



## Penile Fracture with or without Urethral Injury and its Follow-up

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### Abstract

**Introduction:** Penile fracture is a urological emergency and delay in management can result in erectile dysfunction and pain during intercourse. Penile fracture has been reported to be associated with urethral injury in 1% to 38% case.

**Materials and Methods:** A prospective analysis was conducted from January 2013 to June 2015, a total of 16 cases of penile fracture were included. Out of these 16 cases, four were associated with partial urethral injury and two with complete urethral disruption. All patients underwent surgical exploration without any delay under all aseptic precautions and no preoperative radiological imaging was done.

**Results:** Mean age of 16 patients was  $34.40 \pm 6.39$  years while mean interval time from injury was  $26.52 \pm 13.12$  hr. Mean operating time was  $59.50 \pm 17.23$  min. At 12 months of follow up 5 patients had penile pain during erection, 2 had mild curvature not interfering with intercourse and 4 patients had mild erectile dysfunction. Voiding function was found satisfactory in all the patients till last follow up.

**Conclusion:** Penile fracture is a urological emergency. Clinical examination is the best way to diagnose the entity. Immediate exploration and repair without delay can preserve sexual and voiding function.

**Keywords:** Penile fracture; Urethral injury; Erectile dysfunction

### Introduction

Penile fracture is a urological emergency and delay in management can result in erectile dysfunction and pain during intercourse. Many causes of penile fracture have been described in literature including sexual intercourse, self-mutilation, rolling over bed during REM (Rapid Eye Movement) sleep and trauma in erect penis. Main mechanism of all these modes of injury is blunt trauma of erect penis [1]. Typical presentation of penile fracture is pop off or snapping sound followed by rapid penile detumescence. Urethra involvement is uncommon and reported to be associated in 1% to 38% cases [2]. Though partial urethral injuries are more common, complete urethral disruption is a rare association [3]. Associated urethral injury is suspected when patients complain of hematuria, blood at meatus or acute urinary retention. Although there are various literature showing their results of penile fracture, but most of them are retrospective in nature. We have tried to analyse the results in prospective manner covering both voiding as well as sexual aspect of injury.

### Materials and Methods

After taking proper ethical clearance, this prospective study was done. From January 2013 to June 2015, a total of 16 cases of penile fracture were managed and followed up. Considering an emergency, all patients underwent surgical exploration without delay. Preoperatively 14 patients were catheterised, while 2 underwent suprapubic catheter placement after failed urethral attempt. In 10 patients of penile fracture without urethral injury, voiding trial was given at 48 hour, while in 6 patients who had urethral injury; peri-catheter retro grade urethrogram was performed to see any extravasation of contrast. All patients were followed up regularly at 3 months, 6 months, 12 months and 6 monthly thereafter with clinical history, local examination, uroflowmetry (in case of urethral injury). To know the erectile function, IIEF-5 (International Index of Erectile Function-5 items) scoring was done every 3 monthly for 1 year and 6 monthly thereafter. For statistical analysis SPSS 16.0 software was used.

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**Table 1:** Demographic variable.

Variables	Patients (n=16)
Mean age (years)	34.4 ± 6.39
Mean interval time (hours)	26.52 ± 13.12
Mechanism of trauma	
Sexual intercourse	10
Penile manipulation	5
Rolling over bed	1
Clinical presentation	
Penile Swelling	16
Local Pain	14
Pop off	11
Detumescence	9
Blood at meatus/hematuria	6
AUR	2

**Table 2:** Perioperative results.

Variables	No. of patients (n=16)
Mean operation time (min)	59.50 ± 17.23
Mean hospital stay (days)	2.73 ± 1.21
Site of disruption	
Proximal shaft	12
Mid shaft	4
Side of disruption	
Right side	9
Left side	5
Completely shattered Corpora	2
Urethral injury	6
Partial urethral injury	4
Complete urethral injury	2

## Surgical Technique

Penis was de-gloved with sub coronal circumferential incision. At first, hematoma was evacuated. Site of fracture was identified. Tunica/corpora defects were repaired after refreshing margins followed by urethral repair. Both defects were repaired with interrupted 4-0 polygalactin absorbable suture. In case of complete urethral disruption, end to end tension free anastomotic urethroplasty was performed using 4-0 polygalactin absorbable suture after achieving healthy proximal and distal margin and 14 Fr catheters was placed with suprapubic catheter remained in situ if present. In the post-operative period, instruction of regular antibiotics and diazepam 5 mg was given to avoid painful erection as well as disruption of anastomosis.

## Results

Mean age of all the patients were 34.4 ± 6.39 years (range 26-47 years). Mean interval time from injury was 26.52 ± 13.12 hours (range 8-46 hours). Mean operating time was 59.50 ± 17.23 min (range 30 min to 90 min). In 12 cases, tunica defects were found at proximal shaft while 4 had defects at mid shaft of penis (9 on the right side, 5 on the left side and rest 2 had have completely shattered corpora). Of 16 cases those who had fracture penis, 4 were associated with partial urethral injury and 2 had complete urethral disruption. These two patients, who had complete shattered corpora, also had complete urethral disruption. Post-operative period was uneventful. Mean length of hospital stay was 2.73 ± 1.21 days (range 1-5 days). These were patients who underwent pericatheteral retrograde urethrogram after 2 weeks. No extravasation was found in any of the patient and catheter was removed at 2 weeks. All the patients have followed up minimum of 12 months (Tables 1-3).

## Follow-up

All patients were followed up at regular interval. At 3 months

**Table 3:** Complications.

Variables	No. of patients
Pain during erection	5
Mild Penile curvature	2
Mild erectile dysfunction	4
Voiding dysfunction	0

of follow up mean flow rate was 26.6 ± 8.32 ml/sec. Similarly at 6 months and 12 months, mean flow rate was 24.90 ± 6.02 ml/sec and 25.30 ± 5.73 ml/sec respectively. Mean IIEF-5 score at 3 month was 17.30 ± 1.94 which improved to 19.80 ± 1.68 at 6 months and 20.80 ± 1.75 at last follow up respectively. At last follow up 4 patients had penile pain during erection, 2 had mild ventral curvature not interfering with intercourse. Initially 6 patients had induration over local site but at 12 months follow up all patients had normal clinical examination with no evidence of induration or plaque. Voiding function was found satisfactory in all the patients. 2 patients, who had complete urethral disruption and underwent end to end tension free anastomotic urethroplasty, was voiding well. Regarding IIEF-5 score, four patients had mild erectile dysfunction (IIEF score 17-21).

## Discussion

Penile fracture is not a commonly reported entity and its true incidence is unknown due to shame and embarrassment associated with it. Etiology of penile fracture is multifactorial, sexual intercourse has been a main cause but in certain middle east country "taghandaan" i.e. self-inflicted trauma on erect penis is a major cause of penile fracture [1]. Taghandaan causes low pressure trauma and sexual intercourse generates high pressure. During sexual intercourse erect penis slips out of vagina and accidentally hit the perineum causing injury. Tunica is a strong layer and literature has suggested that more than 1500 mm Hg pressure is required to cause rupture [4]. Anatomically in flaccid state thickness of tunica albuginea at ventral aspect of penis is 2.4 mm which decrease to 0.25 mm to 0.5 mm in erect state making it more prone for rupture [5]. Usually involvement of corpora cavernosa in penile fracture is unilateral but in 2% to 10% cases it is bilateral [6]. Concomitant urethral injury in penile fracture is reported to be present in 1% to 38% cases [2,3]. But complete urethral disruption associated with penile fracture is a rare entity. In our series, 4 patients (25%) had partial urethral injury while 2 patients (12.5 %) had complete urethral disruption. Associated urethral injury should be suspected if there is blood at meatus or complains of hematuria or acute urinary retention. Diagnosis of penile fracture is based on history and physical examination [7]. For diagnosing penile fracture with or without urethral injury imaging studies is not well supported by literature due to less sensitivity and time consuming factor but it may be useful in delayed and atypical presentations [8]. Clinical examination seems to be the best way to diagnose this entity. In the present study, none of the case underwent imaging study for the diagnosis. Earlier studies have shown conservative management as one of the option but recent literatures have opposed this view due to high complication rate [9]. Timing of presentation is very crucial as according to El-taher et al. and Muentener et al. immediate surgical reconstruction results in faster recovery, decrease morbidity, lower complication and lower incidence of long term penile curvature [10,11]. Though Asgari et al has reported better long term outcome achieved if exploration has been done within 8 hrs of penile trauma, erectile dysfunction has been reported to occur up to 50% of cases [12,13]. In this study none

of our patients had complains of complete erectile dysfunction till last follow up. This may be because most of our patients had early presentation (mean interval time was  $26.52 \pm 13.12$  hrs). There were four (25%) patients who had mild erectile dysfunction (IIEF-5 score 17-21). These patients had delayed presentation (more than 24 hrs to 36 hrs after the event). As the number of patients is small, this study cannot conclude that this was the only cause of post-operative erectile dysfunction but literature have supported that delayed presentations have poorer outcomes. Sub coronal circumferential incision was used for penile de gloving. Although few studies have used non absorbable proline suture to repair corpora, in this study polygalactin 4-0 was used to repair tunica/corpora as well as urethra. Catheter remained in the postoperative period in all patients which was removed later on accordingly. There are only few series which showed the long term follow up in terms of both voiding as well as erectile function and most of these are retrospective case series. In this study patients were included prospectively and both voiding and erectile function have been evaluated. All patients completed 12 months of follow up. 4 patients had pain during erection and only 2 patients were found to have mild penile curvature, while none of our patient showed major sexual or voiding dysfunction.

### Limitation

Limitation of this study was small number of patients and short follow up. One year is a sufficient time for the assessment considering encouraging outcomes, but these patients need to be followed up for longer time.

### Conclusion

Penile fracture is a urological emergency. Clinical examination is the best way to diagnose the entity. Immediate exploration and repair without delay can preserve sexual and voiding function.

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