

Penile Fractures: Tertiary Center Experience and a Review of the Literature

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ABSTRACT

Objectives: To analyze the clinical presentation, investigations, and outcome of the surgical treatment of penile fractures.

Methods: We present a retrospective study of 18 consecutive cases of penile fracture presented to our institution from March 2008 to August 2011. All patients were completely evaluated and emergency surgical repair was carried out. The outcome of the surgical repair was analyzed.

Results: Trauma during sexual intercourse was the most common cause of penile fracture. Ultrasonography was accurate in localizing tunical defect in 16 cases. Six patients presented 24 hours after injury. Following surgical repair, 2 patients had painful erection and 1 patient had mild chordee. None of the patients had erectile dysfunction.

Conclusion: Ultrasonography is a good adjunct to clinical examination in diagnosing penile fracture. The long-term outcome of surgical repair is good in all groups, including delayed presentation.

INTRODUCTION

Penile fracture is one of the less frequent urological traumas. Fracture of penis occurs as a result of blunt trauma to the erect penis during sexual intercourse or masturbation. When the erect penis bends abnormally, the abrupt increase in intracavernosal pressure exceeds the tensile strength of the tunica albuginea, and a transverse laceration of the proximal shaft usually results [1]. Diagnosis is established via history and clinical examination; however, penile ultrasonography, cavernosography, and magnetic resonance imaging (MRI) have been reported to be helpful in establishing diagnosis and localizing the site of the tear [2-4]. The mainstay in management is prompt exploration and surgical repair. Several studies favor early surgical repair to minimize immediate and long-term complications [5,6].

We report our experience in a tertiary center in regards to presentation, investigation, and the outcome of surgical treatment.

MATERIALS AND METHODS

Our study contains a retrospective analysis of 18 consecutive cases of penile fracture presented to our institution between March 2008 and August 2011. The origin of patients included the local Goan population and tourists from other parts of India and abroad. All patients were clinically assessed for the mode of injury, the time of presentation, history of treatment for erectile dysfunction, penile swelling, and bleeding through the urethra. Ultrasonography was utilized to aid clinical diagnosis. Emergency surgical exploration was carried out in

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all patients. Urethrocystoscopy was done prior to exploration in patients who presented with bleeding through the urethra. Patients were followed up at 1, 3, 6, and 12 months, and yearly thereafter with an emphasis on erectile function and clinical examination.

Surgical Procedure

All patient operations involved degloving of the penis with a circumcoronal incision. Hematoma was evacuated, and defects in the tunica albuginea were identified and sutured with 3-0 polyglactin sutures. In patients with urethral injury, urethral margins were identified, freshened, and sutured with absorbable sutures. A urethral catheter was maintained for 14 days in patients with urethral rupture.

RESULTS

Patient characteristics are shown in Table 1. In our study, vigorous sexual intercourse was the cause of penile fracture in 15 patients. The age of the patients ranged from 18 to 45 years. One patient was receiving an intracavernosal injection of vasoactive agents for erectile dysfunction. Six patients presented 24 hours after injury. Ultrasonography was useful in identifying a defect in the tunica (Figure 1) in 16 patients. One patient who was receiving treatment for erectile dysfunction presented with bleeding through the urethra. Cystoscopy revealed proximal penile urethral rupture. All patients had a unilateral rupture of the corpora cavernosa. A defect in the tunica albuginea ranged from 1 to 1.7 cm. Figure 2 and Figure 3 show the preoperative and intraoperative findings.

The mean duration of hospital stay was 2.5 days. There were no immediate postoperative complications. The duration of follow-up ranged from 2 months to 3 years. One patient was lost in follow-up. Two patients complained of pain with an erection, which subsided over a period of 6 to 8 months. One patient complained of penile curvature, which was confirmed with a sildenafil test. Chordee was mild and did not interfere with his sexual activity. None of the patients had erectile dysfunction except for 1 patient who had a previous history of erectile dysfunction.

DISCUSSION AND REVIEW OF LITERATURE

The tunica albuginea is a bilaminar structure and one of the tougher fascias in body. During an erection, the tunica becomes very thin and vulnerable to rupture [7]. In our study, sexual intercourse was the most common cause, and treatment for erectile dysfunction, such as intracavernosal injection, may

Table 1. Patient characteristics.

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Number of patients	18
Age group	18 to 45 years
Etiology	
Sexual intercourse	15
Masturbation	3
History of treatment for erectile dysfunction	1
Time to presentation	
Less than 8 hours	7
8 to 24 hours	5
More than 24 hours	6
Urethral injury	1

Figure 1. Penile ultrasonography showing a defect in the tunica.

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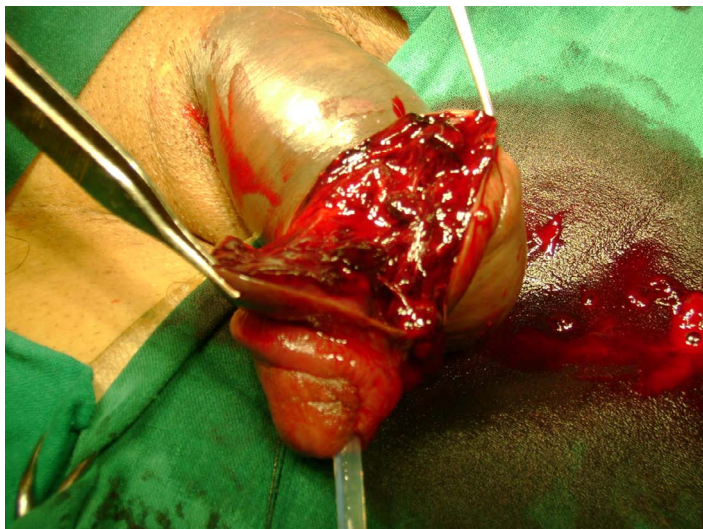
Figure 2. A fractured penis with penile swelling and deformity.

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Figure 3. An intraoperative picture showing hematoma and rupture of the cavernosa.

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predispose one to penile fracture. Typically a fractured penis presents with classic “snap-pop” or rapid detumescence followed by penile swelling, deformity, and ecchymosis. Associated urethral injury, which happens in 10 to 20%, may present with gross hematuria, blood at the meatus, or an inability to void, although the absence of these findings does not definitively rule out urethral injury [8,9].

Although a diagnosis of penile fracture is largely clinical, the spectrum of investigations have been advocated in the literature, including cavernosography, urethrography, angiography, ultrasonography, and magnetic resonance imaging (MRI). Cavernosography is rarely done nowadays because of its false-negative results and its associated complications such as priapism, allergic reaction, and fibrosis of the cavernosa [3,10]. Ultrasonography is the cheapest and most reliable, noninvasive test available; however, sometimes it may be difficult to interpret in the presence of significant hematoma and edema [4]. Nevertheless, some authors advocate USG as an ideal technique for evaluating patients with penile trauma [11,12]. MRI is a noninvasive and highly accurate means of demonstrating disruption of the tunica albuginea [13]. Arguments against the routine use of MRI are the expense, limited availability, and time requirements involved with the study [13]. Our experience suggests that ultrasonography is a good investigation modality with an accuracy of 88.9% in

detecting tunical defects. False fracture and rupture of the dorsal penile artery or vein may mimic a fractured penis in the absence of typical history. A physical examination may not be adequate for a definitive diagnosis of a corporal tear in these circumstances. Surgical exploration or evaluation with MRI should be considered.

There is change in the management of penile fractures over a period of years. It used to be that conservatism was the keyword concerning the care of these cases [14]. Conservative treatment has been advocated in the absence of penile deformity and when the integrity of the tunica is intact, but it is difficult to assess the tunica in an acute penis even with the help of radiological imaging [5]. Conservative management of a penile fracture results in penile curvature in more than 10% of patients, abscess or debilitating plaques in 25 to 30%, and significantly longer hospitalization times and recovery [7,14,15]. Yapanoglu et al. reported an 80% complication rate, including wound infection, painful erection, penile nodule and curvature, and erectile dysfunction in a group of patients that were treated conservatively [16]. Gamal noted only a 4% incidence of erectile dysfunction following surgical repair, whereas 50% of patients had erectile dysfunction and penile deviation following conservative treatment [17]. Since the results of conservative treatment are not satisfactory, multiple contemporary publications indicate that suspected penile

fractures should be promptly explored and surgically repaired [18,19,20].

A distal degloving incision is commonly preferred as it provides access to all 3 compartments of the penis, but it may be complicated by abscesses and skin necrosis [21]. However, other approaches for repair have been described in literature. A direct longitudinal incision over the presumed site of fracture is simple but may be associated with poor cosmetic results [22]. Inguinoscrotal incision has been used for proximal fractures. It does not give access for urethral repair, and it is associated with an ugly scar and penile angulation if there is wound infection [23]. A high scrotal midline raphe incision provides desired cosmesis and avoids excessive dissection [24]. A commonly absorbable suture is used for the closure of tunical defects, but some authors have used nylon as the suture of choice for penile fracture repair [6]. A comparison between absorbable and nonabsorbable sutures showed a highly significant tendency for scar formation with nonabsorbable sutures in 1 study [18]. We have operated on all patients using a distal circumcising incision with access to the cavernosa and spongiosa. Deep corporal vascular ligation or excessive debridement of the delicate underlying erectile tissue must be avoided. Partial urethral injuries should be sewn with fine absorbable sutures over a urethral catheter. Complete urethral injuries should be debrided, mobilized, and repaired in a tension-free fashion over a catheter. Broad-spectrum antibiotics and 1 month of sexual abstinence are recommended.

Immediate surgical reconstruction results in a faster recovery, decreased morbidity, lower complication rates, and a lower incidence of long-term penile curvature [7,14,25]. The influence of surgical timing on long-term outcomes is controversial. Some studies suggest that those undergoing repair within 8 hours of injury had significantly better long-term results than those having surgery delayed 36 hours after the fracture occurred [26]. A study by Zagrooshi [6,20], which is one of the largest on penile fractures, concludes that there is no relationship between timing and the development of complications. Naraynsingh et al. [27] found that conservative treatment for 7 to 12 days in 3 cases of penile fracture allowed edema to subside from the penile shaft. This facilitated a simple, direct repair without the need for degloving dissection. After 18 months of follow-up, this technique had no complications. Nasser and Mostafa reported successful outcomes with the delayed approach in 24 patients who followed up for 6 months [28]. None of their patients had erectile dysfunction or fibrosis plaque. However, only a few studies have compared the timing of presentation with surgical repair outcomes. In 1 study, 180 patients were categorized according to timing of presentation into group I (n

= 149) with an early presentation of < 24 hours and group II (n = 31) with a delayed presentation of > 24 hours. The duration of follow-up ranged from 3 to 272 months. After such long-term follow-up, 35 (19.4%) patients had complications. However, there was no statistically significant difference between both groups regarding late complications [29]. Kozacioglu evaluated 43 patients sorted into 3 groups according to the time interval until surgery. The mean follow-up was 46.1 ± 19.2 months. The mean number of hours from trauma to surgery was 11.3 ± 8.5 . There was no statistically significant difference between the 3 groups in terms of age and length of tears. The results of the IIEF questionnaires of each group for time periods and for individual patients in each separate group were statistically similar [30].

Surgical repair has a positive functional outcome and low complication rates in the long term. In our study, 6 patients presented after 24 hours of injury, and all of them had good outcomes after surgical repair, except 1 patient with mild chordee during an erection.

Complications like penile curvature, a nodule over the penis, pain during intercourse, painful erections, and erectile dysfunction can occur after penile fracture repair. Complications vary in different studies. Zagrooshi [6] reported an overall complication rate of 4.7%. Ibrahiem et al. [18] reported painful erections in 1.3%, penile deviation in 3.2%, both in 0.7%, erectile dysfunction in 7.8%, and palpable scarring in 10% of patients in a cohort of 155 patients. In a study of 300 patients with a mean follow-up time of 7 years, 14 patients presented with mild curvature, which had not hindered intercourse in 10 patients. Penile pain during intercourse developed in 4 patients (1.3%) and during an erection in 6 patients (2%). Erectile dysfunction was observed in 2 cases (0.6%) [19]. In our series, 2 patients had pain during an erection while 1 patient had mild chordee; none of the patients had erectile dysfunction.

CONCLUSION

Penile fractures appear to be under-reported by patients and physicians. This condition can be accurately diagnosed by clinical examination with the help of ultrasonography. Timely surgical treatment is required to prevent morbidity. Long-term results of surgical repair appear to be good, even in patients with delayed repair.

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