Quantitative functional outcomes of the conservative management of partial segmental thrombosis of the corpus cavernosum

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ABSTRACT

The low incidence of partial segmental thrombosis of the corpus cavernosum (PSTCC) means its management is guided by isolated case reports. Erectile function is an important outcome that has not been described quantitatively in the literature. We present two cases of PSTCC managed conservatively. Although both patients reported resolution of local symptoms, formal analysis of sexual function at follow-up review has revealed that only one achieved complete recovery.

KEYWORDS

PSTCC – Corpus cavernosum thrombosis – Partial priapism

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Partial segmental thrombosis of the corpus cavernosum (PSTCC) is a rare condition with no reported UK cases and only 35 described in the world literature to date.¹ The optimal management strategy of PSTCC remains elusive; both surgical and non-surgical approaches have been reported. We describe two conservatively managed cases of PSTCC and detail their formal erectile function at follow-up review, measured using the validated five-item version of the International Index of Erectile Function (IIEF-5) questionnaire.²

Case histories

Case A

A 19-year-old moped user presented with a 3-day history of a painful perineal mass and no lower urinary tract symptoms, prior erectile dysfunction or priapism. He had engaged in vigorous sexual activity the night before the appearance of the mass and admitted misuse of anabolic steroids.

Examination revealed a tender swelling over the proximal left corpus cavernosum with a flaccid distal penis. Admission blood tests and urinalysis were unremarkable apart from elevation of C-reactive protein at 91mg/l. Further investigation revealed hypogonadotrophic hypogonadism (low testosterone, normal luteinising hormone and follicle stimulating hormone) secondary to anabolic steroid misuse. Subsequent magnetic resonance imaging (MRI)

showed thrombosis of the perineal part of the corpus cavernosum (Figure 1).

The patient was managed conservatively (analgesia, 1 month of daily low molecular weight heparin [LMWH] injections and 3 months of aspirin 75mg daily). Repeat MRI at six weeks (Figure 1) showed significantly reduced thrombus volume. He subsequently reported resolution of the tender mass. However, detailed assessment using the IIEF-5 questionnaire revealed mild erectile dysfunction at 17 weeks and mild/moderate erectile dysfunction at 30 weeks (Table 1). He reported no penile curvature as the result of PSTCC.

Case B

A 37-year-old without any prior erectile dysfunction presented with perineal pain and dysuria. He had had vigorous sexual intercourse the preceding day, having just returned home after a two-hour flight from a long cycling holiday. Examination revealed a tender mass in the perineum arising from the left corpus cavernosum with a distal flaccid penis. Blood tests were unremarkable. Urinalysis was negative. Pelvic radiography and Doppler ultrasonography of the scrotum, inguinal and perineal region detected no abnormality. He underwent MRI, which showed low signal intensity in the base of the left corpus cavernosum, in keeping with PSTCC (Figure 2).

At the six-week follow-up review, the patient reported resolution of the painful perineal mass and return of

CC = corpus cavernosum; *thrombus in proximal CC;
CS = corpus spongiosum; A = anus; T = testis

Figure 1 Magnetic resonance imaging (MRI) from case A at presentation (left) and at 6 weeks (right): axial T2 weighted MRI (A), axial short tau inversion recovery MRI (B), axial gadolinium enhanced MRI (C) and sagittal gadolinium enhanced MRI (D)

B = bladder; PB = pubic bone; CC = corpus cavernosum;
CS = corpus spongiosum; T = testis; R = rectum; *thrombus
in proximal CC

Figure 2 T2 weighted magnetic resonance imaging (MRI) from case B: sagittal MRI of left (unaffected) side (A), sagittal MRI of right (affected) side (B), axial view (C) and coronal view (D)

sexual function. He scored 21 on the IIEF-5 at six weeks, indicating mild erectile dysfunction (Table 1). This improved to a score of 25 at 14 weeks. He reported no penile curvature.

Discussion

PSTCC is rare, with 35 cases reported in the literature.¹ It typically presents as a tender, firm perineal mass with associated erectile dysfunction.^{1,3,4} Differential diagnoses include rare primary solid tumours (eg sarcoma or lymphoma), metastases usually of urogenital origin and benign masses (eg epidermoid cysts or inflammatory fibrosis). Definitive diagnosis is often achieved on MRI. Although some authors have advocated the use of Doppler ultrasonography,¹ this proved normal in one of our patients, suggesting insufficient sensitivity as a diagnostic modality.

A number of risk factors for PSTCC have been proposed including cycling, prolonged intercourse, transcontinental flight, prior idiopathic priapism, haematological disease, sildenafil, cocaine and marijuana use.¹ Our cases both had at least one of these risk factors and one patient also had the additional factor of anabolic steroid misuse resulting in hypogonadotrophic hypogonadism.

Current consensus in the literature has focused on the 'two-hit model'.⁵ This proposes that predisposed

individuals have a permeable membrane between the proximal and distal corpora, which forms congenitally or as a result of repeated microtrauma or vascular insults. In PSTCC, an acute insult may lead to blockage of this membrane, resulting in increased pressure in the proximal compartment and resultant partial priapism.

Several management strategies have been proposed. Conservative treatment with LMWH and aspirin has resolved symptoms in many cases. Of the 20 cases in the literature managed conservatively, 3 were given no treatment or analgesia alone, 1 was given analgesia and pseudoephedrine, and the remaining patients received a range of antithrombotic agents. Erectile function was qualitatively reported as preserved in 16 of the 20 cases, with 4 outcomes not known.¹ One case re-presented with recurrent partial priapism seven years after having been managed conservatively, the authors attributing this in part to formation of a septal plaque following drainage of a 'true' priapism.⁴

More invasive treatment of PSTCC by aspiration, phenylephrine injection, corporal incision and clot evacuation, removal of transverse membrane or shunt formation has been advocated, usually in cases not amenable to conservative treatment. Erectile functional outcomes in this group are less encouraging, with 3 of the 15 reporting erectile dysfunction at follow-up review.¹ It is unclear whether the

Table 1 Five-item International Index of Erectile Function scores for patients A and B at follow-up review

Question	Patient A		Patient B	
	17 wks	30 wks	6 wks	14 wks
How do you rate your confidence that you could get and keep an erection?	Moderate (3)	Moderate (3)	High (4)	Very high (5)
When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	Most times (4)	Sometimes (3)	High (4)	Almost always (5)
During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?	Most times (4)	Sometimes (3)	Almost always (5)	Almost always (5)
During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?	Slightly difficult (4)	Difficult (3)	Not difficult (5)	Not difficult (5)
When you attempted sexual intercourse, how often was it satisfactory for you?	Most times (4)	Sometimes (3)	Sometimes (3)	Almost always (5)
Total	19	15	21	25

development of erectile dysfunction is due to more severe disease at presentation or more invasive treatment. Patients with residual erectile dysfunction after PSTCC management seem to benefit from intervention with phosphodiesterase inhibitors.⁵

One of our patients had mild/moderate erectile dysfunction at four and seven months after conservatively managed PSTCC. Whether this reflects a detrimental effect of the condition in isolation or influence of other factors remains unknown. We do not have an IIEF-5 score prior to the development of PSTCC and although the patient reported 'normal' erectile function on questioning, one cannot rule out pre-existing unreported erectile dysfunction. Anabolic steroid misuse may have had an influence on the functional recovery of our first patient. Our other case also had mild erectile dysfunction at 6 weeks but made a full recovery by 14 weeks.

This case series sets a precedent in using a validated quantitative tool (IIEF-5) to accurately describe the functional outcomes in PSTCC over time during the follow-up period. It appears that outcomes may not be as encouraging as previously thought.

Conclusions

PSTCC is a rare condition that should be suspected in patients presenting with a painful perineal mass,

particularly if they have one or more underlying risk factors for the disease. Conservative treatment with anticoagulants should be the first-line response. Despite the apparent clinical improvement in both of our patients on conservative management, there is a risk of erectile dysfunction as demonstrated by our first case. Men with PSTCC may benefit from further follow-up review and intervention to manage their erectile dysfunction.

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