Emphysematous prostatic abscess with rectoprostatic fistula

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ABSTRACT  

Emphysematous prostatic abscess is a rare but relatively serious infectious disease, and its association with rectoprostatic fistula is extremely unusual. The reported risk factors for this condition include diabetes mellitus, immunosuppression, and prostate surgery. We report a rare case of emphysematous prostatic abscess successfully treated by transurethral drainage. Nonetheless, a rectoprostatic fistula was found postoperatively. The fistula healed spontaneously without fasting or fecal diversion after suprapubic cystostomy and placement of a urethral catheter. This case highlights the importance of surgical drainage for the treatment of an emphysematous prostatic abscess and that conservative treatment can be a safe and effective approach for an associated rectoprostatic fistula. 

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1. Introduction  

Emphysematous prostatic abscess is a rare but severe infectious disease of the prostate, which is characterized by a localized collection of gas and purulent exudates in the prostate gland. A previous review has shown that approximately 2.9% of cases consist of spontaneous perforation into the rectum in the prostatic abscess. 1 However, to our knowledge, only one case of rectoprostatic fistula in the emphysematous prostatic abscess has been reported. 2 Here, we report a case of a diabetic patient with emphysematous prostatic abscess due to Escherichia coli and Klebsiella pneumonia. He was successfully treated with transurethral drainage of prostatic abscess and conservative treatment for an associated rectoprostatic fistula. 

2. Case report  

A 69-year-old man presented to the emergency department with the complaint of high fever, dysuria, and anal pain for several days. He had a history of hypertension and diabetes mellitus for more than 10 years, with irregular medical control. Prior to this episode, he had a more than 10-year history of lower urinary tract symptoms suggesting benign prostate hyperplasia without any medication. He denied having diabetic retinopathy, nephropathy, or neuropathy. A digital rectal examination showed a tender and warm prostate. A complete blood count demonstrated white blood cells of 22,000/μL (normal range, 4000–10,000/μL). His C-reactive protein was 28.7 mg/dL (normal range, <1.0 mg/dL). The fasting serum sugar level was 170 mg/dL (normal range, <126 mg/dL) and his Hba1c was 9.0% (normal range, <5.6%). Pyuria was noted on the urinalysis. Pelvic computed tomography showed a gas-forming, emphysematous prostate abscess (Fig. 1). Analysis of the urine culture subsequently revealed the presence of E. coli and K. pneumoniae. These pathogens were sensitive to ceftazidime and amikacin. Broad spectrum antibiotics with ceftazidime at 1 g per 8 hours were prescribed immediately, but the fever persisted. Thus, abscess drainage was suggested 2 days later. 

The patient underwent transurethral drainage of the emphysematous prostatic abscess and trocar cystostomy for urinary diversion. The abscess was necrotic and sticky. No feces or obvious rectal injury was found. A 22F three-way urethral Foley catheter was inserted after surgery. The fever subsided immediately, and the Foley catheter was removed 4 days postoperatively. Feces were found in the cystostomy tube 7 days postoperatively. A rectoprostatic fistula was highly suspected and was visible on pelvic computed tomography (Fig. 2). Emergency cystoscopy was performed, and a Foley catheter was reinseted with the guidance of a safety guide wire. 

The patient was discharged with a Foley catheter and cystostomy tube; he received oral antibiotic treatment. One month later, the Foley catheter was removed. Repeated cystoscopy showed smooth prostate urethra without any obvious fistula. The fistula healed spontaneously without fasting or fecal diversion. During 3 months of follow-up, the patient did not have any febrile urinary tract infection or any defecation discomfort. The free uroflow rate
showed that the voided volume was 170 mL, the peak flow rate was 16.6 mL/s, and the postvoiding residual urine was 16 mL and had a bell-shaped flow pattern.

3. Discussion

Emphysematous prostatic abscess is rare and is characterized by a localized collection of gas and purulent exudate in the prostate gland.1,3 In the past, prostatic abscess was frequently caused by Neisseria gonorrhoeae, a sexually transmitted disease that mainly occurred in young patients. Because of the improvement of antibiotics over the past 50 years, the incidence of prostatic abscess has sharply decreased.1 Previous reports showed that diabetes, immunosuppression, and previous prostate surgery were common risk factors of emphysematous prostatic abscess. K. pneumonia, Pseudomonas aeruginosa, and Candida albicans are commonly reported as the causative pathogens.4,5 Recently, Wen et al6 reviewed 12 cases of emphysematous prostatic abscess and found that 10 patients had diabetes, and the mortality rate was as high as 25%.

Although diabetes is an important risk factor for prostatic abscess, no reference has been reported about the relationship between diabetic duration and prostatic abscess.

Like prostatic abscess, the presenting signs and symptoms include fever, abdominal pain, lower urinary tract symptoms, perineal pain, and rectal discomfort. Digital rectal examination may show an enlarged prostate with tenderness and heat. Sometimes, the prostate would palpate as soft, because of the extensive gas and exudate accumulation. Prior to the development of computed tomography, it was difficult to confirm by plain radiography if the gas had originated from the genitourinary tract or the adjacent bowel. Imaging of the prostate by transrectal ultrasound and/or computed tomography shows copious amounts of gas in the prostate, and so this process should be performed in all patients with a suspected clinical diagnosis of emphysematous prostate abscess.

The definitive treatment is prompt antibiotic treatment and abscess drainage. Abscess drainage may be performed by transurethral drainage/unroofing,7 transurethral incision or resection of the prostate, open perineal drainage, transrectal ultrasound guided drainage, transperineal percutaneous aspiration, or computed tomography-guided transperineal percutaneous drainage. The suprapubic cystostomy was usually performed either immediately or during the operation for urinary diversion. It is recommended that transperineal puncture/drainage be performed in high-risk patients, such as in the elderly, in sepsis, those at high risk for anesthesia, and in emergency situations. Recurrent abscess formation is possible with this procedure because the dead space in the abscess is not enucleated. In a study of nine patients with prostatic abscess who had undergone perineal drainage, two patients experienced recurrence of the abscess during the 1-month follow-up period and underwent drainage again. Transurethral drainage/unroofing was also effective. However, the contraindication of transurethral drainage/unroofing was similar with that of transurethral resection of the prostate. The common contraindications include uncontrolled poor medical conditions, bleeding tendency, high anesthesia risk, and/or in cases where it is difficult to place the patient in the lithotomy position. In this case, we performed transurethral drainage and suprapubic cystostomy. The patient recovered well and no recurrent abscess was found during follow-up.

Rectoprostatic fistula is an extremely rare condition, including that related to prostatectomy for benign or malignant diseases, prostate radiotherapy or cryotherapy, anorectal surgery, trauma, urethral instrumentation, or inflammatory bowel disease (such as Crohn’s disease). To our knowledge, only one case of spontaneous perforation of emphysematous prostatic abscess into the rectum has been reported previously.2 Weinberger et al1 reviewed 269 cases of prostatic abscess without mentioning gas formation or emphysematous change and found eight (2.9%) cases of spontaneous perforation into the rectum. Tuberculosis-related rectoprostatic fistula has also been reported.7 This condition is suspected when urine is seen passing through the rectum or fecal material from the urinary tract, which was the clinical presentation of our patient. A colonoscopy could show a fistula orifice in the rectum, whereas barium enema could show a fistula between the rectum and the prostate, with delineation of seminal vesicles by the barium.5 These imaging findings suggest a fistulous communication between a prostatic abscess and the rectum.

Although urinary diversion is necessary, fecal diversion remains controversial in the treatment of rectoprostatic fistula associated with prostatic abscess. Kumar et al1 reported three cases of tubercular rectoprostatic fistula, and all patients underwent suprapubic cystostomy. Of these patients, one underwent
immediate diverting colostomy and one underwent a 6-week delayed diverting colostomy. All patients recovered and voided uneventfully after closure of colostomy and cystostomy. Two and three cases of iatrogenic rectoprostatic fistula after transurethral resection of prostate were reported by Mottet et al\textsuperscript{9} and Bauer et al\textsuperscript{10} respectively. All five patients underwent simultaneous cystostomy and colostomy and recovered well. Recently, Ruíz Plazas et al\textsuperscript{11} reported a case of rectoprostatic fistula with prostatic abscess. Conservative treatment with antibiotics and indwelling catheter achieved good clinical resolution of the abscess and fistula. In our patient, it was difficult to determine if the rectoprostatic fistula was related to the abscess rupture or the transurethral drainage procedure. We used suprapubic cystostomy to do urinary diversion and prolonged the duration of Foley placement for 1 month. The fistula recovered spontaneously, without surgical repair. The patient was also free from recurrent urinary tract infection and defecation discomfort.

In summary, emphysematous prostatic abscess is a rare disease, and only 13 cases of emphysematous prostatic abscess have been reported so far. Its occurrence with a fistula to the rectum is extremely unusual, and only one case has been found. This condition should be highly suspected if the patient has diabetes, immunosuppression, or previous prostate surgery. Because the mortality rate is high, this case highlights the importance of surgical drainage of emphysematous prostatic abscesses, whereas the conservative treatment of associated rectoprostatic fistula is safe and effective when the rectoprostatic fistula tract is relatively small, not related with malignancy or radiotherapy, and the patient is under adequate infection control and has been well informed about the possibility of further surgical management.

**Conflicts of interest**

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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**References**