Complex penile fracture with bilateral corporeal rupture and partial urethral disruption

Center Of Urologic Surgery, Dialysis and Renal Transplantation, Fundeni Clinical Institute
*Stadt Klinikum Braunschweig - Germany

Abstract

Introduction and objectives Penile fracture is an injury characterized by the rupture of the tunica albuginea enveloping the corpus cavernosum. It can be accompanied by partial or complete urethral rupture. Penile fracture is a urological emergency that may have important physiological and psychological consequences if the therapeutic management is inappropriate. However with prompt diagnosis and competent surgical management, outcomes remain excellent and complications are minimal even in complex cases. Our objective is to present an interesting case of complex trauma involving both corporeal bodies and partial urethral disruption.

Material and method We present the case of a 52 year old male who presented to our department 14 hours following blunt injury of the penis during sexual intercourse. The patient reported a "tearing/popping" sensation, rapid detumescence, severe penile pain and frank blood per urethra. He also presented semnificative dysuria and was unable to void 5 hours after the injury. Physical examination revealed a tender and swollen penis with hematoma extended over the penile shaft, scrotum, perineum and hypogastric region. Blood was visible at the urethral meatus. He also present severe pain in the lower abdomen due to acute urinary retention. Clinically the site of the tunical disruption was impossible to palpate due to penile hematoma and swelling. First step of the operation was placing a suprapubic tube 10 Fr catheter in order to solve the acute urinary retention. Even if clinically was imposible to clear locate the place of rupture we presumed that it was near the penile base on the left side due to the extensive swelling and mild deviation on the controlateral side. We performed a longitudinal incision on the left side near the penile base. Following exposure the hematoma was evacuated, the fracture site debrided and clearly exposed. We observed a transverse corporeal tear of the left cavernosum on the ventral part and the tear of the spongiosum. After dissection of the spongiosum from the corporeal bodies we observed that the rupture was extensive and we have to deal with a bilateral transverse corporeal tear on the ventral aspect of the penis and partial disruption of the urethra on the dorsal side. We close the defect of the corpora using 2.0 vicryl and the urethral defect using PDS 4.0. A Foley catheter was put in place and the suprapubic tube was removed.

Results The patient recovered well in hospital and was discharged in postoperative day 3 on antibiotics with Foley catheter. The urethral catheter was removed on day 14 postop. 6 months after the procedure the cosmetic aspect is very good, potency is preserved with painless erections and the patient reported normal voiding.

Conclusions Urgent surgical exploration and repair should be done in order to improve outcomes. Urethral injury should be suspected in penile fracture especially in those cases with bilateral cavernosal ruptures or suggestive clinical features. The key indicators of urethral injury include blood at the meatus, gross haematuria, dysuria or acute urinary retention. Complex cases such the one presented shoud be operated by surgeons with experience in penile and urethral surgery.

Key words: penile fracture, urethral disruption, trauma

Correspondență: Dr. S. Pătrașcoiu
Institutul Clinic Fundeni, Centrul de Uroinfologoie și Transplant Renal
Șoseaua Fundeni Nr. 258, Sector 2, 022328 București
Tel./Fax: 021-300.75.70.
Introduction and objectives

Penile fracture is an injury characterized by rupture of the tunica albuginea enveloping the corpus cavernosum. It can be accompanied by partial or complete urethral rupture.

Penile fracture is a urological emergency that may have important physiological and psychological consequences if the therapeutic management is inappropriate.

However with prompt diagnosis and competent surgical management outcomes remain excellent and complications are minimal even in complex cases.

Our objective is to present an interesting case of complex penile trauma involving both corporeal bodies and partial urethral disruption.

Material and method

We present the case of 52 year old male who presented to our department 14 hours following blunt injury of the penis during sexual intercourse.

The patient reported a “tearing/popping” sensation, rapid detumescence, severe penile pain and frank blood per urethra. He also presented seminfective dysuria and was unable to void 5 hours after the injury.

Physical examination revealed a tender and swollen penis with hematoma extended over the penile shaft, scrotum, perineum and hypogastric region. This examination suggested extension beyond Buck’s fascia. Blood was visible at the urethral meatus. He also present severe pain in the lower abdomen due to acute urinary retention.

Clinically the site of the tunical disruption was impossible to palpate due to penile hematoma and swelling.

First step of the operation was placing a suprapubic tube 10 Fr catheter in order to solve the acute urinary retention.

Even that clinically was impossible to clear locate the place of rupture we presumed that it was near the penile base on the left side due to the extensive swelling and mild deviation on the contalateral side.

We performed a longitudinal incision on the left side near the penile base. Following exposure the hematoma was evacuated, the fracture site debrided and clearly exposed.

We observed a transverse corporeal tear of the left cavernosum on the ventral part and the tear of the spongiosum. After dissection of the spongiosum from the corporeal bodies we observed that the rupture was extensive and we have to deal with a bilateral transverse corporeal tear on the ventral aspect of the penis and partial disruption of the urethra on the dorsal side.

We close the defect of the corpora using 2.0 vicryl and the urethral defect using PDS 4.0. A Foley catheter was met in place and the suprapubic tube was removed. Mild compressive dressing was applied and the patient was kept an i.v. antibiotics 24 h.

Fig. 1., Fig. 2. Clinical aspect – „butterfly-pattern” extension of the ecchymosis; Frank blood visible at the urethral meatus

Fig. 3. Intraoperative aspect of the hematoma

Fig. 4., Fig. 5., Fig. 6. Intraoperative aspect. 4,5 – the site of cavernosal rupture; 6 – the urethral disruption (better visualised over a Foley catheter)
Results
The patient recovered well in hospital and was discharged in postoperative day 3 on antibiotics with Foley catheter. The urethral catheter was removed on day 21 postop.

6 months after the procedure the cosmetic aspect is very good, potency is preserved with painless erections and the patient reported normal voiding.

Discussions
Fracture of the penis is a rupture of the tunica albuginea of the corpus cavernosum, usually while the penis is rigid and erect. [1]

The tunica albuginea is a structure of great tensile strength that is able to withstand rupture at pressures up to 1500 mmHg. [2]

When the penis is erect the tunica albuginea stretches and thins to 0.25-0.5mm thick, compared with 2 mm thick when flaccid. In consequence the erect penis in much more vulnerable to serious damage from blunt trauma than the flaccid penis. [1]

Our experience and also the literature showed that penile fracture is a rare urological emergency. The majority of cases occurred during sexual intercourse. (Usually the penis slips out of the vagina and then it thrust against the perineum or pubic bone, which results in a tear of the tunica albuginea.) [19], [21]

Many patients have delayed presentation due to embarrassment and it is suspected that some patients with minor corporeal tears never present at all.

Clinically in the classical presentation the penis is deviated often to the opposite side of the injury secondary to mass effect of the hematoma at the injury site.

If the Buck’s fascia is intact, penile ecchymosis is confined to the penile shaft.

If the Buck’s fascia has been also disrupted, the swelling and ecchymosis are contained within the Colles fascia. [1], [2], [15].

In our case, a „butterfly-pattern” ecchymosis could be observed, with extension over the lower abdominal wall, scrotum and perineum.

It has been suggested that traumatic penile ruptures are the consequence of some histologic changes in the tunica albuginea. Some studies have documented fibrosclerosis and cellular infiltrates in ruptured tunica albuginea that could predispose to rupture at low pressures than with healthy tunica. [3]

The role of imaging is controversial, due to fact that penile fracture is a clinical diagnosis. Numerous reports show the accuracy of cavernosonography and MRI of the penis to diagnose the lesion. [20], [22], [23], [24], [25]

We think that such methods delay the surgical approach that should be as early as possible from presentation and also are not cost effective, particularly when the diagnosis can be made on clinical presentation.

Studies comparing surgical versus conservative treatment favour immediate surgical exploration and reconstruction. Conservative treatments have included compression bandages, ice packs, fibrinolytics, anti-inflammatories, sedatives and anti androgens. [4], [5]

However no long term prospective randomised studies are available to establish the optimal treatment of this condition – operative or non-operative management.

In literature nonoperative management is associated with almost 30% complication rate. The complications cited are: angulation, persistent clot, penile abscess due to infected heamatoma or persistent extravasation of urine, painful markedly deformed erection, fibrotic plaque formation, corporeal-urethral fistula. [13], [14]

Immediate intervention has been associated with shorter duration of hospital stay, higher levels of satisfaction for patient and improved outcomes including reduced incidence of erectile dysfunction. [6], [7],
Immediate surgery also prevent formation of the fibrous tissue that causes penile curvature.

We also advocate for early surgical repair.

Our center experience registered 44 cases of penile trauma between January 2000- January 2012.

Surgical repair of the penile fracture first entails exposure of the defect in the corpora cavernosa and the urethra, due to the concomitant 20% urethral injury. The individual patient’s injury can guide the exposure incision, but options include a circumferential subcoronal, degloving incision of the penile skin or a longitudinal incision directly over the injury exposing only the tunical tear.

The justification for degloving that represents an extensive exposure is to obtain complete access to all three corporal bodies, as well as the neurovascular bundles. [18]

Since the vast majority of trauma are not extensive and only a small defect of the albuginea is present a direct incision over the injury is recommended.

This type of incision present in our opinion an advantage in lesions situated at the base of the penis comparative with degloving because if we perform degloving all the penile shaft skin will be rolled at the penile base an the surgical exploration could be difficult having all this rolled skin covering the defect aria.

In complex lesions of the distal penile the circumferential subcoronal, degloving incision is superior to the longitudinal direct incision. [17], [18]

Other approaches described penoscrotal and suprapubic incisions.[10], [11], [12]

Using a Scott retractor, we can obtain a wide surgical field using the direct incision on the lesion.

Urethral injury has been reported in 10-38% of cases due to an extension into the corpus spongiosum, causing partial (laceration) or complete transection of the urethra. [16], [17]

When partial urethral disruption is registered primary suture using PDS or vicryl can be done over a urethrovescical catheter.

Complete urethral transections should be repaired immediately. Spongiosum should be dissected from corporeal bed, the ends of urethra should be debrided, spatulated and reanastomosed in a tension free manner over a Foley catheter.

Conclusions

Urgent surgical exploration and repair should be done in order to improve outcomes.

Urethral injury should be suspected in penile fractures especially in those cases with bilateral cavernosal ruptures or suggestive clinical features. The key indicators of urethral injury include blood at the meatus, gross haematuria, dysuria or acute urinary retention.

The surgical goals are restoration of penis to pre-injury state, preservation of penile length, erectile function and voiding status.

Complex cases such the one presented should be operated by surgeons with experience in penile and urethral surgery. As genital function has a strong impact on quality of life especially in young patients, it is important that the treating physician for genital trauma be knowledgeable about genital anatomy, as well as its immediate treatment and eventual reconstruction.

References:

1. Genoa G. Ferguson and Steven B. Brandes - Reconstruction for genital trauma in Textbook of Reconstructive Urologic Surgery
2. Nathan A. Hoah; Kiara Hennesssey - Penile fracture with bilateral corporeal rupture and complete urethral disruption: case report and literature review CUAJ April 2011 Volume 5 issue 319-22
Introducere și obiective: Fractura peniană reprezintă o leziune caracterizată prin ruptura tunicii albuginee care acoperă corpii cavernoși și se poate însoți de ruptura incompletă sau completă a uretrelui. Fractura peniană este o urgență urologică care poate avea un impact important fiziologic și psihologic dacă tratamentul este inadecvat. Totuși, cu un diagnostic prompt și asistența chirurgicală competentă prognosticul este favorabil, iar complicațiile sunt minime chiar și în cazurile complexe. Obiectivul prezentării este de a scoate în evidență un traumatism penian complex, cu sectionarea parțială a uretrelui.

Materiale și metode: Se doresește prezentaarea cazului unui bărbat de 52 ani care s-a adresat Serviciului nostru după 14 ore de la producerea traumatismului penian în timpul actului sexual. Pacientul a descris o senzație de sfâșiere, urmată de detumescență rapidă, durere severă și ureteroragie. Acesta a acuzat disurie și imposibilitatea golirii urinare timp de 5 ore după traumatism. Examenele clinici evidenția un leziune cu hematom ce cuprindea tegumentul, scrotul, perineul și regiunea hipogastrică. La nivelul meatului a observat prezența sângei proaspăt, iar abdomenul inferior prezenta dureres ca urmare a retenției acute de urină. Locul rupturii tunicii albuginee a fost imposibil de palpat clinic datorită tumefacției și localizării leziunii. Primul pas a constat în montarea unui cateter suprapubian 10 Fr pentru a rezolva retenția urinară acută. Chiar dacă clinic a fost imposibil de determinat locul rupturii tunicii, s-a presupus că se află la baza penisului, pe partea stângă datorită gradului înalt de tumefacție și ușoară deviație de partea opusă leziunii. S-a practicat o incizie longitudinală pe partea stângă a penisului, cu secționarea parțială a uretrelui. S-a observat o transversală a corpului cavernos pe partea ventrală, precum și interesarea corpului spongios. După disecția corpului spongios a observat o leziune pe suprafața ventrală a penisului și ruptură parțială a uretrelui.

Rezultate: Pacientul s-a recuperat bine în spital și a fost externat în ziuă a 3-a postoperator urmând tratament antibiotic și cu cateterul Foley pe loc. Cateterul uretral a fost suprimat în ziuă 21. La 6 luni după intervenție aspectul cosmetic este foarte bun, potența este păstrată, cu eretiii nedurerioase, iar pacientul este în stare de mișcări normale.

Concluzii: Examenul clinic a evidențiat inundația cu hematom de pe scrotul, perineul și regiunea hipogastrică. La nivelul meatului s-a observat prezența sângelui proaspăt, iar abdomenul inferior prezenta dureres ca urmare a retenției acute de urină. Locul rupturii tunicii albuginee a fost imposibil de palpat clinic datorită tumefacției și localizării leziunii. Primul pas a constat în montarea unui cateter suprapubian 10 Fr pentru a rezolva retenția urinară acută. Chiar dacă clinic a fost imposibil de determinat locul rupturii tunicii, s-a presupus că se află la baza penisului, pe partea stângă datorită gradului înalt de tumefacție și ușoară deviația de partea opusă leziunii. S-a practicat o incizie longitudinală pe partea stângă a penisului, cu secționarea parțială a uretrelui. S-a observat o transversală a corpului cavernos pe partea ventrală, precum și interesarea corpului spongios. După disecția corpului spongios a observat o leziune pe suprafața ventrală a penisului și ruptură parțială a uretrelui. S-a închis defectul corporeal utilizând vicryl 2.0, iar defectul uretral a fost reabilitat utilizând PDS 4.0. S-a montat un cateter Foley, iar cateterul suprapubian a fost suprimat.

Cuvinte cheie: fractură peniană, ruptură uretrală, traumatism