Endovascular treatment of a post-traumatic priapism case

A 45-year-old male patient was referred to our hospital due to a one week long, non-sexual or stimulation-related, painless erection that started 3 days after a straddle injury. Apart from the erection, urological examination and penile Doppler ultrasound were unremarkable. Cavernous blood gas aspiration was compatible with arterial origin.

Angiography was performed after placing a 4F introducer sheath in the right common femoral artery and advancing a pigtail catheter to the distal aorta (Fig. 1). Bilateral opacification of the iliac axis revealed an extremely dense left bulb arterial staining, compatible with an arterio-cavernous fistula (Fig. 1).

The catheter was replaced by a selective one, through which a micro-catheter system was guided to the left internal pudendal artery and advanced distally to the left cavernosal artery as proximal to the fistula as possible (Fig. 3a) in order to spare the left dorsal artery of the penis. Gelatin sponge was used to embolize the fistula, with the end point of markedly reducing the flow (Fig. 3b, c). At the end of the procedure only a tenuous fistulous blush remained visible (Fig. 3c).

The contralateral internal iliac angiogram did not show any collaterals from the right internal pudendal artery.

Priapism is defined as a persistent erection or penile tumescence not associated to a sexual stimulus [1, 2]. This entity can be divided in low-flow priapism and high-flow priapism.

Low-flow priapism is a urologic emergency characterized by the compromise of penile venous out-flow, with consequent hypoxia, acidosis and tissue ischaemia leading to cavernous fibrosis and irreversible erectile dysfunction. Patients present with a painful complete erection. The most frequent aetologies are either idiopathic, related with sickle cell anaemia or side effects of vasoactive drugs (erectile dysfunction and antihypertensive drugs) [1, 2]. If it occurs intermittently it is called “stuttering priapism” [1].

High-flow priapism is usually associated with penile or perineal blunt trauma, with laceration of a cavernosal artery creating an arterio-cavernous communication, although in some patients no underlying cause can be found [2]. Delay (2-3 weeks) between trauma and onset of symptoms is frequent, owing to spasm, clot or ischaemic necrosis of the affected artery, which may subsequently resolve [3]. This might explain why our patient only reported symptoms 3 days after the trauma.

Cavernous aspiration of arterial blood is highly suggestive of the diagnosis and colour Doppler US should always be
performed as it can reveal arterial dilation, fistula, a sinusoidal ‘blush’, pseudoaneurysm cavity or help evaluate recurrences [1, 4].

High-flow priapism in not an emergency and conservative measures (local ice or pressure) should be offered because 62% of cases resolve spontaneously and embolization or surgery can be postponed without significant consequences [2]. Our patient initially chose conservative treatment, but with no improvement after 3 weeks, he was referred to embolization. We chose to use sponge gel because it is a non-permanent embolizing agent. The data available indicate that these agents have a much lower risk of erectile dysfunction following treatment than permanent agents (PVA particles, coils, acrylic glue), with only a marginal drop in the resolution rate (temporary agents have a reported resolution rate of 74% with 5% risk of erectile dysfunction, versus 78% and 39% respectively, for the permanent agents) [2].

We tried to be the least aggressive possible and a residual arterial blush was left after embolization. The decision was made to undergo a second embolization if symptoms recurred, which hasn’t happened after 1 month of follow-up.

Penile surgical exploration and ligation of the fistula stands as a last resource when other options failed, as for similar resolution rates the associated risk of erectile dysfunction reaches up to 50% [2].

**Differential Diagnosis List:** High-flow post-traumatic priapism, Low-flow priapism, Spontaneous high-flow priapism

**Final Diagnosis:** High-flow post-traumatic priapism

**References:**

Description: Left arterio-cavernous fistula (circle) originating from the left cavernosal artery (black arrow). Large white arrows: Internal pudendal artery; White arrowhead: Perineal scrotal artery; Thin white arrow: Penile artery; Black arrowhead: Dorsal artery of penis. Origin: Radiology Department, Hospital São João, Porto, Portugal
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**Description:** No collateral branches feeding the fistula (circle) are identifiable. Black arrow: Cavernosal artery; Large white arrows: Internal pudendal artery; White arrowhead: Perineal scrotal artery; Thin white arrow: Penile artery; Black arrowhead: Dorsal artery of penis. **Origin:** Radiology Department, Hospital São João, Porto, Portugal
Description: Superselective left cavernosal artery (black arrow) DSA prior to embolization with sponge gel. Circle: Fistula. Origin: Radiology Department, Hospital São João, Porto, Portugal
**Description:** After embolization: Contrast reflux into and patency of the left dorsal artery of penis (black arrowhead), left penile artery (thin white arrow) and left perineal scrotal artery (white arrowhead).

**Origin:** Radiology Department, Hospital São João, Porto, Portugal
Description: After embolization: Only a slight blush is seen at the site of the fistula (circle) a few minutes after embolization. Origin: Radiology Department, Hospital São João, Porto, Portugal