



Research Article

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Management of Fractures of the Corpora Cavernosa at the University Clinic of Urology and Andrology at Cnhu-Hkm in Cotonou

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Abstract

Background: Penile fracture is a rare accident whose diagnosis relies on a stereotyped history and a physical examination. Early surgical intervention is recommended. In Africa, as well as in Benin, research on this pathology is limited due to likely underreporting, possibly linked to cultural factors. **Objectives:** This study aims to examine the epidemiological, clinical, therapeutic, and evolutionary aspects of penile fracture. **Methods:** It is a retrospective and descriptive study collecting records of patients treated and followed for penile fracture at the Urology Department of CNHU-HKM in Cotonou between January 2010 and March 2021. **Results:** Over the course of 10 years, 23 cases of penile fracture were identified, representing a frequency of 2.3 cases per year. The average age of patients was 35 years, with a predominance of married individuals (n=17). Coital misstep was the primary circumstance of occurrence (n=15). The cracking sound (n=14), pain (n=23), swelling of the penis (n=16), and detumescence (n=23) were the main clinical signs. The average time to medical intervention was 13 hours. Surgical treatment with a circumferential approach under the coronal ridge was employed for all patients. The average duration of hospitalization was 60 hours. The prevalence of erectile dysfunction was 8.7% (IIEF-5). **Conclusion:** Penile fracture is a rare traumatic emergency. Diagnosis is facilitated by a stereotyped clinical presentation. Early surgical intervention is the optimal treatment for a favorable functional outcome.

Keywords: Fracture, Corpora cavernosa, Erection, Cotonou.

INTRODUCTION

Penile fracture is a rare accident, with an incidence rate of 1 in 175,000 [1]. It is defined as a rupture of the corpora cavernosa that occurs when the rigid penis is forcefully bent against resistance, leading to the rupture of the tunica albuginea [2]. The diagnosis of penile fracture is primarily based on a stereotyped history and a physical examination [3,4,5]. Paraclinical examinations such as penile ultrasound, cavernosonography, and MRI are not necessary except in situations where the diagnosis is unclear or when there is concomitant urethral injury [6]. Early surgical intervention is currently recommended, while conservative treatment is considered obsolete [4,7,8].

In African countries such as Benin, there is limited research on penile fractures due to their relative rarity, and cases that do occur may be underreported, likely due to perceived embarrassment and socio-cultural inhibitions of affected individuals. Therefore, the actual incidence of this condition is not well-known in Benin.

To address this lack of information, the aim of the study we initiated is to determine the frequency of this condition and describe its epidemiological, clinical, therapeutic, and evolutionary aspects at the University Clinic of Urology and Andrology at CNHU-HKM in Cotonou.

METHODOLOGY

This was a retrospective, descriptive study collecting records of patients treated and monitored for penile fracture in the Urology Department of CNHU-HKM in Cotonou between January 2010 and March 2021.

We examined the following characteristics: age, medical history, clinical data, type of treatment, duration of hospitalization, and clinical outcome.

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Data analysis and processing were performed using Epi Info version 7 software.

RESULTS

Over a period of 10 years, we collected 23 cases, resulting in a frequency of 2.3 patients per year.

Age

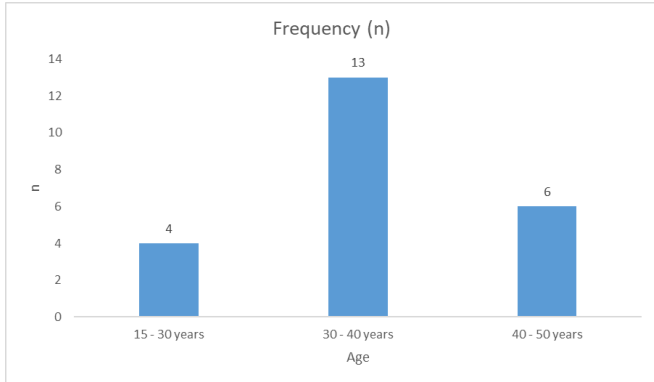


Figure 1: Patient Distribution by Age Group

Marital status

Table 1: Patients Distribution Based on Marital Status

Situation matrimoniale	Effectif (n)
Single	6
Monogamous	17
Polygamous	0
TOTAL	23

Circumstances of Occurrence

The trauma occurred under the following circumstances: a coital misstep in 15 cases, untimely manipulation in 4 cases, and masturbation in 4 cases.

Clinical Manifestations

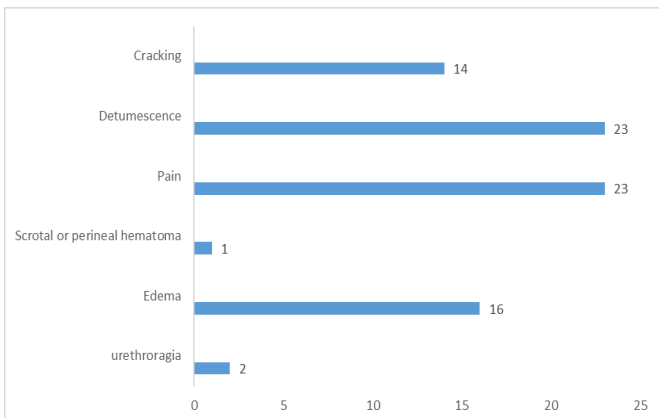


Figure 2: Patient Distribution by Clinical Manifestation

Postoperative Medication

Antibiotics were administered postoperatively in all cases. Analgesics and anti-androgens were prescribed for 19 and 18 patients, respectively.

Surgical Treatment

The average time to intervention was 14 hours, ranging from 3 to 144 hours. The circumferential incision under the coronal ridge (following the circumcision scar) was used in all cases.

Table 2: Intraoperative Clinical Findings

	Frequency
Rupture location	
Distal	1
Middle	14
Proximal	8
Cavernous Body Affected	
Right	10
Left	13
Defect Length (cm)	
0.5-1	3
1-2	12
2-4	8
Urethral Injuries	2

All patients underwent hematoma evacuation and cavernorrhaphy. Urethral repair was performed in 2 patients.

Erectile Function

The assessment of erectile function was based on the International Index of Erectile Function (IIEF-6) score. Twelve patients were seen in a follow-up consultation 1 to 3 months postoperatively, and eleven patients were contacted. Erectile function was well-preserved in 19 patients, 3 patients had moderate dysfunction, and 1 patient had severe dysfunction.

Other Complications

Table 3: Complications and Their frequency

Complications	Frequency
Penile curvature	4
Pain during intercourse	3
Unsightly scar	1

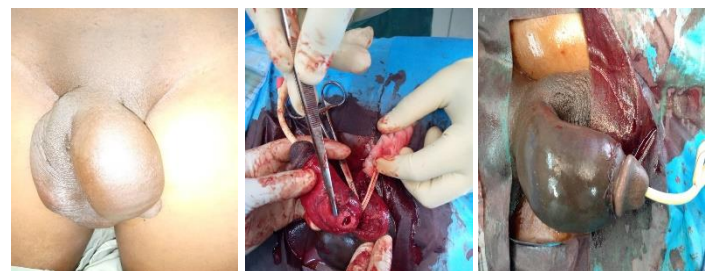


Figure 1: A: Classic Eggplant-like Deformation with Swelling and Deviation of the Penis. B: Intraoperative Discovery of a Tear in the Right Cavernous Body. C: Appearance of the Penis at the End of the Intervention

DISCUSSION

Franck^[9] first described penile fracture in 1835. Although rare, this pathology is observed in Benin. Over a 10-year period, 23 patients were identified, representing a frequency of 2.03 patients per year. Similar studies conducted by Sarr et al^[10], Niang et al^[11], Kpatcha et al^[12] also found comparable results with 3, 2.7, and 1.2 cases per year, respectively. This low incidence may be explained by socio-cultural and religious apprehensions, deeming subjects related to sex as taboo. Patients are often compelled to conceal the fracture due to the circumstances of occurrence, usually within a context of infidelity^[13].

The average age in our series was 35 years. Several studies seem to support our findings; Padja et al^[14], Dar et al^[15] found a young population with respective average ages of 33.7 years and 30 years. Dar et al^[15] identified in their series the youngest patient at 21 years old, while the oldest was 75 years old. Younger men are more likely to be involved in vigorous and enthusiastic sexual practices than older men. This could explain the predominance in this age group. The reduced blood flow in older individuals predisposed to erectile dysfunction may act as a "protection" against penile fracture in older men^[16]. Regarding Marital Status, our results show a clear predominance of married men. Our findings are comparable to those of Sarr^[10] and Shulka^[17], who found 76.19% and 65.38%, respectively. Conversely, Salako et al^[3] found 66% of singles, but this difference may be attributed to the small sample size in their study.

In this study, coital misstep was the most frequently cited etiology by 15 patients. Our results align with those of Dar et al^[15], Patil et al^[18], and Sarr A et al^[14], who found the predominance of coital misstep to be 85.4%, 66.66%, and 52.4%, respectively. In Senegal, as in the rest of sub-Saharan Africa, it appears that coital misstep is the primary circumstance of occurrence^[12,19]. Cortellini et al^[20] have also reported this predominance of coital misstep in the West. In contrast, in the Maghreb and the Middle East, forced manipulation maneuvers on an erect penis predominate^[21,22]. This is attributed to the strict social norms and religious ethics prevalent in these countries.

De Rose et al^[23] and Fetter et al^[24] have mentioned the decrease in albuginea elasticity due to gonococcal urethritis or fibrosclerosis of the albuginea as a risk factor. Sharma et al^[25] has incriminated peno-vaginal disproportion. No predisposing history for the occurrence of penile fracture was found in our study. The basis of diagnosis is a standardized history and physical examination^[3,4,5]. The classic triad of audible cracking, detumescence, and pain is observed in most cases. The normal appearance of the penis is altered, and the swelling gives the characteristic eggplant-like sign^[2,5,6]. All authors agree on the sequence of clinical signs: acute pain contemporaneous with a cracking sound is followed by immediate detumescence^[9].

In our study, this symptomatology was not well described in the interviews of all patients; nevertheless, pain and detumescence were mentioned in all cases, and cracking in 14 patients. Paraclinical assessment is only necessary in case of doubt or if there is an indication for elective intervention^[26,27]. The non-use of imaging exams allowed avoiding delays in management, and surgical exploration was favored for a comprehensive lesion assessment. The average time to intervention was 11 hours, with a range of 3 to 144 hours. Hussain et al^[28] found an average time to intervention between 1 and 8 hours, while Dar et al^[15] had a range of intervention times between 4 and 24 hours. The British Association of Urological Surgeons recommends surgical repair within 24 hours^[29]. Our extended duration for intervention may be mainly due to patients being reluctant to seek medical attention for genital trauma, which remains a taboo subject.

Naouar et al^[30] showed that the complication rate was 7.6% for surgery performed within 24 hours, compared to 68.7% for surgery performed beyond 24 hours. Based on the literature and our experience, the debate between conservative treatment and surgical

repair is no longer relevant and should ideally be performed within 24 hours^[31,32]. Furthermore, many authors advocated for conservative treatment since the 1970s, but it was later observed that this approach led to complications such as prolonged pain, penile curvature, and erectile dysfunction. Recent literature supports immediate surgical repair, which has proven to have fewer complications and good functional outcomes^[15]. In our context, the coronal incision followed by the degloving of the penis was systematic for all our patients, consistent with the observations made by Diarra et al, Kara et al, Natchagande et al^[13,26,33]. The coronal incision allows for a comprehensive lesion assessment. It is also aesthetically pleasing as it follows the circumcision scar. However, this approach is highly invasive compared to elective incision and may favor parietal suppuration.

Dissection and assessment of the lesions revealed unilateral lesions involving the right cavernous body in 10 patients (43.47%) and the left in 13 patients (56.52%); associated urethral injuries were observed in 2 patients (8.7%). In their study, Padja et al^[14] found a predominantly right unilateral fracture line and bilateral fractures in 12.5%, but without urethral involvement. Abdullah GEDİK et al^[34] found an incidence of urethral trauma of 1.8% (2 patients), all presenting with urethrorrhagia and dysuria. The literature states that urethral injuries are estimated at 1.03%. Surgery for penile fracture is easy and straightforward without the constraint of prolonged hospitalization. The latter varies between 24 to 48 hours according to different series^[27,35]. In the series by Diallo et al^[36], the average length of hospital stay was 13 hours, proving that penile fractures can be managed on an outpatient basis.

In our series, the average length of hospital stay was 60 hours, with a range of 24 to 96 hours. Complications of penile fracture are diverse, such as penile curvature, induration of the cavernous bodies, pain during erection, or erectile dysfunction. The results obtained after surgical treatment were satisfactory and comparable to those of Niang^[11] and El-Assmy^[37]. Erectile dysfunction secondary to penile fracture is believed to be mainly of vascular origin, particularly due to insufficient venous occlusion and reduced blood supply through the cavernous artery^[11]. This theory was confirmed by Rajkumar et al^[35], who observed insufficiency of the dorsal artery of the penis on Doppler ultrasound in a patient who had erectile dysfunction after penile fracture.

CONCLUSION

Cavernous body rupture represents a rare urological emergency primarily affecting young adults. The diagnosis is clinical, with paraclinical assessments being rarely necessary. Early surgical intervention is recommended to minimize complications in the long term. Evacuation of the hematoma and suturing of the tunica albuginea of the cavernous bodies, preferably through a coronal incision, have yielded superior results without major complications in our series.

Conflict of Interest

The authors declare no conflicts of interest.

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