



**ORIGINAL RESEARCH PAPER**

**Surgery**

**CLINICO-IMAGING PROFILE AND OPERATIVE OUTCOME OF PATIENTS WITH PENILE FRACTURE : A SINGLE CENTRE STUDY**

**KEY WORDS:** corpus cavernosum, fractured penis, tunica albuginea

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**ABSTRACT**

Penile fracture is defined as tear or rupture of tunica albuginea of corpus cavernosum in erect condition. This is an uncommon surgical emergency. Most of the injuries occurred by forceful manipulation during masturbation. We studied 14 such cases prospectively during a period of seven and half years, focussing primarily on diagnosis and outcome of prompt surgical management.

**INTRODUCTION**

Penile fracture is an urological emergency that can be faced by an emergency surgeon. It is an uncommon but probably the under-reported urological emergency that may have devastating physical, functional and psychological consequences (1). Early surgical repair provides the best long term outlook. In the past the diagnosis of this condition was usually clinical, based on high clinical suspicion and proper history taking. However, novel imaging techniques like ultrasonography (USG) can be useful to confirm the diagnosis and localise the tear (2). The protocol for managing penile fracture has evolved from a conservative approach to the current standard of care involving immediate surgical exploration (3,4,5). The timing of repair from the time of injury has never been well defined, although most series indicate that the repair is needed as soon as the patient presents; but unfortunately due to social and personal scenario surrounding the occurrence of these events some men may delay seeking medical help immediately(6). Unsatisfactory penile curvature and erections, urethral strictures, and urethral cutaneous fistulae are among the complications that have been associated with the delayed treatment of penile fractures(4,7).

We have evaluated our institutional experiences in terms of diagnosis and surgical treatment with 14 patients of penile fracture.

**OBJECTIVE**

To know following aspects in cases of penile fracture

- 1) etiology (as elicited from history)
- 2) clinical features
- 3) diagnosis and operative findings
- 4) outcome of surgical repair
- 5) post operative complications

**MATERIAL**

- **STUDY AREA:** Surgery department of a rural medical college in South Bengal.
- **STUDY POPULATION:** all patients admitted in the surgical department with the diagnosis of penile fracture irrespective of age, socio economic status and duration of complaints.
- **STUDY PERIOD:** 7 years 6 months ( February 2008 to August 2015).
- **SAMPLE DESIGN:** Sample was selected from admitted patients who fulfilled the inclusion criteria and gave a voluntary consent to participate in the study
- **INCLUSION CRITERIA:** All patients diagnosed preoperatively and confirmed at operation of penile fracture in surgery department

**EXCLUSION CRITERIA:**

- All patient who only had rupture of dorsal vein of penis.
- All patients who had total amputation of penis.
- All patients who did not voluntarily give the consent to participate in the study
- All patients who are unwilling for surgical treatment.
- **STUDY DESIGN:** This was a prospective observational study.

**PARAMETERSTO BE STUDIED:--**

- History of the patient including the mode of injury.
- Duration from onset to surgery.
- Clinical findings.
- Investigation- ultrasonographic findings
- Surgical findings and procedure adopted.
- Duration of stay.
- Complications if any.
- Periodic follow up to note the ability to gain normal erection after 1 year of surgery .

**STUDYTECHNIQUE:**

Study was conducted among the study population after taking written informed consent. After counselling, relevant information was collected using a predesigned proforma which was filled in every case by the operating surgeon and by the researcher in the post operative period.

**METHODS**

This study took place at general surgery department of our medical college hospital where initial resuscitation, investigations and treatment were carried out.

All the patients had intravenous fluid replacement, correction of derranged electrolytes, and prophylactic broad-spectrum antibiotic treatment. The diagnosis of the penile fracture was done by emergency surgeon on the clinical grounds and based on USG findings which demonstrated corporal tear and related hematoma. All the patients underwent surgical exploration on emergency basis. In all patients a single attempt at catheterization was done at the operative table just before exploration. The catheter helps the surgeon in identifying the urethra. The access to the corpora cavernosa was achieved through sub coronal degloving incision. The site and extent of lacerations involving corpora were noted. Hematoma at the laceration site was thoroughly washed. Any urethral injury noted and repaired with 3/0 polygalactin. Corpora cavernosa was repaired with interrupted 3/0 polygalactin suture. Care was taken to achieve water-tight corporal repair. Any corporal leak and penile erection were checked by intra-operative corporal saline injection. After meticulous haemostasis, wound was closed leaving a subcutaneous drain. Diazepam was advised to prevent

postoperative spontaneous erection. Strict instruction was given regarding abstinence from sexual activity for minimum 8 weeks. Any penile deformity or erectile problem was noted on subsequent follow up.

**RESULTS**

A total of 14 patients who presented with penile fracture at surgical emergency during the said period were included in this study.

The average age of the patients was 28 years with a range from 19 to 45 years. The duration of presentation ranged from 3 hours to 4 days from the time of trauma. Ten out of 14 cases (71.4%) presented within 8 hours of the incident.

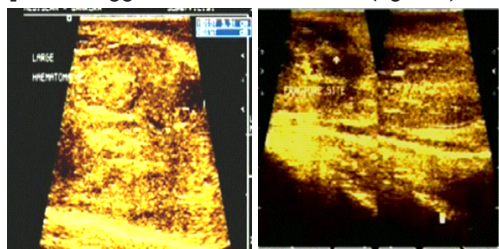
The most common cause elicited on history was found to be due to forceful masturbation (50%). Other causes in order of decreasing frequency were sex with woman on top (n=4), manipulation in erected state (n=2), accidental traumatic rolling over on the erect penis while sleeping (n=1). The most common symptom was a snap feeling (71.4%). The other symptoms were pain, instant detumescence, and bleeding per urethra. The characteristic cucumber shaped swelling of the involved penis was noted in all the 14 patients (figure-1)



**Figure 1: Characteristic appearance of penile fracture.**

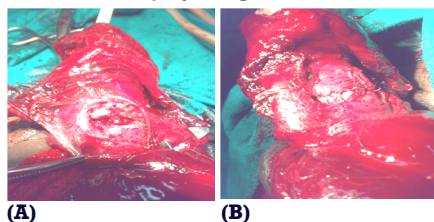
The rolled up feeling on palpation of the penis was found in about 36% cases. In case of urethral injuries blood were found at the external urethral meatus.

USG revealed superficial hematoma and detected a gap in deep fascia suggestive of cavernosal tear (figure 2).



**Figure 2: USG showing a large penile hematoma superficial to deep penile fascia (A) and detects a gap in buck's fascia [white arrow] suggestive of cavernosal tear (B).**

Out of all 14 patients operated upon, lesion were mostly found on left side (8 cases) (figure 3). One patient presented with bilateral cavernosal injury with partial urethral tear.



**Figure 3: Operative photograph of cavernosal tear (yellow arrow) (A) before and (B) after repair.**

In all cases exploration was done by sub-coronal circumferential degloving technique. Following identification and evacuation of hematoma, water-tight repair of cavernosa was done with interrupted 3/0 polygalactin sutures.

Post operative recovery was uneventful in all the cases. The most common post operative complication was nodular feeling in five cases and wrong curvature in one case. In the follow up for 1 year no recurrence occurred.

**DISCUSSION**

Penile fracture is one of the rare emergency situations encountered by an emergency surgeon. It is defined as a rupture of the corpus cavernosum due to a blunt trauma in an erect penis. Lesions on a flaccid penis or lesions in the suspensor ligament of the penis are not included in this definition (1). The rupture of tunica albuginea occurs due to its marked thinning from a resting thickness of 2 mm to 0.25-0.5 mm on erection together with the associated marked short-term pressure increases (intra-cavernosal pressures exceeding 450 mm Hg), which approach or exceed the tunica tensile strength during acute abrupt loading or bending of the erect penis(2). The classical pathological injury to the erect penis is usually a transverse tunical rupture of one corporal body, but the involvement of both corpora, corpus spongiosum and urethra can occur(2,3), as found in one of our case.

The mode of injury ranges from manipulation of erect penis to sexual intercourse with woman on top position(4). Actually, the exact history may not be reflected in all cases. This could be explained on the basis of the conservative society and reluctance of the patients to give correct history because of social stigma.

Penile fracture has a quite typical clinical presentation. All cases in this study were diagnosed on the basis of history and the typical physical findings (5, 6). For confirmation and localisation of cavernosal tear ultrasonography was done in all cases.

Patients reported of hearing a snap sound during injury, immediately followed by pain, penile detumescence. Penile swelling, hematoma and deformity followed few hours after (7-9). In the presence of associated urethral injury, happening in in one of our cases (7.1%), urethral bleeding, hematuria and difficulty in voiding was observed (8,10).

Historically, conservative management was considered the treatment of choice for penile fractures. Conservative therapy consisted of cold compresses, pressure dressings, penile splinting, anti-inflammatory medications, fibrinolytics, and suprapubic urinary diversion with delayed repair of urethral injuries (11).

The concept of conservative treatment has fallen into disfavour mainly because of high complication rates (29-53%). Other complications of conservative management include missed urethral injury, penile abscess, nodule formation at the site of rupture, permanent penile curvature, painful erection, painful coitus, erectile dysfunction, corpora-urethral fistula, arteriovenous fistula, and fibrotic plaque formation. (11)

The current mode of treatment is early surgical primary repair to achieve maximum benefits with shortest time of hospital stay. In a recent report the success rate was 92% for immediate surgical repair (100% in our series) and 59% for conservative management. (12)

Though narayan singh et al suggested to approach the site of

repair directly we followed the classical sub coronal incision and did not find the incision to be cumbersome or causing more complications. (13)

#### REFERENCES

1. Muentener M, Suter S, Hauri D, Sulser T. Long-term experience with surgical and conservative treatment of penile fracture. *J Urol.* 2004;172:576-579. [PubMed]
2. Koga S, Saito Y, Arakaki Y, Nakamura N, Matsuoka M, Saita H, et al. Sonography in fracture of the penis. *Br J Urol.* 1993;72:228-229. [PubMed]
3. Zargooshi J. Penile fracture in Kermanshah, Iran: report of 172 cases. *J Urol.* 2000;164:364-366. [PubMed]
4. Eke N. Fracture of the penis. *Br J Surg.* 2002;89:555-565. [PubMed]
5. Jack GS, Garraway I, Reznichak R, Rajfer J. Current treatment options for penile fractures. *Rev Urol.* 2004;6:114-120. [PubMed]
6. Cummings M, Parra RO, Boullier JA. Delayed repair of penile fracture. *J Trauma* 1998;45:153-4.
7. Mahapatra RK, Ray RP, Mishra S, Pal DK. Urethrocutaneous fistula following fracture penis. *Urol Ann.* 2014;6:392-394. [PubMed.]
8. Mydlo JH, Hayyeri M, Macchia RJ. Uretrography and cavernosography imaging in a small series of penile fractures: a comparison with surgical findings. *Urology* 1998;51:616-9.
9. Ruckle CH, Hadley HR, Lui PD: Fracture of the penis: Diagnosis and management. *Urology* 1992;40:
10. Tsang T, Demby AM: Penile fracture with urethral injury. *J Urol.* 1992;147:466-8.
11. Nale Dj, Nikic P, Vukovic I, Djordjevic D, Vuksanovic A. Surgical or conservative treatment of penile fracture. *Acta Chirugosl.* 2008;55(1):107-14
12. Cole FL, Vogler RW. Fractured penis. *J Am Acad Nurse Pract* 2006;18:45-48
13. Dr V. Naraynsingh, Department of Surgery, University of the West Indies General Hospital, Port-of-Spain, Trinidad, West Indies