

SURGERY

Sexual Function Outcomes After Surgical Treatment of Penile Fracture



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ABSTRACT

Introduction: Penile fracture is a urologic emergency and is defined as the rupture of the tunica albuginea of the cavernous body in erection.

Aim: Our study aims to evaluate patients with penile fracture and to identify the factors that may influence the sexual function after surgical repair.

Methods: A total of 138 patients who were diagnosed with penile fracture between January, 1999 and December, 2018 were reviewed. Clinical features, perioperative assessment, time from injury to surgery, tunica defect properties, and presence of urethral injury were assessed.

Main Outcome Measures: Sexual function was evaluated by three parameters six months after surgical repair: International Index of Erectile Function-5 (IIEF-5) questionnaire, penile curvature and the presence of a painful intercourse. All factors that could potentially influence these parameters were analyzed.

Results: The mean age was 31.2 years (19-55). Presentation delay ranged from 1 to 5 days (mean = 16.8 hours) while surgery delay was 14.3 hours. The most common cause of penile fracture in our patients was forcefully bending of the erect penis to achieve detumescence in 62 cases (44.9%). On multivariate analysis, we found that the presentation delay and the fracture site located in the proximal shaft of the penis showed significant difference in the occurrence of postoperative ED ($P = 0.03$ and $P = 0.015$ respectively). Presentation delay, elective incision and tunical leak located in the proximal shaft ($P = 0.045$; $P = 0.018$ and $P = 0.022$ respectively) were associated with higher penis curvature.

Conclusion: Immediate surgical repair and circumferential degloving incision for tunical leaks located in the proximal shaft of the penis are recommended in order to decrease the incidence of ED after surgical repair of penile fractures. **Ouanes Y, Saadi MH, Alouene HH, et al. Sexual Function Outcomes After Surgical Treatment of Penile Fracture. Sex Med 2021;9:100353.**

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Key Words: Penile Fracture; Sexuality; Erectile Dysfunction; Traumatology

INTRODUCTION

Penile fracture is a traumatic rupture of the tunica albuginea of the corpus cavernosum secondary to blunt trauma to the erect penis with subsequent subcutaneous hematoma

with or without rupture of the corpus spongiosum and the urethra.¹⁻³ The incidence of penile fractures is underreported because many patients do not seek medical attention due to the embarrassment of being seen with this unusual injury.^{4,5} A loud snapping sound is usually heard by the patient associated with sharp penile pain and rapid detumescence.^{6,7} According to many recent studies, immediate surgical repair should be performed in order to have more adequate functional and cosmetic results.^{1,8} Serious complications such as penile curvature, erectile dysfunction (ED), development of plaques or urethral fistulas may develop due to inappropriate and/or late surgical repair.^{7,8} ED seems to

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be the most critical problem because of the serious physical and psychological consequences that may have on the patient.⁶ It has been reported that the incidence of ED after surgical repair of fracture penis ranges from 0% up to 12%. The aim of our study was to identify the factors that may influence the sexual function after surgical repair.

PATIENTS AND METHODS

After gaining local ethics committee approval, the surgical records of our institute were reviewed to identify patients who underwent surgical repair of penile fracture between January, 1999 and December, 2018. Clinical presentation, investigations, operative and postoperative details were reviewed from the patient charts. Sexual function of all patients was evaluated by three parameters 12 months after surgical repair: the International Index of Erectile Function-5 (IIEF-5) questionnaire, curvature of the penis and the presence of a painful intercourse. All factors that could potentially influence these parameters, whether related to penile fracture or not, were analyzed using SPSS version 15. The statistical analysis was carried out using Chi-squared test and a logistic regression.

RESULTS

A total of 138 patients were operated for penile fracture in our department with a mean age of 31.2 years (range 19-55). The presentation delay varied from 1 hour to 5 days (mean = 16.8 hours). The most common cause of penile fracture in our patients was forcefully bending of the erect penis to achieve detumescence in 44.9% of cases followed by maneuvers during sexual intercourse in 34%. By history, all patients had no problems with erectile function before penile fracture, only three patients had risk factors for systemic vascular diseases at first presentation, such as diabetes mellitus (two patients) and hypertension (one patient). Snap sound was heard by all patients except nine. Penile swelling and/or ecchymosis was present in all patients mostly involving the whole penis associated in four cases with scrotal swelling. The mean surgery delay was 14.3 hours (range = 3-18 hours). Decision of surgery was only based on clinical findings (history and physical examination). Spinal

Table 1. Demographics and descriptive analysis

Mean age (range)	31.2 years (19;55)
Fracture mechanism n (%)	
Forcefully bending of the erect penis	62 (45)
Intercourse	47 (34)
Other	29
Presentation delay	14.3 hours
Incision n (%)	
Elective	112 (81.2)
Circumferential degloving	26 (18.8)
Fracture location n (%)	
Proximal	118 (85.5)
Distal	20(14.5)
Mean tunical leak length (mm)	16.5
Urethral injury n (%)	13 (9.4)
Erectile function 6 months after surgery	
Mean IIEF-5 score	22
Erectile dysfunction rate n (%)	24(17.4)
Penile curvature (%)	21(15.2)
Painful intercourse (%)	18(13)

anesthesia was used for all patients. Two different incisions were used: elective incision was performed in 112 patients (81.2%) while circumferential degloving incision was used in other cases whenever it was impossible to locate the tunical tear by physical examination. On surgical exploration, a tunical tear was found in the proximal shaft of the penis in 118 patients (85.5%) and in distal part in 20 patients (14.5%). All tears were unilateral and on the ventral aspect of the penis. The mean tear length was 16.5 mm (range = 7–37 mm). Urethral repair was required in 13 cases (13.4%). There was no significant postoperative morbidity except for two patients who had mild wound infection. After 12 months of follow-up, the mean IIEF-5 score was 22. ED was noted in 24 cases (17.4%). 21 patients (15.3%) complained of penile curvature that was interfering with sexual intercourse and 18 patients (13%) stated that they had a painful intercourse. None of the cases has developed complaints as regards the frequency or rigidity of erections. The descriptive data was resumed in [Table 1](#).

Table 2. Relationship between factors related to the patient and the intervention, and post-operative sexual function on the other

	Erectile dysfunction	Penile curvature	Painful intercourse
Age	$P > .05$	$P > .05$	$P > .05$
Presentation delay	$P = .03$	$P = .045$	$P > .05$
Incision type	$P > .05$	$P = .018$ (exp(b) = 1.107)	$P > .05$
Fracture location (proximal)	$P = .015$ (exp(b) = 1.083)	$P = .022$ (exp(b) = 1.144)	$P > .05$
Tunical leak length	$P > .05$	$P > .05$	$P > .05$
Urethral injury	$P > .05$	$P > .05$	$P > .05$

On multivariate analysis, we found that the presentation delay and the fracture site located in the proximal shaft of the penis showed significant difference in the occurrence of postoperative ED ($P = 0.03$ and $P = 0.015$ respectively). It also showed that the presentation delay ($P = 0.045$), elective incision ($P = 0.018$) and tunical leak located in the proximal shaft ($P = 0.022$) were associated with higher penile curvature. Neither of these factors has been significantly related to painful intercourse (Table 2).

DISCUSSION

Penile fracture occurs exclusively during erection caused by a marked thinning of tunica albuginea.⁴ It may also be explained by a marked short-term intracavernous pressure increase which exceeds the tunical tensile strength, and then the erect penis is more prone to injury.^{1,4} The causes and circumstances differ depending on both cultural contrast and different etiologies. While sexual intercourse is the driving factor for western countries, penile manipulation is considered to be the prime cause in the middle east.^{9,10}

In our series, trauma's causes were similar to the Middle East reported mechanism, which is the flexing and bending of the erect penis in order to get the penis to a detumescent state. However, as found in the results shown above, no direct link was seen between etiology of penile fracture and eventual impact on post-operative erectile function.

Common presentation of penile fracture demonstrates visual and sound appearances; a snapping sound is heard, followed by extreme pain, accompanied with fast swelling of the penis and even some deformity, commonly known as eggplant deformity.¹ In accordance with the results we found, it is often reported by authors that the distal penile shaft is almost always convoluted in penile fractures.^{11,12} Reports also point to the right side of the penis as the most affected by the leisure, as a matter of fact, Ateyah et al¹ linked this to the fact that right-handed population is greater than left-handed ones among the patients, thus the penile manipulation is frequently to the left side, resulting obviously in tunical tears on the right side. It has been reported that the right side is the most commonly affected by the injury.^{3,11} During our study, we saw that the ventral area of the penis is the most impacted by these tunical tears, which is may be due to the dorsal thickness of the tunica albuginea.

To deal with penile fracture, two divergent approaches are usually adopted, surgical and conservative.¹³ The most recent studies showed that the surgical approach is the one to revert to in dealing with any case of penile fracture.¹⁴ Our results obviously reinforce and opt for the surgical approach as the primary standard in managing a penile fracture, as the aftermath shows great functional results. The vast majority of surgeons use sub-coronal circumferential incisions.^{15,16} Yet it seems useless to actually perform a full penis degloving by circumferential incision in order to detect unilateral tear as it poses risks of impacting tissues and vessels. Furthermore, Ekwere et al. demonstrated that such exaggerated dissection may possibly raise the tendency of

skin necrosis, decreased penile sensation and hematoma.¹⁷ Nonetheless, our series displayed a much higher rate of penile curvature linked with elective incision. The time gap between the injury and the surgery was considered, according to two different series, to be the most leading factor of late complications.¹⁸⁻²⁰ Indeed, it is agreeing with our found results which pointed to the report delay having a central role, among others, in the evolution of the erectile dysfunction. In the literature, ED ranged from 0% in small series to almost 12% in other reports, in our case, we had a higher range of ED subsequently of 12 months follow up.²¹ The sexual dysfunction resulting from penile fracture is either due to penile curvature, ED (linked to an organic or psychogenic element), or simply painful intercourse. Numerous authors advocate performing color Doppler ultrasonography to investigate ED, which would allow display of arterial insufficiency, persistent venous leakage or veno-occlusive dysfunction. Also, it may help to show normal Doppler indices, specifically in case of psychogenic.^{2,22} In such cases, patients may declare that they are experiencing fear of recurrence while performing sexual activities, which leads to the interruption of said activity.² Comparing CDU assessments from both intact and injured sides reveals to be useful to detect ED of injured sections of the penis. El-Assmy et al. uncovered that main risk factors are aging > 50 years at presentation and bilateral corporal involvement.² However, not even one of these signs is to be found related to ED according to our results. Penile nodules may or may not be associated to penile curvature. Only 4.1% of the patients, as reported by Zargooshi, were seen to develop penile curvature after 24 months, while Hinev stated an 8% percentage of patients complained about penile curvature within a year.^{20,23} We discovered in our series that presentation time delay, tunical leak location and elective incision are the three factors linked with higher penile curvature.

Hence, we concluded that the follow up should be extended to reach a more definitive conclusion on complications. Painful intercourses appear to be the most common complication in the first months following surgical treatment, yet they diminish with time. As a matter of fact, no element or factor was linked with this complication according to our results.

CONCLUSIONS

In order to evict long-term complications especially ED, immediate surgical repair is recommended. Elective incision should be performed for tunical leaks located only in the distal shaft of the penis, for those located in the proximal shaft circumferential degloving incision must be considered, so the risk of penile curvature would be reduced with this type of lesions.

MAIN POINTS

- Immediate surgical repair of penile fracture is highly recommended in order to evict long-term complications of this pathology especially erectile dysfunction.

- Incisional technique should be considered according to the site of penile fracture (proximal, distal)
- The presentation delay, the fracture site located in the proximal shaft of the penis and elective incision were the most related factors to erectile dysfunction.

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STATEMENT OF AUTHORSHIP

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