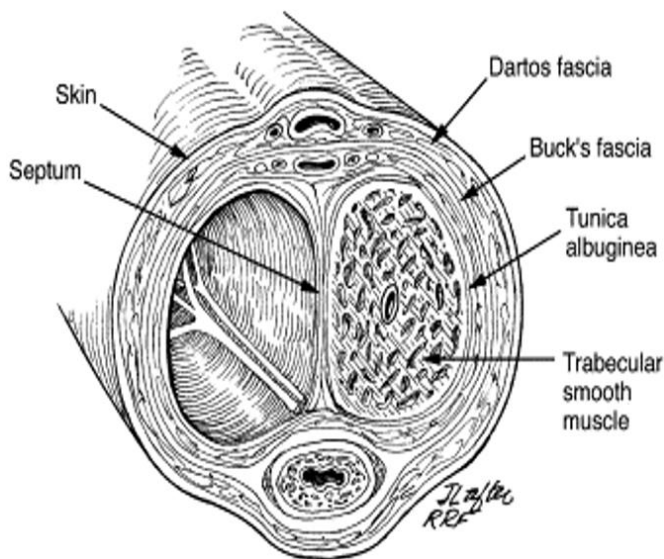


Figure 9

Tunica Albuginea & Buck's Fascia

- Tunica albuginea thickness ~2 mm when flaccid, thins to ~0.25–0.5 mm during erection. This erectile thinning predisposes it to rupture under sudden bending force.
- Buck's fascia: dense fibrous sheath — if intact, contains hematoma within the shaft. Rupture of Buck's fascia allows hematoma to spread into scrotum, perineum or lower abdomen (along Colles'/Scarpa's fascial planes). The integrity of Buck's fascia determines the clinical deformity pattern observed on examination.

Discussion

- Penile fracture is an uncommon but well-described entity that refers to rupture of the tunica albuginea of the corpus cavernosum, commonly during sexual activities.
- The first case of a penile fracture was described in the literature in 1924
- Clinically, the majority of patients reported to have heard a “pop” or cracking sound from the erect penis at the moment of injury.

- Detumescence occurs rapidly, and acute swelling, pain, and penile deformity follow.
- The tunica of the erect penis thins to approximately 0.25 mm on expansion, and the firmly engorged corpora under the strain of buckling can generate pressures in excess of 1500 mm Hg and exceed the limit of the thinned tunica.
- Penile fracture is diagnosed based on clinical criteria. The retrograde urethrogram, should be used selectively to diagnose concomitant urethral tearing.
- The gross appearance of a fractured penis is often summarized as an “eggplant deformity,” which refers to the combination of localized penile swelling, discoloration, and deviation toward the opposite side of the fracture.
- Manual examination of the penis can often detect the site of the corporal tear by palpation of the overlying hematoma. The “rolling sign” is used to describe a firm, immobile hematoma, which is palpable as the penile skin is rolled over it.
- Less commonly, penile fractures can present with swelling within the scrotum, suprapubic region, and perineum secondary to the hematoma extravasation outside of Buck's fascia.
- Voiding symptoms, including dysuria, urinary retention, and gross hematuria are uncommon but warrant investigation because they are indicative of a potential urethral injury. Analysis of the urine should be performed to evaluate for microscopic hematuria, which can be indicative of a nonapparent urethral injury.

Role of Urethrography

- Retrograde urethrography is advocated in any case of suspected penile fracture that presents with voiding difficulty, hematuria, or blood at the meatus.

However, the absence of these features does not exclude the possibility of a urethral injury.

- Evidence of bilateral corporal rupture should also prompt investigation for a potential urethral injury, because bilateral injuries have a higher rate of urethral disruption compared with unilateral fractures.

Role of Cavernosography

- Although some recommend routine cavernosography on all patients with suspected penile fracture, most reserve it for unusual cases, such as those with delayed presentation or discrepancies in clinical findings.
- Injection of 15 to 70 mL of half- to quarter-strength nonionic contrast dye (diatrizoate meglumine and diatrizoate sodium) directly into the uninvolved corpora under live fluoroscopy. Injection is continued until both corpora are filled and tumescent changes are observed.
- Anteroposterior and oblique radiographs should be obtained over several time intervals.
- Early films are reviewed for filling defects and extravasation at the suspected hematoma site.
- 10-minute-delayed films should ascertain for delayed extravasation.
- Can be performed intraoperatively.
- Primary limitations to cavernosography include the time, expertise, and equipment required to perform the study.
- Reported complications of cavernosography include allergic reaction, corporal fibrosis, and priapism.

Role of other investigations

- Ultrasonography has been reported as a cheap and noninvasive modality. Theoretically, ultrasound might be advantageous in the pediatric setting.

- Magnetic resonance imaging has been shown to be extremely accurate in diagnosing and localizing corporal injuries.

Treatment

➤ Non-Surgical

- Ice packs, Foley catheterization, and anti-inflammatory medicines.
- Compression bandages, erection-inhibiting estrogens, penis splints, antibiotics and fibrinolytic agents.
- The current literature generally advocates immediate surgical repair upon presentation to the hospital.
- In the event of a delayed presentation (48 hours after injury), immediate repair is still advocated, although it is associated with increased risk of long-term sequelae.

➤ Surgical

- Evacuation of the hematoma, identification of the tunica injury, local corpora debridement, closure of the tunica lacerations, and ligation of any disrupted vasculature.
- Recommended is a distal circumferential degloving incision. In addition to being the most cosmetic incision, distal degloving readily allows exposure to the entire tunica bilaterally, facilitating diagnosis and repair of coexisting urethral and contralateral injuries.
- Suprapubic, inguinal-scrotal, and perineal incisions have also been reported.
- Closure of the tunica laceration is best performed with running or interrupted absorbable sutures
- Intracorporeal saline injection and simulated erection, referred to as GITTES TEST, might help localize a nonapparent or incompletely repaired tunica laceration.

- Proper dissection must be carried down, until the hematoma within Buck's fascia is exposed and evacuated. Postoperative antibiotics, compressive bandages, and erection inhibitors are given.

Long Term Sequelae

6% to 25% of patients experience long-term sequelae after surgery.

- Penile Deviation
- Painful Intercourse
- Painful Erection
- Erectile Dysfunction
- Priapism
- Skin Necrosis
- Arteriovenous Fistula
- Urethrocavernous Fistula
- Urethral Stricture.

Conditions mimicking Penile Fracture

- Rupture of the dorsal artery and veins
- Rupture of the suspensory ligament of the penis
- Nonspecific bleeding
- Isolated urethral injury
- Proximal shaft injury inaccessible by the standard incisions

Conclusion

The diagnosis of penile fracture is mostly a clinical one. Prompt surgical exploration and repair are advocated in almost all cases.

Most commonly, the rupture occurs on the lateral side of the proximal corpora, but it can occur anywhere along the corpora and produce a variety of swelling patterns.

Hematuria and voiding symptoms are not specific to a urethral injury. Their presence should prompt the performance of retrograde urethrography.

Corporal cavernosography might aid in localizing an unusual injury prior to surgery; however, the procedure is

limited by technical requirements and the possibility of false-negative results.

Immediate surgery reduces long-term complications; post-traumatic penile curvature remains the most common long-term complaint.

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