

# Penile Fracture: Presentation and Management

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## ABSTRACT

**Objective:** To evaluate the clinical presentation, therapeutic options and outcome of the treatment of penile fracture.

**Study Design:** Case series.

**Place and Duration of Study:** The Department of Urology and Transplantation, Civil Hospital Quetta, between March 1995 and March 2009.

**Methodology:** One hundred and thirty seven patients of penile fracture were admitted. Detailed history was taken. Physical examination was done in order to get the extent of penile hematoma, sign of blood at the meatus and side of curvature. Patients with rupture of the superficial and deep dorsal vein of the penis were excluded from the study. The operative plan consisted of immediate exploration, debridement and primary repair of the tear in tunica albuginea and urethra via a degloving incision. Data analysis was performed to obtain descriptive statistics.

**Results:** The mean age was 25 years (ranging from 14-50 years). Causes of fractures were manipulation in 56 (40.87%) cases, sexual maneuver in 39 (28.46%) cases, rolling or fall on bed in 18 (13.13%) and direct blow on erect penis in 11 (8.02%) patients. Injury involved unilateral corpora cavernosa in 126 (89.78%) and bilateral corpora cavernosa plus urethra in 11 (8.02%) respectively. The interval from time of injury to presentation was 4 hours to 45 days. All the patients presented with the typical clinical picture of a characteristic sound at the time of injury, pain, detumescence, and hematoma. In all the patients the tunical and urethral injuries were promptly repaired. Complication occurred in 7 (5.10%) patients. The mean hospital stay was 2 days. Eighty nine (64.96%) patients available for follow-up reported achieving adequate erection for intercourse without erectile or voiding dysfunction.

**Conclusion:** Common clinical presentation were snapping or popping sound, sudden penile pain, detumescence and penile deviation. The aim of surgical repair was to avoid complications and preserve both sexual and voiding functions which was satisfactorily achieved in the majority.

**Key words:** *Penis. Fracture. Tunica albuginea. Corpora cavernosa. Trauma.*

## INTRODUCTION

Penile fracture is defined as traumatic rupture of the tunica albuginea of one or both corpora cavernosa of an erect penis. There may be an associated injury to the corpus spongiosum or urethra. Urethral injury usually occurs when both the corpora cavernosa are fractured.<sup>1,2</sup>

The most common causes are blunt trauma during sexual intercourse, secondary to rolling in bed, masturbation, unconscious nocturnal penile manipulation or fall on to erect penis.<sup>3</sup> In flaccid state injury to the penis is rare because of the thick tunica albuginea (about 2 mm), but during erection it becomes as thin as 0.5-0.25 mm, becoming more susceptible to fracture or tearing.<sup>4</sup>

Patients usually describe hearing of crackling, popping or snapping sound followed by sudden detumescence with minimal or severe sharp pain. On examination, swelling, hematoma, ecchymosis and penile deformity are present.<sup>2</sup>

Diagnosis of penile fracture is usually made on the basis of history and physical examination. However, in some

cases ultrasound, MRI or diagnostic cavernosography is obtained.<sup>5,6</sup> Retrograde urethrogram is employed when concomitant urethral injury is suspected. Previously, there was some controversy about the treatment of penile fracture and early reports advocated conservative management. But now a days majority of reviews advocate immediate surgical exploration with primary closure of the tunica albuginea.<sup>4,7</sup>

The aim of this study was to evaluate the clinical presentation, therapeutic optioned and outcome of the treatment of penile fracture.

## METHODOLOGY

This study was conducted at the Department of Urology and Transplantation, Civil Hospital, Quetta, between March 1995 to March 2009.

Cases of penile fracture were admitted in the urology unit via emergency or out patients departments. Detailed history was taken and the time between fracture time and presentation at admission was documented for each case. Patient's age, marital status, cause of fracture and time of injury were documented. Physical examination was done in order to determine the extent of penile hematoma, signs of blood at the external meatus and side of curvature. Radiological investigations such as retrograde urethrogram were done when there was suspected urethral injury i.e.,

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hematuria or blood at the meatus. Corporal cavernosography was done only in 2 cases in whom the diagnosis of corporal tear was not obvious.

During operation Foley's catheter was inserted in all the cases to prevent inadvertent urethral injury during exploration. A distal circumferential subcoronal incision was made and followed by degloving of the penis upto base, taking care not to injure the dorsal neurovascular bundle. The hematoma with in the Buck's fascia was evacuated and the corporal tear was identified. The edges of the tunical laceration were freshened, washed with heparin and closed with interrupted 3/0 vicryl sutures. The sutures were inverted, so the knots will not be palpable. Gittes test i.e., intracorporal saline injection and simulated erection was also done to localize a non-apparent or incompletely repaired tunical laceration or curvature at the lesion side.<sup>8</sup> In urethral injury the mucosa was closed with 4/0 chromic sutures. The penile shaft skin was closed with 3/0 chromic sutures in an interrupted fashion, and pressure dressings were applied. Foley's catheter was removed after 24 hours, but in urethral injury cases catheter was retained for 2 weeks.

Patients were discharged on the second postoperative day with oral antibiotics and analgesics. Compressive dressings were applied for one week and the patients were advised to abstain from sexual relation for 8 weeks. Follow-up was done regularly in outpatients department for 6 months.

### RESULTS

Between March 1995 to March 2009, 137 patients of penile fracture were admitted. The age ranged from 14-50 years (mean 25 years). The causes of penile fracture are shown in Table I, and the clinical features are shown in Table II. Urethral bleeding and blood present at the external urethral meatus, was present in 11 (8.02%) patients. Majority of the patients came to seek medical care during the very first few hours after the injury. However, 19 (13.86%) patients presented late, they were treated conservatively by general physicians. In 85 (62.04%) of the fractures, cavernosal ruptures were on the right side and 41 (29.92%) were on the left side, while in 11 (8.021%) patients, the tunica albuginea of the both corpora cavernosa were ruptured. The site was the proximal shaft in 98 (71.53%) mid shaft in 32 (23.35%) and distal shaft in 7 (5.10%). The tunical tear was transverse in 83 (60.59%) patients, longitudinal in 29 (21.16%), oblique in 21 (15.32%) and irregular in 4 (2.89%) patients.

The delay time between the incident and surgery ranged from 6 hours to 45 days. The whole procedure of repair was completed in 30-45 (mean 20) minutes. Seven (5.10%) patients developed a slight penile curvature, but that did not affect their sexual activity. Four patients with

**Table I:** Causes of penile fracture.

Causes	Number of patients	Percentage
Manipulation	56	40.87
Sexual intercourse	39	28.46
Fall/rollover on erect penis	18	13.13
Direct blow on erect penis	11	8.02
Bumping into furniture in the dark	06	4.37
Hastily removing cloths during erection	04	2.91
Hastily applying clothing during erection	03	2.18

**Table II:** Clinical features.

Signs and symptoms	Number of patients	Percentage
Pop or crackling sound	137	100
Local pain	137	100
Immediate detumescence	137	100
Hematoma and swelling/ecchymosis	137	100
Palpable tunical defect	131	95.62
Deviation towards opposite site	118	86.13
Discoloration	58	42.33
Swelling within the		
Scrotum	29	21.16
Perineum	11	8.02
Suprapubic region	09	6.56

urethral injury on follow-up complained of difficulty in micturation. The urethrogram revealed strictures at the anastomosis site. So internal urethrotomy was done in all these cases and still they are on regular urethral dilatation. Hospital stay ranged from 2-3 days. The follow-up period ranged from 1-6 months. Eighty nine (64.96%) patients available for follow-up reported achieving an adequate erection for intercourse without erectile or voiding dysfunction.



**Figure 1:** Ecchymosis of penis, scrotum and suprapubic region.

### DISCUSSION

Penile fracture is a urologic emergency having physiologic and psychologic consequences. Sporadic or low reporting gives the impression of this, being a rare trauma and the reason for this may be that not every urologist reports their clinical experience of condition. The under reporting may be due to the embarrassing

nature of the injury and the circumstances in which injury usually occurs.<sup>9</sup>

The reported range of the age in different studies is 26 to 41 years and most of their patients were in their 4th decade.<sup>1,3,10</sup> In this series, the patients were also young and age range was 14-50 years (mean 25 years). Majority i.e, 59 (43.06%) patients of them were in the third decade of life, which is the decade of maximum sexual activity.<sup>4</sup>

In this series, the main cause of fracture was manipulation of the erect penis, and sexual intercourse and rolling on bed. It is unanimously agreed that in Western hemisphere, the most common cause (accounting for 30-50% cases) is intercourse, and in Middle Eastern countries the common cause is physical manipulation of the penis to remove erection.<sup>7,10,12</sup> This is because of social norms and strict religious ethos prevalent in Middle Eastern countries.

In a typical penile fracture, the normal external appearance is completely obliterated because of significant penile deformity, swelling and ecchymosis (the so called "egg plant deformity")<sup>7,12</sup> was present in all of these cases.

Physical examination of the penis can often detect the side of the corporal tear by palpating the overlying hematoma. The "rolling sign" is used to describe a firm, immobile hematoma, which is palpable as the penile skin is rolled over.<sup>7</sup>

The fracture was mostly unilateral involving the right corpora in 85 (62.04%) which is as also stated by others.<sup>9,14,15</sup> Involvement of the left corpus cavernosum was in 41 (29.92%) patients and bilateral involvement of the corpora cavernosa, the corpus spongiosum and urethra in 11 (8.02%).

The incidence of urethral injury associated with penile fracture is reported as 11-22% in Europe and USA, and 2-3% in Asia and Middle East.<sup>16,17</sup> In this study, urethral rupture along with penile fracture was seen in those 11 (8.02%) cases that had bilateral corpora cavernosa rupture. In all those cases, retrograde urethrogram showed complete or partial urethral tear and on exploration it was seen that ventral aspect of the both corpus spongiosum and urethral mucosal tear had involved the mid shaft level.

Until 1970s many author's recommended conservative treatment for management of penile fracture, but it has been abandoned due to high complication rate of 29-53%.<sup>7,10,18</sup>

Recent studies and the recommendations of WHO have demonstrated the clear advantage of early surgical exploration,<sup>19</sup> as majority of the penile fracture patients are young, sexually active and highly motivated to resume sexual activity as soon as the healing process is complete. The goals of immediate surgical repair are the

relief of painful symptoms, prevent erectile dysfunction, allow normal voiding and minimize complications from delay in diagnosis. Immediate re-approximation of the torn tissue leads to sooner healing process. Surgery also reduces the complication rate upto 10%.<sup>20</sup>

In this study, all the cases were dealt surgically and the aim of the surgical repair of penile fracture was the evacuation of the hematoma, identification of the tunical injury, local corpora debridement and closure of the tunical laceration.

The type and location of incision is operator dependant in treating penile fracture. Some surgeons suggest of longitudinal incision over the area of suspected fracture. Para penile incision exposing the shaft or even inguino scrotal incision.<sup>7,14,21</sup> They argue that the most commonly used degloving incision is associated with neurovascular injury and necrosis. In this study, degloving incision was used in all the cases and none of these complications were seen. The degloving incision is the most cosmetic incision, offers better exposure of both corpora cavernosa, corpora spongiosum, facilitates diagnosis, repair of co-existing urethral and contralateral injuries. A study stated that, the intraoperative injection of methylene blue into the corpora, reveals the urethral injury and there by reduces unnecessary tissue dissection and operative time and as well as simplifies the repair.<sup>22</sup>

The orientation of the tear in the tunica albuginea is most often transverse in direction, although longitudinal tears have also been described.<sup>23</sup> In this series, 83 (60.59%) transversed rupture lines, 29 (21.16%) were longitudinal, 21 (15.32%) were oblique and 4 (2.98%) were irregular. The locations are usually ventral and lateral and mostly, proximal corpora is the source of rupture, but it can occur anywhere.

Perioperative use of urethral catheterization, is also operator dependant, some advocating its routine use, while others prohibiting its insertion. In this series, urethral catheter was inserted perioperatively in all the cases. The catheter helps intraoperative dissection without harming the urethra, facilitates the application of a pressure dressing and prevents wound contamination postoperatively.

Closure of the tunical laceration is performed with running or interrupted absorbable sutures. Synthetic absorbable inverted knot suture were used in these cases for the repair of the fractured site, non-absorbable sutures may cause painful palpable suture knots and should be avoided.<sup>15,23,24</sup>

There is no consensus on the use of drugs for the suppression of postoperative penile erection, some studies have used penile erection suppressive drugs such as Diazepam or Stilboestrol and some report that, its use is unnecessary.<sup>3</sup> In this series, anti-erectile drugs

were not used, the painful stimuli are sufficient to prevent spontaneous erections in the first few days and the recurrence of rupture seems unlikely.

Long-term follow-up of 2 years was obtained in 89 (64.96%) cases. All the patients stated achieving normal painless erections. Six patients developed a slight penile curvature, but it did not affect their sexual activities. This was present in patients who had presented late. The delay is probably due to social attitude and embarrassment of the patient at being seen with this condition. Four patients with urethral injury complained of difficulty in micturation. The urethrograms revealed strictures at the site of the urethral anastomosis. So internal urethrotomy was done in all these cases and still they are on regular urethral dilatation.

### CONCLUSION

Common clinical presentations were snapping or popping sound, sudden penile pain, detumescence and penile deviation. The aim of early surgical repair was to avoid complications and preserve both sexual and voiding functions and it was achieved.

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