CASE REPORT

Penile fracture with bilateral disruption of corpora cavernosa and complete disruption of the urethra
A case report and review of the literature

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Abstract

The penile fracture is a rare blunt injury that typically happens during sexual intercourse. It might be accompanied by injury to corpus spongiosum with partial or complete rupture of urethra.

We present a case of a penile fracture with bilateral rupture of corpora cavernosa and complete urethral disruption that was successfully managed. The patient underwent early surgical exploration and primary repair of the tunica defects and single stage end-to-end urethral anastomosis. Postoperatively he retained both erectile and voiding functions.

Blunt penile injury with disruption of tunica albuginea of corpora cavernosa requires urgent surgical exploration and repair to avoid long-term complications as impotence, penile
disfigurement and urethral strictures. Associated urethral injury should be suspected in those patients.

**Key words**

Penile fracture, urethral injury, end-to-end urethral anastomosis

**Introduction**

Penile fracture is an injury caused by disruption of the tunicae albuginea, which envelops the corpora cavernosa of the penis. It is most often caused by a blunt trauma to an erect penis and represents a true urologic emergency. The peak age group is 20-45 years. It presents as a tender, swollen and deviated penis with haematoma that runs along the fascial planes. The patients typically report a cracking/popping sound, rapid detumescence and pain. An associated urethral injury might be from a simple contusion to a complete urethral rupture. Surgical exploration and primary repair is mandatory since it carries the lowest risk for complication rates as compared to the conservative management.

**Description of the case**

A 41-year-old male, presented at the emergency department for acute penile pain and swelling after consensual intercourse. He reported a popping sensation, rapid detumescence and bleeding from the urethra.

On examination, he was haemodynamically stable. The penis was swollen, ecchymotic, S-Shaped and dorsally deviated. The associated haematoma, extended over the dorsal penile surface to penile base, suggesting rupture of Buck’s fascia (Figure 1). Blood was visible at the external urethral meatus. On palpation, the penis was tender and painful. The “rolling sign” was not assessed due to lack of patient’s cooperation. The scrotum was tender on palpation but both testicles felt structurally normal and consistent. The abdominal examination revealed a palpable urinary bladder which was dull to percussion.

The patient was an otherwise healthy individual with past medical history free of any diseases, no reported allergies and without past urologic disease history. He was transferred to the operating theater for urgent exploration of the injured organ.

Under general anesthesia, a suprapubic 10-French catheter was inserted. A subcoronal circumferential incision was made and the penis was degloved. Disruption of Buck’s fascia was evident and an organised haematoma that was seen under the loose connective tissue, was evacuated. Careful observation revealed a single tear on each tunica albuginea adjacent to
corpus spongiosum. Interrupted 2-0 Vicryl sutures used for the reparation of the defects. A tourniquet was placed around the penile base and an artificial erection was instituted, as proposed by Gittes-Langhlin, to control the water-tightness of the primary defect closure and to evaluate the straightening of the erection (Figure 2).

The corpus spongiosum was dissected, a silicon 20-French Folley catheter was gently advanced proximally to the distal urethral end and the urethra was explored. The urethra was mobilized proximally and distally and the ends were spatulated to ensure a tension-free anastomosis. A single stage end-to-end anastomosis followed by interrupted 4-0 Vicryl sutures. A Dartos flap was used to cover the repaired lesions and to minimize the risk of fistula formation. Classic circumcision followed (Figure 3). Penis was firmly gripped in gauze in order to arrest oozing and a non-adherent pad dressing was applied compressively to immobilize it and to reduce edema development. The postoperative period was uneventful. Postoperative
painfull were managed by sedative per request. The trial without catheter was successful on the 14th postoperative day and the suprapubic catheter was removed the following day. At follow up, his postvoid residual (PVR) was minimum. At the 6th month follow up, he complained for stranguria and dysuria. An uroflowmetry revealed a plateau at maximum flow (Qmax) of 16ml/s. A urethroscopy followed showing a small membranous like stricture at mid-penile urethra. The patient entered a urethral dilatation program. At follow up, his uroflowmetry showed a bell-shaped flow pattern at Qmax of 26ml/s and insignificant PVR. He reported nocturnal erections 4 weeks postoperatively and he was able to achieve a full intercourse at 3rd postoperative month.

Discussion

Penile fracture results from the traumatic rupture of the tunica albuginea of penile corporae. Although infrequent, it follows a blunt injury to the erect penis and represents a urologic emergency. Injury to the flaccid penis is rare because of the mobility and flexibility of the organ. The peak age group is 20-45 years old. The incidence of concomitant urethral injury is reported between 10-58%\(^1\). Injury of the deep dorsal penile vein in association with a tear in tunica albuginea is extremely rare\(^2\). During erection, the arterial inflow causes the erectile bodies to enlarge longitudinally and transversally, thinning the supporting tunica albuginea from 2mm to 0.25-0.5mm, that stiffens and loses its elasticity. A sudden direct trauma or a bending in an erect state can cause a 0.5-4 mm tear of the tunica albuginea. De Rose et al. found histopathological abnormalities such as perivascular lymphocytic infiltration and fibrosclerosis in 83% of fractured corpora, suggesting the presence of a predisposing factor for penile fracture\(^3\). They also suggested that at least 1500mmHg intracorpororeal pressure would be necessary to lead to fracture. While intercourse and masturbation account for most cases, there have been reports of fracture following a fall from bed with an erect penis, rolling over in bed during nocturnal tumescence, hitting an erect penis against a firm surface and masturbating in a cocktail shaker\(^4\). In Middle East countries, a practice to achieve rapid detumescence termed ‘taghaandan’ accounts for a percentage of cases\(^5\).

The injury usually involves a single corpus, although bilateral rupture accounts for 2-10% of cases. At unilateral corpus injury, the associated urethral injury is reported in 9-20%\(^1\). The urethral injury is usually partial. Complete urethral rupture has been published in 5 case reports since 1970.

Penile fracture is clinically presented as a tender, swollen penis with ecchymosis that spread along the involved fascial planes. The eggplant appearance is characteristic when Buck’s fascia remains intact. The patient often reports a cracking/popping sound or snapping sensation, rapid detumescence and pain. If urethra is involved in the injury, blood is seen at the meatus.
and there is either dysuria if the rupture is partial or urinary retention in complete urethral injury².

Imaging studies to assess penile trauma are not usually required and should be used when the diagnosis is equivocal. Cavernosonography or magnetic resonance imaging can identify lacerations of the tunica albuginea in unclear cases⁶.

The goals of treatment following penile trauma are the preservation of penile length, the preservation of erectile function and the maintenance of the ability to urinate in the standing position⁷. Surgical exploration and primary repair is mandatory since it carries low postoperative complication rates and favorable outcome as compared to the conservative management. The latter could be offered in cases of false penile fracture where fracture sound or sensation is absent and the erections are conserved following the injury. Conservative management includes ice-packs, non-steroidal analgesics and urine diversion if urethral injury is suspected². Muentener et al. reported good outcomes in 92% of patients treated surgically versus only 59% in those treated conservatively⁸. In addition, surgery provides good outcomes after varying timing of presentation after injury. El-Assmy et al. studied the early (<24h) versus delayed (>24h) surgical management of penile fracture where the second groups presented with higher complication rates⁹. The late presentation is contributed to the embarrassment following the injury causing patients to avoid seeking treatment.

The principles of surgical therapy are the adequate surgical exposure, the evacuation of hematoma, the identification of the injury site, the correction of the defect in tunica albuginea and the primary repair of any associated urethral injury. Different approaches are used as the incision directly over the defect, the circumcision-degloving incision, the inguinal-scrotal incision, the penoscrotal, the inguinoscrotal, the lateral and the suprapubic incisions. The circumferential-degloving incision is used in most centers.

The complications of penile fracture include erectile dysfunction, abnormal penile curvature, painful erections and development of fibrotic plaques, penile abscess, urethral strictures, urethrocutaneous fistula, corporourethral fistula and painful nodules along the site of injury. Erectile dysfunction might result from a cavernoso-spongiosal fistula. Patients treated with conservative management have a significantly higher incidence of complications compared with those treated with prompt surgical therapy¹⁰.

**Conclusion**

Penile fracture remains a rare, yet likely underreported condition. The diagnosis is clinical and urgent exploration and repair is mandatory. Associated urethral injury should be suspected in
penile fracture, especially in those patients with bilateral cavernosal rupture or suggestive clinical features. To our opinion, urgent exploration should be the first choice of treatment to avoid long-term complications as impotence, penile disfigurement and urethral strictures.

Περίληψη

Το κάταγμα είναι μια σπάνια επιπλοκή του αμβλέως τραυματισμού του πέους που συμβαίνει συνήθως κατά τη σεξουαλική επαφή. Η τραυματική ρήξη των σηραγγωδών σωμάτων είναι δυνατόν να συνοδεύεται από μερική ή πλήρη ρήξη της ουρήθρας. Η υπόνοια της παραπάνω κατάστασης απαιτεί επείγουσα χειρουργική διερεύνηση και αποκατάσταση για να αποφευχθούν μακροχρόνιες επιπλοκές με κύριες την ανικανότητα, την παραμόρφωση του πέους και τα στενώματα ουρήθρας. Ο σκοπός του άρθρου είναι να παρουσιάσει μία περίπτωση κατάγματος πέους με αμφοτερόπλευρη ρήξη των σηραγγωδών σωμάτων και πλήρη διατομή της ουρήθρας που αντιμετωπίστηκε επιτυχώς με άμεση χειρουργική επέμβαση.

Λέξεις ευρετηριασμού

Κάταγμα πέους, τραυματισμός ουρήθρας, τελικοτελική αναστόμωση της ουρήθρας

References


