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LETTER TO THE EDITOR

The pelvic pop: an extremely rare case of internal penile fracture presenting with scrotal hematoma and review of the literature

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Dear Editor,

Penile fracture is an infrequent urologic emergency with a nationwide incidence of 1 in 100 000 men in the United States.¹ Blunt trauma during sexual intercourse (penile-perineal impact) is the primary cause of penile fracture, but a variety of alternative mechanisms of injury have been reported in the literature.² The vast majority of penile fractures occur in the external corpus cavernosum and manifest with the classic “eggplant deformity.” The location of these fractures makes them amenable to repair through a circumcising, degloving incision.

Extreme proximal internal corpus cavernosum (EPICC) penile fractures are extraordinarily rare. These injuries occur at the crus of the cavernosal bodies just inferior to the ischiopubic rami. In this location, anchoring bone, muscle, and connective tissue are thought to provide increased supportive strength to the corporal bodies.³ The few reported cases of EPICC penile fracture have been repaired through a perineal incision. Here, we present the first case of an extreme internal penile fracture repaired through a penoscrotal approach.

A 32-year-old male with unremarkable medical history presented to the emergency department at Dartmouth-Hitchcock Medical Center located in Lebanon, NH, USA, with deep, left pelvic pain and scrotal swelling 12 h after engaging in rear-entry penovaginal intercourse. He reported experiencing a deep, pelvic popping sensation under his scrotum with immediate penile detumescence and perineal pain after accidentally thrusting his penis into his partner’s perineum. He had no evidence of hematuria and denied voiding issues. Physical examination was notable for marked scrotal swelling and ecchymosis as well as a normal appearing penis. He was taken urgently to the operating room (OR) for penile degloving and exploration in accordance with the American Urological Association guidelines. Initial cross-sectional imaging was not obtained because of our high index of suspicion of fracture and desire to proceed promptly to the OR. Unfortunately, no definitive corporal injury was identified despite degloving the penis as proximally as possible. On postoperative day 1, the patient had worsening pain, scrotal ecchymosis, and swelling. As a result, he underwent an unremarkable penile ultrasound. He subsequently had a pelvic magnetic resonance imaging (MRI), which was read as negative

for apparent fracture. Both studies provided inadequate visualization of the proximal corpora. A second MRI with and without contrast focused on the perineum and internal penis showed a 3-mm fracture of the left corpus cavernosum, with hematoma tracking from the corporal tear inferiorly to the left hemi-scrotum (**Figure 1a**). The patient was taken to the OR for scheduled surgical exploration and repair through a penoscrotal incision 8 days after his index injury by a sexual medicine fellowship-trained urologist (**Figure 1b–1d**). The patient’s pelvic pain and scrotal swelling were significantly improved on postoperative day 1, and he was discharged home. One month after his corporal repair, the patient reported erectile function but with new slight curvature to the left. The patient agreed to share his case for teaching purposes, and this report was generated in accordance with the Declaration of Helsinki.

Two cases of EPICC penile fracture have been described in the literature to date. In 2000, Pruthi *et al.*⁴ identified an internal penile fracture in a 21-year-old patient who presented 6 days after painful intercourse with scrotal and perineal pain, as well as a “butterfly pattern” of ecchymosis over his perineum. The injury was confirmed with a cavernosogram that showed extravasation from the left proximal cavernosal body and was repaired through a midline perineal incision.⁴ More recently in 2013, Darves-Bornoz *et al.*⁵ described a case of internal penile fracture in a 47-year-old patient who presented with scrotal pain and swelling 1 week after painful intercourse. Given his delayed presentation, the patient underwent a penile MRI which demonstrated a tear in the extreme proximal right corpus cavernosum. This fracture was also repaired through a midline perineal incision.⁵ In both cases, perineal approaches were selected due to surgeon familiarity and the belief that adequate surgical exposure could only be obtained via the perineum.

Our patient experienced a deep, pelvic popping sensation under his scrotum during intercourse with immediate penile detumescence, similar to the common complaint of men who fracture their penises more distally. As in the EPICC penile fracture cases described above, our patient had a delayed presentation and developed isolated scrotal pain, ecchymosis, and swelling with no apparent penile pathology (*e.g.*, eggplant deformity). We feel that these distinct presenting symptoms are explained by the extreme proximal location of his fracture. Unlike the above cases, we elected to repair through a penoscrotal incision similar to the incision made for penile prosthesis implantation. This incision was chosen in order to maximize hematoma evacuation. This incision was also more familiar to the surgeon and allowed for similar access to the proximal corpora

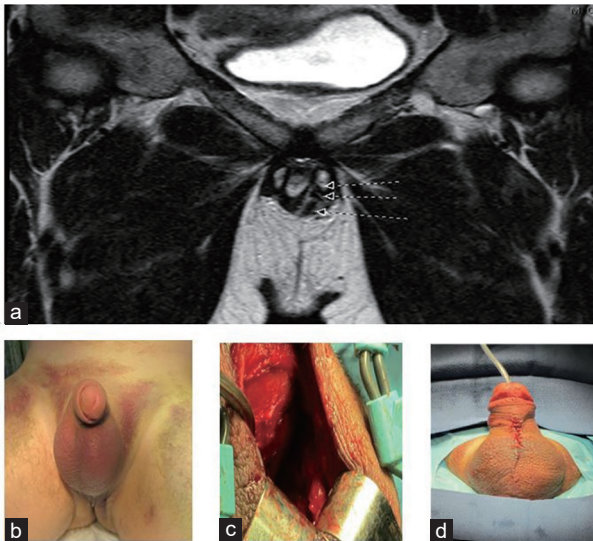


Figure 1: (a) T2-weighted coronal MRI of the pelvis showing a 3-mm fracture of the tunica albuginea of the left corpus cavernosum located inferior to the posterior aspect of the pubic symphysis. Abnormal signal intensity compatible with blood extends inferiorly from the defect into a left scrotal hematoma (depicted by arrows). (b) The patient's penis and scrotum after penile degloving and before delayed penoscrotal repair. (c) Evacuating hematoma and identifying corporal tear. (d) Completion of an internal penile fracture repair through a penoscrotal incision. MRI: magnetic resonance imaging.

but with greater ability to evacuate the scrotal hematoma. Of note, we delayed our patient's surgery by 1 week to allow for residual swelling to subside after his initial penile degloving and exploration. To the best of our knowledge, we are the first to report the successful repair of an EPICC penile fracture through a penoscrotal incision.

As demonstrated by our case, patients with EPICC penile fractures may have atypical signs, symptoms, history of present illness, and delay to presentation compared to traditional penile fractures. Although it is not incorrect to proceed directly to the OR for penile exploration, patients with suspected EPICC fractures may benefit from first obtaining a high-quality penile MRI to confirm and localize the corporal injury.⁶ Patients identified with an EPICC penile fracture on MRI could potentially be spared from the morbidity of penile exploration and instead, proceed directly to repair through a penoscrotal or perineal incision.

As in this case, it is important to recognize the diagnostic value of MRI in the workup of penile fracture. The sensitivity to detect a corporal tear approaches 100%, while the specificity is approximately 88%.⁷ Corporal tears are depicted on MRI as a discontinuity of the low signal intensity of the tunica albuginea that is best seen on T1-weighted images, but can also be seen on T2.⁸ As demonstrated by our case, the quality and completeness of a penile MRI is crucial in diagnosing an internal penile fracture, especially in patients with a negative penile exploration and atypical presentation. Our patient had a negative initial penile MRI. However, the corporal bodies inferior to the ischiopubic rami were not well visualized and our index of suspicion was high. Repeat MRI focused on the internal penis demonstrated an extreme proximal tear not detected with penile exploration or postoperative ultrasound or MRI. A high-quality and complete penile MRI prior to initial exploration may have prevented multiple operations and images in our patient.

Acute versus delayed repair of penile fractures is controversial. In a 2016 meta-analysis by Amer *et al.*,⁹ immediate surgical correction resulted in significantly fewer postoperative complications and lower

rates of penile curvature compared to delayed repair. No difference was seen in the rates of erectile dysfunction or plaque/nodule formation.⁹ In a 2017 meta-analysis, Wong *et al.*¹⁰ also found that immediate repair was associated with lower rates of penile curvature, but that most cases of curvature were mild and did not affect sexual function. Similarly, rates of erectile dysfunction and plaque/nodule formation did not differ by timing of repair.¹⁰ It is unclear whether the slight penile curvature observed in our patient was related to the timing of his surgery or was a consequence of the extreme proximal location of the injury.

A benefit of the penoscrotal approach is that it provides the ability to evacuate the patient's scrotal hematoma while simultaneously exposing the proximal corporal bodies to facilitate a successful repair. Complete evacuation of the hematoma may also improve visibility and ease surgical difficulty. This is the same incision commonly used in penile prosthesis and artificial urinary sphincter placement surgery.¹¹ Urologists should consider a penoscrotal incision for EPICC penile fracture repair, especially if they are less familiar and uncomfortable with perineal approaches.

Extreme proximal internal penile fractures are rare. These patients may have atypical presentations, such as a deep, pelvic popping sensation during intercourse, development of scrotal or perineal pain, ecchymosis, swelling (without penile pathology), and delayed presentation to the hospital. MRI is an important tool in diagnosing internal penile fractures not visualized during penile exploration. These extreme proximal injuries can be successfully repaired through a penoscrotal incision.

AUTHOR CONTRIBUTIONS

MER and MSG equally drafted and finalized this manuscript. Both authors read and approved the final manuscript.

COMPETING INTERESTS

MSG is a consultant for Coloplast. MER declares no competing interests.

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