Case series – Tolerability of penile fracture repair under conscious sedation

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INTRODUCTION

KEY MESSAGES

- Penile fracture is a rare injury usually presenting with a sudden audible "snap" followed by immediate detumescence and pain with associated edema.
- Conscious sedation in delayed and complicated cases may provide equally favorable outcomes to immediate operative intervention.
- Use of locosedation offers significant cost savings while not requiring the assistance of anesthesia, allowing patients to receive their surgery sooner.

Penile fracture is a rupture of the tunica albuginea comprising the corpus cavernosa. While an uncommon clinical condition, it is the most common form of penile trauma. Though traditionally a surgical emergency it is severely under-reported due to fear and embarrassment[1]. Penile fracture characteristically follows a sudden "cracking noise" with detumescence, pain and edema leading to what is classically termed as "aubergine deformity" or spreading ecchymosis if Buck's fascia is compromised.[2]

Currently when a penile fracture is suspected the standard of care is prompt surgical exploration and repair. Repair within a 7-day window is associated with improved erectile function and cosmetic outcomes.[3,4] As of now, these cases are typically performed in the OR under general or spinal anesthetic. An alternative is to perform the case under loco-sedation - our centre has performed several cases under nursing administered IV sedation[5,6]. Utilizing this anesthetic technique we perform the repair in a timely fashion, circumventing issues associated with limited staff and avoiding the risk inherent to general/spinal anesthetic.

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CASE 1

A 54-year-old patient presented to a rural hospital stating he "hit his penis against a hard surface 20 minutes ago". Urology was consulted and the patient was transferred to a central tertiary site. He explained in consultation that during intercourse with his female partner she moved to the left and he experienced a sudden ripping/tearing sensation to his penis with a clear "snap and pop". He immediately noted detumescence with rapid onset swelling and bruising.

On physical examination the patient was noted to have significant ecchymosis along the shaft extending to the suprapubic region. The penis was circumcised and had a 90-degree hinge defect with severe edema. There was no urethral bleeding on exam and no previous genitourinary disorders. If there was blood at the meatus or bilateral corporal injury a retrograde urethrogram would be considered. A bedside cystoscopy was also performed with dorsal penile nerve block confirming a ventral right sided hematoma with an intact urethra.

The patient received ultrasound imaging documenting a significant disruption of the tunica of the right corpus cavernosum towards the distal penis while the left corpus cavernosum and spongiosa were left intact (Figure 1). A large hematoma involving the corpus cavernosum extending beyond the tunica measuring 6.1 x 2.3 x 3.7 cm was found (Figure 2). If at this point urethral injury was suspected, we would move towards immediate surgery with general anesthesia.

The next day, the patient was brought to the endoscopy suite under conscious sedation with 100mcg of fentanyl and 2mg of midazolam. A dorsal penile block was then performed with 30 cc of 1%lidocaine and 0.25% Marcaine mix. A circumcision incision was made and carried to the tunica albuginea to reveal a distal fracture in correspondence with ultrasound imaging. The fracture site was closed using 2-0 PDS suture with urethral mobilization to close the tunica defect. An artificial erection using a 21gage butterfly needle with normal saline into the corpora cavernosa was completed to verify that there was no evidence of a leak. The patient tolerated this well and the skin edges were then reapproximated using 3-0 chromic suture. This approach reduced surgical operative and recovery time due to anesthetic expediency.

The patient was seen six weeks post-operation in clinic with normal painless erections. The patient had a full recovery without any lasting curvature or scarring and no acute post-operative complications.

CASE 2

A 32-year-old male presented to the emergency department from a rural site following penile trauma during sexual intercourse. He had described a classic "snap" sound followed by pain and detumescence. The community ERP had elected to insert a urethral catheter given concern of urethral injury. Penile ultrasound was obtained demonstrating a 9.2mm defect at the base of the right ventrolateral corpus cavernosum with an overlying hematoma, thus the patient was transferred to Winnipeg for urological consultation. Given issues with transport availability, the patient was transferred on post injury day 1 and assessed at that time. Physical examination

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demonstrated an uncircumcised, bruised and swollen penis with left-sided deviation. Scrotum and perineum were uninvolved, in keeping with an intact Buck's fascia.

The patient was brought to the procedure suite on post injury day 5 for repair under conscious sedation with 100mcg of fentanyl and 3mg of midazolam. A dorsal penile and ring block was performed with 30cc of 1% lidocaine and 0.25% Marcaine mix. Then a midline ventral incision was done at the level of the hematoma, given dissection over the urethra, a 16Fr straight catheter was inserted for landmarking. The fracture site with overlying hematoma was in correspondence to the ultrasound report. The hematoma was evacuated and the tunica albuginea at the fracture site was closed using a running 3-0 PDS suture. At this time an artificial erection was induced using a 21-gauge butterfly needle with normal saline to verify no residual defect. Buck's fascia and penile skin were respectively closed with a running 3-0 vicryl rapide and vertical mattress suture. The patient tolerated the procedure well and was transported back to the ward in stable condition and discharged a few hours later.

DISCUSSION

This case series represents the most common etiology of penile fracture in the western hemisphere being heterosexual intercourse, typically describing "a woman on top" position followed by blunt trauma involving the partner's pubic symphysis or perineum[7].

Given the etiology, shame may play a role in delayed patient presentation. Moreover, the lack of urologists and their inaccessibility in rural areas may delay surgical management. This was seen in our case series, with both patients presenting from rural sites which contributed in time to surgical repair. Nevertheless, despite delay surgical consultation continues to provide excellent outcomes.[8,9] Moreover, a 1999 review of 172 cases found that regardless of delay in presentation, there were no associated intraoperative complications and that operative difficulty was unchanged as compared to immediate intervention.[10] However more contemporary literature suggests timely repair in a 7-day window is associated with improved erectile function and cosmetic outcomes.[3,4]

In the cases above, multiple factors contributed to delay in surgical repair. Embarrassment, lack of urologists in remote rural areas, and limited operating room resources frequently play a role. However, our institution has a long history of completing urologic procedures including but not limited to ureteroscopy, hydrocelectomy under nursing administered IV sedation with good tolerability.[7,6]

Utilization of loco-sedation has potential benefits at multiple levels. At a system level significant cost savings are possible from performing penile fracture outside of an OR, thus not requiring the assistance of anesthesia in addition to helping alleviate the already significant surgical backlog in Canada. At the patient level, they receive their surgery sooner with less pre-operative fasting without sacrificing tolerability. These factors together lead to shorter hospitalizations and better functional as well as cosmetic outcomes.

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CONCLUSIONS

Overall, these cases reflect highlight the use of doppler ultrasonography, clinical assessment and conscious sedation in the diagnosis and management of penile fracture. Moreover, it sets precedence that conscious sedation in delayed and complicated cases may provide equally favorable outcomes. Such an approach would allow for better surgical availability while minimizing cost to the system and optimizing patient outcomes.

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FIGURES AND TABLES

Figure 1. Doppler ultrasonography examination of the penis in transverse view from the dorsal penile tip showing disruption of the tunica albuginea delineating the right corpus cavernosum towards the distal penis while the left corpus cavernosum and spongiosa were left completely intact.

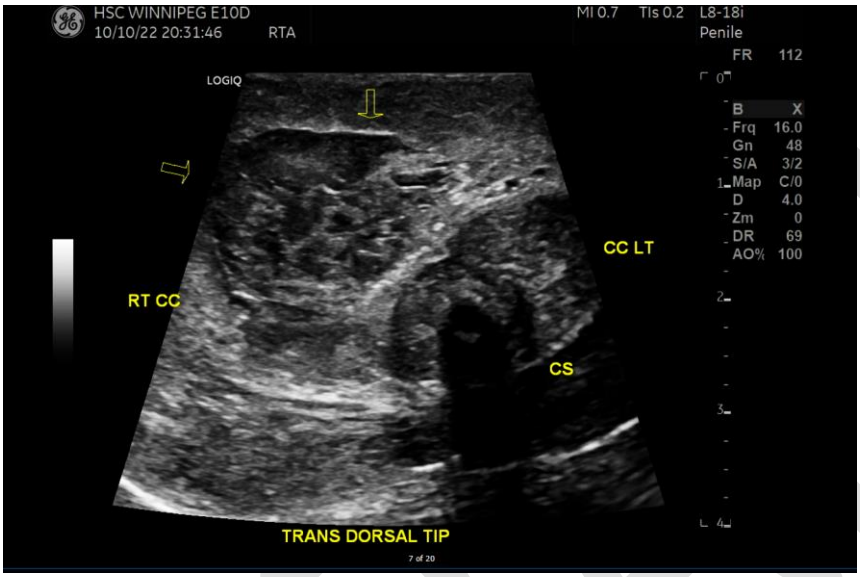

Figure 2. Doppler ultrasonography examination of the penis in transverse view from the dorsal end showing a large hematoma involving the corpus cavernosum extending beyond the tunica measuring approximately 3.68 x 2.26 cm in height and width.

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