

Rupture of the Superficial Dorsal Vein of the Penis: About Two Cases

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Abstract

Case Report

Superficial dorsal vein rupture is a rare penile emergency, its presentation could suggest penile fracture instead. While penile fractures are a true emergency, superficial dorsal vein rupture is not as the consequences for the patient are different and loss of erectile function is rare. We report the observation of 2 men who presented with a clinical picture suggestive of a fracture of the corpora cavernosa, and whose exploration objectified a rupture of the superficial dorsal vein of the penis. The evolution is most often favorable after surgical management.

Keywords: Superficial dorsal vein rupture, Penile fracture, Penile trauma, Coital injury.

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INTRODUCTION

Traumatic injuries of the penis are diverse. Fracture of the penis is the best-known entity, even if it is rare. It essentially includes lesions of the erectile bodies, whether or not associated with lesions of the urethra. However, trauma may involve the vascular network. These types of lesions are rarely reported in the literature. They may involve involvement of the superficial dorsal vein, the deep dorsal vein, the dorsal artery, and nonspecific dartos bleeding. Rupture of the superficial vein of the penis is a urological emergency whose clinic may simulate a fracture of the penis. The authors report a case of rupture of the deep vein of the penis falsely taken for a rupture of the penis occurring during a false step of coitus.

We report the observation of 2 men who presented with a clinical picture suggestive of a fracture of the corpora cavernosa, and whose exploration objectified a rupture of the superficial dorsal vein of the penis.

PATIENT 1

A 49-year-old man with no notable pathological history was admitted to the surgical emergency department for ecchymosis with swelling of the penis that occurred suddenly during sexual intercourse, 4 hours before admission; the interrogation did not reveal any notion of audible cracking or immediate detumescence, and the patient did not present any pain or URR or urethrorrhagia.

The clinical examination on admission revealed a bruise on the dorsal surface of the penis with swelling without deviation, no palpable hematoma was found and the appearance of the glans (circumcised) was unremarkable (**Fig 1**).

An ultrasound scan was performed showing infiltration of the soft parts of the penis without obvious hematoma, and without visualization of rupture of the albuginea.

Surgical exploration was recommended under spinal anesthesia, with coronal incision and removal of the penis, and found an intact albuginea and an uninjured urethra. The dorsal hematoma was evacuated, revealing a breach of the superficial dorsal vein at the junction between the proximal 1/3 and middle 1/3 of the latter (**Fig 2**).

The injured vein was ligated and the patient was put on analgesic treatment and abstinence for 4 weeks. The check-up performed at day 10 showed satisfactory morning erections, and the check-ups performed at one month and 4 months showed satisfactory erectile function without functional disorders: IIEF5 score was 21 at the first month vs 20 before the operation.



Figure 1: Clinical examination showing ecchymosis and swelling of the penis



Figure 2: Intraoperative image showing a breach of the superficial dorsal vein at the 1/3 proximal-1/3 middle junction

PATIENT 2

A 34-year-old man with no notable pathological history was admitted to the surgical emergency department for a sudden onset of ecchymosis with swelling of the penis after sexual intercourse, 2 hours before admission; the interrogation did not reveal any notion of audible cracking or immediate detumescence, and the patient did not present any pain or URR or urethrorrhagia.

The clinical examination on admission revealed a bruise on the dorsal and 2 lateral surfaces of the penis with swelling without deviation, no palpable hematoma was found and the appearance of the glans (circumcised) was unremarkable (**Fig 3**).

Ultrasound was not performed because of the emergency context.

Surgical exploration was recommended under spinal anesthesia, with coronal incision and removal of the penis, and found an intact albuginea and an uninjured urethra. The penile hematoma was evacuated,

revealing a complete rupture of the superficial dorsal vein, with a deep dorsal vein that was visible and intact (**Fig 4**).

A lavage was performed, with evacuation of the hematoma, and the patient was put on analgesic treatment and abstinence for 4 weeks.

The check-up performed on day 10 showed satisfactory morning erections, and the check-up performed at one month showed satisfactory erectile function without functional disorders: IIEF5 score at 21 at the first month vs 20 before the operation.



Figure 3: Clinical examination showing the appearance of the swollen penis with the presence of an ecchymosis at the level of the dorsal face and the lateral faces of the penis



Figure 4: Intraoperative image showing a complete rupture of the superficial dorsal vein with intact deep dorsal vein

DISCUSSION

Coital lesions of the superficial dorsal vein of the penis are rare and are usually presented in individual case reports. The highest number (18 cases) was recorded by Bar-Yosef [1]; 9 of the 17 procedures performed for false penile fractures had found a rupture of the superficial dorsal vein.

Rupture of the deep dorsal vein during sexual intercourse is even rarer; two cases have been reviewed in the literature [2-3]. Rupture of the superficial dorsal vein occurs following a brutal trauma on an erect penis, which is responsible for a laceration or even a complete rupture of the vein; although there are not yet long series allowing to study the risk factors, some authors suggest that circumcision may be incriminated [1-6-7].

The few descriptions in the literature of penile vein rupture have been reported as single cases [12,13,17] and as part of a series of patients with suspected penile fracture. Karadeniz *et al.* reported two cases of dorsal vein rupture in 21 patients [14]. In their report of seven operated patients, Gontero *et al.* described a patient who had a lacerated dorsal complex vein [15]. El-Bahnasawy and Gomha detected an intact tunica with bleeding from a superficial vein in four of 60 exploratory procedures [9]. In a recent report by Koifman *et al.* a dorsal vein injury was the only finding in two of 49 surgical patients with a clinical diagnosis of penile fracture [16].

In his extensive review, Eke identified reports of 1642 cases of penile fracture in the medical literature from 1935 to 2001 [8]. Of these, publications containing 1331 cases were available for his study. In only a fraction of these cases was a venous laceration identified during exploration.

More than half (74.56%) of the cases reviewed by Eke were from the Mediterranean region where ritual neonatal circumcision is widely practiced [8]. In the largest available series of penile fractures, Zargooshi from Iran reported 172 patients in whom 119 (69.1%) fractures occurred during manipulation, compared to only 14 (8.1%) that occurred during intercourse [22]. Coitus was reported to be the cause of penile fracture in 30-50% of reported cases in the Western Hemisphere [8]. Similarly, all of our circumcised patients claimed to have sustained the injury during intercourse, leading us to speculate that mechanism may play a role in determining the nature of the injury, with venous injury being more likely to be associated with intercourse in the circumcised male.

Patients with rupture of the superficial dorsal vein of the penis may present with symptoms that mimic a penile fracture. However, penile fracture presents a distinct clinical picture. Most patients with a penile fracture report hearing a "snap" followed by pain, immediate detumescence of the penis, and late-onset swelling, hematoma, and deformity of the penis. of late onset [3-4]. When a urethral lesion is associated, urethrorrhagia and sometimes a butterfly wing hematoma, differential voiding and concomitant hematuria are sometimes seen [5]. However, patients with superficial dorsal vein rupture of the penis do not necessarily describe the classic "snap" or rapid detumescence. [4]; this was the case in our patients.

Patients with superficial dorsal penile vein rupture may present with bleeding from the ruptured vein and may present with a dorsally swollen and slightly painful penis, which usually occurs within 24 hours of sexual intercourse. A very suggestive sign of superficial dorsal vein rupture is suprapubic and distal ecchymosis, this sign is due to retraction of the proximal and distal segments of the ruptured vein; However, this sign was absent in our patient, which can be explained by the fact that it was a breach of the vein and not a complete rupture, so he did not have retraction of the 2 ends and the ecchymosis was located in the middle part of the penis. The "Rolling sign" is a very suggestive sign of a fracture of the corpus cavernosum and makes it possible to locate the fracture: the clot which forms at the level of the fracture is palpable under the skin of the penis which rolls over it [22]; this sign was absent in our patients

The utility of imaging studies in the setting of suspected penile fracture is controversial. Seven global imaging modalities have been tested. Ultrasonography, with or without color Doppler, has been found to be useful in making the diagnosis and localizing the site of the lesion, although it has been tested in a limited number of patients [9]. An attempt has also been made to localize the lesion site by injecting intracavernosal blue methylene [18]. Magnetic resonance imaging (MRI) has been performed by many investigators [19-20]. MRI provides superior soft tissue imaging, and the reported results were excellent, but again the number of studies was limited. Caverno-graphy is another imaging study performed by many surgeons prior to surgical exploration [21-22], but it has the disadvantage of being an invasive technique. The added value of imaging studies is not established, given the rarity of penile fractures and the small number of studies performed. MRI appears to be the most accurate modality, but routine use would be limited by availability and cost. Finally, all of the above studies require specific expertise that is not always available.

There are recent reports on the outcomes of conservative management of suspected penile fracture. Muentener *et al.* reported a favorable outcome in 10 of 17 patients (59%) who were treated preventively, and in 11 of 12 patients (92%) who were treated with immediate surgery [23]. Mydlo *et al.* reported the outcome of five patients who refused surgery for a suspected penile fracture. All patients reported adequate erections for a 12-month follow-up [24]. In the absence of clear imaging data, it is naturally impossible to make a definitive diagnosis in patients who are managed while waiting. During early exploration, hematoma evacuation, and ligation It is very possible that conservative management will yield similar results. Refinement of imaging studies or diagnostic tools capable of ensuring tunica albuginea integrity and

establishing the diagnosis of venous injury may spare patients the need for surgery. Currently, none of the available imaging studies can differentiate tunica rupture from venous injury. We continue to practice and advocate for early exploration in patients with suspected penile fractures, as a missed opportunity to repair a tunica tear can result in long-term damage and compromised erectile function.

CONCLUSION

Rupture of the superficial dorsal vein is rare and may simulate an erectile body fracture in an emergency setting. Surgical exploration remains a diagnostic and therapeutic means when accessibility to imaging is a problem. The evolution is most often favorable after surgical management.

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