



# Therapeutic Embolization for Treating Erectile Dysfunction Secondary to Priapism: A Case Report

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## Abstract

Priapism is a less common disease in urology. Non-ischemic priapism does not require emergency management and can be treated conservatively. The deficiency of this treatment is that some of these patients may experience Erectile Dysfunction (ED). In this case, ED occurred 2 months after conservative treatment of priapism, and an arteriovenous fistula in the right cavernous of the penis was found by Color Doppler Ultrasound (CDU). Digital Subtraction Angiography (DSA) was performed to determine the location of the fistula, and microcoils were placed to block the fistula for treatment. Erectile function was restored satisfactorily after therapeutic embolization. When reviewing 1 year after surgery, the IIEF-5 score was 19 and the patient had satisfactory erections. Selective arterial embolization is still an effective treatment for erectile dysfunction secondary to priapism.

**Keywords:** Priapism; Secondary erectile dysfunction; Embolization; Treatment

## Introduction

Priapism is a less common pathologic erect condition, which is a condition of penile erection that lasts more than 4 h and is unrelated to sexual interest or stimulation. There are three main subtypes of priapism: ischemic priapism (low-flow priapism), non-ischemic priapism (NIP, also known as high-flow priapism) and stuttering priapism [1]. NIP is a less common form of priapism, accounting for less than 5% of all priapism. Conservative treatment is one of the recommended treatments for NIP. Spontaneous remission occurs in about 62% of patients. The deficiency of this management is that about a third of these patients may experience some degree of ED [2]. Here we report an unusual case of ED secondary to priapism.

## Case Presentation

A 39-year-old man appeared in our department of urology with a 3-month history of persistent ED. The patient had an unexpected straddle injury of perineal 5 months previously. He didn't go to hospital after the blunt trauma, because there was only a 1 cm × 1 cm lump and pain, with no hematuria or other discomfort. The patient went to the local hospital to see a doctor 2 days later owing to a half-rigidity, painless, persistent erection. The symptoms of priapism were under control after 2 months of conservative treatment, but ED appeared, and the five-item International Index of Erectile Function 5 (IIEF-5) questionnaire score was 2. According to the patient's medical history, the possibility of cavernous structure injury was considered, which was confirmed by CDU. There was an arteriovenous fistula about 2.4 cm × 0.4 cm in the right cavernous. There was no erection or hyperemia swelling of the penis before or after the injection of prostaglandin G1 during the CDU examination. For further examination and treatment, DSA was performed to determine the location of the fistula (Figure 1a), and microcoils were placed to block the fistula for treatment (Figure 1b). Low-dose phosphodiesterase type 5 (PDE-5) inhibitors treatment with tadalafil, 5 mg daily, was started the second day after surgery, and spontaneous erection appeared 2 weeks later. No cavernous fistula was found by CDU 3 months later, and the patient was able to perform a satisfactory intercourse with the help of PDE-5 inhibitors. When reviewing 6 months and 1 year after surgery, the IIEF-5 score both were was 19 and the patient had satisfactory erections.

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**Figure 1:** (a) DSA of right cavernous arteriovenous fistula. (b) Microcoils block arteriovenous fistula.

## Discussion

The diagnosis of priapism is self-evident in the untreated patient, as the history and physical examination are enough to make the diagnosis [3]. So this was a case of NIP. NIP is generally caused by perineal or penile blunt trauma that results in cavernosal artery injury and the formation of arterial-lacunar fistula [4,5]. Conservative or non-operative management for NIP are recommended by both the American Urological Association (AUA) and the European Association of Urology (EAU) [3]. So this patient was treated conservatively. Unfortunately, ED appeared 2 months later. CDU is an efficient and widely available method for the evaluation of many penile diseases [6]. However, CDU may miss the diagnosis of arteriovenous fistula. DSA remains the “gold standard” for vascular diseases because it shows the anatomy of vascular system accurately and can treat vascular diseases at the same time. As for the more concerned ED side effect, a literature suggested that ED rates were lower with permanent agents (8% to 17%) than temporary agents (17% to 33%) [2]. Low-dose PDE-5 inhibitor was given orally after therapeutic embolization. Abnormal Nitric Oxide (NO) signaling pathway is one of the pathophysiological changes of priapism. Daily therapy of low-dose PDE-5 inhibitors can upregulate PDE-5 gene expression, increase endothelial NO Synthase (eNOS) expression, balance the NO signaling pathway, and promote the recovery of erectile function [7]. In this case, the patient had satisfactory erectile function when reviewing 1 year after therapeutic embolization.

## Conclusion

In conclusion, we present a rare case of ED with penile arteriovenous fistula, which is a complication of conservative treatment of NIP caused by perineal blunt trauma. We recommend DSA as an examination method for secondary ED, especially for those suspected with arteriovenous fistula. Selective arterial embolization

is still an effective treatment for erectile dysfunction secondary to priapism, and combination with low-dose of PDE-5 inhibitors daily makes it more effective. However, more research is needed on safer and more effective treatments for NIP and secondary ED.

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