

Importance of time in management of fracture penis: A prospective study

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Abstract

Background: The presentation of penile fracture may vary depending on the delay to seek medical attention and on the presence of associated injuries. Delay in presentation has been linked previously to embarrassment associated with this condition.

Aims and Objectives: The study aims to share our clinical experience in management of penile fracture and its complications and specifically highlights the impact of time delay on post-operative outcome in patients presenting with penile fracture.

Material and methods: The study is a prospective observational study conducted from July 2014 till January 2017. All the patients presenting to the emergency with a clinical presentation of penile fracture and a tear in the tunica albuginea of the penile cavernosal tissue, confirmed on ultrasound were included in this study and intraoperative and postoperative data was analysed.

Results: The most common cause for fracture noted was coitus. The average time delay from the time of insult to presentation to the emergency department was 25.11 ± 12.48 hours. The parameters that have significantly been altered by a time delay of more than 24 hours include post-operative wound infection, erectile dysfunction at 1-year, post-operative hospital stay. Two patients develop chordee at 6 and 9 months respectively and both patients presented beyond 24 hours. All patients with hematoma size on color Doppler of more 10cc and intraoperative tear >10mm had developed post-operative wound infection. Patients with urethral injury or post-operative cavernositis or wound infection had significant association with erectile dysfunction.

Conclusion: Penile fracture although a rare urologic emergency, it has a significant impact on sexual health of a young man. An early intervention along with identifying and managing early complications factors would help patients of fracture penis lead an almost normal sexual life.

Keywords: Delay, fracture, penis, time, urethra

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Received: 13.06.2018, **Accepted:** 05.03.2019

INTRODUCTION

Ever since penile fracture was the first report in Arab literature about a 1000 years ago, the clinical presentation and mechanism of injury have remained the same.^[1] The

management, however, has changed over the past few decades from a conservative approach to a more aggressive surgical approach.^[2,3] The presentation of penile fracture may vary depending on the delay to seek medical attention

Access this article online	
Quick Response Code:	Website: www.urologyannals.com
	DOI: 10.4103/UA.UA_80_18

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How to cite this article: Patil B, Kamath SU, Patwardhan SK, Savalia A. Importance of time in management of fracture penis: A prospective study. Urol Ann 2019;11:405-9.

and on the presence of associated injuries. Delay in presentation has been linked previously to embarrassment associated with this condition.^[4] Delay in presentation has been associated with worse postoperative outcome in previously published articles; however, there has been no conclusive evidence to support this.^[4,5] This study aims to share our clinical experience in the management of penile fracture and specifically highlights the impact of time delay on postoperative outcome in patients presenting with penile fracture.

MATERIALS AND METHODS

The study was conducted in a tertiary care medical college after seeking ethics approval. It is a prospective observational study conducted from July 2014 to January 2018. All the patients presenting to the emergency department with a clinical presentation of penile fracture and a tear in the tunica albuginea of the penile cavernosal tissue, confirmed on ultrasound, were included in this study. Patients who denied active intervention or who followed up for a tenure of <6 months were not included in the study. On presentation, clinical features included symptoms at presentation, duration of symptoms, and associated injuries, if any were noted. The mechanism of injury and time from insult to the time patient presented to our institution were specifically questioned to all the patients with penile fracture. On clinical examination, general physical findings and detailed genital examination were done. Laboratory variables included a complete hemogram, urine routine, and coagulation profile. Color Doppler ultrasound (CDU) of the penis to diagnose the extent of tear in the tunica albuginea and the size of hematoma if present as well as the integrity of the cavernosal vasculature were included. Urethral injury if any was documented.

All the patients diagnosed with fracture penis were subjected to early repair of the tear. All patients were catheterized prior to intervention. After having obtained informed written consent from the patient, definitive management was considered. Circumcision was done in patients who consented to undergo the same. Distal degloving incision was taken in all patients and all patients uniformly underwent primary repair with Vicryl 3-0 RB of tunica albuginea after having identified the tear and evacuation of the hematoma. Associated injuries if any were dealt at the same time. Patients were given compression dressing for 3 days postoperatively. Wound was assessed postoperatively on day 3, and patients were discharged by day 4. Prolonged hospital admission and its reason if any was documented. Patients received oral diazepam and ethinyl estradiol for 15-day postoperatively to suppress immediate postoperative

spontaneous painful erection. Postoperative complications if any and the course of events were noted in the immediate postdischarge period, at 3 months and at 6 months. At 3 and 6 months, patients underwent CDU and especially assessed for erectile dysfunction and chordee. Erectile dysfunction was objectively defined as failure to attain erection during office sildenafil test at 6 months postoperatively.

Data were analyzed using SPSS software 16.0 (IBM-SPSS, Chicago, Illinois, U.S.A.). Initial statistics included tabulating the descriptive analyses of perioperative parameters. This was followed by univariate analysis to evaluate the association of delay at presentation with respect to the postoperative complications.

RESULTS

The average age at presentation among patients presenting with penile fracture was 28.88 ± 7.59 years (average \pm standard deviation). The most common cause for fracture noted was coitus in 66.66% patients (12/18) followed by penile manipulation in 27.77% cases (5/18), and one patient reported fracture following rolling over the erect penis in bed. The average time delay from the time of insult to presentation to the emergency department was 25.11 ± 12.48 h. All patients presented with penile edema with or without eggplant deformity, but only 22.22% (4/18) patients reported a click sound at the time of insult. All the patients presenting to the emergency department who underwent CDU had hematoma over the site of tear and 5.56% (1/18) patients had peak systolic arterial velocity of <25 cm/min.

The intraoperative findings have been documented in Table 1. Figure 1 shows a patient with penile fracture with tear in the tunica albuginea at 7 o'clock position. One patient had urethral injury which was diagnosed intraoperatively, and in view of large segment injury, Stage I Johanson's urethroplasty was done [Figures 2 and 3].

Postoperatively, the incidence of wound infection and that of erectile dysfunction was 44.44% (8/18). The incidence of postoperative fever and chordee was 16.67% (3/18) and 11.11% (2/18), respectively. The average hospital stay was 5.11 ± 1.68 days. Sixty-six percent (12/18) cases had prolonged hospital admission (>4 days). The results of univariate analysis done to identify the parameters significantly associated with a time delay of >24 h from presentation have been noted in Table 2.

DISCUSSION

Penile fracture has been most commonly associated with vigorous sexual activity in the Western literature.^[4,6]

Table 1: Showing the intraoperative findings

	Number of patients	Percentage
Site of injury		
Proximal	15	83.33%
Distal	3	
Location of tear/Laterality		
5'clock	13	72.22%
7'clock	5	
Associated urethral injury		
Yes	1	5.55%
No	17	
Length of the tear		
0.5cms	5	
1.0cms	9	50%
1.5cms	3	
2.0cms	1	

Table 2: Showing univariate analysis to identify the parameters associated with time delay of more than 24hours

Post-operative parameters	Time delay <24hours	Time delay ≥24hours	P
Wound infection	2	8	0.002
Post-operative fever	0	3	0.231
Delay in discharge	2	10	0.006
Erectile dysfunction	0	8	0.002
Chordee	0	2	0.315

P value < 0.05 considered significant

However, an article by Zargooshi from Middle East reported forceful bending of the penis, thereby highlighting the cultural variation.^[7] Our study reports coitus to be the most common cause followed by masturbation and one patient gave a history of accidental rolling over the penis in sleep.

Most common reported examination finding among patients with penile fracture include penile edema with or without eggplant deformity.^[4,5,8] Majority of our patients also had a similar presentation. However, a major difference noted in our study includes the fact that only 22.22% (4/18) patients reported awareness for a click sound at the time of insult. In a study by El-Assmy *et al.*, 81% patients presented within 24 h, whereas in our study, only 38.88% (7/18) patients present within a day. Both these clinical findings may highlight sheer lack of knowledge of the consequences of penile fracture or embarrassment in seeking medical attention. Furthermore, the significant discrepancy in time delay from insult between the two studies can also be explained by the fact that about 50% of the patients in our study were referred from a rural hospital.

Cavernosography was commonly used in the past to preoperatively diagnose penile fracture.^[9] Being noninvasive, CDU has overseeded cavernosography. Sensitivity of CDU has improved over a period of years, and it has helped to identify the site of injury and hematoma, if present.^[10] As a protocol, our clinical diagnosis was always confirmed on CDU. Although the site of injury had time 100%

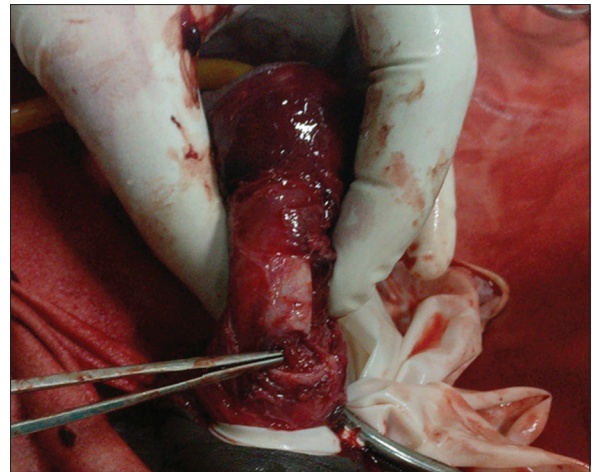


Figure 1: Penile fracture with breach in the tunica albuginea at 7 0 clock position

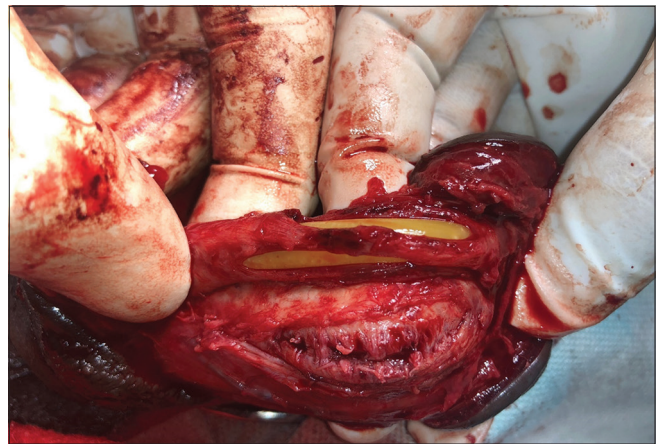


Figure 2: Longitudinal penile fracture with urethral injury



Figure 3: Post operative image of penile fracture with urethral injuring following first stage Johansson's repair

correlation to intraoperative findings, CDU had missed an urethral injury in a patient. As the average time delay in our study was 23.61 h, all the patients had hematoma diagnosed on ultrasound at presentation.

Fractures of the penis occur during erection following marked thinning of tunica albuginea from a resting thickness of 2 mm down to 0.25–0.5 mm combined with marked increase in intracavernous pressure.^[5] The tunica albuginea lacks longitudinal layer at 5 and 7 o'clock positions and thus is extremely thin and has been mentioned to be the most common site for penile fracture. In our study as well, irrespective of the mechanism, 72.22% (13/18) of the patients had sustained a tear at 5 o'clock followed by the next most common at 7 o'clock position. Furthermore, 83.33% (15/18) patients had proximal penile tear which was also the most common site mentioned in the previous literature.^[4,5,11] The average length of the tear in the tunica albuginea noted was 1.00 cm, with the largest tear documented being 2 cm. Although the site of tear has been extensively described in previous literature, the length of the tear has been highlighted in only one study by Ateyah *et al.* which has a mean tear of length 2 cm.^[11] Length of the tear could correlate with the postoperative outcome including erectile dysfunction and chordee. However, due to a small sample size of this study, we were unable to ascertain an association between length of tear and postoperative outcome.

Urethral injury could be associated in about 10%–33% of penile fractures.^[12] The incidence of urethral injury varied from 0% to 3% in reports from Iran, Persian Gulf countries, and Japan to 20%–38% in reports from European countries.^[12,13] Only one patient in our study had urethral injury. Variations in the incidence over the globe could be linked to the severity of impact at the time of injury.

Surgical repair was first advocated by Fetter and Gartman in 1936.^[14] However, it has been popularized over the past three decades as increasing number of surgeons realized that complication of both early and delayed significantly reduced.^[3,11] As a protocol, all our patients underwent surgical repair.

The parameters that have significantly been altered by a time delay of >24 h include postoperative wound infection, erectile dysfunction at 6 months, and postoperative hospital stay. Although the occurrence of chordee at 6 months did not significantly correlate with time delay, both patients who eventually had chordee presented beyond 24 h. A study by Asgari *et al.* mentioned an association between delayed repair and chordee.^[15]

The importance of time in the management of trauma has been mentioned in the literature for over three decades.^[16] Penile fracture is nothing but a result of sexual trauma,

and this understanding explains why a delay of >24 h leads to a significantly higher number of complications. In our study, the average time delay is more and so probably the percentage of complications is significantly higher compared to other studies. This further supports our hypothesis that time delay correlates with complications. A study by El-Assamy *et al.* assessed factors responsible for postoperative erectile dysfunction among patients of penile fracture and did not find correlation between time delay of 24 h at presentation and erectile dysfunction.^[5] However, a few recent articles have recommended the need for early intervention within 24 h, but none have objectively proven it.^[17,18]

As mentioned previously, times have already changed from a conservative management for penile fracture to surgical management. This study helps to take a step ahead and advocates the need for timely surgical intervention. As the number of patients enrolled in this study remains to be a major drawback of this study, nonetheless, it certainly helps a clinician highlight the adverse outcomes of time delay and gives a topic to the researchers to conduct a multi-institutional prospective study evaluating the importance of time in fracture penis. Another drawback of this study is the time delay which is an approximate estimate from the patients' history and hence may not be accurate.

CONCLUSION

Penile fracture, although a rare urologic emergency, has a significant impact on the overall outlook and sexual health of a young man. An early and prompt intervention would definitely help the fracture penis lead an almost normal sexual life. As the average age of injury remains 28 years, a delay in intervention would mean a significant loss in years of sexual ability. Therefore, the awareness and importance of seeking early treatment should be explained to the primary care givers and to the younger population in the community as well.

Acknowledgments

The authors would like to thank Dr. Anita Patel for highlighting few important points in the manuscript and drawing important conclusions as well. The authors are highly grateful to Dr. Ajay Kanbur to provide important insight into the methodology and helping in the final editing of the article.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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