

Review Article

Penile fracture and its management

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ABSTRACT

Fracture penis is a rare surgical emergency that is also underreported and treatment often delayed due to embarrassment felt by the patient. The condition is one of some uncommon emergencies which are fully diagnosed through history and clinical examination. Only a few cases need USG or color Doppler as a supportive tool for diagnosis. Penile fracture commonly occurs due to slippage of the penis out of the vagina during sexual intercourse. Generally patient presented to surgical emergency within 48 hours of injury can be handled successfully with minimum complications. The immediate surgical exploration with evacuation of the hematoma and repair of tunica albuginea defect is the ideal treatment. Postoperatively the patient may have erectile dysfunction, but this is self-limiting, normalising in 3-4 months.

Keywords: Penile fracture, Penile trauma, Penile anatomy, Tunica albuginea

INTRODUCTION

Traumatic rupture of the tunica albuginea with either one or both corpora cavernosa of the penis known as penile fracture. This may be associated with corpora spongiosum or urethral injury.^{1,2}

This is commonly occurring when the erect penis is accidentally hit on the pubis or perineum after slipping out of the vagina during sexual intercourse.³ The other cases are falling out of bed with an erect penis, masturbation, or handling of the erect penis, turning over erect penis during sleep, and being kicked by an animal.

During sex patient feels immediate detumescence associated with discoloration and swelling of the penis, often having a cracking or popping noise at the time of injury. The patient feels embarrassed to attend hospital thus delaying the treatment.³

PENILE ANATOMY

The penile shaft is made up of 3 erectile tissues, 2 corpora cavernosa and a corpus spongiosum. Each of tissue groups covered by fascial layers containing nerves, lymphatics, and blood vessels. Externally, these are all covered by skin.⁶

Both corpora cavernosa are surrounded by bilayers of tunica albuginea, the outer longitudinal and the inner circular layers. Proximally, at the base of the penis, formed the cruras, which are attached to the ischiopubic rami. The corpus spongiosum is considerably thinner (<0.5 mm) than the corpora cavernosa (approximately 2 mm) which is adjusted with in a groove formed ventrally by tunica albuginea.⁷ The urethra passes through the corpus spongiosum. This is very elastic relative to tunica albuginea, allowing expansion of the corpus spongiosum for passage of the ejaculate and urine through the urethra.

Blood to the corpora cavernosa is supplied by paired deep arteries of the penis (cavernosal arteries), which run in the centre of each corpora cavernosa.

The urethral meatus is positioned just slightly on the ventral surface of the glans and is slit like. The edge of the glans overhangs the shaft of the penis, forming a rim called the corona.

All 3 cavernosa and spongiosa are surrounded by Bucks fascia, dartos fascia, and the penile skin. The penile skin is continuous with lower abdominal wall and distally covering the glans and at the corona, it forms the prepuce (foreskin).

Symptoms and signs

- Acute pain.
- Immediate loss of erection.
- History of a snapping or cracking sound.
- Ecchymosis, penile swelling and penile deviation toward the side opposite to the injury ("Aubergine" sign).
- Haematuria or dysuria indicates subsequent urethral injury.

DIAGNOSIS

Careful clinical examination and history is appropriate for the diagnosis of penile fracture. Penis is swollen up, deviated to the side opposite to the injury and is associated with discoloration (Figure 1).



Figure 1: External clinical view of penile fracture.

The hematoma is localized in the penis only when the Bucks fascia is intact, resulting in the typical "eggplant" deformity. If the tunica albuginea injury is associated with Bucks fascia tear, then the extravasation of hematoma spreads along the Colles fascia and ecchymosis extends like a "butterfly" over the perineum, scrotum, and lower abdomen.

On palpation- focal tenderness and a palpable defect in the tunica albuginea may help in diagnosing the fracture site. There is often a clot lying over or near the fracture site that corresponds to the site of cavernosal rupture. Penile rupture can occur anywhere but it commonly localized at the base of the penis, just proximal to the peno-scrotal junction.

Often single corporal body is injured, but both corpora and the corpus spongiosum may be injured depending upon the severity of the injury. Sometimes a patient fails to void spontaneously, which usually is due to compression of the urethra by hematoma, but urethral injury has to be ruled out by retrograde urethrography (RUG). Urethral injury is observed in around one third of cases and usually is a partial disruption of urethra.⁴

INVESTIGATIONS

Ultrasound (USG) and color doppler

Ultrasound and color Doppler are the first line diagnostic tools that are easily available and non-invasive. They identify defects of the Tunica albuginea and blood collections.^{9,10}

Magnetic resonance imaging (MRI)

It is better and more accurate than USG imaging procedure and can visualize smaller injuries of Tunica albuginea. It also identifies urethral injuries.

Retrograde urethrography

This identifies urethral tears. It must be performed in all cases with blood at the urethral meatus, hematuria, or in condition of failure to void.³

Angiography

It should only be performed when embolization is planned.

MANAGEMENT

Blunt trauma to the flaccid penis does not do much harm to penis and may have only produce a subcutaneous hematoma. No surgical intervention is usually needed and only analgesics and ice packs are required for treatment of these cases.

In condition of penile fracture, emergency surgical exploration with closure of the tunica albuginea is treatment of choice. During exploration the hematoma is evacuated with debridement of dead tissue and primary repair of the defect performed. Surgical exploration usually done via subcoronal circumferential incision, and penile skin degloved proximally upto to the base. Other option is incision over shaft, directly overlying the fracture site. This is only of use when fracture is palpable

preoperatively. Usually fracture site presented as a transverse laceration, between 0.5 and 2.0 cm long, in the tunica albuginea.⁸



Figure 2: Tunica albuginea tear.

Absorbable suture like vicryl 3-0 or 2-0 RB are used for closure of the tunica albuginea tear with good long-term outcome. Postoperatively systemic antibiotics, anti-inflammatory agents are used as supportive treatment.



Figure 3: Repaired tear.



Figure 4: Repaired coronal incision.

Patients can be discharged after 24-48 hours of surgery and sexual activity can be restarted after about 1 to 2 months. Postoperative penile erection is prevented with benzodiazepines or amyl nitrate. Urethral transection, if present is to be repaired primarily over a 16Fr silicone catheter. Postoperative healing is confirmed by voiding cystourethrogram at around 14 days post operatively before catheter removal.

Postoperative complications

Postoperatively superficial wound infection in 9% and impotence/erectile dysfunction in 1.3%, has been reported.⁵ Erectile dysfunction is usually self-limiting and resolves in 3-4 months.

With conservative management (selected or neglected by patient), penile fracture results in complications like penile abscess, missed partial urethral disruption, penile curvature, and persistent hematoma requiring delayed surgical intervention. 35% cases reported fibrosis, stricture, fistula formation, and penile angulation after conservative management.⁵

CASE REPORT

A 35 year male patient, attended emergency surgery ward with history of penile injury following sexual intercourse close to 48 hours before. He gave a clear history of rough sexual intercourse and slippage of penis out of vagina followed by detumescence. On examination patient had normal vitals and unremarkable systems. Penis was curved ventrally with edema and local hematoma formation. Defect was not palpable. Patient underwent USG color Doppler examination which confirmed the diagnosis of fracture penis (defect in tunica albuginea and hematoma formation). Surgical exploration performed in emergency OT via coronal incision. We found local hematoma and an underlying defect of around 1 cm x1 cm over dorsolateral aspect of tunica albuginea (Figure 5).



Figure 5: Tunica albuginea tear (close view).

Defect was repaired with vicryl 3-0 RB and hematoma tissue debrided. Postoperatively patient kept on antibiotics, analgesics and also sedatives for prevention of erection. Penile erection returned after 15 days of surgery. At regular follow up of 6 month patient reported normal erectile functions of penis.

DISCUSSION

Penile fracture is a rare urological emergency encountered by a general surgeon. It affects the patient physiologically as well as psychologically. Most surgeons do not have much exposure of this condition because of its rare occurrence. Due to the obvious embarrassment associated with such injuries the patients may hesitate to disclose their condition thus delaying the medical treatment. Cummings et al reported that a delay of 24-48 h does not adversely impact the postoperative functioning of the penis.¹¹

Penile fracture is the disruption of the tunica albuginea with rupture of the corpus cavernosum. This commonly occurs during vigorous sexual intercourse, slippage of penis out of vagina and it hitting the perineum or pubic bone, causing the injury. Tunica albuginea is a bilayered structure, the outer longitudinal and the inner circular layers, which varies in different locations along the shaft and is thinnest ventro-laterally.¹² Tunica albuginea resists rupture until intra-cavernous pressures rise to more than 1500 mm Hg.¹² Mydlo reported that 94% of fractures in Philadelphia, Pennsylvania, were a result of sexual intercourse; Zargooshi described 69% of fractures in Kermanshah, Iran, as being due to self-manipulation.¹²

The tunica albuginea tear is usually transverse and 1 to 2 cm in length. The injury is usually unilateral but may involve both corpora. Injuries associated with coitus are usually over ventral or lateral aspect of tunica albuginea where it is thinnest.¹²

Penile fracture usually has tunica albuginea tear but it may be associated with urethral tear. The urethral injury incidence is higher in the United States and Europe (20%) than in Asia, the Middle East, and the Mediterranean region (3%).¹² The diagnosis of penile fracture usually is made by simple clinical history and examination but some radiological investigations like USG, color Doppler, MRI, angiography and urethrography are helpful. Emergency surgical exploration with evacuation of hematoma and repair of tunica albuginea tear is treatment of choice. Generally patient responds well with minimal complications. We studied a case of penile fracture in which the mode of injury was sexual intercourse. He had presented to the surgical emergency within 48 hours of injury. He was managed by emergency exploration with debridement and repair of tunica albuginea with vicryl 3-0 round body

suture. Postoperatively patient responded well, he was kept under antibiotic, analgesics, and also sedative for prevention of penile erection. Erectile function returned after 15 days of surgery.¹²

CONCLUSION

Penile fracture is a rare surgical emergency that is an obvious embarrassment for the patient. Early surgical exploration and primary repair produces good outcome in respect of erectile and sexual functions.

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