

# Penile Fracture

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A 46-year-old man came to the emergency department with complaints of pain and swelling of the penis that he had experienced for approximately 1 hour. He had been having intercourse with his wife; he had withdrawn his penis and, upon thrusting, missed the vagina and hit his penis against her pubis. He reported hearing a cracking noise and having immediate detumescence and pain; a large hematoma had formed on the left side of the penis. He said he was able to void after the incident with slight discomfort, but he reported no hematuria.

On examination, a large, purplish hematoma extended along the entire left side of the penis, which deviated away from the involved side. There was no palpable defect in the penile shaft. The glans and scrotum were not involved. Urinalysis was negative for blood. A urologist was consulted. Because a fracture of the corpus cavernosum was suspected, the patient was taken to the operating room, where a large rent in the proximal left corporum cavernosum was repaired with absorbable sutures. He did well postoperatively, and only a small amount of scar tissue was noted at the fracture site. He had no further deviation of the penis and had normal erections.

## Literature Review

Penile fracture can be defined as a rupture of the corpus cavernosum and its surrounding fibrous sheath, the tunica albuginea, that occurs after injury to the erect penis.<sup>1,2</sup> The fracture itself can result either from a direct blow to the penile surface or from bending the organ.<sup>2</sup> If the penis is flaccid at the time of trauma, the injury is usually minor, consisting of subcutaneous ecchymosis.<sup>2</sup> Fractures are usually unilateral, but can be bilateral, and they can involve the corpus spongiosum or the urethra.<sup>3</sup>

## Incidence

Penile fracture is an underreported condition, with the incidence noted to be as low as 1:175,000 admissions.<sup>1,4-6</sup> In a recent review of the Western literature, only 180 cases were reported as of 1988.<sup>3</sup> The low incidence of reporting may result from patients wanting to conceal the true history of the injury, as well as from their failure to seek medical attention because of the nature of the incident.<sup>7</sup> These injuries can become manifest later as chordee, Peyronie disease, and impotence.<sup>1</sup> Penile fractures are reported to have associated urethral injury in 10 to 33 percent of cases.<sup>5,8-11</sup> If patients have gross hematuria, 91 percent will have sustained a urethral injury.<sup>10</sup>

## Etiology

Penile fracture occurs most often during intercourse, the so-called *faux pas de coit* or "coital sexual athleticism"<sup>1</sup> being noted as the cause of injury in 3 to 58 percent of cases.<sup>3-5,9,10,12</sup> Fracture results from striking the erect penis on the pubis or buttocks accidentally during thrusting or as a result of having the partner fall while having intercourse in the standing position.<sup>7</sup> Others have reported trauma to the erect penis from direct injury, rolling over in bed, striking the penis on a toilet seat, bumping into a chair in the night, having the penis caught in clothing, masturbation, kneading an erection away by hand to achieve detumescence, being kicked by a horse, being kicked in a fight (*coup de pied*), being thrown on a saddlehorn, and having the penis closed in a car door.<sup>2,4</sup> Another form of injury, more common in small boys, is the "toilet-seat syndrome," in which the toilet seat falls on the penis while the child is voiding. This accident usually leads only to soft tissue contusion, but it could cause a fracture as well.<sup>13</sup>

## Mechanism of Injury

During an erection, the thickness of the tunica albuginea thins from 2 mm to 0.5–0.25 mm, predisposing the penis to injury, either from bending or direct forces.<sup>14,15</sup> Sudden forces on the dorsal aspect of the penis will often lead to fracture.<sup>16</sup>

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Most penile fractures result in a tear in the tunica albuginea and one of the corpora cavernosa, although the corpus spongiosum and the urethra can be involved as well. The relatively fixed position of the urethra between the urogenital diaphragm and the glans predisposes it to injury, especially when dorsal bending forces are applied compared with ventral bending forces.<sup>1</sup> Prior penile fracture or periurethral infections can cause decreased elasticity and tensile strength, increasing the likelihood of fracture.<sup>1,2,6,17</sup>

### **Presentation**

Patients with penile fractures will usually relay a history of trauma to the erect penis. Often, an audible crack is heard, followed by immediate detumescence, deviation away from the affected side, and pain that can be so intense that the patient collapses.<sup>2,15,18</sup> The more distal the fracture site, the more severe the deformity.<sup>5</sup> Fractures usually occur in the distal two-thirds of the penis and rarely at the root.<sup>15,16</sup> The fracture is usually unilateral and involves less than one-half of the circumference of the corpus cavernosum.<sup>15</sup> A resulting hematoma is usually confined to the penis, but disruption of the Buck fascia can cause the hematoma to dissect along the fascial planes and extend to the scrotum, perineum, and possibly the thighs and abdominal wall.<sup>2,19</sup> Often, a defect can be palpated in the tunica albuginea.<sup>18</sup> The degree of injury is not always obvious, as some patients with rupture of the tunica albuginea do not have pain. Also, not all patients with a hematoma have a tear in the tunica albuginea.<sup>19</sup> When the urethra is involved, the patient will usually have hematuria or blood exuding from the meatus, as well as dysuria or an inability to void.<sup>1,5</sup> Patients can have difficulty voiding not only when the urethra is involved; occasionally, acute urinary retention also occurs with the formation of periurethral hematomas and penile angulation.<sup>19</sup>

### **Diagnosis**

Because a hematoma can develop without a major fracture, corpus cavernosography has been recommended to evaluate the exact location of the tear. Normal findings on a cavernosogram could save the patient unnecessary surgical exploration.<sup>20</sup> The procedure can also detect urethral complications associated with corporal tears and

any underlying anatomic deformities that might otherwise not be suspected.<sup>21,22</sup> Corpus cavernosography is performed by inserting a 25-gauge butterfly needle into the uninvolved corpus cavernosum and instilling one-half strength radiocontrast media under fluoroscopic guidance. Spot films are then obtained, and the site of injury is localized.<sup>1,20-22</sup> If a urethral injury is suspected, a retrograde urethrogram will define the site and size of the injury.<sup>1,3,20</sup>

### **Treatment**

Currently, surgical exploration is the recommended treatment.<sup>1,5,7-10,12,23-25</sup> The hematoma is localized, hemorrhage is controlled, and the rent in the tunica albuginea is repaired, with sharp débridement, if necessary.<sup>10,26</sup> Both absorbable and nonabsorbable sutures have been advocated, with the former being more commonly used.<sup>10,19</sup> If there has been no urethral damage, an indwelling catheter is placed, and a pressure dressing is applied to the penis.<sup>5,10,19</sup> Prophylactic antibiotic and proteolytic enzymes provide uncertain benefit.<sup>5,10</sup> Within the first few postoperative days, the catheter can usually be removed and the patient discharged if he is able to void.<sup>5,10</sup> If repair of a conservatively treated or previously untreated fracture is needed, excessive scar tissue is removed followed by repair of the defect with strips of fascia lata femoris.<sup>16</sup> Early surgical repair will generally give excellent postoperative results, minimal complications, a shortened hospital stay, and an earlier return to normal sexual function.<sup>5,8,10,12,19,27</sup>

Conservative measures consisting of compressive bandages and splints, urethral catheterization, antibiotics, and prevention of erections were the recommended forms of treatment in the past.<sup>2,4,6,28</sup> Surgical intervention with clot removal was thought to be indicated only if the hematoma was not resolving or if it became infected.<sup>6</sup> More recently, some authors have advocated conservative management,<sup>29</sup> but mainly for minor tears as delineated by cavernosography and urethrography.<sup>1,3</sup> Conservative treatment, however, is associated with a much higher rate (10 to 53 percent) of sequelae,<sup>5,8,10,12,18</sup> such as organized hematoma, infected hematoma, skin necrosis, chordee, cavernous fibrosis, decreased turgidity of erection, pseudodiverticulum, penile deformity, painful erections, and impotence.<sup>1,3,8,9,12,23,30</sup> In practical

terms, a major drawback to conservative management is the reported 14-day median hospital stay compared with a 6.6-day median hospital stay for operative management.<sup>10,12</sup>

It is likely that attempts to insert a catheter in patients with suspected urethral damage will aggravate the injury.<sup>5,10,28</sup> Unrepaired urethral injuries can result in stricture and extravasation of urine into the periscrotal tissues.<sup>5,27</sup> If urethral injury is present and the tear is only partial, as is often the case, a diverting cystostomy is created while the urethra heals.<sup>5,8,10,12,19,28</sup> Some authors believe that primary repair of urethral tears is necessary, especially if a complete transection has occurred.<sup>3,5,11,20</sup> Serial urethrograms and urinary flow rates are recommended for patients who have urethral injuries so that stricture formation can be detected early.<sup>5</sup>

## Conclusion

Penile fractures occur perhaps more frequently than has been reported in the past. Patients will characteristically report a history of trauma to the erect penis, usually during intercourse. Many will report an audible crack, followed by pain, detumescence, and hematoma formation. Meatal bleeding is indicative of urethral involvement. The site of the fracture can be delineated by a cavernosogram, and urethral injuries by a urethrogram. Treatment can be conservative if only a minor rent is identified; otherwise, surgical exploration and repair will yield a much more favorable outcome in most cases.

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