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Factors Favoring Penile Fractures in Ivory Coast in 2022

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Abstract

Objective: To report the factors promoting penile fracture. **Patients and Method:** This was a retrospective cohort study consisting of 27 patients received from 2021 to 2022 in urology at the University Hospital Center (UHC) of Cocody for penile fracture. The medical history made it possible to note the circumstances of the occurrence of the fracture, in particular the age of the patient, the sexual position during the sexual act, the consumption of products to stimulate erection. **Results:** The mean age of the patients was 35 years with age borderlines of 25 and 52 years. The circumstances of occurrence were dominated by the misstep during coitus in 26 out of 27 patients. The doggy style position was found in 18 patients and the cowgirl position in 8 patients. Among the patients, 17 took alcohol before the sexual act and 20 took traditional medicines (aphrodisiac) to stimulate their erections. Among the patients, 12 were living with a partner and the other 15 were not. One case of recurrence was noted. Early surgical treatment was performed in all patients. The circumferential approach was performed in all patients. The postoperative hospitalization period was 2 days. After surgical treatment, 2 patients had moderate pain during erections, there was no erectile dysfunction or penile curving. Relative risk factors were the cowgirl position, alcohol, and taking aphrodisiac drugs. **Conclusion:** Penile fracture is a rare traumatic emergency in urology occurring most often in a young population in full sexual activity. These young people are mostly unmarried, adopt more doggy style and cowgirl positions and perform the sexual act vigorously under the influence of alcohol and traditional erection-stimulating drugs.

Keywords

Penile Fracture, Coital Misstep, Cowgirl, Doggy Style, Aphrodisiac

1. Introduction

Penile fracture is a rare uro-andrological emergency in Ivory Coast. It is a rupture of the tunica albuginea of the erect penis. It presents as an audible cracking of the penis associated with penile pain, accompanied by immediate detumescence of the penis and the appearance of a subcutaneous hematoma [1] [2]. The lesions mainly concern the corpora cavernosa but an association with a rupture of the urethra is sometimes found [3]. The two main causes are coital misstep and forced manipulation of the erect penis [4]. Diagnostically, although the vast majority of penile fractures can be made by clinical examination alone, imaging studies can help with diagnosis and guide surgical management. Geographically, the largest number of cases have been reported in Mediterranean countries, including Turkey, but a recent study noted that the number of cases reported in the Middle East and North Africa were higher than in any other country, including the United States and Europe [5] [6].

In black Africa, studies have also been conducted. Particularly in Guinea Conakry, where a study of 22 cases from 2005 to 2014 at the Ignace Deen hospital, another 25 cases was conducted at the urology-andrology department of the Grand Yoff general hospital in Dakar between January 2001 and December 2011, a study of 14 cases in Chad in 2015, a study of 6 cases in Togo in 2017 and a study of 5 cases in Burkina Faso in 2019.

Emergency surgical treatment of penile fracture is cavernorrhaphy, which is the gold standard [5]. This is a surgical exploration to evacuate the hematoma, ensure hemostasis and repair the tunica albuginea lesion as soon as possible. It helps to preserve the anatomy and copulation function of the penis [6]. The surgical approach can be direct by elective incision on the suspected fracture line area or indirect by subcoronal circumferential incision and loosening of the penis with wide exploration and repair. Penile fractures can have serious and long lasting consequences due to their impact on the sexuality of those affected, altering their quality of life. The main complications are erectile dysfunction and penile curving.

2. Methodology

2.1. The Type of Study

This was a retrospective cohort. The study period was from January 2021 to December 2022.

2.2. The Study Population

The population consisted of 27 patients received in urology at the UHC of Cocody-Abidjan.

2.3. Selection Method

All patients selected and meeting the inclusion criteria had the same probability of belonging to the sampling, which was of a simple random type.

2.4. Inclusion Criteria

Those included (27) were all patients with penile fractures who had undergone surgical treatment (by the urological surgeon) and postoperative follow-up by the urological surgeon and the andrologist at the urology department of the CO-CODY University Hospital Center during the study period. The inclusion criteria took into account the complete files of patients with penile fractures who had undergone surgical treatment and postoperative follow-up in the same department.

2.5. Exclusion Criteria

Patients received, operated upon for penile fracture but whose follow-up was done in another center (2), incomplete files.

2.6. The Study Variables

The study variables were Epidemiological data (age, marital status, notion of alcohol intake, medication), clinical data (etiology, mechanism) and therapeutic data (time for surgical treatment, type of intervention, and evolutionary data (anatomical restitution, notion of curvature, erectile dysfunction). Relative risks (RR) were calculated to link certain factors such as alcohol, taking aphrodisiac drugs, age, cowgirl and doggy style positions with the occurrence of penile fracture.

3. Results

A total of 904 patients were received at the urology department of the UHC of Cocody in 2 years. Among them, 27 cases of penile fracture. This was equivalent to a hospital frequency of 1.99%. The average age of the patients was 35 years, with borderline of 25 to 52 years.

The age group of 25 - 35 years was affected. 11 patients were married and 16 cases were single. 22 patients were referred and 5 patients came to the consultation on their own. The average consultation time was 26 hours (1 to 120 hours) with a predominance of consultation in the first six hours (12/27). The misstep of coitus (**Figure 1**) was the main circumstance of occurrence in our series with 26 cases. There was only one case of forced manipulation of the erect penis. Concerning social habits, 20/27 consumed alcohol, and 15/27 took aphrodisiacs; hematoma, painful swelling and detumescence were present in 27/27 cases. Cracking in 17 cases and eggplant deformation in 25 cases. Two (02) total ruptures of the urethra and three (03) partial ruptures of the urethra. All patients underwent surgical treatment by subcoronal circumferential incision, denudeation of the penis, evacuation of the hematoma as well as suture of the albuginea of the corpora cavernosa (cavernorrhaphy). Relative risk factors were calculated to link certain factors alcohol, taking aphrodisiac drugs, age, the position of cowgirl and doggy style with the occurrence of penile fracture.

3.1. Mechanism

The doggy style position results in more penis fractures (67%) followed by the

andromache position (30%).

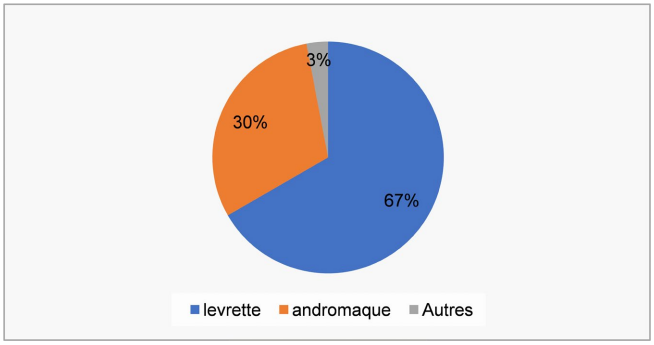

Figure 1. Distribution of patients according to mechanism.

3.2. Lesions

(a) Eggplant appearance: deformation of the penis following a fracture; (b) fracture line here we see a rupture of the urethra.

(a) (b)

Figure 2. (a) Anatomical deformation; (b) Anatomical lesions fracture with urethral lesion.

3.3. Treatment

Subcoronal circumferential incision approach used for surgical treatment.

Figure 3. Surgical treatment by coronal incision.

4. Discussion

4.1. Limit of the Study

The limitation of the study was the small sample size.

4.2. Epidemiological and Clinical Characteristics

The study noted 27 cases of penile fracture in 2 years, *i.e.* a frequency of 13 cases per year. The largest series in the world was reported by the Iranian Zargooshi [7] in 2009 with 352 cases over a period of 18 years, *i.e.* a frequency of approximately 20 cases per year. A Tunisian series by Miaadi *et al.* [8] published 210 cases in 2003. In West Africa, Ndiaye *et al.* [9] in Dakar, Senegal, Paré *et al.* in Bobo, Burkina Faso and Kpatcha *et al.* in Cotonou, Benin reported frequencies of 6 and 5 cases per year, respectively. Penile fracture is a rare traumatic emergency in urology.

The mean age was 35 years with extremes of 25 and 52 years. As for that of Ndiaye *et al.* [9] the mean age was 36 years. The most affected age group concerned subjects aged 25 - 35 years (77.78%). In the series reported by Rebai *et al.* [10] in Tunisia the mean age was 41 years.

Corpora cavernosal fracture (**Figure 2(a)**) was more commonly found in young adults. This predominance could be explained by the intensity of sexual activity at this time, and the vigor of sexual intercourse at this age.

It was noted that the misstep of coitus in 26 out of 27 cases was the main circumstance of occurrence of the trauma. The same reason was given in West Africa in the Burkinabe, Togolese, Beninese and Nigerian series. On the other hand, in Senegal, a study of 30 cases was conducted from 2012 to 2017 in the urology-andrology department of the Grand Yoff general hospital in Dakar where forced manipulation was the most frequent circumstance of occurrence (33%) [11]. In the Maghreb and the Middle East, forced manipulation of the erect penis aimed at accelerating detumescence in order to camouflage morning erection was the most frequently cited circumstance. Thus in Tunisia, in a series of 123 cases reported 88 cases (71.5%) of forced manipulation of the erect penis against 8 cases (6.5%) of missteps during coitus. In Morocco, El-Assmy *et al.* [12], in a series of 90 cases, noted forced manipulation of the erect penis in 60 cases (66.6%) against six cases of missteps during coitus. Forced manipulation of the erect penis would be linked to the promiscuity of the habitat or several members of the same family would share the same room in a context of modesty.

In Western countries, the most common cause was coital misstep; Luca *et al.* in [13] England in a series of 76 cases; 70 patients (92.1%) had coital misstep. Similarly in American series, coital misstep was the most frequently found. This difference in etiology between these two regions could be explained by the greater freedom in morals in the West than in the East and the Maghreb [7] [8] [12]. The circumstances of occurrence of penile fracture varied according to the geographical region and sociocultural considerations.

As for the mechanism, 18 of the 27 patients had adopted the doggy style posi-

tion and 8 the cowgirl position. Among the patients, 17 had taken alcohol before the sexual act and 20 had taken traditional medicines (aphrodisiac) to stimulate their erections. Also, 12 patients lived with a partner and the other 15 did not. All patients and their partners reported that the sexual act was very vigorous. Because of the patient's guilt and embarrassment, some authors could not find the exact etiology. Some exact circumstances of the occurrence of a rupture of the corpora cavernosa sometimes remained difficult to highlight.

A recurrence of penile fracture in the same corpus cavernosum two years after the first intervention had been noted. The occurrence of a second episode of penile fracture was an extremely rare entity, and to date, only 13 cases have been reported in the literature. Some authors had revealed histological evidence of an underlying chronic inflammatory process in the tunica albuginea of penile fracture patients. The fibrous and inelastic scar tissue of the previous lesion seemed to weaken the corpora cavernosa, making them weaker and vulnerable to a new episode of fracture. This theory is supported by the predominance of penile fracture cases that recurred in the ipsilateral corpus cavernosum.

The existence of a history of penile fracture would constitute a risk factor for the occurrence of other episodes of penile fracture regardless of the time period.

Detumescence and hematoma were noted in 100% of cases, cracking was present in 18 cases, urethrorrhagia in 2 cases, eggplant deformity in 26 cases. These results were comparable to those reported by Tunisian series where cracking was present in (76.52%) of cases, urethrorrhagia in (8.11%) of cases, eggplant deformity in (75.83%). Rebai *et al.* [10] reported similar results. The diagnosis of corpus cavernosum fracture was essentially clinical (**Figure 2(a)**) and based on questioning and clinical examination. The succession of clinical events was reported by the patients: cracking, pain, rapid detumescence of the penis, hematoma deforming the penis. The most common manifestations of penile fracture were classically reported: cracking was reported in 69.2 to 100% of patients [14], while pain was present in 76.9 to 100% of cases detumescence was observed in 64% to 100% according to Kara and the hematoma varied in 70% to 100% of cases such as Zargoshi. This did not demonstrate a great variability of the symptoms associated with this condition and thus augured the possibility of making the correct diagnosis with little or no paraclinical examinations.

4.3. The Care

The mean consultation time was 16 hours with extremes of 4 hours and 32 hours. Our data were higher than those of Abdel Raheem *et al.* in Egypt who noted a mean consultation time of 5.5 hours (1 h - 15 h). In India, Dar *et al.* [15] reported a mean consultation time of 11 hours with extremes of 4 and 24 hours.

This discrepancy could be explained by the fact that 70% of patients in the series were referred unlike all patients in some series who consulted directly at the urology department of the Tanta University Hospital (Egypt) and at the Government Medical College of Srinagar (India) place of care. The detour to a health post be-

fore referral and reasons of modesty could be the factors of the delay observed.

Intraoperatively, the line was unilateral in 100% of cases, and on the right in 61.11% of cases. Bali *et al.* reported the unilateral line in 100% of cases, and on the right in 66.7% of cases. Niang *et al.* in 2012, reported the unilateral line in 96% of cases and on the right in 52% of cases.

The direction of the line (**Figure 2(b)**) was transverse 83.33%, Barry *et al.* [16] reported a transverse direction in all patients in their series. Barry *et al.* [16] also noted 100% of cases.

The location of the lesion was proximal in 10 (55.56%) of our patients, Luca *et al.* reported a proximal location in 65.7% of cases in a series where coitus falsity was the most frequent mechanism of occurrence (92.1%). These figures were similar to those of the series.

The longitudinal trait was rare. In the series, it was 16.67% of cases. This trait, when present, was the consequence of the extension of a transverse trait.

Subcoronal circumferential incision followed by penile skin stripping was the approach used in all 27 patients.

This was also the attitude of Zargooshi *et al.* in Iran who reported 82 (95.35%) cases. This complete loosening of the sheath of the penis up to the seat of the fracture offered a wide exposure of the lesion, an exhaustive lesion assessment and a complete exploration of the three erectile bodies of the penis up to the penoscrotal groove. The subcoronal circumferential incision (**Figure 3**) had a diagnostic and therapeutic interest, this would make it possible to compensate for not performing an imaging examination beforehand and the possible treatment of urethral lesion in the same operation. Surgical repair by a subcoronal circumferential incision as soon as possible would reduce the repercussions on sexual activity and offered a satisfactory aesthetic result. According to the authors of the elective approach [17] [18], there would be a shorter operating time, with repair of the lesion without undressing the entire penis in a shorter operating time. On the other hand, according to Gamal *et al.* [19], it would be useless to "remove the entire penis for a small proximal albugineal lesion". However, it appeared that this approach would carry a risk of unsightly scarring and curvature of the penis according to Rimtebaye *et al.* [20].

Surgical exploration of the penile fracture was an emergency and repair remained the standard treatment. This early surgery made it possible to avoid the after-effects which were erectile dysfunction, penile bends as well as sub-albugineal plaques.

The duration of postoperative hospitalization ranged from 1 to 4 days with an average of 2 days. This result was close to those of Niang *et al.*

On the other hand, Bouya *[21]* reported an average length of hospitalization of five days. This prolonged period in their series could be explained by the existence of urethral lesions associated in 25% of cases with cavernous rupture.

4.4. Evolution

A patient complained of bending of the penis during erection.

The frequency of penile bending after surgical treatment remained low. As for Luca *et al.*, Dar *et al.*, Paven *et al.* [22] and Nasser *et al.* [23] they reported penile bending among the complications after early penile fracture surgery in 5.2%, 4.01%, 3.7%, and 4% of cases, respectively.

indurations were of the order of 2 cases. Tang *et al.* [24], and Luca *et al.* in 2017 had observed low rates of postoperative cavernous indurations (2.5% and 3.9%). These values were lower, mainly explained by their larger sample size in Tang *et al.*, 62 cases.

2 patients reported pain during erection, *i.e.* 11.11%.

Rabii *et al.* reported a rate of 1.30% in a series of 300 patients with a seven-year follow-up. Dar *et al.* noted 2.5% in a series of 48 patients with a one-year follow-up. Persec *et al.* [25] reported that postoperative complications were more pronounced due to the short duration of the trauma and noted after each three-month follow-up, at 12 months a significant regression of postoperative complications.

No patient reported erectile dysfunction. Tang *et al.*, observed erectile dysfunction in 5.6% cases; 2.8% mild erectile dysfunction, and 2.8% mild to moderately severe erectile dysfunction.

Zargooshi *et al.* reported erectile dysfunction in 4.8% of cases; mild erectile dysfunction in 2%, and mild to moderately severe erectile dysfunction in 2.5% of cases. They also reported in a case-control study of a series of 170 cases, a frequency of erectile dysfunction comparable to that of the normal control population. This demonstrated that surgical treatment was not a risk factor for exposure to erectile dysfunction because the risk was the same in the patient population and the general population. This supported the argument that surgical treatment did not alter erectile function in any way. Early surgical treatment is associated with a low incidence of erectile dysfunction between 0 and 12%.

5. Conclusion

Penile fracture is a rare traumatic emergency in urology occurring most often in a young population in full sexual activity. It is characterized by a rupture of the tunica albuginea on an erect penis. The circumstances of occurrence mainly implicated were the misstep of coitus due to sexual positions such as the doggy style and cowgirl position. The population concerned is young unmarried people taking a lot of risks often under the influence of alcohol or traditional medications.

Ethical Approbation

The ethics declaration "in accordance with the Declaration of Helsinki".

Informed Consent

The study was carried out in the urology department of the Cocody University Hospital, requiring the favorable opinion of the head of department, and the medical and scientific director of the Cocody University Hospital, who is responsible

for the establishment's ethics committee.

We did not require patient consent since this is a retrospective study.

Nevertheless, the medical data of each patient were transmitted only to the principal investigator or any person authorized by the latter under conditions guaranteeing their confidentiality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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