



What is the Fate of the Penis After its Fracture?

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Summary

Objective: The penis fracture is indeed growing in incidence, of various causes, the most frequent of which in the Maghreb is the manipulation of an erect penis. Its management aims at both anatomical and functional restitution of the penis because the evolution can be crowned with complications. The purpose of our study was to assess the condition of the penis after its fracture.

Patients and methods: We report a mono-centric cross-sectional study from January 2015 to December 2019 in the fracture surgery department. The parameters studied were: age, mechanism of occurrence, clinical and surgical data, and then postoperative follow-up. Checks had been carried out on the 1st and 2ed week and 1st, 3rd, 6th and 12th month. The complications were: aesthetic (repair scar and restrain of penis curvature) and functional (discomfort during sexual intercourse and erectile dysfunction); erectile dysfunction was assessed according to the International Erectile Function Index (IIEF-5).

Results: One hundred and seventy-one patients had operated with an average age of 35.99 years. Forced maneuver on the erect penis was predominant (40%) followed by missteps by coitus (27%). The doggy position was in the majority (46.81%). The coronal first was in the majority (120 cases); the frequency of short- and long-term complications was 18.71% after a 15-month decline; the majority of patients (123 cases) had a duration of abstinence between 1 and 2 months. No patient had a penile fibrosis plaque and three had a penis curvature of less than 15° without sexual impact. The mean IIEF5 score was 18, two patients had severe erectile dysfunction. There were correlations between duration of abstinence and IIEF5 score ($P < 0.05$). The time of consultation, the duration of abstinence, and the length of the fracture line as well as the duration of surgical management were factors influencing the occurrence of complications ($P < 0.05$).

Conclusion: In short, with 18.71% of the complications of penis fracture, it is necessary to proceed to primary management (eviction of forced maneuver on the erect penis, of certain sexual postures), secondary (early and adequate surgical intervention), or even tertiary (respect of the abstinence period) to preserve or restore the anatomy see the functioning of the penis.

Introduction

The fracture of the corpora cavernosa is a rare urological emergency but emerging from the point of view of incidence. It is defined by the rupture of the albuginea of the cavernous bodies during erections. Of various causes, the fracture of the penis is often due, in the Maghreb, to forced manipulations either during masturbatory maneuvers or to reduce or disguise an embarrassing erection. Surgery stays the indisputable treatment either elective or coronal, however, any delay or non-use of surgery is a source of complications (functional or aesthetic). Thus the purpose of our study was to assess the state of the penis after the fracturing of the cavernous body.

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Patients and Methods

From January 2015 to December 2019 (5 years), we conducted, within the urology department of the Ibn Rochd University Hospital in Casablanca, a monocentric transversal study on fractures of the cavernous bodies of the penis. All patients aged at least 15 years with a cavernous body fracture were included, all were consenting to the study. Patients who had ruptured albuginea by self-harm, as well as those with a particular history (of cavernous body fracture, pre-existing erectile dysfunction, penis curvature), were not included (5 patients). Several parameters were studied: age, marital status, mechanisms of occurrence, consultation time, clinical data (cracking sensation, penis pain, hematoma, penis curvature, urethritis) ultrasound, and surgical than the evolutionary results of treatment taking into account the duration of abstinence after surgery (in months). The mechanisms of occurrence were classified as follows: masturbation, shock on erect penis, turning on erect penis during sleep, forced maneuver on erect penis, coitus misstep (Andromachus, and vaginal doggie, men on top, women on top, missionary). All patients had been operated on within 24 hours of admission, under spinal anesthesia. The way first was either elective or coronal. A braided thread 3.0 and 4.0 raphie with rapid resorption had been made in all our patients respectively on the albuginea and the urethra (in case of lesions), they had all been put on analgesics and anti-edematous. They had been reviewed post-operatively on the 7th, 15th day (for the removal of the bladder probe in case of associated urethral rupture) and 1st 3rd, 6th, and 12th months (in search of complications, see references).

The complications were grouped into two groups: (E) aesthetic (repair scar and restrain of penis curvature) and (F) functional (discomfort during sexual intercourse and erectile dysfunction); erectile dysfunction was assessed according to the International Five-Point Erectile Function Index (IIEF-5) and intracavernous injection of prostaglandin (Caverject 20µg) or saline in patients reporting a deviation or curvature of the penis during an erection in order to objectify this deviation. Due to the lack of flowmetry in our department, we used the urinary symptom profile (USP) score alone for the evaluation of lower urinary tract disorders in the follow-up of patients with a repaired urethral lesion, followed by the realization of retrograde urethrocytography at six months.

The analysis of the data was done by the epi software info.7, the ki2 test was used to compare them with a significant threshold <5%.

Results

We analyzed 176 files, 171 cases had been retained. The mean age was 35.99 years (extremes 15 to 67 years). There were 87 married (50.88%) and 84 single (49.12%). The majority of our patients had consulted within the first 24 hours (76% of cases), and in 24% of cases after 24 hours. Yard hematoma was the predominant symptom (Figure 1) and forced maneuver on the erect penis was the most frequently encountered mechanism of occurrence (Figure 2). Among the mechanisms of interrupted coitus, we noted: the position doggy style (22 cases) including 20 vaginal and 2 cases of, the position "andromaché" (14 cases) and the position "missionary" (11 cases). The study was more

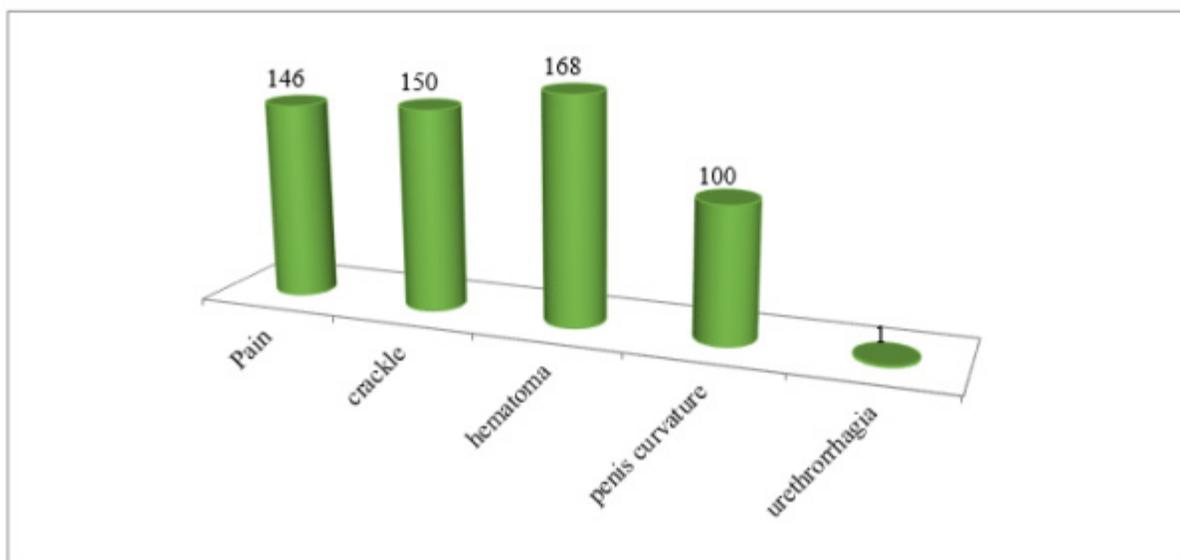


Figure 1: Distribution of patients according to consultation time.

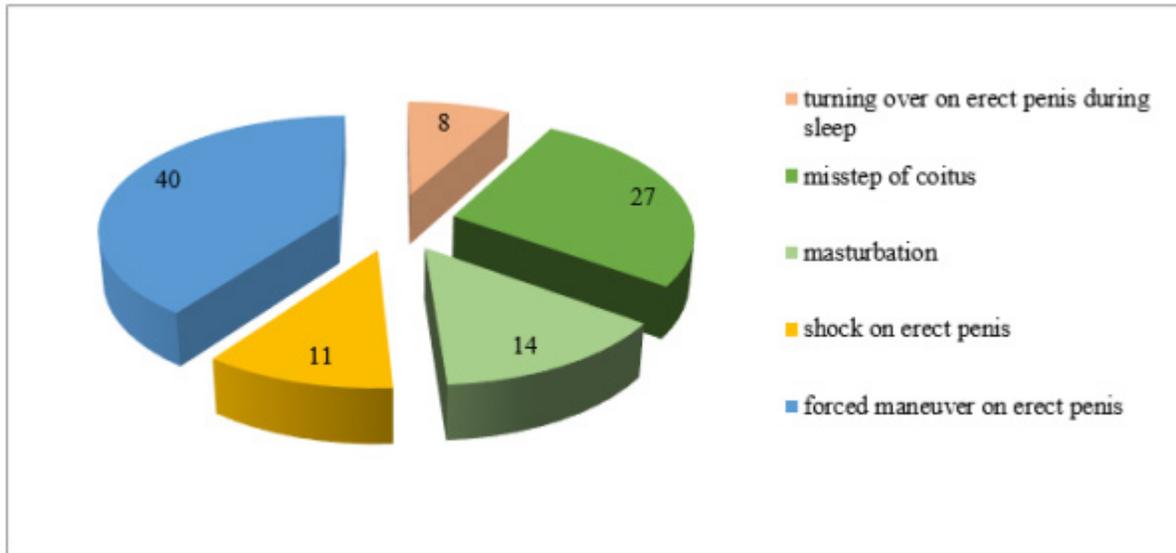


Figure 2: Distribution of patients according to the mechanism of occurrence(percentage).

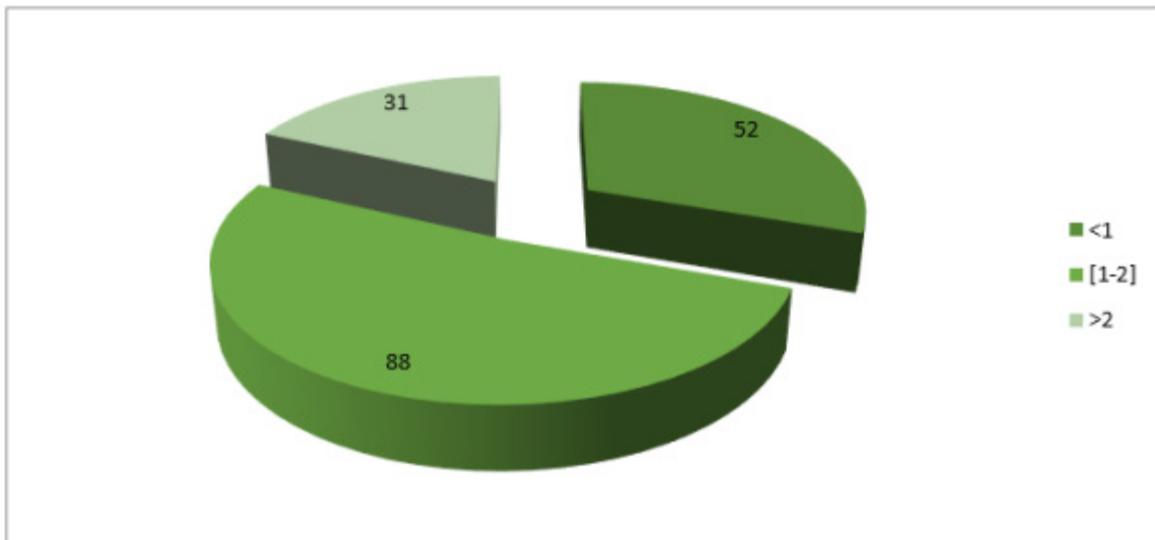


Figure 3: Distribution of patients according to fracture length (in cm).

Table 1: Distribution of patients by type of complication.

| Types of complications | | n | % |
|------------------------|--------------------------------|---|-------|
| Functional (F) | Erectile dysfunction | 8 | 25 |
| | Gene during sexual intercourse | 9 | 28,13 |
| Aesthetic (E) | restain of curvature | 3 | 9,4 |
| | Repair scar | 6 | 18,75 |

Table 2: Distribution of patients according to complications and duration of sexual abstinence.

Ki(2)=12.62 P<0.05.

| Complication/abstinence | F | E | F+E | Total |
|-------------------------|---|----|-----|-------|
| <1 | 5 | 2 | 0 | 7 |
| 1-2 | 1 | 3 | 3 | 7 |
| >2 | 3 | 10 | 5 | 18 |
| Total | 9 | 15 | 8 | 32 |

oriented to the right than to the left in 77.78% and 22.22% respectively.

The hematoma was over the entire penis, at the proximal, distal, and scrotal levels respectively in 72.51%, 16.96% 7.02%, and 3.51% of cases. Ninety-seven patients had an ultrasound of the penis and the fracture was objectified in 73 patients. The fracture trait was proximal, distal, and mid axial respectively in 46, 7, and 20% of cases. Of the 120 coronal incisions, 78 were longitudinal and 42 transverse and the selective incision was made in 51 patients. The predominant fracture line length was between [1 and 2]cm (Figure3). The type of sutures of the albuginea was overjet, single stitches, and inverted stitches in 1.94%, 7.74%, and 90.32% respectively.

The average duration of intervention was 49 min (extremes of 30 and 90 min), and that of hospitalization of 26.54 hours (extremes of 24 and 72 h). There was an average pick-up time of 2.5hours (extremes of 45 minutes and 15 hours). No complications were noted intraoperatively or in the immediate post-operative period. However, Thirty-two patients had short- and long-term complications at near an average decline of 15 months [extremes of 9 and 68 months] or 18.71%, distributed as follows: 15 cases of aesthetics, 9 cases of functional, and 8 cases were aesthetic associated with functional. During the evolutionary phase, discomfort during the sexual intercourse was the predominant functional complication (Table 1). No patient

had a fibrosis plaque on the penis and three had a penis curvature whose angle was less than 15 ° without impact during sexual intercourse (see Table 1). Erectile dysfunction accounted for 25% of complications and 5% in the overall study population.

The average time of abstinence after surgery was 2.5 months, the majority of our patients had a duration of abstinence between one to two months in 72% of cases, and less than a month and beyond 2 months there were respectively 10 and 18% of cases. There was a correlation between the occurrence of complications and the duration of sexual abstinence (Table 2). There was no causal link between the type of suture, the type of coitus misstep, and the occurrence of complications ($P>0.05$). Similarly, no type of coitus misstep had an impact on the length of the penis fracture line ($P>0.05$, $ki(2)=12.79$). However, we have identified correlations between fracture length and the occurrence of complications (Table 3) then the occurrence of erectile dysfunction, and the time to sexual abstinence (Table 4).

Score IIEF5

The median IIEF5 score was 18, only two patients with severe erectile dysfunction (Figure 4).

USP score

The USP score of the patient who had a urethral rupture

Table 3: Distribution of patients by complications and fracture line length.

| Complication /Suture type | <1cm | [1-2] cm | >2cm | Total |
|---------------------------|------|----------|------|-------|
| E | 1 | 0 | 14 | 15 |
| F | 1 | 0 | 8 | 9 |
| E+F | 0 | 3 | 5 | 8 |
| Total | 2 | 3 | 27 | 32 |

$P<0.05$ $ki(2)=10.46$

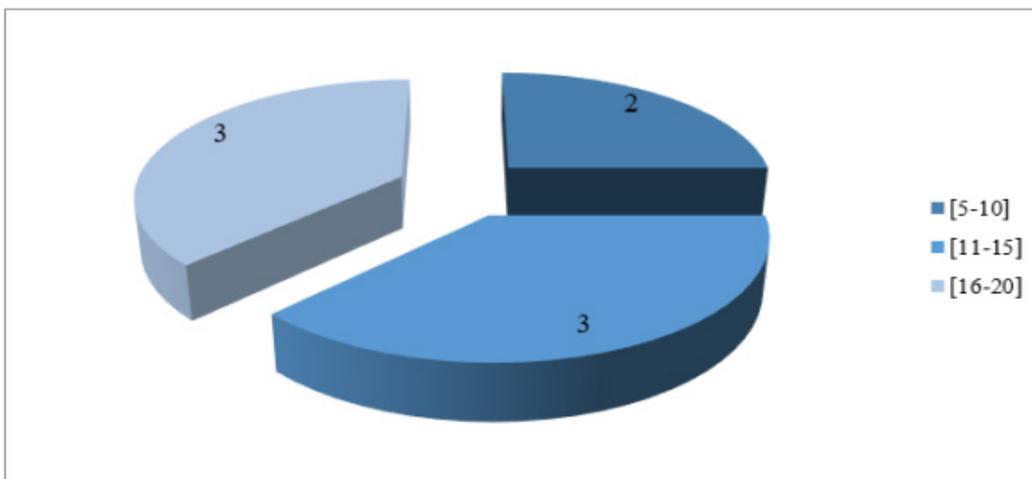


Figure 4: Distribution of patients by IIEF score.



Annex: Appearance of the penis at 3 months of follow-up after fracture of cavernous body.

does not show dysuria and his retrograde urethrograms was normal at the 6th month.

Discussion

many authors note a significant frequency of fracture of cavernous bodies related to forced maneuvers of an erect penis in Maghreb and Eastern countries [1-3], however, it is no less in case of interrupted coitus [4], such as the case of our series. The latter can be explained by the fact that our study population was so young with an average age of 35.99 years and the majority of whom were married, therefore in full sexual activity. The doggy position was the most predominant of the mechanisms in case of interrupted coitus followed by the Andromachus; our results corroborate those of some authors [5-6]. This is explained on the one hand when the man is in a dominant position and very excited, sexual intercourse can become extremely vigorous, triggering a greater impact at the moment when the penis slides out of the vagina and hits against the perineum or pubic symphysis. On the other hand when the woman is on the man and then inadvertently lands all her weight on the erect penis if it slips out of the vagina.

Although it is recognized that clinical history and genital examination are the mainstays of diagnosis, there is no consensus on how to exclude a concomitant urethral lesion, which can be present in almost a third of cases. Most authors agree that urethral catheterization should be avoided when a urethral injury is suspected and a suprapubic catheter should be inserted for drainage [7-8]. No correlation was noted between sexual position and penile injury severity in our study, as is the case in a meta-analysis in which no impact of relative risk was objectified [9].

The diagnosis of penile fracture was essentially clinical, based on the stereotypical history of the accident and physical examination. No paraclinical examination is required for diagnosis in typical forms [10-12]. However, in frustrated or late-sighted forms some authors recommend

Color Doppler ultrasound, retrograde urethrography, cavernography, or magnetic resonance imaging (MRI) [11-13]. Retrograde urethrography finds its only indication in the rupture of the associated urethra. MRI makes a precise lesion assessment on the location and extent of the rupture of the albuginea of the cavernous body as well as the associated lesions such as a rupture of the spongy body or urethra [14]. Its disadvantage is related to its cost and availability. Doppler ultrasound is a non-invasive examination, less expensive than MRI, reliable when performed by experienced hands, which can highlight the rupture of the albuginea and hematoma even under albuginea [11,15-16]. In our case, we have not used any of these examinations because of their unavailability as a matter of urgency.

The coronal approach was the most used in our study, it is the preferred route because it allows better exposure and exploration, it is the gold standard in case of bilateral lesion or complete urethral involvement [17-18].

However, several authors report the risk of edema, infection, and skin necrosis during the coronal approach of penis fracture [19]. We have not had any cases of infection or edema of the penis, this can be administered to all our patients of antioedematous. Some authors state that the lateral and longitudinal incision in front of one of the cavernous bodies allows an elective approach to the focus of fracture without skin risk but sometimes at the cost of an unsightly scar [4].

We noted a short- and long-term complication rate of 18.71% in our study with a predominance of discomfort during sexual intercourse and erectile dysfunction, similar to those of many authors [20]. This frequency in our series can be explained by the non-respect of the required period of abstinence in post-operative in some because we note a correlation between the time of abstinence and the occurrence of complications ($P < 0.05$). The erectile

Table 4: Distribution of patients by abstinence period (in months) and IIEF5 score.

| | n | | | |
|--------------|----------|----------|----------|----------|
| | <1 | 1-2 | >2 | total |
| [5-10] | 2 | 0 | 0 | 2 |
| [11-15] | 1 | 2 | 0 | 3 |
| [16-20] | 0 | 0 | 3 | 3 |
| Total | 3 | 2 | 3 | 8 |

$P < 0.05$ $ki(2) = 11.56$

dysfunction observed after penile fracture appears to be more related to a venous cause (leakage of venous blood into the spongy body) than to an arterial cause due to cavernous artery failure [21-23].

The origin of this dysfunction in our series was not known, because we have not resorted to echo-Doppler in the search for etiology. However Rajkumar, in a series of 18 cases of penis fractures, had objectified to Doppler an insufficiency of the cavernous artery in one of the patients who had erectile dysfunction after a follow-up of 3 months [22]. In our series, we have highlighted a correlation between the length of the fracture line and the occurrence of short- and long-term complications ($P < 0.05$). We think that the size of the fracture line would be at the origin of huge fibrosis of the albuginea therefore source of stretch curvature and on the other hand of significant leakage of cavernous venous blood in the spongy, the cause of erectile dysfunction. The subjectivity of questionnaire responses is also a bias in the assessment of sexual function in our patients.

Conclusion

The penis fracture (Although rare) is a pathological entity due mainly to the forced maneuver of an erect penis and by the sexual act, whose inadequate or delayed management can be enameled with both functional and aesthetic complications, reaching 18.71% in our series, with a correlation to the time of abstinence and the length of the fracture line. Thus the therapeutic base is based on preventive, secondary, and tertiary care adequate to maintain or restore the functional anatomy of the patient.

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