
Presentation, Management and Outcome of Penile Fractures in a Nigerian Tertiary Hospital

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Abstract

Background

Penile fracture is a relatively rare acquired urologic condition which may occur following blunt trauma to an erect penis. The aim of the study is to review the presentation, management and outcome of penile fractures in a tertiary hospital in Nigeria over a 7 year period.

Patient and Methods

Medical records of 6 patients with diagnosis of penile fracture seen over a 7 year period were retrieved and information regarding the aetiology, mode of presentation, treatment, outcome and follow up were recorded.

Results

The mean age of the patients was 32.3 years. Blunt trauma during sexual intercourse was the mechanism of trauma in 5 patients. In one patient it was due

to abrupt bending of an erect penis against tight underwear during foreplay. The mean time interval before presentation was 22 hours. All patients presented with the classical symptoms of penile pain, swelling and detumescence. All patients had immediate penile exploration and repair of tunica albuginea via a circumferential sub- coronal incision. The mean period of follow up after repair was 9.3 weeks. Penile erection and sexual function were satisfactory in all patients following repair. Complications noted included mild pain at the site of repair during sexual intercourse in 1 patient and mild lateral deviation in another.

Conclusion

Penile fracture was a rare condition in this centre during the period. The immediate outcome of the repair of penile fracture is satisfactory. Long term follow up is needed to further evaluate patients with this condition.

Key words

Penile fracture, Tunica Albuginea, Repair, Outcome

Introduction

Penile fracture is a rare urologic condition which occurs when there is a tear in the tunica albuginea covering the corpora cavernosa as a result of blunt trauma to an erect penis (1,2). It occurs usually during vigorous sexual intercourse when the erect penis is thrust against the pubic bone or perineum of the partner. Other reported mechanisms of injury include falling on an erect penis, rolling over on an erect penis during sleep, masturbation and other forms of penile manipulation (2,3,4). The thinning out of the tunica albuginea from 2mm to 0.25 - 0.5mm during erection puts it at risk of rupture with a sudden increase in intracorporeal pressure(5). Previous studies have proposed that an intra cavernosal pressure of 1500mmHg and above during erection can result in rupture of the tunica albuginea (5,6).

The penis consists of two corpora cavernosa and a corpus spongiosum, which contains the urethra. The corpora are capped distally by the glans. A fascial sheath, the tunica albuginea encloses each corpus while a thick envelope, the Buck's fascia surrounds the corporeal bodies. A loose covering of skin devoid of fat is applied around the above structures. Beneath the skin of the penis, the Colle's fascia extends from the base of the glans to the urogenital diaphragm and continues as the Scarpa's fascia of the anterior abdominal wall. Proximally, the corpora cavernosa are attached to the pelvic bones just anterior to the ischial tuberosities while in the midline the corpus spongiosum is attached to the under surface of the urogenital diaphragm through which emerges the membranous urethra. The suspensory ligament of the penis which arises from the linea alba and pubic symphysis inserts

into the fascial covering of the corpus cavernosa(7).

The pathological lesion of penile fracture consists of a tear in the tunica albuginea resulting in penile hematoma, swelling and skin discolouration. The hematoma is limited to the penile shaft if the Buck's fascia over the tunica albuginea is intact. An associated tear of this fascia results in perineal and scrotal ecchymosis limited only by the Colle's fascia(2,8).

The classical presentation consists of a cracking sound followed by pain, rapid detumescence and penile swelling (3,4,8). Urethral injury may be associated with the condition in up to 30% of cases(8). Diagnosis is usually based on the history and physical examination. However, radiological investigations such as ultrasonography, cavernosography and magnetic resonance imaging may be required to establish a diagnosis in the few equivocal cases. Differential diagnosis of penile fracture includes rupture of the deep dorsal vein/artery which lies between the buck's fascia and tunica albuginea as well rupture of the suspensory ligament of the penis which results in deviation or 'dislocation' of the penis, with or without hematoma (10,11). Prompt surgical exploration and repair of the tunica albuginea is advocated for restoration of normal penile erection and sexual activity. Delayed surgical intervention and non operative treatment alternatives carries a higher risk of post traumatic curvatures and erectile dysfunction(2-6).

The study reports on the presentation, management and outcome of 6 cases of penile fracture managed by 4 urologists over a 7 year period in a tertiary hospital in Nigeria.

Patients and Methods

Case files of 6 patients with a diagnosis of penile fracture managed in the urology unit of the University of Benin Teaching Hospital, Nigeria over a 7 year period (between February 2005 and January 2012) were retrieved from the medical records department. Clearance was obtained from the Hospital's Ethical committee prior to commencement of the study. The patients were referred to the urology unit via the accident and emergency department during the period. Information relating to the mechanism of injury, clinical presentation, operative findings, repair and outcome of repair during follow up was recorded.

Results

The patients' age at the time of presentation ranged between 20 and 55 years with a mean of 32.33 ± 11.08 years. Five out of the 6 patients sustained penile fracture during sexual intercourse, while in one case it was due to forceful and abrupt bending of the erect penis against tight underwear during foreplay. Two out of the 6 patients were married while 4 were unmarried. Out of the 5 patients who sustained penile fracture during intercourse, 2 were from the 'woman on top' position, 2 from the 'rear' position and 1 from the 'missionary' position. The mean interval before presentation was 22 hours (range, 3-48 hours). All patients described the classical cracking sound followed by pain, swelling and rapid detumescence. The diagnosis of penile fracture was made in all cases based on history and physical examination without the need for additional investigations. One patient gave a wrong initial history on presentation but later revealed the true mechanism of injury when seen by the urology unit. The proximal penile shaft was the area involved in all cases. The patients had unilateral corporeal tears with the right side affected in 2 cases, left side in 1 while in 3 cases the affected corporeal body was not recorded. All the patients had surgical repair of the tunica albuginea with a mean operative time of 65 minutes. Penile exploration involved degloving of the penis down to the site of injury and repair of tunica albuginea with continuous absorbable sutures (vicryl 3/0) via a circumferential sub coronal incision under regional anaesthesia in the six cases (Fig. 1). They all had intra-operative erection induced with intracavernosal saline injection to assess the integrity of the tunica albuginea repair. Foley's catheter that was routinely inserted intra-operatively to prevent iatrogenic injury to the urethra was removed within two days of repair in all cases. The period of hospital admission ranged between 3 and 5 days with a mean of 3.6 days.

No significant immediate post-operative complication was noted. The mean period of follow up was 9.3 weeks (range, 8-14 weeks). All the patients had satisfactory penile erection and sexual function following repair. One patient had mild pain at site of repair during intercourse while another had mild lateral curvature with erection. Longer period of follow up was not possible as most of the patients defaulted in their clinic attendance.

Table 1: Characteristics of patients with penile fracture

Patients	Age	Mechanism of Trauma	Presenting Interval	Injury site	Follow up	Complication
1	20yrs	Sexual	3 hours	Proximal 1/3	8 weeks	None
2	26yrs	Sexual	36 hours	Proximal 1/3	6 weeks	None
3	55yrs	Sexual*	17 hours	Proximal 1/3	14 weeks	Coital pain
4	35yrs	Sexual	20 hours	Proximal 1/3	11 weeks	None
5	28yrs	Sexual	10 hours	Proximal 1/3	8 weeks	None
6	30yrs	Sexual	48 hours	Proximal 1/3	9 weeks	Mild curvature

* This patient fractured his penis during foreplay from abrupt and forceful bending of penis against tight pants.



Fig 1: Site of fracture identified after penile degloving

Discussion

The finding of the study suggests that penile fracture is a rather rare condition in this part of the world. However, some authors have suggested that this may be due to under reporting as a result of cultural taboos and shyness on the part of affected individuals (2,12). Sexual intercourse was the predominant cause of injury noted in the study. This is in keeping with findings from similar studies in the western world

(1,5,9). However, other mechanisms of injury including falling or rolling over on an erect penis, masturbation, penile auto manipulations and entrapment of an erect penis in an African bamboo bed have been reported (3,4,13). Zargooshi et al reported 172 cases in Kermanshah, Iran (4). This high incidence is attributed to the peculiar cultural practice in the region which involves forceful bending of the erect penis.

The mean interval before presentation (22 hours) noted in the study suggests that patients with penile fracture delay their presentation to hospital. This may be due to the embarrassing nature of the condition or ignorance on the part of the patients. One patient in the study presented 48 hours after injury with a wrong initial history of blunt penile injury following a motorbike accident which was obviously not in keeping with the clinical findings. Therefore tact and persistence may be required by the physician to unravel the true mechanism of injury in some patients as noted in an earlier study(3).

The classical symptoms of the condition which consist of a cracking sound, pain, swelling and rapid detumescence, coupled with the typical appearance of penile deviation and ecchymosis (the 'egg plant deformity') were present in all the cases. These were very helpful in making an early and correct diagnosis of penile fracture in all the patients without the need for further investigations. Similar findings were noted in previous studies. (3,8) Penile fracture may be mimicked by other conditions associated with penile trauma. These include rupture of the superficial or deep dorsal vein of the penis, rupture of the dorsal artery of the penis and penile ecchymosis following blunt trauma. In these conditions however, the integrity of the tunica albuginea is preserved. (10,14) Rupture of the suspensory ligament of the penis following forceful downward deflection of the erect penis may lead to penile 'dislocation'. The diagnosis is made clinically by the presence of a palpable gap between the penis and the pubic symphysis(11).

Caversonography, penile ultrasonography and magnetic resonance imaging may be done in equivocal cases to confirm a diagnosis of penile fracture. However, the above investigations may lead to a delay in surgical intervention. Moreover, caversonography may cause reactive corporal fibrosis in some patients while ultrasonography is not very sensitive in detecting small cavernosal tears(15). Thus many authors advocate immediate penile exploration and repair when the history and clinical findings suggest penile fracture as done in this series(2,15). No associated urethral injury was noted in our study, although this can occur in up to 30% of patients. Urethral injury is suspected in patients presenting with urethral bleeding, haematuria or difficulty in passing urine. A retrograde urethrogram can confirm the diagnosis in such cases(9).

Though the proximal third of the penis was the site of fracture in all the cases in our series, involvement of the proximal, mid-shaft and distal aspect of the penis have been reported in other studies (2,3). All patients had satisfactory penile appearance and sexual function following repair of tunica albuginea. Penile exploration via a circumferential sub coronal incision

gave excellent outcome in our series. Many other studies have also shown similar satisfactory outcome with this operative approach (6,16,17). This involves degloving of the penis, evacuation of hematoma at the fracture site and repair of the tunica albuginea defect with synthetic absorbable inverted knot sutures. The use of non absorbable sutures in the repair may be complicated with a painful palpable knot(18). Repair of the tunica albuginea via a longitudinal incision over the suspected site of fracture may also be done but this does not allow complete assessment of both corpora cavernosa and corpus spongiosum(19). A study reported satisfactory assess to the corporeal bodies as well as good outcome in 5 patients using the ventral midline approach (20). Associated urethral injury is also repaired during the same procedure. Urinary diversion via a suprapubic cystostomy allows prompt relief of acute urinary retention due to urethral rupture. A urethral catheterization is avoided because of the risk of further urethral trauma in the above circumstance.

Conservative measures involving the use of anti-inflammatory agents, antibiotics, and compressive penile dressings have been proposed in an earlier study(21). However these non operative measures require a longer period of admission and are generally considered to be associated with more complications than the presently advocated operative approach (16,17). Such complications may include pain on erection, penile curvature or nodule and erectile dysfunction due to disruption of the integrity of the tunica albuginea. These complications may require surgical correction depending on their severity. One patient in our series complained of mild pain during intercourse while another who presented 48 hours after trauma had mild lateral curvature on erection. This finding is in keeping with the need for immediate surgical intervention in cases of penile fracture. Both patients were, however satisfied with their sexual function and did not require any further surgical intervention.

The mean period of follow up (9.3 weeks) was due to the fact that all except one patient defaulted clinic follow up. This apparent reluctance to continue hospital visits may be due to the fact that the affected patients had no compromise in their sexual functions and as such may not have considered it necessary to keep clinic appointments. Thus longer period of follow up was not possible in these patients and as such long term complications could not be assessed. A study evaluating the long term erectile status of patients who had immediate repair of penile fracture noted erectile dysfunction in 8 out of 36 patients after a mean follow up period of 3.6 ± 1.9 years. Erectile dysfunction in the above patients was due to cavernosal and/or penile arterial insufficiency(22). Another study reported

paraesthesia along the scar line and formation of penile nodule during long term follow up(23). These findings necessitate the need for further studies to document long term outcome of penile fracture repair in this African sub region.

Presently, specialist urologic care is not readily available in many rural areas of Africa. This may lead to a delay in diagnosis and surgical intervention. Thus there is a need to educate health personnel in the remote areas of the continent on the clinical presentation of this condition to enhance early recognition and referral to appropriate centers.

A limitation, however, is the small number of patients in our series. We postulate that with better awareness of penile fracture and the benefits of early surgical intervention, more patients may present with this condition in our region.

References

- Godec CJ, Reiser R, Logush AZ. The erect penis: Injury prone organ. *J Trauma* 1988; 28: 124-126.
- Eke N. Fracture of the penis. *Br J Surg* 2002; 89: 555-565.
- Chung CH, Szeto YK, Lai KK. 'Fracture' of the penis: a case series. *Hong Kong Med J* 2006; 12:197-200.
- Zargooshi J. Penile Fracture in Kermanshah, Iran: report of 172 cases. *J Urol* 2000; 164: 364-6.
- De Rose AF, Giglio M, Carmignani G. Traumatic rupture of the corpora cavernosa: new physiopathologic acquisitions. *Urology* 2001; 57: 319-22.
- Bitsch M, Kromann-Andersen B, Schou J, Sjøntoft E. The elasticity and the tensile strength of tunica albuginea of the corpora cavernosa. *J Urol* 1990; 143: 642-5.
- Tenagho EA, McAninch JW. Anatomy of the genito-urinary tract. *Smith's general urology*. 17th ed. Lange Medical books/McGraw-Hill. New York. 2008; 1-16.
- Mensah JE, Morton B, Kyei M. Early surgical repair of penile fractures. *Ghana Med J* 2010; 44:119-122
- Cavalcanti AG, Krambeck R, Araújo A, Rabelo PH, Carvalho JP, Favorito LA. Management of urethral lesions in penile blunt trauma. *Int J Urol* 2006; 13: 1218-20.
- Nicely ER, Costabile RA, Moul JW. Rupture of deep dorsal vein of penis during sexual intercourse. *J Urol* 1992; 147: 150-2.
- Li C, Agrawal V, Minhas S, Ralph DJ. The penile suspensory ligament: Abnormalities and repair. *BJU Int* 2007; 99: 117-120.
- Ugwu BT, Yiltok SJ, Uba AF, Abdulmajid UF. Fracture of the penis - a rare injury on the Jos Plateau, Nigeria. *Cent Afr J Med* 1998, 44: 107-109.
- Anselm O, Okechukwu O. Penile fracture from entrapment of an erect penis in the African bamboo bed: A case report. *Afr J Urol* 2010; 16: 24-26.
- Armenekas NA, Hochberg DA, Fracchia JA. Traumatic avulsion of the penis mimicking a penile fracture. *J Urol* 2001; 166: 619.
- Agarwal MM, Singh SK, Sharma DK, Ranjan P, Kumar S, Chandramohan V et al. Fracture of the penis: a radiological or clinical diagnosis ? A case series and literature review. *Can J Urol* 2009; 16: 4568-75.
- Muentener M, Suter S, Hauri D, Sulser T. Long term experience with surgical and conservative treatment of penile fracture. *J Urol* 2004; 172: 576-9
- Van der horst C, Martinez Portillo FJ, Bannowsky A, Seif C, Juenemann KP. Penile fractures: controversy over surgical or conservative management. *BJU* 2003; 92: 349-350.
- Punekar SV, Kinne JS. Penile refracture. *BJU Int* 1999; 84: 183-4.
- Narayan S V, Maharaj D, Kuruvilla T, Ramsewak R. Simple repair of fractured penis. *J Coll Surg Edinb* 1998; 43: 97-98.
- Mazaris EM, Livadas K, Bisas A, Deliveliotis C, Skolarikos A. Penile fracture: immediate surgical approach with a midline ventral incision. *BJU Int* 2009; 104: 520-3.
- Mydlo JH, Gershbein AB, Macchia RJ. Non operative treatment of patients with presumed penile fracture. *J urol* 2001; 165: 424-5.
- Nane I, Tefekli A, Armagan A, Sanli O, Kadioglu A. Penile vascular abnormalities observed long-term after surgical repair of penile fracture. *Int J Urol* 2004; 11: 316-320.
- Zargooshi J. Penile fracture in Kermanshah, Iran: The long-term results of surgical treatment *BJU Int* 2002; 89: 890-4.