

Use of Magnetic Resonance Imaging (MRI) for Appropriate Management of Penile Fracture

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Abstract

Penile fracture is a relatively rare emergency in urology, defined by traumatic rupture of the tunica albuginea of the corpora cavernosum. We present the case of a 39-year-old patient presenting with penile fracture involving a focal rupture of the tunica albuginea of the left corpus cavernosa. Often times, ultrasound is used initially to evaluate the rupture. In this case, Magnetic Resonance Imaging (MRI) was instead performed prior to the repair.

This led to a change in surgical approach from a sub coronal degloving incision to a penoscrotal incision. Although ultrasound may be more cost-effective and accessible, MRI is more sensitive in detecting tears in the tunica. The increased sensitivity is helpful in avoiding unnecessary dissection and decreasing complications associated with repair.

Keywords: MRI; penile fracture; surgical approach

Background

Penile fracture is an uncommon urologic emergency involving unilateral or bilateral rupture of tunica albuginea of the corpora cavernosum [1]. It usually occurs due to non-physiologic bending of an erect penis during vigorous sexual intercourse. Clinically, the patient reports a “popping” sound, followed by immediate detumescence, diffuse swelling of the penis and angulation towards the unaffected side. Early surgical exploration is crucial to preserve long-term erectile function, avoid penile deformity, and repair associated urethral rupture. Penile degloving is the most commonly used surgical approach, allowing for adequate visualization of the corpora cavernosa and urethra. However, in 2/3 of cases, the tear is located at the level of the penoscrotal junction [2]. Thus, use of penoscrotal approach instead lessens the overall dissection required and reduces complications associated with the traditional degloving approach. Preoperative imaging, such as ultrasound and Magnetic Resonance Imaging (MRI) are used to determine the exact site of tunica defect and determine the appropriate surgical repair method. Ultrasound is an inexpensive and easy-to-access imaging modality. Therefore, it is often the primary method of evaluation.

Case Report

A 39-year-old man with past medical history significant for Peyronie’s disease presented to the Emergency Department for evaluation of penile pain and bruising. During sexual intercourse the night prior, he reported a sudden “popping” sound, followed by rapid detumescence and acute pain. The following morning, the pain subsided but there was bruising and tenderness to touch. He denied difficulty urinating or haematuria. Previously, he was treated with Xiaflex injections for Peyronie’s disease, and his last injection was over 8 months ago. Physical examination revealed testicular and penile swelling most prominent on the left lateral aspect, ecchymosis on the scrotum, and rightward deviation of the penile shaft reportedly worse than baseline.

There was no blood at the meatus. Cremasteric reflex was intact. Pelvic MRI revealed focal rupture of tunica albuginea with haemorrhage and edema involving left corpus cavernosa and extending into adjacent soft tissues. There were no signs of extension into the urethra or corpus spongiosum. A penoscrotal incision was made down to the area identified by MRI to be in the left proximal penile shaft. A 1.5cm laceration proximal to the lateral tunica albuginea of left corpus cavernosum was found. After Buck’s fas-

cia was dissected, a small hematoma was evacuated, revealing the edge of the tunica albuginea. The corporotomy was 1.5 to 2cm in length. The medial-most aspect was identified and the corporotomy was closed with 2-0 Vicryl interrupted sutures. The Buck's fascia and dartos were closed in a running fashion over the corporotomy using 2-0 Vicryl sutures. The patient was transferred to the Post-Anesthesia Care Unit (PACU) in stable condition, and discharged later that day.

Discussion

Preoperative imaging is utilized to confirm the correct diagnosis and dictate appropriate surgical approach to repair penile fractures. In this case, pelvic MRI findings shaped the decision to utilize a more conservative penoscrotal incision to repair our patient's penile fracture, as opposed to a more invasive sub-coronal incision. Previous studies suggest that although ultrasound is an inexpensive and non-invasive diagnostic tool, it has limitations [3]. It may detect associated hematoma and tunica tear if the defect is large enough otherwise, it is heavily operator dependent and may miss tunica tears depending on size and location, particularly at the base of the penis.

In contrast, MRI has superior soft-tissue resolution and is more effective in determining tunica tear location and defect length where ultrasound may not provide adequate information [4]. It also provides the added benefit of being able to detect associated hematomas and urethral ruptures. Although not as readily available, the higher sensitivity and negative predictive value associated with MRI is necessary in making decisions regarding subsequent surgical management.

Surgical exploration remains a safe option in management of penile fractures [5]. Degloving of the penis with a circumferential incision is the most commonly used technique for exploring the corpora cavernosum and penile urethra. However this approach may unnecessarily cause additional complications, such as diffuse swelling of the Dartos fascia [6]. Thus considering the location of our patient's fracture, a more focal penoscrotal incision better served our patient.

Conclusion

Use of MRI preoperatively can help to determine appropriate surgical approach to penile fracture. Although not always readily available and more costly, it provides valuable information that can reduce the need for invasive surgical incisions and associated postoperative complications.

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Disclosure Statement

No competing financial interests exist.

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