

FRACTURE OF THE PENIS: A CRITIQUE OF CLINICAL FEATURES AND MANAGEMENT

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Fracture of the penis is defined as a rupture of the tunica albuginea of the corpus cavernosum. The usual cause is abrupt bending of the erect penis by blunt trauma. This excludes penetrating trauma¹ and injury of the flaccid penis.² Erection converts the flaccid penis into a vulnerable rigid organ in which the usually thick tunica albuginea becomes very thin and prone to fracture.³ Angulation or compression of the erect penis shaft will result in an increase in the intracavernous pressure to levels that might exceed the tunical tensile strength and results in its rupture.⁴ This harmful angulation usually occurs during coitus,⁵ masturbation or nocturnal unconscious manipulation.⁶ Pathologically, the lesion consists of a tear in the tunica albuginea. Bleeding will result in the formation of a hematoma, and distortion and discoloration of the penis.¹ There may be an associated injury to the corpus spongiosum or urethra.⁷ The extravasation of blood, urine or both may extend to the scrotum, the perineum and the inguinal region,^{6,8} if Buck's fascia is torn. The patient may recall hearing a cracking sound followed by detumescence of the erect penis, and at times intense local pain. Hematoma, bruising and deformity of the penis then follow. There may be urethral bleeding indicating associated urethral injury.^{1,7,9} A palpable tunical defect and a hematoma with a "rolling sign" are usually pathognomonic features.¹⁰ Cavernosography,^{11,12} ultragraphy,¹³ or even magnetic resonance^{14,15} have been used to help in the diagnosis. Urethrography is recommended in suspected urethral injury.^{9,16}

Fracture of the penis has been considered a rare trauma^{3,17} or an underreported one,¹⁸ yet many recent reports have included series of considerable numbers.¹⁹ Details of the proper treatment method remain unsettled. Early reports recommended conservative management,^{20,21} but recent reviews advocate surgical repair as the treatment

choice.²² There is also still a controversy over the preoperative investigation and postoperative care of patients with this injury. We present our experience in the management of 12 incidents of penile fracture seen in our hospital over the last eight years.

Patients and Methods

We looked retrospectively into our department's emergency admission records over the period March 1987 to March 1995. All patients who were admitted with a diagnosis of fracture of the penis were identified and their records retrieved. Patient characteristics were documented, including age, nationality and marital status. The details of the clinical picture, including the activity culminating in the accident and detailed progress of symptoms until arrival at the emergency room, were noted. Findings on physical examination, investigation, results and details of management were also recorded. A standard operative management technique was adopted with all these patients: a circumferential subcoronal incision was made followed by degloving of the penis to its base. The hematoma was evacuated and the tunical tear was identified. The tear was repaired with 3/0 vicryl, while the skin was closed with 3/0 catgut. In the single case with a urethral injury, the mucosa was closed primarily with interrupted 4/0 catgut and the spongiosa with interrupted 3/0 vicryl. No drains were used, but a pressure dressing was applied after insertion of a Foley's urethral catheter in all the patients. Antibiotics were routinely given postoperatively, as well as diazepam to suppress penile erection. Finally, length of postoperative hospital stay, onset of any postoperative complications, and progress of patients on follow-up in the out-patient were recorded.

Results

During the study period, 12 incidents of fracture penis involving 11 patients were recorded at our hospital. One patient had this unfortunate accident twice in five years. One patient had a suspected fracture of the penis diagnosed, but cavernosography proved an intact tunica

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albuginea and therefore, this patient was not included in the series. The etiology of the fracture was related to coital activity in six cases, but the other six denied such activity. Table 1 presents the patients' characteristics and clinical picture. The mean age of the patients was 36 years (range 19 to 56 years). Urethral bleeding and blood at the meatus were recorded in three cases, although on urethrography only one of them proved to have a urethral injury in the mid-penile urethra. Subsequently at exploration it was found that the tunical tear had extended to involve the ventral aspect of both the corpus spongiosum and the urethral mucosa in the mid-penile shaft region.

Surgery was performed on the 12 occasions, using the standard method detailed earlier. The time between the occurrence of the fracture and presentation varied between 2 to 72 hours (an average of 19 hours), and the mean delay time between injury and operation was 26 hours (range 6 to 76 hours). Table 2 details the anatomical sites of the various tunical tears.

Patients were discharged from hospital on removal of the urethral catheter and spontaneous voiding. Follow-up continued until restoration of normal penile function without complaint. It comprised routine physical examination and inquiry for penile deformity and potency. The follow-up period was limited in most patients, and ranged from 1 to 4 months (average 2.3 months). However, two patients had second admissions, one for the treatment of a urethral stricture, and the other for a second insult causing penile fracture. Those two patients were the only patients who had a long follow-up (two and five years respectively).

The hospitalization period of the patients who underwent surgery varied from two to five days (average 3.3 days). There were no immediate postoperative complications and only one patient had a wound infection which healed by secondary intention, leaving a cutaneous scar at the incision site. During the early follow-up period, all the patients had painful erection, as would be expected. There was minimal penile deviation in seven patients. However, potency was not affected and neither the painful erection nor the penile deviation continued to bother patients. All patients regained normal erection with full sexual activity within one to four months (average 2.3 months).

The only patient with urethral injury in the series continued to complain of progressive difficulty on urination. A second urethrogram revealed a stricture urethra that was treated by visual internal urethrotomy two years after penile fracture. On the second presentation, neither penile deformity nor potency problems were detected. Another patient was admitted after five years with a recurrent fracture of the penis, with a torn tunica on the opposite corpus cavernosum. There was mild penile curvature as a sequel of the first corporal rupture, but there

TABLE 1. *Patient criteria and clinical picture.*

Patient criteria	No. of cases
Age (years)	
<20	1
20-50	9*
>50	2
Marital status	
Married	9**
Married unaccompanied by his wife	1
Single	2
Clinical picture	
Cracking sound	12
Localized pain	2
Immediate detumescence	7
Hematoma and swelling	12
Palpable tunical defect	12

*One patient sustained the injury twice, at ages 40 and 45; **the same patient was married on both occasions.

TABLE 2. *Operative findings.*

Findings	No. of cases
Tunical tear	
Laterality	
Right corpus	9
Left corpus	3*
Site	
Proximal	9
Mid-shaft	2
Distal	1
Associated urethral injury	1

*One patient had a previous right corpus rupture.

was no problem with potency.

Discussion

The age of patients with penile fracture discussed in the literature ranges from 26 to 41 years.^{1,6,23-25} The mean age in this series, 36 years, falls within this range. In seven of our 12 patients (57%), the fracture incidents were related to sexual intercourse, which is similar to the 58% reported by Nicolaison et al.²⁴ from the West, but varies greatly with the 9.5% reported by El-Sherif et al.⁶ from a neighboring Gulf state. One patient had a fracture twice in five years, and to the best of our knowledge no such recurrent fracture has been reported before.

All 12 cases were diagnosed clinically and diagnosis was confirmed upon exploration. On one occasion the diagnosis was in doubt and cavernosography was performed, only to show an intact tunica albuginea penis. However, it has been reported that some patients with the classical symptoms and signs of penile fracture may not have a tear on cavernosography,²⁶ and that "the gap" in the tunica considered to be pathognomonic of fracture may not be easily felt.¹ Hence, some authors advocate routine cavernosography,^{11,12,27} while others discourage its use

unless the diagnosis is in doubt.^{6,28} Our own experience would support the latter view. Ultrasonography has also been suggested as a noninvasive alternative,¹³ but we have no experience with it.

The incidence of urethral injuries associated with fracture of the penis ranged from 20% to 38% of the cases. In the current series, one urethral injury was documented (8%). El-Sherif et al.⁶ attributed the similarly low incidence in their series to the high incidence of non-coital fractures, whereas Tan et al.²⁵ reported a similarly low incidence despite a high percentage of coital fractures in their series. It is therefore not clear what predisposes to urethral injuries in association with fractured penis. We suspected urethral injury in three cases, but only one was confirmed at urethrography. This supports the view that urethrography should only be done for suspected urethral injury,^{6,8,24} and not for all cases of penile fracture.^{1,30}

All our patients were managed by early operative intervention. The "conservative management" advocated by some workers in the past^{17,21,31} has now been abandoned by most surgeons because of its high complication rate, reaching 25% to 53%.^{23,32} Some authors⁶ advocate the use of a direct incision for basal tears, while subcoronal circumferential incisions have been used for distal tears. Others⁷ recommend the use of direct incisions for recent trauma and subcoronal for cases with large hematomas. In the present series, all the patients had subcoronal circumferential incisions with degloving of the penis. In view of the fact that the diagnosis was based on clinical findings, as well as the diversity of localization of the tear, we felt that it was preferable to expose the corpora cavernosa and repair any gaps in the albuginea which might be wider or more irregular than suggested by physical examination before surgery. Also, all of our patients had a previous circumcision scar and we felt that it was more cosmetic to perform the incision at the site of the scar. Although non-absorbable suture is recommended in the repair of tunical tears,³³ many surgeons have reported the use of absorbable sutures.^{1,6,7,25} In the current study, vicryl was used in all cases without significant sequelae. We feel that it is the preference of a urological surgeon (as opposed to a vascular surgeon) that dictates the selection of absorbable sutures.

The insertion of a urethral catheter perioperatively is still controversial, with some advocating its routine use,^{1,8,23,24,30} and others prohibiting such insertion.^{6,9,34} In the current study, a urethral catheter was inserted preoperatively after exclusion of any associated urethral injury, and postoperatively in all patients. The catheter helped the intraoperative dissection without harming the urethra, facilitated the application of a pressure dressing and prevented wound contamination postoperatively. There was no harmful effect as a result of such insertion.

There is also a lack of consensus on the need for postoperative suppression of penile erection with diazepam or estrogen, routinely used in some studies,^{23,30} but declared to be unnecessary in other reports.^{6,25} In the current series, the use of diazepam helped in the prevention of early erections that might have had harmful effects, and helped to allay patient's anxiety which may occur with such trauma.

Conclusion

We conclude that fracture of the penis is an injury that is easily diagnosable by a proper history and physical examination. If there is doubt, the diagnosis should be confirmed by cavernosography. A urethrogram should be performed on patients with suspected urethral injury. Since this injury is not common, it is difficult to get large enough numbers in a single center to allow for randomization of patients to compare different aspects of treatment, but the currently adopted policy of early surgical repair of the tunical defect seems to give excellent results in the short term.

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