Preservation of erectile function by artery sparing dilation of the corpora cavernosa in prolonged priapism

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ABSTRACT

Prolonged low-flow priapism causes structural impotence. We describe a case where potency has been preserved by off-centre corporal dilation to spare the cavernosal arteries. The patient suffered from idiopathic priapism lasting more than 72 hours before presentation. Corporoglanular shunts were performed thrice over a period of six days, twice also performing off-centre corporal dilation along the inside of the tunica. The idea was not to damage the central cavernosal arteries. Corporal blood supply spontaneously improved. Successful intercourse was possible after six months. Artery sparing cavernosal dilation techniques might improve spontaneous recovery in select cases.

Introduction

Low-flow-priapism is defined as an often painful, rigid erection of the penis with impaired arterial inflow of the corpora cavernosa. The most significant predictor for irreversible consequences, such as long-term erectile dysfunction, is the duration of erection until detumescence is achieved.¹ Mulhall et al. postulate that none of their patients, who presented after 36 hours of low-flow priapism, had residual erectile function. El-Bahnasawy reports, that only 24% of their patients with low-flow priapism, lasting more than 48 hours, have maintained erectile function.¹ The European Association of Urology (EAU) recommends the consideration for early implantation of a penile prosthesis in ischaemic priapism lasting > 36 hours. In our case report we present a treatment alternative for low-flow priapism, lasting > 72 hours, facilitating the possible conservation of erectile function.

Case presentation

A 36-year old male presented with a priapism lasting longer than 72 hours at the time of first presentation at urology outpatients. Previous erectile function was normal, and this was the patient's first erection lasting longer than six hours. Previous history included a fracture of the atlas and medication with trazodone 25 mg once daily. On physical examination the patient had a rigid erection including a congenital penile deviation. Puncture and aspiration of the corpora cavernosa blood revealed low-flow priapism with an oxygen partial pressure of 13 mmHg, CO₂ partial pressure of 92 mmHg and pH of 6.87. Saline irrigation of the corpora cavernosa was done and etilefrine was injected with no effect. Hence a corpus spongiosum-cavernosum incision through the glans (Ebbehøj-shunt) was performed in local anaesthesia. The hypoxic blood was aspirated and blood clots were squeezed out, until light red blood appeared. Furthermore unfractionated heparin 5000 IU was administered intravenously, and diazepam 5 mg was given every 6 hours. Detumescence was achieved without further complications. The anxious patient remained in hospital for four days before he was discharged. Two days later he returned with a recurrent priapism. MRI of the penis confirmed absence of blood flow, suggesting thrombosis in both corpora cavernosa (Fig. 1). Another Ebbehøj -shunt was done and the corpora dilated off-centre alongside the capsule trying to spare the central cavernosal artery (Fig. 2). Clots were expelled and etilefrine was given intracavernosally. Four days later the patient had another recurrence of priapism. The Ebbehøj-shunt and the central artery sparing dilation were repeated again. After that the penis remained flaccid. The patient made it clear, that he does not want a penile prosthesis. In the absence of obvious risk factors for priapism the patient was discharged with acetylsalicylic acid 100 mg once per day for one year. In addition, diazepam 5 mg three times daily was given, weaning it over the following three weeks. Follow-up was scheduled regularly with Doppler-sonography of the penis. Six months after priapism the patient developed spontaneous erections sufficient for intercourse. Doppler-ultrasound confirmed cavernosal arterial blood flow in the proximal two thirds of both corpora. After 24 months follow-up the patient was very satisfied with his erectile function. Distal corporal perfusion improved significantly (Fig. 3).

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Discussion

The EAU guidelines recommend the consideration of an early implantation of a penile prosthesis after prolonged priapism (> 36 hours). Our hypothesis is that a proximal shunt might compromise distal corporal perfusion as it may divert arterial blood flow. There seem to be more complications following proximal shunting procedures than distal ones. The combination of a distal corpus spongiosum-cavernosum shunt combined with an off-centre dilation of the corpora might help to maintain central cavernosal artery integrity. We could demonstrate...
blood flow in the central cavernosal artery after two liberal corporal dilations. Three weeks after the last shunt procedure the patient already had slight tumescence, developing into full spontaneous erections after six months. Burnett et al. suggested similar shunt surgery to resolve treatment refractory priapism. Instead of a transglanular incision of the corpora cavernosa, an Al-Ghorab-Shunt-technique was performed, whereby a wedge of spongiosum tissue and corporal capsule is excised. After that the corpora cavernosa were dilated with drilling motions to mobilize blood clots. This seems to be quite effective for the evacuation of thrombotic material, but may damage the central cavernosal artery. Despite this aspect, one of their three patients was able to have intercourse after a priapism lasting for more than 24 hours. Burnett originally described inserting a 7/8 Hegar dilator into the distal corpora performing gentle boring movements. In our case the MRI confirmed total corporal thrombosis/arterial occlusion. We therefore used a 10 French conic bougie (Dittel dilator) and inserted it alongside and inside the lateral aspect of tunica all the way proximal to the root of the penis (Fig. 2). This enabled effective clot removal and we hoped not to damage the central cavernosal artery. Intact central cavernosal arterial blood flow was confirmed on later Doppler-sonography. A PubMed search regarding erectile function after priapism lasting for more than 72 hours, only showed one case report where erectile function was preserved. Shah et al. reported a patient with a priapism, which was resolved after bilateral saphenocoronal shunts after a glans-corporal shunt was not successful. The patient was 14 years old, known with sickle cell disease and regained normal, spontaneous erections.3 Proximal corporal decompression in refractory ischaemic priapism is an exciting new concept after failed distal shunt procedures.3

Conclusion

We propose off-centre corporal dilation as an extension of distal corporoglanular shunting in cases of prolonged ischaemic priapism. Maintaining central cavernosal artery integrity might help in the preservation of erectile function, even after priapism lasting longer than 72 hours.

Consent

Patient data was anonymized and consent was obtained for publication of data.

Declarations of interest

None.

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Fig. 3. Doppler sonography showing distal perfusion in both cavernosal arteries six months post priapism.