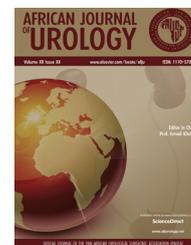




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Genito-urinary trauma

Original article

Pattern of presentation and surgical management of penile fractures in a semi-urban African teaching hospital: Case reports and literature review

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KEYWORDS

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Abstract

Introduction: Penile fracture is relatively rare and also under-reported in our environment. There seem to be a gradual change in this pattern however, as we managed six patients over a two-year period.

Objective: To present the peculiarities of penile fracture presentation and surgical management in our semi-urban African setting; while also reviewing the available literature on the subject to possibly validate our practice.

Patients and methods: All patients with penile fracture managed in our university teaching hospital between January 2014 and December 2015 were prospectively studied in order to identify any peculiarities of clinical presentation, surgical reconstruction technique and management outcome.

Results: Six male patients were studied. Their ages ranged from 23 to 41 years (mean 31 years) while interval between penile fracture occurrence and clinical presentation in our emergency unit ranged from 45 min to 30 h (mean about 10 h). The aetiologic mechanism was penile self manipulation (2, 33.2%), masturbation (1, 16.7%), sexual intercourse with the female in the dominant position (1, 16.7%), turning in bed (1, 16.7%) and motorcycle road traffic accident in a man with local aphrodisiac induced penile erection who was rushing home to his female partner (1, 16.7%). The rupture of the tunica albuginea was located on the right side in majority of cases (4, 66.7%) while none of the patients had coexisting urethral injury. All of them had surgical repair between 3 and 9 h of presentation with good cosmetic and functional outcome.

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Conclusion: The trend of penile fracture seems to be changing in our semi-urban African community. Surgical reconstruction results in good outcome.

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Introduction

Penile fracture is an acute urologic emergency that may result in significant functional and psychosocial consequences if not properly and timely managed [1]. The fracture, which refers to a traumatic disruption of the tunica albuginea of the corpus cavernosum when the penis is in a fully erect state [2], may be associated with corpus spongiosal and urethral injuries in complex cases [3]. It was first described by Abdulkasem of Cordoba more than a thousand years ago, though the first report in contemporary medical literature was by Malis et al. in 1924 [2,4]. The fracture usually results from blunt penile trauma, and the mechanism may be from aggressive sexual intercourse (commonly with the female partner on top), masturbation, self-penile manipulation or accidental trauma to the erect penis from falls or while turning in bed [2,5,6]. Clinical features include sudden penile pain associated with immediate detumescence, penile deformity (swelling and/or deviation to the contralateral side) and voiding difficulties if there is co-existent urethral involvement. The diagnosis is usually clinical and most authors advocate early surgical repair using absorbable sutures [7].

The condition is relatively uncommon globally. As of the year 2001, only 1331 cases had been reported worldwide [7]; and there are still less than 3500 cases described in world literature till date [3,8]. A recent systematic analysis of all penile fracture publications between 1974 and 2015 however showed that some of the relatively scanty literature on the subject are of low quality in methodology or result presentation [9], thereby further reducing the number of reliable, high-impact articles available on the subject. On the African continent, there is significant paucity of penile fracture research, as it is relatively uncommon and most of the cases that do occur remain underreported probably due to the perceived embarrassment and socio-cultural inhibitions by affected individuals [2,6]. We therefore aim to present the peculiarities of penile fracture presentation and management in a semi-urban African setting such as ours and review the available literature on the subject in order to possibly validate our practice.

Patients and methods

This hospital based study was carried out at the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, Osun state, Nigeria. The hospital serves as a referral center for mainly semi-urban populations spread across six states of southwestern and Northcentral Nigeria. All patients that presented with penile fracture to OAUTHC over a 24-month period (January 2014 to December 2015) were prospectively studied in order to identify any peculiarities of clinical presentation, surgical management and treatment outcome. Ethics approval was obtained from our institution's ethics committee and informed consent was secured from all the patients.

A proforma specially designed for the study was used for data collection, while the International Index of Erectile Function (IIEF-15) questionnaire was administered periodically starting 6-weeks after surgical repair during the follow-up evaluation period. All the data from the study was transferred to a computer for analysis using SPSS 21.

Results

Six male patients were studied. Their ages ranged from 23 to 41 years (mean 31 years) while duration between penile fracture occurrence and clinical presentation in our emergency unit ranged from 45 min to 30 h (mean about 10 h) – Table 1. The disruption of the tunica albuginea was located on the right side in majority (4, 66.7%) of cases while there was no patient with bilateral involvement. The size of the rent ranged between 0.5 and 2.0 cm and was located laterally in all cases with none being ventral or dorsal. None of the men had bleeding per urethra or voiding difficulty suggestive of co-existent urethral injury. Diagnosis was clinical in all cases (Fig. 1) and treatment was by surgical repair done between 3 and 9 h of presentation using a circumferential sub-coronal incision to deglove the penis, identify and evacuate the hematoma (Fig. 2); and repair the tunica albuginea defect (using interrupted polyglactin 2/0 sutures) before skin closure.

All the patients were discharged 12–48 h after surgery on oral medications and were reviewed on out-patient basis within one week of surgery. Total follow-up was for a period of 9–12 months in 4 patients (66.7%) while the remaining two (33.3%) defaulted after three months of follow-up. There were no early wound complications and none of the patients had erectile dysfunction or penile curvature detected during the follow-up period.

Discussion

Penile fracture is rare in our immediate environment, with only two reported cases from our tertiary hospital located in a semi-urban, hinterland region of south-western Nigeria in the last close to two decades [2,5]. A meta-analysis by Eke [7] of 1331 patients worldwide over a 35-year period (1966–2001) had also reported only 11 cases from Nigeria, further buttressing the rare status of penile fracture not only in our immediate environment but in Nigeria as a whole. For unknown reasons however, there seems to be a gradual change in this rare pattern in our immediate environment as the six patients highlighted in this report all presented over a 24-month period. This may possibly suggest an improvement in the health seeking behavior and health-related awareness of our populace. A recent publication from an urban setting of south-western Nigeria hundreds of kilometers away from our hospital also documented

Table 1 Summary of the penile fracture cases.

Case number	Age (years) Mean = 31 years	Marital status	Injury-presentation interval Mean = 9.4 h	Mechanism	Presentation	Site
1	23	Single	30 h	Vaginal intercourse (female dominant position)	Classical	Mid-shaft
2	26	Single	8 h	Self penile manipulation ^a	Classical	Distal-shaft
3	28	Single	6 h	Masturbation	Classical	Proximal-shaft
4	30	Single	7 h	Turning in bed	Classical	Mid-shaft
5	37	Married	4.5 h	Self penile manipulation ^c	Classical ^b	Mid-shaft
6	41	Married	45 min	RTA while on motorcycle	Scrotal and thigh abrasions ^d	Proximal-shaft

Classical presentation: penile pain associated with swelling, angulation to contralateral side, immediate detumescence and a popping sound.

^a Forceful penile manipulation to reduce nocturnal tumescence.

^b Classical presentation, but with no popping sound heard.

^c Inadvertent penile fracture while attempting to manipulate the erect penis out of a tight underwear to urinate early in the morning. RTA – road traffic accident.

^d 41-year old male with background erectile dysfunction who had just ingested a local aphrodisiac bought at a roadside store, following which he had an erection and was rushing home on a motorcycle to his wife. He lost control and was involved in RTA from which he developed penile pain, swelling, angulation and immediate detumescence. Popping sound could not be ascertained. No other injuries apart from few abrasions on anterior-thigh and scrotum.



Figure 1 Penile deformity, swelling and ecchymosis, so-called “egg-plant” deformity.

an increase in penile fracture occurrence which was attributed to the progressive demographic changes and ‘westernization’ of their urban community [10].

The relatively young mean age of our patients suggest that this is a disease of sexually active young adults, similar to previous documentation in literature [5,6,11]. Any age group can however be affected, as the meta-analysis by Eke [7] documented an age range of occurrence between 12 and 82 years.

The fractures were laterally placed and located on the right side in majority of our patients, consistent with findings from literature;



Figure 2 Penis degloved and hematoma noted at the fracture site.

and previously postulated as probably being due to an anatomical weakness on the right side of the corpus cavernosum [6,12]. We did not encounter any case of bilateral involvement, which is why it is therefore not surprising that none of our patients had associated urethral involvement, as urethral injuries are commoner in patients with bilateral tear of the tunica albuginea [3].

Penile manipulation was the commonest etiology of the fractures in this series, consistent with previous reports both from our environment [2,5,13] and also from many middle-Eastern countries of the world [14,15]. Sexual intercourse, which is the commonest cause in Europe, America, few Middle Eastern/Asian countries and some urban centers in Nigeria [6,8,10,11], was not a major aetiological factor in our study, possibly because of our semi-urban location since some of the daring sexual tendencies that are spread mainly through the internet may not yet be easily accessible to a vast number of young men in our clime. A peculiar and equally interesting etiology in our series was penile fracture in a man who had local-aphrodisiac induced penile erection and sustained penile fracture resulting from

motorcycle road traffic accident while riding home to his wife. This mechanism again brings to fore the age-long perennial challenges involving road traffic accidents, self-medication and use of local herbs in developing countries such as ours.

Half of our patients presented to the hospital relatively early (within 6-hours), which is commendable and may reflect a progressive increase in confidence in orthodox medical care as against traditional medicine which was hitherto generally the default first option by patients for many ailments. Only one of our patients, a 23-year old male undergraduate, had a relatively long injury-presentation interval (30-hours) which he adjudged as being due to embarrassment and shame felt secondary to the circumstances surrounding the occurrence of the penile fracture in him.

Majority of the patients in this series had a classical presentation and were all diagnosed clinically, consistent with documentation in literature [6,10,14]. The pathognomonic nature of the fracture allows for relatively easy recognition of the condition by urologists and thus favors clinical diagnosis. In making the clinical diagnosis however, it must always be borne in mind that rupture of the deep dorsal vein of the penis is a close differential diagnosis especially in those with penile pain and deformity but without the classical popping sound. Detumescence would however not be immediate in such cases unlike in penile fracture, though definitive resolution of such equivocal cases would have been by any of color Doppler penile ultrasonography, magnetic resonance imaging (MRI) or cavernosography. These were however not routine in our practice because the logistics would have further delayed surgical intervention and current thinking is that cases of deep dorsal vein rupture should also be explored surgically [16], so performing any of these radiologic investigations would not have significantly altered the line of management. Retrograde urethrogram (RUG) has a role to rule out urethral involvement in patients with voiding dysfunction or blood at the penile tip [17]. RUG however did not have a place in this study as it was not indicated in any patient.

Surgical management involving evacuation of the hematoma and repair of the rent in the tunica albuginea using prolonged absorbable polyglactin sutures was done in all our patients as this is known to be associated with better functional and cosmetic outcome, less psychological morbidity and improved patient satisfaction compared to conservative management [6,11,17]. The repair, especially when done early (usually within 24 h), is also associated with shorter hospital stay and less risk of long-term structural penile deformity [9,18,19]. Historically, conservative management (involving cold compresses, pressure splinting, anti-inflammatory medications, fibrinolytics, suprapubic urinary diversion \pm delayed repair of any co-existent urethral injuries) was considered the treatment of choice for penile fractures but has now fallen out of favor due to its increased attendant risk of complications such as penile abscess formation, nodules at fracture site, permanent penile curvature, painful erections, erectile dysfunction, corpora-urethral fistula, arteriovenous fistula and fibrotic plaque formation [20].

The degloving sub-coronal incision was used for surgical exploration in all our patients. Other possible options would have been the use of a transverse incision at the fracture site, semi-circumferential incision or a longitudinal incision depending on surgeon preference and whether or not there is bilateral cavernosal rupture or urethral involvement [5,21].

There were no early wound complications recorded neither did any of our patients develop erectile dysfunction or penile curvature during the period of follow-up, possibly not unconnected with our relatively small sample size. A study of a larger cohort of patients in literature revealed that possible complications of the condition include erectile dysfunction, penile curvature, penile pain during intercourse, penile nodules, paresthesia over the scar-line and development of corporo-urethral fistula [7,14].

A limitation of this study is the relatively short follow-up period as most of the patients defaulted clinic appointments once their wounds had healed and they could have satisfactory erection post-operatively. This is not surprising, as long-term follow-up remains a major challenge in many African communities, probably due to patient ignorance and/or negligence (oftentimes despite adequate counseling), poverty and very long distance and challenging transportation between the hospital and some of the local communities from where the patients travel to the hospital. The relatively small number of patients studied is also another possible limitation; which is likely due to the relative rarity of the condition in our environment. There may however be need for larger, possibly multi-centered studies to further validate our findings from this study.

Conclusion

The occurrence of penile fracture seems to be increasing in our semi-urban African community. Etiology from penile manipulation is commoner than sexual intercourse in our environment. Peculiar occurrence secondary to motor-cycle road traffic accident after local aphrodisiac induced penile erection can occur. Surgical intervention results in good outcome.

Authors' Contributions

A.A. Salako: Performed some of the surgeries, in-depth review and revision of the manuscript.

T.A. Badmus: Critical review and revision of the manuscript.

R.A. David: Performed some of the surgeries, conceptualized the manuscript and made an initial draft of the manuscript.

A.A. Aremu: Performed some of the surgeries, made intellectual input into writing the manuscript.

A. Laoye: Performed some of the surgeries, data acquisition and revision of the manuscript.

G.A. Oyeniyi: Performed some of the surgeries, made intellectual input into writing the manuscript.

I.A. Akinbola: Data acquisition and revision of the manuscript.

M.C. Igbokwe: Data acquisition and revision of the manuscript.

C.I. Onyeze: Performed some of the surgeries, made detailed input into writing the manuscript.

R.N. Babalola: Made detailed input into writing the manuscript.

All the authors read and approved the final version of the manuscript before submission.

Conflict of interest

None.

Source of funding

None.

Ethical committee approval

Obtained.

Consent from the patients

Obtained.

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