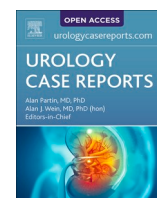


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# Urology Case Reports

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Inflammation and infection

## Partial segmental thrombosis of the corpus cavernosum associated with recreational use of sildenafil

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### ABSTRACT

Partial segmental thrombosis of the corpus cavernosum (PSTCC) is a rare disease involving thrombosis at the proximal corpus cavernosum. We describe the case of a 39-year-old African American man presenting with right groin pain who was diagnosed with PSTCC. Classic sonographic, computed tomography (CT), and magnetic resonance imaging (MRI) features were present. After conservative treatment with systemic anticoagulation, he had no long-term adverse effects or erectile dysfunction. Although various risk factors for PSTCC have been reported, this is the first documented case associated with recreational use of a phosphodiesterase inhibitor.

### Introduction

Partial segmental thrombosis of the corpus cavernosum (PSTCC), also called partial priapism, is a rare condition with fewer than 60 cases reported over the last 40 years.<sup>1</sup> Most information regarding imaging findings and treatment relies on case reports. There are several hypothesized risk factors but most cases are idiopathic. Patients have been managed with a variety of diagnostic and treatment modalities; however, the majority of cases can successfully be managed conservatively with good long-term outcomes. We present a case related to recreational use of sildenafil in a healthy 39-year-old African American man managed conservatively. We also demonstrate sonographic, CT, and MRI findings relating to this poorly understood entity in relation to our patient. To the best of our knowledge, this is the first reported case of PSTCC associated with recreational sildenafil use in our review of the literature.

### Case description

A healthy, 39-year-old African American man presented to the Emergency Department with two days of right groin pain that radiated to the perineum. The patient denied history of trauma and reported having normal erections prior to the onset of symptoms. He admitted to intermittently using sildenafil off-label without a diagnosis of erectile dysfunction. The patient's medical history was otherwise unremarkable and he denied taking other medications. On physical examination, there

was tenderness and rigidity to his proximal right corpus cavernosum at the base of his penis which extended into the perineum. The distal right corpus cavernosum, left corpus cavernosum, and glans penis were flaccid. The remainder of the examination was unremarkable. The patient was admitted for further evaluation and pain control.

The proximal right corpus cavernosum was aspirated and negative for abnormal cells and the corporal blood gas was consistent with ischemia. Sick cell screen and peripheral blood smear were normal. He had an elevated D-dimer (0.72 mcg/mL) and C-reactive protein (10.4 mg/dL). His other laboratory results were unremarkable. Hematology was consulted for a hypercoagulability work-up. Initial contrast-enhanced CT of the pelvis demonstrated a marked edematous appearance of the proximal right corpus cavernosum with fascial enhancement (Fig. 1). A curvilinear focus of hyperattenuation was also noted and likely corresponded to a small region of tunica albuginea enhancement on the ventral right corpus cavernosum (Fig. 1). The left corpus cavernosum demonstrated minimal fascial enhancement without significant edema or enlargement. Penile ultrasound showed asymmetric fullness of the right corpus cavernosum and decreased blood flow (Fig. 2). The left corpus cavernosum was normal in sonographic appearance. MRI of the pelvis displayed a diffusely enlarged appearance of the proximal portion of the right corpus cavernosum with T2-weighted sequence signal hypointensity compared to the left (Fig. 3). The proximal left corpus cavernosum also demonstrated a mild degree of T2 hypointensity possibly secondary to restricted blood flow due to mass effect from right corpus cavernosum edema. The constellation of

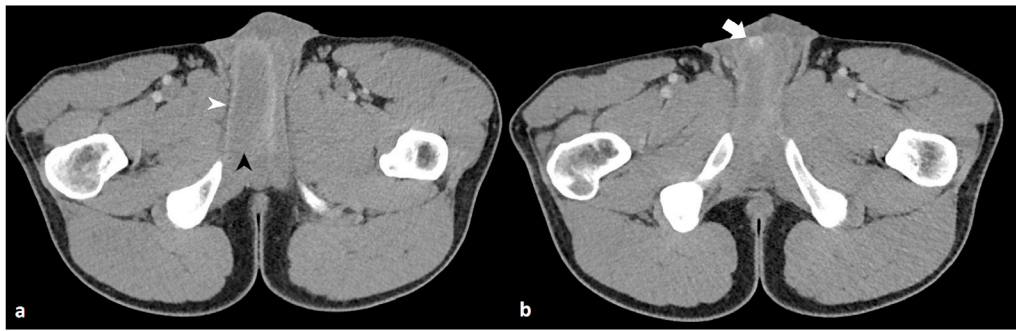
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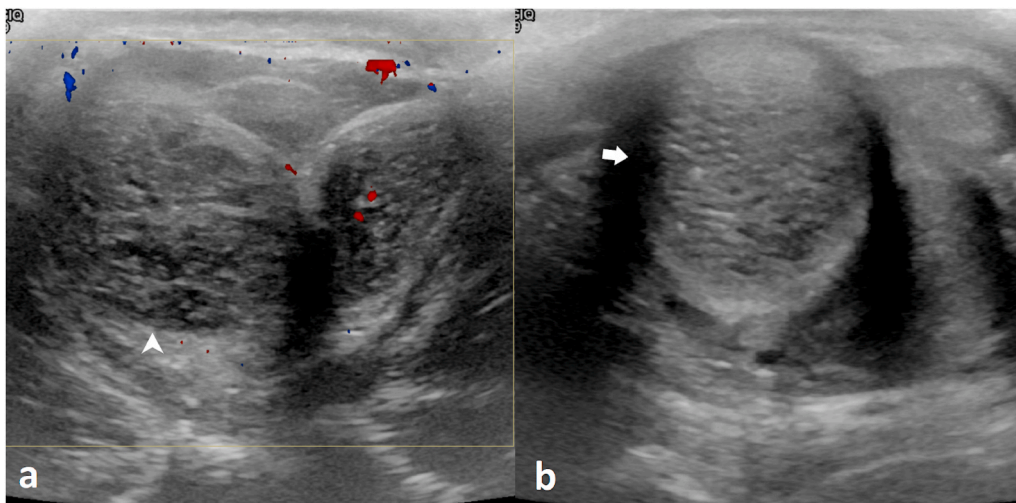
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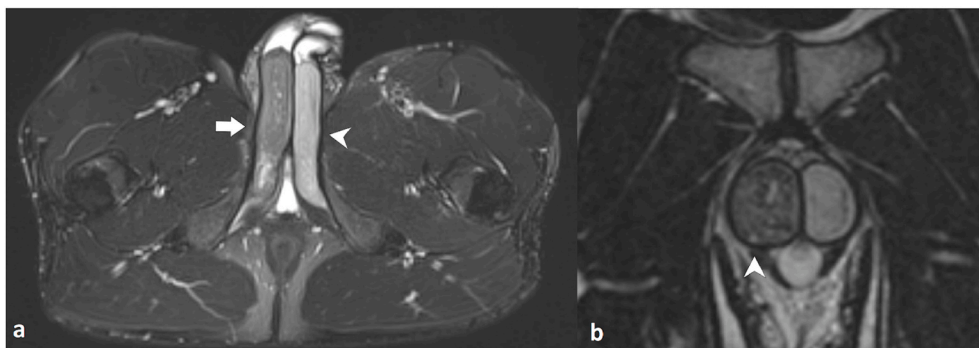
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**Fig. 1.** Axial contrast enhanced CT images through the proximal corpora cavernosum. **a** The right corpus cavernosum demonstrates marked enlargement (black arrowhead). Fascial enhancement is also appreciated (white arrowhead). **b** Curvilinear enhancement is noted on more caudal slices likely corresponding to focal enhancement of the right corpus cavernosum and ventral tunica albuginea (arrow).



**Fig. 2.** Two ventral and cross sectional still sonographic images from the patient's penile sonographic exam. **a** Color doppler image shows decreased blood flow of an enlarged right corpus cavernosum. **b** The right corpus cavernosum is demonstrated to a better extent and demonstrates marked enlargement (arrow). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)



**Fig. 3.** T2 MRI sequences through the level of the corpora cavernosa. **a** Axial T2/STIR image demonstrated T2 hypointense signal within the proximal corpus cavernosum (arrow). A milder degree of T2 low signal is also appreciated within the proximal left corpus cavernosum (arrowhead). **b** An axial T2 sequence demonstrates T2 low signal within the right corpus cavernosum (arrowhead). No color is needed for Fig. 1 or Fig. 3. Color is needed for Fig. 2.

findings from these three imaging modalities and his physical examination were consistent with PSTCC of the right corpus cavernosum. Hematology recommended treatment with rivaroxaban 15mg twice daily for 21 days followed by 20mg once daily for a total of six months. Two weeks after discharge he reported resolution of pain and his examination showed significantly improved palpable fullness. He had normal erectile function and was no longer using sildenafil. At two months post-discharge, his examination had returned to baseline and at

six months post-discharge, he did not have painful erections or erectile dysfunction.

#### Discussion

The pathophysiology of PSTCC is poorly understood. Cases that have been managed surgically report a septum of fibrous connective tissue located at the cruro-cavernosal junction, which may predispose patients

to forming PSTCC at this location.<sup>2</sup> While the majority of cases appear to be idiopathic, suggested risk factors include bike riding, perineal trauma, vigorous sexual activity, or hematological conditions. While priapism is a known potential complication associated with the use of sildenafil, the overall incidence is quite low. PSTCC has been reported in an older man with the use of prescribed sildenafil.<sup>2</sup> To our knowledge, we present the first case of PSTCC associated with recreational use of sildenafil in a male with no documented diagnosis of erectile dysfunction.

The diagnosis of PSTCC can be made based on physical examination and with the aid of different imaging modalities. On physical examination, there is unilateral tender rigidity of the proximal corpus cavernosum in the setting of distal and contralateral flaccidity. Noninvasive imaging options include ultrasound, CT, and MRI. Ultrasound is readily available and noninvasive but technique can often be operator dependent. Findings can be confirmed with MRI as it can better delineate the segmental thrombosis and may demonstrate a thickened septum within the affected corpus cavernosum.<sup>3</sup>

Suggested treatment modalities have varied from conservative regimens to surgical intervention. Conservative medical treatment regimens include subcutaneous injections of low molecular weight heparin for at least six weeks with the addition of aspirin 325mg by mouth once daily or non-steroidal anti-inflammatory drugs.<sup>3,4</sup> Rivaroxaban for up to six months combined with daily sildenafil, which can also be used to treat stuttering priapism, has also been reported.<sup>1</sup> Alternatively, surgical intervention for refractory pain to evacuate the thrombus has been reported after aspiration/injection methods have failed.<sup>2</sup> In conjunction with Hematology recommendations, we would recommend a six month course of rivaroxaban to prevent further thrombotic events. There is the added benefit of improved patient compliance and tolerability with oral medications. We also recommend close follow-up with Hematology to ensure a complete hypercoagulability evaluation. To date, there was no

reported erectile dysfunction following resolution of the thrombus in our patient.

## Conclusion

Partial segmental corpus cavernosum thromboses are typically the result of idiopathic or traumatic etiologies. Recreational use of sildenafil may place men at a higher risk of developing PSTCC and use should be documented in the initial evaluation. Diagnosis can be made with the combination of physical examination, sonography, CT, and MRI. PSTCC can be successfully treated conservatively with systemic anticoagulation with resolution of symptoms within three months.

## Declaration of competing interest

Disclaimer: The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Army, the Department of the Air Force, or the Department of Defense or the U.S. Government."

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