

Erectile Dysfunction Secondary to a Posttraumatic Corpus Caverosum-Spongiosum Fistula Treated by a Cellular Matrix Interposition

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Abstract

Traumatic urethrocavernous fistula may develop as an acute or late complication after blunt penile trauma, however reports on corpus spongiosum-cavernosum fistula have rarely been described. We report the case of a 24-year-old man with a corpus cavernosum-spongiosum fistula secondary to an untreated penile fracture, and its surgical management with acellular matrix graft. Penile fractures are urologic emergencies that, if not handled opportunely, can lead to serious sequels, early surgical management should be the treatment of choice. The appearance of a post-traumatic cavernospongous fistula is a rare complication with almost non-existent literature reported. However, ignorance of this pathology can significantly compromise the patient's quality of life.

Keywords: Erectile dysfunction; Fistula; Ultrasonography; Doppler; Penile diseases; Urethra; Impotence; Vasculogenic; Conservative treatment

Introduction

Penile fracture or traumatic rupture of one or both corpora cavernosa is an infrequent injury that occurs as result of a trauma to the erect penis when it slipped out of vagina during intercourse and hit against the female pubic symphysis or perineum; may also present with forced ventral or dorsal flexion during coitus or masturbation.

In erection, the tunica albuginea is thinned and stretched and excessive force with a tangential vector may result in a transverse tear of the corpora cavernosa [1,2].

In the United States, the estimated incidence is 1 in 175,000, however, a higher frequency is expected than the cases reported, and considering that many patients avoid seeking medical care due to shame or fear [3].

In typical cases, patients report having heard a click during intercourse (corresponding to the rupture of the albuginea), followed by immediate loss of erection and appearance of penile or inguinoscrotal genital hematoma [4].

Between 10-33% of the cases present associated lesions of the spongy body and the urethra, so they may present hematuria, urethral bleeding, dysuria and urinary retention [5]. The diagnosis is clinical, although diagnostic images such as penile ultrasonography, cavernosography and magnetic resonance imaging are useful for specifying the site of albuginea rupture, in doubtful cases [6].

Historically, penile fracture was treated conservatively, but up to 30% of patients treated non-surgically had severe sequels such as: erectile dysfunction, fibrotic plaques, painful erections, abnormal curvatures and infected hematomas [1].

During the 1970s the treatment was revalued and the most accepted treatment since then is the surgery between the first 36 hours after trauma, aiming to repair the albuginea defect offering patients better functional and aesthetic results with minimal complications [2,7,8].

We present the case of a 24-year-old male with an untreated penile fracture and erectile dysfunction. After a detailed medical history and physical examination, the diagnosis was made with a penile doppler ultrasound and cavernosography. A corpus cavernosum-spongiosum fistula was identified in the proximal third of the penis, which was treated satisfactorily by the interposition of a cellular matrix graft. There are no similar cases reported.

Case Report

A 24-year-old man, 12 months prior to urological examination, suffered a penile fracture during intercourse, which did not receive surgical management due to lack of medical consultation. Since then, the patient presented erections with adequate axial rigidity, self-rated 8/10, which were lost shortly after penetration, so he self-medicated with sildenafil 50 mg prior coitus with adequate response.

When he consults to the urologist (1 year after the penile fracture), the genital physical examination was normal. Taking in to account the medical record and the unusual characteristics of the erectile dysfunction, a post-traumatic vascular anomaly was suspected, so the patient was studied with a penile doppler echography (Figure 1).

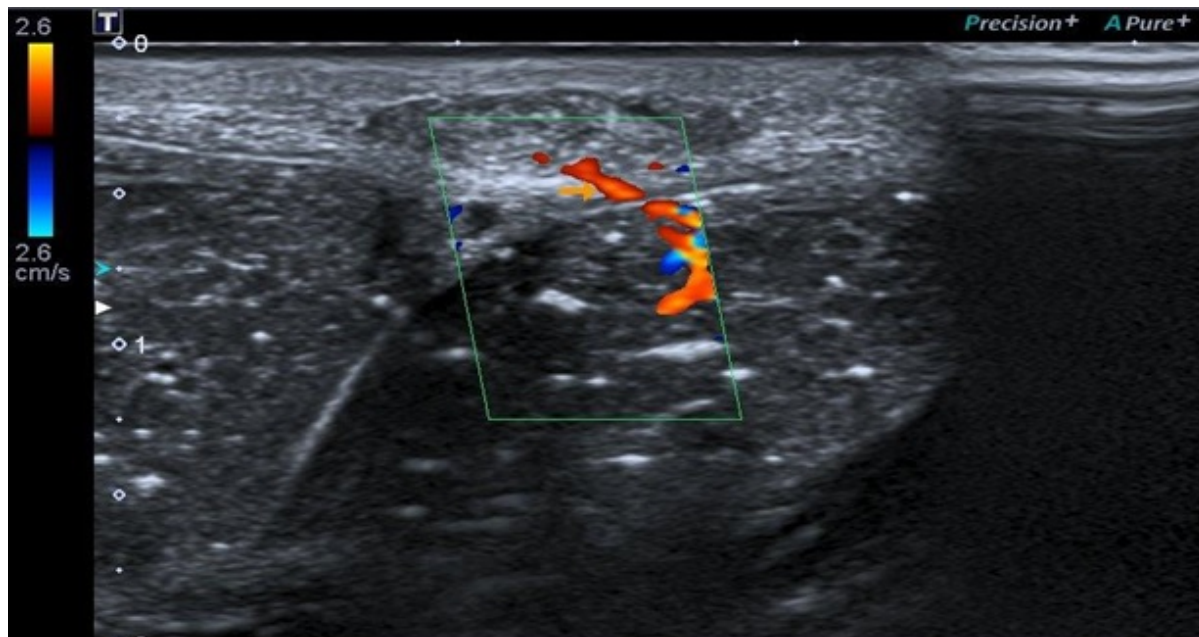


Figure 1: Penile doppler ultrasound.

Transducer on the penis ventral side. Normal cavernous arterial flow at rest. After injection of intracavernous agent (Alprostadil 20 mcg) we found increased diastolic velocities and decreased resistance index in all arteries compatible with venous leakage.

Erection induced with vasoactive agent (Alprostadil 20 mcg) with 30% axial rigidity and 30 degrees of angulation, no leakage of contrast agent was seen by the periprostatic plexus or pudendal veins. There is notable escape to the spongiosum body. Site of communication identified in proximal third.

Considering the clinical history and the imaging findings in the cavernosography the diagnosis of a cavernosum-spongiosum fistula of the proximal third was made. We decided a surgical repair of the defect by interposition of acellular matrix graft (Figure 3).



Figure 2: Cavernosography.

Thanks to the image in the ultrasound which showed an anomalous communication in the erectile tissue we decided to realize a cavernosography, to precise and confirm the fistula localization (Figure 2).

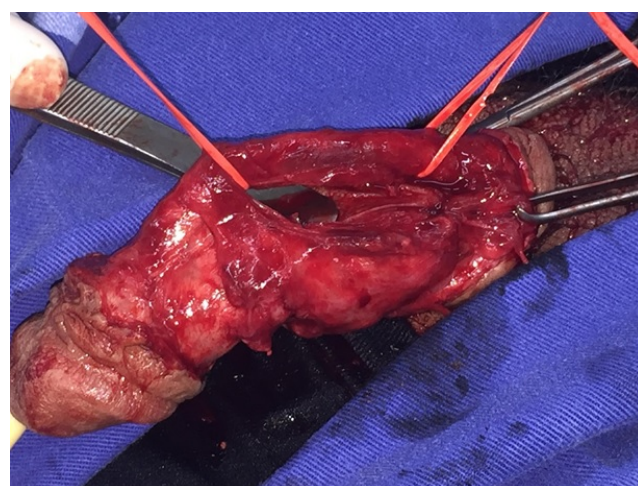


Figure 3: Surgery; [Dissection of the spongiosum body and separation of cavernous bodies in the middle and proximal third within a safety margin to include the fistula].

The surgical procedure consisted in: (i) denudation of the penis to its base, (ii) penile erection induced with saline solution, (iii) bilateral longitudinal incision in Buck's fascia until exposure of the albuginea, and (iv) placement of the slh-4 pr1 graft on the fistula in cavernous body (dimensions of 4 × 2 cm) fixed circumferentially with vycril 4-0.

The patient presented an adequate postoperative without complications, and was discharged 48 hours after the procedure. During a 3-month follow-up, he reported a good erectile function (self-rated 10/10) without penetration failures, having satisfactory intercourses without the usage of sildenafil.

Discussion

Penile fracture is a urologic emergency, which can cause devastating physical, functional and psychological sequelae, if not treated timely (Table 1). The patients will often report hearing a cracking noise during sexual activity (albuginean rupture) followed by immediate pain, detumescence, and a slowly expanding penile hematoma often described as an "eggplant deformity"[8,9].

If Buck's fascia is involved, the ecchymosis can progress along the fascial planes and compromise the scrotum and the perineum [10]. Urethral lesion is present in 20% of the cases, in which patients will have macroscopic hematuria, urethrhage and/or urinary retention [4,8].

Penile Fractures Complications
Abnormal penile curvature
Painful erection
Erectile dysfunction
Hematoma infection
Fibrotic plaques
Penile abscess
Urethrocuteaneous fistula
Urethrocavernous fistula
Cavernosum-spongiosum fistula
Urethral stricture
Low self-esteem

Table 1: Penile fractures complications.

All patients with suspected penile fracture should be assessed early. The diagnosis is clinical and imaging such as penile doppler ultrasonography, cavernosography and magnetic resonance are reserved for atypical cases and the study of long-term complication. Retrograde urethrography or flexible cystoscopy is mandatory in cases of suspected urethral injury [11,12].

The conservative management used previously consisted in: urethral catheterization, analgesia, anti-inflammatory, local cold with ice packs and antiandrogens for avoid erections, however, up to 30% of the patients handled in this way had serious sequelae such as: erectile dysfunction, fibrotic plaques, painful erections, abnormal curvatures and infected hematomas, as well as prolonged hospital stays and late

recovery of sexual activity [7]. Consequently, for more than four decades ago, early surgical treatment had been the best approach.

Patients whose lesion is repaired surgically within the first 36 hours have minimal sequelae and shorter hospital stays [13]. The most widely used surgical technique consists of a subcoronal incision to denature the skin and expose the three compartments of the penis to drain the hematoma, closure of the albuginean defect with continuous absorbable 2-0 or 3-0 sutures [14]. The objectives of the surgical procedure are: (i) removal of the hematoma, (ii) identification of the fracture site, (iii) closure of the defect in the tunica albuginea, and (iv) restoration of urethral integrity (if necessary) [15].

Although it is recommended that patients refrain from sexual activity six to eight weeks to prevent refracture, some authors have found no recurrence in patients who had intercourse in the two subsequent weeks [9]. Early surgery is not only the treatment of choice for managing penile fractures but also prevents the development of posttraumatic anatomical alterations. In the case reviewed, the lack of timely surgical treatment led to the development of a cavernosum-spongiosum fistula with erectile dysfunction.

Conclusion

The penile fracture is a urological emergency, if not treated in promptly it can lead to serious sequelae. The diagnosis is clinical and the treatment is surgical within the first 36 hours. The appearance of a post-traumatic cavernosum-spongiosum fistula is a rare complication of this pathology, however, it must be known and studied, since it can significantly compromise the quality of patient's life due to the repercussions in sexual function. There are no similar cases reported in the literature of cavernosum-spongiosum fistulae treated satisfactorily with a cellular matrix grafts.

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