

## Surgical Management of the Fractured Penis: 10 Years of Experience

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### ABSTRACT

**INTRODUCTION:** The erect penis is very vulnerable to blunt trauma, which is mostly sustained during sexual intercourse or through vigorous manipulations during masturbation or other violent sexual activities. These actions may lead to a fracture of the penis. The purpose of this retrospective study is to review the effect of early surgical exploration and repair of penile fractures and to report the overall healing of these injuries and the patient's ability to regain erectile function.

**METHODS:** A total of 20 patients presented with a fractured penis between October 1999 and November 2009. Their mean age was 27 years (range, 16-48 years). All were managed with surgical repair within 24 hours of the injury by the same surgeon (HA). Postoperative follow-up occurred monthly up to 6 months. The outcome measures were: (1) patient satisfaction with the cosmetic results, and (2) patient satisfaction with erectile function, as determined by the International Index of Erectile Function (IIEF). Complications during the follow-up period were summarized.

**RESULTS:** All 20 patients had successful wound healing, although 4 patients who were HIV-positive developed superficial wound infections that were treated by antibiotics. All patients reported normal psychogenic response, nocturnal erection, and full sexual activity at 3 months after surgery. The mean IIEF score was 23.5 out of a total 25 points (range, 22-25).

**CONCLUSION:** A fractured penis is a urological emergency that is best treated with immediate surgical exploration and repair of the tunica albuginea and any associated injuries. Surgical repair minimizes the incidence of erectile dysfunction.

**KEYWORDS:** Fractured penis; Urethral injury; Erectile dysfunction; Surgical management.

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### Abbreviations and Acronyms

HIV, human immunodeficiency virus  
IIEF, International Index of Erectile Function

### INTRODUCTION

Penile fracture is defined as primary rupture of the tunica albuginea of the penile corpora cavernosum that occurs during penile erection. The rupture can extend to the corpus spongiosum of the urethra [1]. This condition excludes penetrating trauma and degloving or amputation injury to the flaccid penis.

Penile fracture is a rare urological emergency. The first report was made by Abdul Kasem (an Arab physician in Cordoba) over 1000 years ago [2]. The incidence of penile fractures is underreported because many patients do not seek medical attention due to embarrassment over the clinical situation [3,4].

Previously, penile fractures were treated with ice-packs and antiinflammatory medication [5]. The immediate surgical repair of penile fractures was first described by Fernstrom in 1957 [6]. Currently, immediate surgical repair is the treatment of choice [4] because it gives excellent long-term results [7].

Because of the rarity of this condition, studies involve small numbers of patients and additional data are needed. Treatment procedures often depend on the surgeon's individual preference, apart from specific guidelines. In the present retrospective study, we present the outcome of 10 years of experience with immediate surgical repair of the penile fracture. The purpose of this retrospective study is to review the effect of early surgical exploration and repair of penile fractures and to report the overall healing of these injuries and the patient's ability to regain erectile function.

## METHODS

Data for this retrospective investigation were obtained from the surgical records of Mpilo Central Hospital between October 1999 and November 2009.

### *Participants*

A total of 20 patients with a mean age of 27 years (range, 16 to 48 years) had a fractured penis. Of the 20 patients, 18 patients gave a clear history of blunt trauma: 6 during vigorous masturbation and 12 during sexual intercourse (5 with the women in superior positions, 6 from a forcible thrust that missed the introits, 1 during rear-entry vaginal intercourse). The remaining 2 patients denied intercourse, stating that the fracture was discovered when the patient awakened with penile swelling and discoloration.

When asked about symptoms, 10 patients stated that they heard a cracking sound and 6 heard a snapping sound. Blood tests revealed that 14 patients were human immunodeficiency virus (HIV) negative and 6 patients were HIV-positive. Retrograde urethrography was done if urethral injury was suspected.

### *Surgical Procedures*

All patients received preoperative parenteral antibiotics and analgesia. Repair took place within 24 hours of the injury by the same surgeon (HA).

A vertical midline incision was created on the penile raphe. The superficial layer and Buck's fascia were incised and the hematoma was drained. Laceration of the tunica albuginea was identified and sutured with 2/0 polyglactin (Ethicon Inc, Somerville, NJ, USA) continuous sutures. In case of associated urethral injury, urethral reconstruction was done and a 2-way Foley catheter

was left in situ for 2-3 weeks. Possible leakage was tested by creating an artificial erection with intracavernosal injection of normal saline. The fasciae and skin were then sutured with 3/0 polyglactin absorbable sutures. Finally, a compressive bandage was applied to the penis. Postoperative antibiotics were given for 5 days.

Patients and their partners (when available) were counselled prior to discharge. Diagrams were used to explain the mechanism of erection, the cause of the injury, and the management procedure. Patients were assured that they could have a normal sexual life after complete recovery. They were asked to abstain for intercourse for 10-14 days; patients with urethral injury were asked to abstain for up to 6 weeks.

Patients were discharged 2-3 days after surgery, except for those with urethral injury. These patients were hospitalized until the catheter was removed.

### *Data Analysis*

The intraoperative results were summarized. Patients returned for follow-up examination 2 weeks after discharge and monthly for up to 6 months. The outcome measures from this follow-up examination were: (1) patient satisfaction with the cosmetic results, and (2) satisfaction with erectile function, as determined by the International Index of Erectile Function (IIEF) [8]. Complications during the follow-up period were summarized.

## RESULTS

Out of the total 20 patients, 4 patients had associated urethral injury with disruption of the corpus cavernosum; 7 patients had a tear in the tunica albuginea only; 9 patients had disruption of the corpus cavernosum (4 were bilateral, associated with urethral injury; 5 were unilateral). All tears were on the distal 2/3 of the penile shaft. A total of 4 patients who were HIV-positive developed superficial wound infections. These healed well with antibiotics and daily wound dressing.

All patients reported normal psychogenic outcomes. All attained nocturnal erections and had full sexual activity at 3 months. The mean IIEF score was 23.5 out of a total 25 points (range, 22-25).

## DISCUSSION

Injuries to the flaccid penis are uncommon due to its protected location and relative mobility. However, in the tumescent state the corpora cavernosa becomes engorged with blood and the tunica albuginea thins from 2 mm to 0.25-0.5 mm [9]. These events can make the penis vulnerable to trauma.

The diagnosis of penile fracture is based on the patient's history and clinical findings [4,7]. Patients frequently report a sudden cracking or snapping noise with concomitant detumescence, penile swelling, and *eggplant* deformity; angulations of the penis toward the contralateral side from the lesion are also common [10]. If the hematoma is contained within Buck's fascia, there may be a *rolling sign* (a palpable clot felt directly over the tear in the tunica albuginea) that can determine the site of injury [7]. If Buck's fascia is disrupted, blood will extravasate into the subcutaneous plane of the scrotum, perineum, or pubic area, which results in significant swelling [11].

Associated urethral injuries have been reported in 0-3% of cases in Japan and the Middle East and up to 20%-38% of cases in the USA and Europe [12]. This discrepancy is most likely due to differing mechanisms of injury. Sexual intercourse is the usual etiology in the USA and Europe; forceful bending of the erect penis to achieve detumescence is the usual cause in the Middle East and Japan [7]. Other causes include masturbation, falling out of bed, or placing the erect penis in underwear [4].

In our study, 4 out of 20 patients (20%) had an associated urethral injury. Most authors advocate a retrograde urethrogram to exclude urethral injury if patients present with blood at the external meatus, gross hematuria, or urinary retention. However, false-negative results can occur due to an overlying blood clot, small tunical tear with an intact mucosa, or inadequate amount of contrast medium injected during the study [11]. It was suggested that penile ultrasound, magnetic resonance imaging, or cavernosography can reliably locate the rupture of the tunica albuginea [7,13-15]. However, the positive predictive value of these studies is similar to that of a clinical examination [16]. In the present study, we did not use any of these imaging methods because of their high cost, general unavailability, and limited value in diagnosis. However, these imaging methods might be useful in the differential diagnosis of penile fractures. This includes isolated urethral rupture, penile suspensory ligament rupture, penile lymphangitis, or penile vascular lesions such as rupture of the superficial dorsal vein of the penis, the deep dorsal vein, the dorsal artery [16].

Until the 1980's, treatment of the fractured penis was highly controversial. Many conservative treatments have been employed, but they were associated with significant complications such as delayed chordee, formation of fibrous plaque, organized hematoma, severe angulations, and impotence. Hospital stay is also longer for conservative treatment when compared with surgical treatment.

More recently, there has been a move toward early surgical

repair. Several techniques for the surgical repair of penile fractures have been proposed: penile degloving [7,14], longitudinal incision over the hematoma [17], inguinoscrotal incision [18], high scrotal midline incision on the raphe [19], and suprapubic incision [20]. In the present study, we adopted a midline ventral incision on the penile shaft. This access has the advantages of easy exploration of the base of the corpora cavernosa (where most penile fractures statistically occur) and direct access to the penile urethra for cases of urethral rupture. The authors of a recent study on early management of the fractured penis reached similar conclusions [21].

Postoperative counselling and patient reassurance provide support for fast recovery of normal sexual activities. In this study, all patients were counselled prior to discharge. All reported normal sexual activity within 3 months after surgery.

## CONCLUSION

A fractured penis is a urological emergency that can easily be diagnosed by clinical examination without additional imaging tests. A fractured penis is best treated with immediate surgical exploration and repair of the tunica albuginea and any associated injuries. Surgical management minimizes hospitalization time, promotes healing, and reduces the incidence of erectile dysfunction. Postoperative counselling and psychological support lead to early return to full sexual activity.

**Conflict of Interest:** none declared.

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