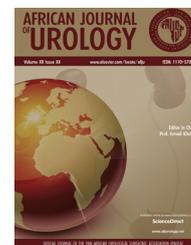




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Penile and Scrotal Diseases

Original article

Management of penile fracture: Can it wait?



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KEYWORDS

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Abstract

Objectives: To assess the effect of timing of presentation of cases with penile fracture on the long-term outcome of surgical intervention.

Patients and methods: Between 2000 and 2015, 42 patients with penile fracture were operated in our centre, immediately after admission. To assess the effect of timing of presentation, patients were classified into 2 groups: group 1 with early presentation (≤ 24 h) and group 2 with delayed presentation (> 24 h). All patients had a routine follow-up visit at 6 months after surgery; during this visit, long-term complications were assessed.

Results: Group 1 included 26 patients (62%) and group 2 included 16 (38%). In group 1, patients presented to the emergency department from within 24 h (mean: 3.96 ± 2.47 h) after occurrence of the penile trauma. Patients in group 2 presented from 24 h to 4 days (mean: 79.50 ± 37.62 h). The incidence rate of long-term complications was 7.6% and 68.7% in group 1 and group 2, respectively (OR 26.4, 95% CI 4.41–157.86, $p = 0.0001$). Concerning erectile dysfunction and penile nodules, there was no significant difference between the two groups ($p = 0.67$ and 0.06 , respectively). However, painful penetration was significantly higher in group 2 (50% vs 3.8% in group 2 and 1, respectively, OR 25, 95% CI 2.69–231.59, $p = 0.001$). Penile curvature was seen only in the second group (43.8%).

Conclusion: Immediate surgical repair has the best prognosis and should remain the recommended treatment modality of penile fracture.

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Introduction

Penile fracture is the rupture of the tunica albuginea of the penis's corpora cavernosa. It is caused by a trauma to the penis during erection and is a rare urological emergency [1,2]. According to the

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reported series, the incidence of penile fracture is higher in Northern Africa and Middle East than in the United States and in Europe [2,3].

Masturbation, rolling over in bed onto an erect penis, kneading and snapping of the penis during erection to achieve detumescence are the main causes of penile fractures in these regions [4]. In occidental countries, sexual intercourse is more commonly incriminated; the injury occurs when a clumsy movement forcefully strike the penis on the perineum or pubic bone [5,6]. Penile fracture is more likely to occur in stressful situations such as extramarital affairs and sexual relations in unusual locations outside of the bedroom [7].

Early surgical exploration and defect closure of the tunica is recommended to avoid long-term complications. However, reported postoperative long-term results, especially regarding erectile function, are rare and vary widely. In this study, we present long-term results after surgical therapy and compared patients who had been operated in the first 24 h, and those operated late after 24 h.

Patients and methods

From 2000 to 2015, 42 patients presented to our department with clinical features suggestive of penile fracture. The diagnosis of penile fracture was achieved clinically in all our patients without the use of radiological imaging. All patients were operated immediately after admission. The choice of incision was dependent on surgeon preference; it was circumferential with penile degloving in some cases and elective on suspected site of injury in the others. Evacuation of the hematoma revealed the defect in the tunica albuginea; inverted knot suture was performed using the Vicryl 3/0, in all our cases. If the tear was near the urethra or had extended ventrally with undefined margins, an urethral catheter was inserted into the bladder to protect the urethra.

Patients were classified into two groups: group 1 (G1, n = 26) operated in the first 24 h after the trauma and group 2 (G2, n = 16) operated after 24 h. Clinical presentation, preoperative evaluation, time from injury, mechanism and site of injury, and the presence of urethral injury were assessed and compared between these two groups. All patients had a routine follow-up visit at 6 months after surgery. During this visit, long-term complications were also assessed; the author examined the penis, recorded the location and diameter of the penile nodules, checked nodules for tenderness, and asked about penile curvature and pain in erection. The patients were asked to answer the structured questionnaire of the International Index of Erectile Function (IIEF 5). Erectile dysfunction (ED) was considered if IIEF score was less than 26. ED severity was classified as severe (score 5–10), moderate (score 11–16) and mild (score 17–25). These long-term complications were compared between the two groups.

The data were analyzed using the IBM SPSS 20.0 software. Comparison between groups was carried out with Chi-squared or Fisher's exact test, when appropriate; *P* value <0.05 was considered significant.

Results

Mean patient age was 44.6 ± 12.7 years (range: 22–70 years). Patients in the fifth decade (20/42: 47.6%) were affected predominantly. There was no statistical difference between both groups

Table 1 Clinical and pathological profile of the patients.

	Group 1 (N = 26) n (%)	Group 2 (N = 16) n (%)	<i>P</i> value
Causes of penile fracture			
Masturbation	20/26 (76.9)	9/16 (56.2)	0.18
Sexual intercourse	5/26 (19.2)	2/16 (12.5)	0.62
Rolling over in bed	1/26 (3.8)	1/16 (6.2)	1.00
Not evaluable	3/26 (11.5)	2/16 (12.5)	
Clinical pictures			
Penile hematoma	26/26 (100)	16/16 (100)	
Penile swelling	26/26 (100)	16/16 (100)	
Penile pain	18/26 (69.2)	10/16 (62.5)	0.74
Acoustic cracking	9/26 (34.6)	4/16 (25)	0.73
Detumescence	24/26 (92.3)	16/16 (100)	0.51
Urethral bleeding	1/26 (3.8)	0/16 (0)	1.00
Clinical findings during surgical explorations			
Side of tear			1.00
Right	4/26 (15.3)	3/16 (18.7)	
Left	22/26 (84.6)	13/16 (81.2)	
Bilateral	0/26	0/16	
Site of tear			0.52
Proximal	6/26 (23)	4/16 (25)	
Mid	18/26 (69.2)	12/16 (75)	
Distal	2/26 (7.6)	0/16	
Urethral injury	1/26 (3.8)	0/16	1.00
Incision			0.15
Circumferential	5/26 (19.2)	7/16 (43.7)	
Direct	21/26 (80.7)	9/16 (56.2)	

Table 2 Comparisons of complications between the groups.

	Group 1 (N = 26) n (%)	Group 2 (N = 16) n (%)	<i>P</i> value
Presence of complications	2/26 (7.6)	11/16 (68.7)	0.0001
Plaques/Nodules	1/26 (3.8)	4/16 (25)	0.06
Pain/Paresthesia	1/26 (3.8)	8/16 (50)	0.001
Penile curvature	0/26 (0)	7/16 (43.7)	0.0001
Difficulties to penetrate	0/26	0/26	
ED	2/26 (7.6)	1/16 (6.2)	0.67

regarding age (45.1 ± 13.6 vs. 43.8 ± 11.5 in G1 and G2, respectively, *p* = 0.74). All cases had no problems with erectile function before penile fracture.

The most common cause of penile fracture was masturbation (66.6%) followed by sexual intercourse (16.6%); Table 1 lists the causes of penile fractures in both groups and there was no statistical difference between them.

Penile hematoma and swelling were present in all the cases. Cracking sound was heard by 12 patients (28.5%); all patients had immediate detumescence after the incidence except two cases. There was no statistical difference between both groups regarding clinical presentation (Table 2).

Mean time from injury to presentation was 32.37 h (range: 1–168 h). In G1, patients presented to the emergency room from 1 to 10 h (mean: 3.96 ± 2.47 h) after occurrence of penile fracture. Patients in G2 presented from 24 h to 4 days (mean: 79.50 ± 37.62 h) after

sustaining the trauma. In the second group, 10 patients presented from 3 to 7 days.

There was no difference between both groups regarding the side, site of tunical defect and associated urethral injury (Table 1).

Results regarding complications and impairment of sexual life in the two groups are shown in Table 2. In 6-month follow-up, 13 patients (31%) presented complications which were higher in G2 with a statistically significant difference (68.7% vs. 7.6% in G2 and G1, respectively, OR 26.4, 95% CI 4.41–157.86, $p=0.0001$).

ED of mild severity occurred in 7.6% and 6.2% of patients in G1 and G2, respectively; there was no significant difference between both groups ($p=0.67$).

In G2, 50% of patients complained of postoperative pain and paresthesia during sexual intercourse, compared with 3.8% in G1 (OR 25, 95% CI 2.69–231.59, $p=0.001$).

Penile curvature occurred only in patients of G2 (43.8%, OR 1.77, 95% CI 1.15–2.73, $p=0.0001$).

Penile nodules were reported and diagnosed in 25% of patients in G2 compared with 3.8% in G1; however, there was no statistically significant difference between the groups ($p=0.06$).

Discussion

The first documented report of penile fracture is ascribed to the Arab physician Abu al-Qasim in Cordoba, over a thousand years ago [8]. In the modern medical literature, the first case was described by Malis and Zur in 1924 [9].

Predisposing factors include excessive force at intercourse or manipulation, fibrosclerosis of the tunica albuginea or chronic urethritis [10]. The mechanism of injury depends upon socio-cultural characteristics, masturbation habits and indulgence in sexual activities. Information concerning factors related to penile fracture is always obtained by the story that patients tell their doctors. Given the intimacy and taboos of patients' sexual life, especially in Muslim population, many patients might have been imprecise about the real truth. The causes of penile fracture in our series were similar to what has been reported in most other Middle East and North African published series, with masturbation being the most common cause.

Diagnosis of penile fracture is based mainly on clinical presentation. Patients typically hear a cracking or snapping sound, followed by rapid detumescence, sharp penile pain, swelling (43%) and discoloration (33%) with the typical aubergine sign/eggplant deformity on presentation [2,11,12].

The utility of preoperative investigations in penile fracture are still controversial. Currently, there are no evidence-based recommendations regarding the algorithm to apply for patients with penile fracture [6,13,14]. In the majority of cases, the diagnosis can be made clinically without the need for any further complementary tests. Ultrasonography, MRI, cavernosography, and retrograde urethrography were reported as useful tools to confirm the diagnosis, assess the site and extent of damage and exclude associated urethral injury. However, they can be time consuming and not cost

effective; therefore, they are not definitive and should not replace clinical assessment and delay surgical exploration [15–17].

In the past, conservative approach was considered as the standard treatment for penile fractures. It consists of cold compress, anti-inflammatory medicines, antibiotics and anti-androgens. However, this approach was associated with a high incidence of complications such as infected hematoma, penile curvature, palpable nodule and ED in up to 50% of patients, in addition to prolonged recovery and hospital stay [18–20]. These results confirmed that surgical repair must be the treatment of choice in penile fracture cases.

Recently, most authors recommend urgent surgical repair for its excellent outcome and decreased hospital stay.

Surgery steps to follow are: incision, haematoma evacuation, debridement and repair of tunica's tear with absorbable sutures. A small lateral incision over the defect when it is palpable has the advantage of a direct access with less tissue trauma, while a distal degloving incision exposes bilateral tunicae allowing the identification and repair of associated injuries (urethral and contralateral). Retrograde urethrography has a good value in assessing associated urethral injuries.

Drugs have been advocated for spontaneous erection suppression postoperatively. Abstinence from all sexual activities for 6–8 weeks is recommended after surgical repair of the fractured penis.

In a series of 32 patients reported by Asgari et al. [21], delayed surgical repair of penile fracture more than two days after trauma was associated with penile curvature and pain during intercourse. In another series of 180 patients with penile fracture categorized according to timing of presentation, El-Assmy et al. [4] found that both groups have comparable excellent outcome with no serious long-term complications (In group I, patients presented to the emergency department from 1 to 24 h after occurrence of the penile trauma; in group II, patients presented from 30 h to 7 days).

In a meta-analysis reported by Amer et al. [11], they found that overall early surgery results in significantly fewer complications versus delayed surgery ($p<0.00001$). Rates of penile curvature are significantly lower in patients having emergent rather than delayed surgery ($p=0.0004$). There was no difference on pooled analysis between plaque formation and rates of ED in immediate versus delayed treatment.

A retrospective analysis was performed by Bozzini et al. [22], using data obtained from 137 patients presenting with penile fracture at seven different European academic medical centres, to evaluate the association between timing of surgical intervention and postoperative ED. Analysis revealed that if the surgical intervention was performed >8.23 h after emergency room admission, postoperative erectile function was significantly worse ($p=0.0051$ at first month and $p=0.0057$ at third month postoperatively).

The findings of our study demonstrated that an early surgical repair performed within the first 24 h after penile fracture reduces the risk of postoperative complications such as pain during sexual intercourse and penile curvature. Occurrence of ED and penile nodules was not related to the time from event to surgery in our series.

Our study was limited by its being retrospective and because the number of patients with more delayed presentation is limited. Nevertheless, this study has emphasised the compelling need for penile fractures to be treated surgically without delay so as to minimise physical complications which can be a stressful event for patients.

Conclusions

Early surgical repair is associated with better functional outcomes and low morbidity in patients with penile fracture. In our study, we found a high incidence of pain during sexual intercourse and penile deformity in patients operated with delay. However, patients with early and delayed presentation maintained their erectile function. Immediate surgical repair has the best prognosis and should remain the recommended treatment modality of penile fracture.

Informed consent

Informed consent of patients has been obtained using a written consent form approved by ethical committee of our institution (Ibn El Jazzar Teaching Hospital, Kairouan-3100, Tunisia).

Ethical committee approval

This work has been approved by ethical committee of Ibn El Jazzar Teaching Hospital of Kairouan-3100, Tunisia.

Authors' contributions

S. Naouar: study design, statistical analysis.

H. Boussaffa: data collection and manuscript drafting.

S. Braiek: analysis and interpretation of data.

R. El Kamel: approving the final version of the publication.

Conflict of interest

No conflicts of interest exist for any author.

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No one.

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