


CASE REPORT OPEN ACCESS

# A Case of Penile Cavernosal Abscess Associated With Sigmoid Colovesical Fistula

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## ABSTRACT

**Introduction:** A penile cavernosal abscess is rare and typically attributable to sepsis, trauma, or intracavernosal injections.

**Case Presentation:** A 65-year-old man with suspicion of non-muscle invasive bladder cancer underwent transurethral resection. Edematous and erythematous mucosa was noted on the posterior wall. The pathological findings showed significant inflammatory cell infiltration, and urothelial carcinoma was ruled out. Abdominal CT post-surgery revealed multiple diverticula in the sigmoid colon and bladder wall thickening, indicating the presence of a fistula. Although colonoscopy and cystography did not show any fistula, the patient developed a penile cavernosal abscess approximately 40 days post-transurethral resection. Emergency penile incision and subcutaneous drainage were performed, followed by laparoscopic sigmoid colectomy after inflammation improved. A complete cure was achieved with continued antibiotic therapy for 5 weeks.

**Conclusion:** To our knowledge, this is the first report of a penile cavernous abscess associated with a sigmoid colovesical fistula definitively treated by drainage and colectomy.

## 1 | Introduction

A penile cavernosal abscess is rare and attributable to sepsis, trauma, or intracavernosal injections [1, 2]. Definitive treatment consists of antibiotic administration together with surgical incision and drainage [3, 4]. A colovesical fistula arises from various conditions, with diverticulitis of the colon being the most common cause [5]. For a colovesical fistula, the treatment involves colectomy, partial cystectomy, and bladder repair. Here, we present a case of penile cavernosal abscess triggered by a sigmoid colovesical fistula after transurethral resection (TUR) at the fistula site. Following drainage of the cavernosal abscess, laparoscopic sigmoid colectomy was conducted, which resulted in a complete cure.

## 2 | Case Presentation

A 65-year-old man with hypertension presented to our department for treatment of suspected urothelial carcinoma. Cystoscopy performed at another facility had revealed papillomatous mucosal proliferation on the posterior wall (Figure 1). Urinalysis showed significant pyuria, whereas urine cytology was negative. TUR of the bladder tumor was performed. A broad area of edematous and erythematous mucosal proliferation was noted on the posterior wall. The center of the lesion appeared tumor-like, but we could not exclude the possibility of fistula formation. TUR of the lesion was performed until the muscular layer was exposed. Pathological examination showed significant infiltration of inflammatory cells (Figure 2A). Despite

**Abbreviations:** CT, computed tomography; MRI, magnetic resonance imaging; TUR, transurethral resection.

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## Summary

- We report a case of penile cavernosal abscess associated with a sigmoid colovesical fistula that was definitively treated by drainage and laparoscopic sigmoid colectomy.

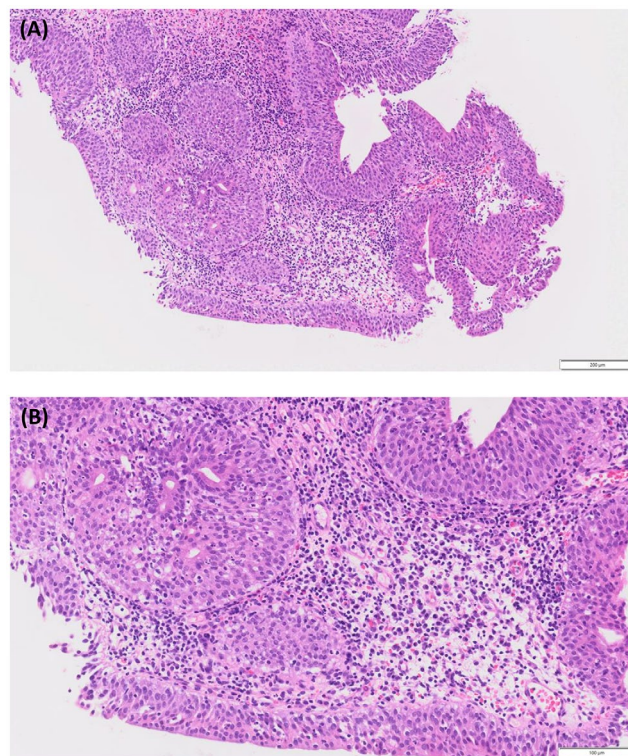


**FIGURE 1** | Cystoscopy performed at another facility revealed a papillomatous mucosal proliferation on the posterior wall with the presence of stones on the surface.

the presence of mild nuclear enlargement, the pronounced surrounding inflammation suggested a reactive change rather than urothelial carcinoma (Figure 2B).

In the absence of any symptoms, a plain abdominal CT was performed the day after surgery to evaluate the presence of a fistula. It revealed multiple diverticula in the sigmoid colon (Figure 3A), along with thickening of the bladder's posterior wall, indicating the presence of a fistula (Figure 3B,C). The patient underwent colonoscopy on the 18th postoperative day. Numerous diverticula were noted in the sigmoid colon; however, no obvious fistula was identified. Cystography performed on the 30th postoperative day did not show any contrast medium leakage. After an initial period of outpatient observation, the patient experienced fever and perineal pain approximately 40 days after TUR and visited the local emergency department. An abscess formation was found in the left penile corpus cavernosum. The patient was administered antibiotics (levofloxacin) and referred to our hospital the following day.

At our hospital, laboratory findings revealed inflammatory marker elevation and fecaluria. Contrast-enhanced CT revealed air within the abscess and an increase in the adipose tissue density around the fistula (Figure 4A–C). We diagnosed a penile cavernosal abscess triggered by sigmoid colovesical fistula. The patient was admitted for emergency surgery. Coronal sulcus incision and puncture through the left corpus cavernosum using Kelly forceps were performed, which allowed easy access to the abscess cavity, and a drainage tube was placed. Postoperatively, the patient was

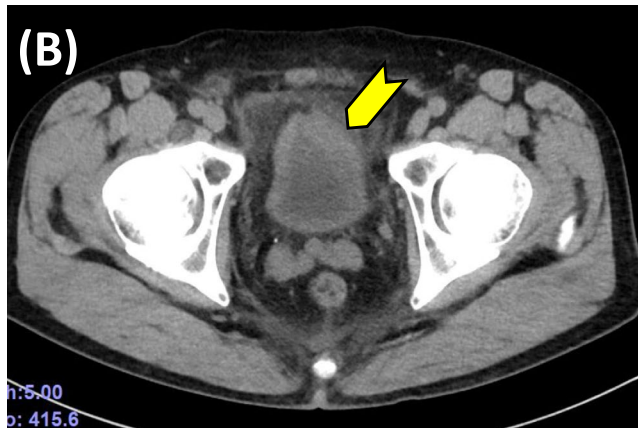
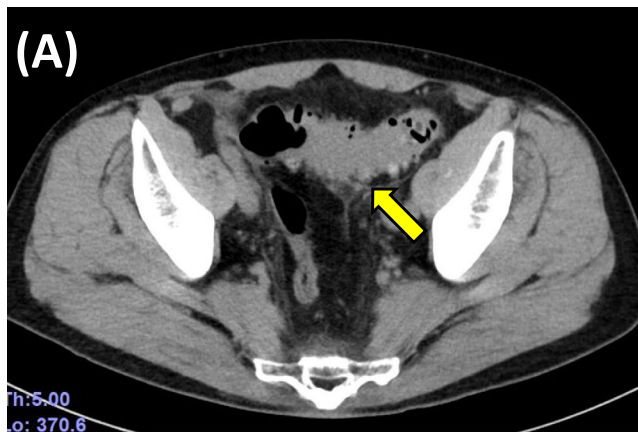


**FIGURE 2** | Pathological examination showed significant infiltration of inflammatory cells, including lymphocytes (A). Despite the presence of mild nuclear enlargement, the pronounced surrounding inflammation suggested a reactive change rather than urothelial carcinoma (B).

kept fasted and treated with antibiotics (cefmetazole). After inflammatory markers were normalized (13th day of readmission), laparoscopic sigmoid colectomy was performed for definitive management. The sigmoid colon diverticulum adhered to the bladder's posterior wall. After resection of the sigmoid colon, because a saline leak test of the bladder did not demonstrate leakage, the bladder repair was not conducted. The sigmoid colon was anastomosed end to end. On the 17th day after rehospitalization, the drainage tube at the left corpus cavernosum was removed. Cystography conducted on the 24th day confirmed the absence of a leak, and the urethral balloon catheter was removed. The urine cultures, drainage specimen cultures, and blood cultures conducted at our institution were all negative because of the prior administration of antibiotics, while *Streptococcus intermedius* was detected in the blood cultures submitted at the local emergency department. The patient was discharged on the 26th day, transitioning to oral levofloxacin while completing approximately 5 weeks of antibiotic therapy. The patient has not experienced any symptom recurrence.

## 3 | Discussion

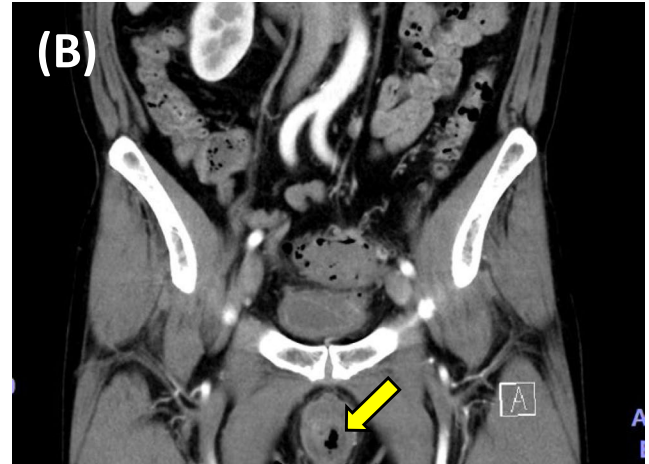
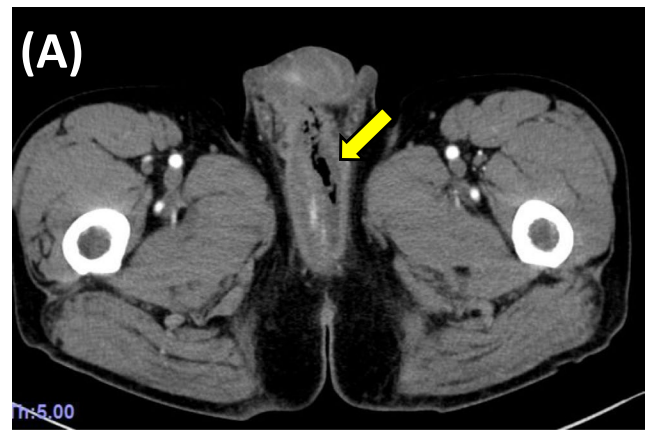
A penile cavernosal abscess is rare and reportedly caused by septic metastasis, intracavernous injection, sexual trauma, or perineal abscess extension. The chief complaints are penile pain and localized swelling. Diagnosis is based on clinical examination and imaging modalities, namely CT and MRI of the penis. Identified risk factors include immunosuppression and pre-existing local or distant infection. *Staphylococcus aureus*,



**FIGURE 3** | A plain abdominal CT scan on the day after surgery revealed multiple diverticula in the sigmoid colon (A, arrow) along with thickening of the posterior wall of the bladder (B, arrowhead). Although it was post-transurethral surgery, there was air at the site of proximity to the sigmoid colon diverticula (C, arrowhead).

streptococci, and *Bacteroides* species are the common causative organisms, while *Escherichia coli* is relatively uncommon [1–3]. The treatment consists of antibiotic administration together with surgical incision and drainage [3, 4].

A colovesical fistula arises from various conditions, including inflammation, malignancy, radiation therapy, and trauma [5]. The most common cause of colovesical fistula is colonic



**FIGURE 4** | A contrast-enhanced CT scan revealed an abscess formation, with air inclusion extending from the left penile corpus cavernosum on the axial image (A, arrow) and coronal image (B, arrow). An increase in the density of adipose tissue around the fistula (C, arrowhead) was also apparent.

diverticulitis, which accounts for 50%–70%. Anatomically, most fistulas are located in the sigmoid colon. The chief complaints are typically fecaluria, pneumaturia, and cystitis symptoms. Abdominal CT is useful for diagnosing colovesical fistulas as it easily detects air within the bladder [6]. Gastrointestinal tract and urinary system examinations are necessary to diagnose the underlying condition and the fistula location. However, the probability of detecting a fistula with barium enema imaging is



low, ranging from 10% to 30%. In cystography, since intravesical pressure is lower than colonic pressure, the probability of detecting a fistula is even lower [7]. Definitive treatment for a colovesical fistula secondary to colonic diverticulitis involves colectomy, partial cystectomy, and bladder repair [5].

In our case, as the patient did not have any immunosuppressive conditions, the penile cavernosal abscess was considered to have been caused by infection from a sigmoid colovesical fistula. The transurethral procedures had the potential to exacerbate the fistula. *Streptococcus intermedius* detection in the blood cultures and the absence of subcutaneous abscess extension from the perineum suggest that the infection was caused by septic metastasis. *Streptococcus intermedius* originally exhibits low susceptibility to second-generation cephalosporin antibiotics [8, 9]. In our case, because of the delay in obtaining blood culture results, levofloxacin was chosen when transitioning to oral therapy.

Although endoscopic options (including fibrin glue, clips, stents) are available to treat colovesical fistulae, these treatments remain to be assessed and are generally recommended to patients who are unsuitable for surgery [10]. To enhance the curative potential, and in line with general recommendations, surgical intervention was chosen, specifically resection and reanastomosis of the bowel segment. In benign enterovesical fistulae, Dziki et al. have proposed that closure of the bladder defect is not necessary in cases demonstrating no leakage from the bladder intraoperatively [11]. After confirming the absence of leakage with a leak test, we did not perform bladder repair. To our knowledge, this is the first report of a penile cavernous abscess associated with sigmoid colovesical fistula that was definitively treated by drainage and colectomy.

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## Ethics Statement

The authors have nothing to report.

## Consent

The authors have nothing to report.

## Conflicts of Interest

The authors declare no conflicts of interest.

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