

Current Treatment Options for Penile Fractures

Gregory S. Jack, MD, Isla Garraway, MD, PhD, Richard Reznicek, MD,
Jacob Rajfer, MD

Division of Urology, Department of Surgery, Harbor-UCLA Medical Center, Los Angeles, CA

The diagnosis of “penile fracture” describes the traumatic rupture of the tunica albuginea of an erect penis. Penile fractures typically occur when the engorged penile corpora are forced to buckle and literally “pop” under the pressure of a blunt sexual trauma. Patients typically describe immediate detumescence, severe pain, and swelling as a result of the injury. Prompt surgical exploration and corporal repair is the most efficacious therapy. Although a majority of cases can be diagnosed from the history and physical examination alone, radiographic studies, including retrograde urethrography and corporal cavernosography can aid in the diagnosis of unusual cases.
[Rev Urol. 2004;6(3):114-120]

© 2004 MedReviews, LLC

Key words: Penile fracture • Corpora rupture • Cavernosography • Urethrography • Trauma

Penile fracture typically occurs when the engorged penile corpora are forced to buckle and literally “pop” under the pressure of a blunt sexual trauma. Here, we present a sample case, review the current literature, and discuss the diagnostic and surgical dilemmas posed by this relatively common trauma.

Incidence and Pathophysiology

The diagnosis of “penile fracture” specifically refers to a rupture of the corpus cavernosum induced by blunt trauma to the erect penis. Although similar cavernosal lacerations to the flaccid penis have been reported as the result of gunshot traumas and sporting injuries, it is accepted that injuries to the flaccid penis should not be regarded as “fractures,” owing to the different nature of the injury.^{1,2} Anatomically, the flaccid penis lacks

onto an erect penis.³ A majority of the cases in Mediterranean countries are the result of patients kneading and snapping their penis during erection to achieve detumescence.⁴ In Iran, only 8% of the cases were attributed to sexual intercourse; the remaining cases were due to self-manipulation and potentially fabricated events, such as a donkey bite to the erect penis, a man falling from a mountain onto his erect penis, and a brick falling onto an erect penis.⁵

ination, and there was no blood at the meatus. The penile shaft lacked a palpable defect, rolling sign, or hematoma, but the scrotum was markedly ecchymotic and tender. His urinalysis was normal, without evidence of microscopic hematuria. Ultrasound of the testicles was normal. A retrograde urethrogram did not demonstrate any urethral injury. On the basis of his clinical presentation, the patient was taken to the operating room urgently for exploration and repair of an acute penile fracture.

The firmly engorged corpora under the strain of buckling can generate pressures in excess of 1500 mm Hg and exceed the limit of the thinned tunica.

a fulcrum for snapping and contains relatively thick tunica albuginea, protecting it from internal rupture under strain. In contrast, the tunica of the erect penis thins to approximately 0.25 mm on expansion, and the firmly engorged corpora under the strain of buckling can generate pressures in excess of 1500 mm Hg and exceed the limit of the thinned tunica.³

The first case of a penile fracture was described in the literature in 1924.⁴ Although initially regarded as a relatively rare injury, fracture of the penis is an increasingly reported genitourinary trauma. A review by one investigator identified more than 1600 cases in the world literature, with more than half of those cases originating from Muslim countries.⁵ The largest single series to date describes 172 cases over 9 years in a single province of Iran.⁶

In the United States, the majority of cases are the result of traumatic coitus, usually from thrusting an erect penis against the symphysis pubis or perineum.⁷ In Japan, only 19% of cases are attributed to sexual intercourse, with the majority of cases reported as the result of masturbation and rolling over in bed

Other rare reports in the world literature include cases resulting from banging an erect penis against a toilet, masturbating into a cocktail shaker, and placing an erect penis into tight pants.^{7,9,10}

Case Presentation

A 29-year-old, healthy African-American man presented to the emergency room for acute scrotal pain and swelling lasting 12 hours after traumatic intercourse. His injury occurred when his penis

Clinical Presentation

Penile fractures are commonly diagnosed from their stereotypical clinical presentation.¹¹ Patients commonly report hearing a “pop” or cracking sound from the erect penis at the moment of injury.¹² Some patients have likened the sound to the snapping of a corn stalk or glass rod.⁵ Detumescence occurs rapidly, and acute swelling, pain, and penile deformity follow. The pain can vary from minimal to severe and is not proportional to the degree of injury.¹³ Cases that lack the popping sound or in which there is gradual detumescence have a higher rate of false-

Some patients have likened the sound at injury to the snapping of a corn stalk or glass rod.

slipped from the vagina and was forcefully thrust against his partner’s perineum. Upon injury, he heard a “pop” from his penis, and rapidly experienced acute penile pain and detumescence. He rapidly developed swelling of his scrotum and significant pain in his penoscrotal region. Upon presentation to the emergency department, he was voiding well and denied gross hematuria. His penis was symmetrically swollen on exam-

positive diagnosis¹⁴ and might benefit from additional preoperative workup.

The gross appearance of a fractured penis is often summarized as an “eggplant deformity,” which refers to the combination of localized penile swelling, discoloration, and deviation toward the opposite side of the fracture.^{12,13} Manual examination of the penis can often detect the site of the corporal tear by palpation of the overlying hematoma. The “rolling sign”

Table 1
Assessment of Urethral Injuries in the Setting of Penile Fracture

| Series (Reference) | Penile Fractures (n)* | Urethral Injury (n) | Microscopic Hematuria (n) | Positive RUG (n) | Hematuria PPV [†] n (%) | RUG Sensitivity* n (%) |
|--------------------|-----------------------|---------------------|---------------------------|------------------|----------------------------------|------------------------|
| Beysel et al (23) | 21 | 2 | 4 | 2 | 2/4 (50) | 2/2 (100) |
| Mydlo (25) | 29 | 4 | 6 | 2 | 2/6 (33) | 2/4 (50) |
| Mydlo et al (48) | 7 | 3 | 4 | 2 | 2/4 (50) | 2/3 (66) |
| Fergany et al (13) | 8 | 3 | | 3 | | 3/3 (100) |

RUG, retrograde urethrography.

*Number of patients assessed for urethral injury.

[†]Positive predictive value = number (percent) of patients with microscopic hematuria who had a true urethral injury (true positive/predicted positive).

*Sensitivity = number (percent) of patients for whom RUG detected a urethral injury (true positive/predicted positive).

is used to describe a firm, immobile hematoma, which is palpable as the penile skin is rolled over it.¹⁵ Less commonly, penile fractures can present with swelling within the scrotum, suprapubic region, and perineum secondary to the hematoma extravasation outside of Buck's fascia.¹⁶ Voiding symptoms, including dysuria, urinary retention, and gross hematuria are uncommon but warrant investigation because they are indicative of a potential urethral injury. Analysis of the urine should be performed to evaluate for microscopic hematuria, which can be indicative

of a nonapparent urethral injury.

Urethral Injury and Urethrography

Retrograde urethrography is advocated in any case of suspected penile fracture that presents with voiding difficulty, hematuria, or blood at the meatus. The incidence of urethral injury ranges from 0% to 3% in Asia and the Middle East to 20% to 38% in the United States and Europe.^{6,8,13,17,18} Although hematuria, blood at the meatus, and voiding symptoms often signal a urethral injury, the absence of these features does not exclude

the possibility of a urethral injury (Table 1).¹⁹ Evidence of bilateral corporal rupture should also prompt investigation for a potential urethral injury, because bilateral injuries have a higher rate of urethral disruption compared with unilateral fractures.^{13,20} Considering that the urethrogram is quick, inexpensive, and poses little risk, Miller and McAninch¹² recommend that "only in the setting of an unremarkable urinalysis and the complete lack of voiding complaints . . . should one forego urethrography. This should be considered the exception rather than standard practice."

Table 2
Evaluation of Penile Fractures with Cavernosography

| Series (Reference) | Penile Fractures (n)* | Cavernosogram Positive (n) | Sensitivity [†] n (%) | Specificity [‡] n (%) | PPV [§] n (%) |
|----------------------|-----------------------|----------------------------|--------------------------------|--------------------------------|------------------------|
| Mydlo (25) | 15 | 11 | 11/15 (68) | | 11/11 (100) |
| Beysel et al (23) | 27 | 21 | | | 21/21 (100) |
| Karadeniz et al (22) | 21 | 19 | 19/19 (100) | 2/2 (100) | 19/19 (100) |

*Number of patients who underwent cavernosography.

[†]Sensitivity = true positive/true positive + false negative.

[‡]Specificity = true negative/false positive + true negative.

[§]Positive predictive value = true positive/predicted positive.

||Sensitivity and specificity n/a because only patients with a positive cavernosogram were explored surgically.

However, not all authors agree with this statement: Zargooshi²¹ concludes on the basis of his series of 172 patients that routine urethrography is unnecessary.

Role of Cavernosography

Although some authors recommend routine cavernosography on all patients with suspected penile fracture,^{22,23} most reserve it for unusual cases, such as those with delayed presentation²⁴ or discrepancies in clinical findings.¹² Proper technique for cavernosography includes injection of 15 to 70 mL of half- to quarter-strength nonionic contrast dye (we recommend diatrizoate meglumine and diatrizoate sodium) directly into the uninvolved corpora under live fluoroscopy. Injection is continued until both corpora are filled and tumescent changes are observed. Anteroposterior and oblique radiographs should be obtained over several time intervals. Early films are reviewed for filling defects and extravasation at the suspected hematoma site; 10-minute-delayed films should ascertain for delayed extravasation.^{12,23,25} Intraoperative cavernosography can be performed on the operating room table in an identical manner.²⁵ Primary limitations to cavernosography include the time, expertise, and equipment required to perform the study. Other investigators cite the potential for delay in treatment and the potential of false-negative results (Table 2).^{6,16,25} Reported complications of cavernosography include allergic reaction, corporal fibrosis, and priapism.²⁶

Additional Radiographic Modalities

Ultrasonography has been reported as a cheap and noninvasive modality²⁷; however, it is limited by examiner expertise and difficulty in interpretation.²⁸ Theoretically, ultrasound might

be advantageous in the pediatric setting because of its noninvasive nature compared with more invasive cavernosography.¹² Magnetic resonance imaging has been shown to be extremely accurate in diagnosing and localizing corporal injuries, but the modality is severely limited by

Primary limitations to cavernosography include the time, expertise, and equipment required to perform the study; reported complications include allergic reaction, corporal fibrosis, and priapism.

the time and significant expense of the study.²⁸ Angiography is not recommended in the setting of acute penile fracture.⁵

Nonoperative Treatment of Penile Fractures

Ice packs, Foley catheterization, and anti-inflammatory medicines were initially regarded as the standard of care for penile fractures,²⁹ and the condition was associated with a relatively high morbidity rate. Attempts to minimize the long-term complications of penile fractures involved the use of compression bandages, erection-inhibiting estrogens, penis splints, antibiotics, and fibrinolytic agents; however, the long-term complication rates remained approximately 30%

Instead of conservative therapy, current recommendations are for immediate surgical exploration and repair.

or higher despite all of the above.⁷ Commonly reported complications included painful erections, severe penile angulation, arterial-venous fistulas, infected hematomas, abscess formation, and impotence.^{7,30} As a result, instead of conservative therapy, current recommendations are for immediate surgical exploration and repair.

Surgical Repair and Timing of Repair

Surgical repair of penile fractures was popularized in the 1980s after several studies demonstrated that long-term complications were reduced from 30% to 4% in surgically treated patients.^{7,30,31} Thus, the current litera-

ture generally advocates immediate surgical repair upon presentation to the hospital. In the event of a delayed presentation (48 hours after injury), immediate repair is still advocated, although it is associated with increased risk of long-term sequelae.^{8,16,32} In 1 patient, delayed treatment was performed as late as 30 days after the injury.⁸ In another series of 3 patients, investigators reported successful outcomes after intentionally delaying the repair for 7 to 12 days, though this practice is not universally recommended.¹⁵

Surgical Technique

Proper surgical repair of penile fractures requires evacuation of the hematoma, identification of the tuni-

ca injury, local corpora debridement, closure of the tunica lacerations, and ligation of any disrupted vasculature.⁵ The type and location of the incision is operator dependent, although we use and recommend a distal circumferential degloving incision, as advocated by McAninch and others.^{6,12,25} In addition to being the most cosmetic incision, distal deglov-

Table 3
Locations of Corpora Injuries

| Series (Reference) | Penile Fractures (n)* | Distal Corpora n (%) | Mid-Corpora n (%) | Proximal Corpora n (%) | Prominent Side (%) |
|--------------------|-----------------------|----------------------|-------------------|------------------------|--------------------|
| Fergany et al (13) | 8 | 1 (12.5) | 1 (12.5) | 6 (75) | n/a |
| Ishikawa et al (8) | 8 | 0 | 0 | 8 (100) | Right (75) |
| Zargooshi (6) | 91 | n/a (<10) | n/a (<10) | 83 (91.2) | Right (71) |

*Number of patients with documented location.

ing readily allows exposure to the entire tunica bilaterally, facilitating diagnosis and repair of coexisting urethral and contralateral injuries.³³ Some surgeons argue that the degloving is associated with increased neurovascular injury and skin necrosis,^{34,35} and they advocate a less invasive lateral incision directly over the hematoma site.³⁶ Still others prefer the selective use of each incision based on the clinical presentation and severity of injury.^{8,35} Suprapubic, inguinal–scrotal, and perineal incisions have also been reported to have excellent functional and cosmetic results.^{37,38}

Regardless of the incision site, proper dissection must be carried down until the hematoma within Buck’s fascia is exposed and evacuated. The underlying laceration in the tunica albuginea usually runs transverse in direction^{5,39} and lies ventral

and lateral in location.⁵ Most commonly, the proximal corpora is the source of the rupture, but the injury can occur anywhere (Table 3).^{5,8,13} Extremely proximal corporal injuries have also been reported, sometimes necessitating a perineal approach for repair.¹⁶ For an unknown reason, significantly more lesions occur to the

Intracorporeal saline injection and simulated erection, referred to as a Gittes test,⁴⁰ might help localize a nonapparent or incompletely repaired tunica laceration.²⁵ Corporal injection with indigo carmine is a similar alternative, and might be beneficial in the evaluation of an otherwise negative exploration. The decision to

Regardless of the incision site, proper dissection must be carried down until the hematoma within Buck’s fascia is exposed and evacuated.

right corpora,^{5,8} with the right-side incidence as high as 75% (Table 3).

Closure of the tunica laceration is best performed with running or interrupted absorbable sutures¹⁵; however, similar results have been reported with the use of nonabsorbable suture with inverted knots.⁶

place a Foley catheter is operator dependent. McAninch^{7,41} and Mydlo²⁵ routinely catheterized their patients overnight in their series, whereas Zargooshi⁶ advocates use of a urethral catheter only when injuries are close to the urethra. Postoperative antibiotics, compressive bandages,

Table 4
Incidence of Bilateral and Urethral Injuries in Acute Penile Fractures

| Series (Reference) | Penile Fractures (n) | Unilateral Corpora Tear n (%) | Bilateral Corpora Tear n (%) | Urethral Injury n (%) | No Fracture Identified n (%) |
|--------------------|----------------------|-------------------------------|------------------------------|-----------------------|------------------------------|
| Fergany et al (13) | 8 | 5 (63) | 3 (27) | 3 (27) | 0 |
| Beysel et al (23) | 34 | 29 (85) | 3 (9) | 3 (9) | 2 (6) |
| Mydlo (25) | 29 | 26 (90) | 3 (10) | 4 (14) | 0 |
| Zargooshi (6) | 91 | 91 (100) | 0 | 2 (2) | 0 |
| Hinev (32) | 25 | 24 (96) | 1 (4) | 3 (12) | 0 |

Table 5
Complaints After Penile Fracture Repair

| Series (Reference) | Country | Fractures With Long-Term Follow-Up (n) | Most Common Complication, % | Other Common Complication, % |
|------------------------|---------------|--|-----------------------------|------------------------------|
| Karadeniz et al (22) | Turkey | 21 | Curvature, 14 | |
| Mydlo (25) | United States | 31 | Curvature, 6 | Reoperation, 3 |
| Ghanem (11) | Egypt | 27 | Skin necrosis, 11 | |
| Fergany et al (13) | United States | 8 | Sensory loss, 25 | Voiding difficulty, 12 |
| Asgari et al (17) | Iran | 68 | Dysparunia, 9 | |
| Benckekroun et al (49) | France | 50 | Painful erection, 22 | Curvature, 18 |

and erection inhibitors are highly surgeon dependent.

Urethral Injury

Management of urethral injuries is highly variable between series. Treatment options for partial urethral tears include urethral catheterization, primary closure with nonabsorbable suture, or suprapubic cystostomy tube. All possible combinations of the above have also been used. McAninch⁴¹ advocates percutaneous

suprapubic cystostomy for the majority of partial tears. Other investigators report excellent results after primary repair.^{13,42} Partial tears managed strictly with Foley catheterization did equally well.²⁵ Complete urethral injuries can be managed with primary reanastomosis, graft interposition, or stenting over a urethral catheter.⁴³

Mimicking Injuries of the Erect Penis

Despite the stereotypical history and

reliable examination of most penile fractures, negative findings are occasionally encountered at the time of penile fracture exploration.²³ Presumed penile fractures unaccompanied by rapid detumescence or that lack the classic “snap” sound are more likely to have negative explorations.¹⁴ Rupture of the dorsal artery⁴⁴ and veins⁴⁵ are the most common mimics, and they are usually indiscernible from corporal rupture except by cavernosography. Dorsal vein ruptures

Main Points

- The diagnosis of “penile fracture” specifically refers to a rupture of the corpus cavernosum induced by blunt trauma to the erect penis; in the US, the majority of cases are the result of traumatic coitus, usually from thrusting an erect penis against the symphysis pubis or perineum.
- Penile fractures are commonly diagnosed from their stereotypical clinical presentation: a “popping” or cracking sound from the erect penis at the moment of injury, rapidly followed by detumescence and acute swelling, pain, and penile deformity.
- Voiding symptoms are uncommon but warrant investigation because they are indicative of a potential urethral injury; analysis of the urine should be performed to evaluate for microscopic hematuria, which can be indicative of a nonapparent urethral injury.
- Retrograde urethrography is advocated in any case of suspected penile fracture that presents with voiding difficulty, hematuria, or blood at the meatus.
- Current treatment recommendations for penile fractures are for immediate surgical exploration and repair; proper surgical repair requires evacuation of the hematoma, identification of the tunica injury, local corpora debridement, closure of the tunica lacerations, and ligation of any disrupted vasculature.
- Treatment options for partial urethral tears include urethral catheterization, primary closure with nonabsorbable suture, or suprapubic cystostomy tube.
- Reported long-term complaints after penile fracture repair include penile deviation, painful intercourse, painful erection, erectile dysfunction, priapism, skin necrosis, arteriovenous fistula, urethrocarvenous fistula, and urethral stricture.

should be ligated when encountered intraoperatively but can be managed conservatively if diagnosed clinically.^{23,25} Rupture of the suspensory ligament of the penis might present in the emergency room with a similar history of traumatic intercourse, but the injury should be identifiable based on physical presentation of the floppy penis.⁴⁶ Other negative explorations have been attributed to nonspecific bleeding, isolated urethral injury,⁴⁷ and proximal shaft injury inaccessible by the standard incisions.¹⁶

Long-Term Sequelae of Penile Fracture

Although surgery has been shown to reduce the incidence of penile fracture complications, 6% to 25% of patients still experience long-term sequelae after surgery (Table 5). Reported long-term complaints after penile fracture repair include: penile deviation, painful intercourse, painful erection, erectile dysfunction, priapism, skin necrosis, arteriovenous fistula, urethrocutaneous fistula, and urethral stricture.⁵ The incidence of the most common postsurgical complaints in several modern series is listed in Table 5.

Conclusions

The diagnosis of penile fracture is mostly a clinical one. Prompt surgical exploration and repair are advocated in almost all cases. Most commonly, the rupture occurs on the lateral side of the proximal corpora, but it can occur anywhere along the corpora and produce a variety of swelling patterns. Hematuria and voiding symptoms are not specific to a urethral injury. Their presence should prompt the performance of retrograde urethrography. Corporal cavernosography might aid in localizing an unusual injury prior to surgery; however, the procedure is limited by technical requirements and the pos-

sibility of false-negative results. Immediate surgery reduces long-term complications; posttraumatic penile curvature remains the most common long-term complaint. ■

References

1. Jallu A, Wani NA, Rashid PA. Fracture of the penis. *J Urol*. 1980;123:285-286.
2. Godec CJ, Reiser R, Logush AZ. The erect penis-injury prone organ. *J Trauma*. 1988;28:124-126.
3. Schonberger B. Verletzungen der mannlichen Genitalorgane. *Z Urol Nephrol*. 1982;75:879.
4. Malis J. Zur Kausistik der fractura penis. *Arch Klin Chir*. 1924;129:651.
5. Eke N. Fracture of the penis. *Br J Surg*. 2002;89:555-565.
6. Zargooshi J. Penile fracture in Kermanshah, Iran: report of 172 cases. *J Urol*. 2000;164:364-366.
7. Nicoliasen GS, Melamud A, McAninch JW. Rupture of the corpus cavernosum: surgical management. *J Urol*. 1983;130:917-919.
8. Ishikawa T, Fujisawa M, Tamada H, et al. Fracture of the penis: nine cases with evaluation of reported cases in Japan. *Int J Urol*. 2003;10:257-260.
9. Klein FA, Smith V, Miller N. Penile fracture: diagnosis and management. *J Trauma*. 1985;25:1090-1092.
10. Fetter TR, Gartman E. Traumatic rupture of penis. Case report. *Am J Surg*. 1936;32:371.
11. Ghanem AN. Re: penile fractures in Kermanshah. *Br J Urol*. 2002;89:890.
12. Miller S, McAninch JW. Penile fracture and soft tissue injury. In: McAninch JW, ed. *Traumatic and Reconstructive Urology*. Philadelphia: W.B. Saunders; 1996:693-698.
13. Fergany AF, Angermeier KW, Montague DK. Review of Cleveland Clinic experience with penile fracture. *Urology*. 1999;54:352-355.
14. Shah DK, Paul EM, Meyersfield SA. False fracture of the penis. *Urology*. 2003;61:1259.
15. Naraynsingh V, Raju GC. Fracture of the penis. *Br J Surg*. 1985;72:305-306.
16. Pruthi RS, Petrus CD, Nidess R, Venable DD. Penile fracture of the proximal corporeal body. *J Urol*. 2000;164:447-448.
17. Asgari MA, Hosseini SY, Safarinejad MR. Penile fractures: evaluation, therapeutic approaches and long long-term results. *J Urol*. 1996;155:148-149.
18. Cendron M, Whitmore KE, Carpiniello V, et al. Traumatic rupture of the corpus cavernosum: evaluation and management. *J Urol*. 1990;144:987-991.
19. Tsang T, Demby AM. Penile fracture with urethral injury. *J Urol*. 1992;147:466-468.
20. Cumming J, Jenkins J. Fracture of the corpora cavernosa and urethral rupture during sexual intercourse. *Br J Urol*. 1991;67:327.
21. Zargooshi J. Re: Surgeon experience with penile fracture. *J Urol*. 2001;166:528-529.
22. Karademiz T, Topsakal M, Ariman A. Penile fracture: differential diagnosis, management, and outcome. *Br J Urol*. 1996;77:279-281.
23. Beyssel M, Tekin A, Gurdal M. Evaluation and treatment of penile fractures: accuracy of clinical diagnosis and the value of corpus cavernosography. *Urology*. 2002;60:492-496.
24. Porst H. Re: Penile fracture repair: assessment using color Doppler ultrasound. *Int J Impot Res*. 2000;12:128-129.

25. Mydlo JH. Surgeon experience with penile fracture. *J Urol*. 2001;166:526-529.
26. Pliskow RJ, Ohme RK. Corpus cavernosography in acute 'fracture' of the penis. *AJR Am J Roentgenol*. 1979;133:331-332.
27. Koga S, Saito Y, Arakaki N. Sonography in fracture of the penis. *Br J Urol*. 1993;72:228-229.
28. Fedel M, Venz S, Andreessen R. The value of magnetic resonance imaging in the diagnosis of suspected penile fracture. *J Urol*. 1996;155:1924-1927.
29. Thompson RF. Rupture of the penis. *J Urol*. 1954;71:226-229.
30. Wespes E, Libert M, Simon J, Schulman CC. Fracture of the penis: conservative versus surgical treatment. *Eur Urol*. 1987;13:166-168.
31. Seaman EK, Santarosa RP, Walton GR. Immediate repair: key to managing the fractured penis. *Contemp Urol*. 1993;5:13.
32. Hinev A. Fracture of the penis: treatment and complications. *Acta Med Okayama*. 2000;54:211-216.
33. Agrawal SK, Morgan BE, Shafique M. Experience with penile fracture in Saudi Arabia. *Br J Urol*. 1991;67:644-646.
34. Naraynsingh V, Maharaj D, Kuruvilla T, Ramsewak R. Simple repair of fractured penis. *J R Coll Surg Edinb*. 1998;43:97-98.
35. Maharaj D. Re: Penile fractures in Kermanshah, Iran. *J Urol*. 2001;165:1223-1224.
36. Creecy AA, Beazlie FS. Fracture of the penis. Traumatic rupture of the corpora cavernosa. *J Urol*. 1957;78:620-627.
37. Seftel AD, Haas CA, Vafa A, Brown SL. Inguinal scrotal incision for penile fracture. *J Urol*. 1998;159:182-184.
38. Mellinger BC, Douenias R. New surgical approach for operative management of penile fracture and penetrating trauma. *Urology*. 1992;34:429-432.
39. Uygur MC, Gulerkaya B, Altug U. 13 years' experience of penile fracture. *Scand J Urol Nephrol*. 1997;31:265-266.
40. Gittes RF, McLaughlin AP 3rd. Injection technique to induce penile erection. *Urology*. 1974;4:473-474.
41. McAninch JW. Traumatic injuries to the urethra. *J Trauma*. 1981;21:291-297.
42. Orvis BR, McAninch JW. Penile rupture. *Urol Clin North Am*. 1989;16:369-375.
43. Devine CW, Jordan GH, Schlossberg SM. Surgery of the penis and urethra. In: Walsh PC, Retik AB, Stamey TA, Vaughan ED, eds. *Campbell's Urology*, 6th ed. Philadelphia: W.B. Saunders; 1992:2957-3032.
44. Armenakas NA, Hochberg DA, Fracchia JA. Traumatic avulsion of the dorsal penile artery mimicking a penile fracture. *J Urol*. 2001;166:619.
45. Nicely E, Costabile R, Moul J. Rupture of the deep dorsal vein of the penis during sexual intercourse. *J Urol*. 1992;147:150-152.
46. Kropman RF, Venema PL, Pelger RC. Traumatic rupture of the suspensory ligament of the penis. Case report. *Scand J Urol Nephrol*. 1993;27:123-124.
47. Cortellini P, Ferretti S, Larosa M. Traumatic injury of the penis: surgical management. *Scand J Urol Nephrol*. 1996;30:515-519.
48. Mydlo JH, Hayyeri M, Macchia RJ. Urethrography and cavernosography imaging in a small series of penile fractures: a comparison with surgical findings. *Urology*. 1998;51:616-619.
49. Benckekroun A, Lachkar A, Soumana A. Rupture of the corpora cavernosa. *Ann Urol Paris*. 1998;32:315-319.