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# Ureterocutaneous Fistula in Setting of Recurrent Gluteal Abscesses: A Case Report

Catherine Alapatt  
*Rowan University*

Young Son  
*Rowan University*

Benjamin Fink  
*Rowan University*

Brian Thomas  
*Rowan University*

Sean Coulson  
*Rowan University*

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**Author(s)**

Catherine Alapatt, Young Son, Benjamin Fink, Brian Thomas, Sean Coulson, Shawon Akanda, Jacob Thatcher, and Thomas Mueller



## Introduction

Ureteral fistulas are a rare occurrence and most commonly the result of iatrogenic trauma<sup>1,2,3</sup>. Treatment of urinary tract fistulas often depends on their severity and location, with some fistulas requiring conservative therapy whereas surgical repair can also be utilized in refractory cases<sup>4</sup>. Conservative measures are the first line of treatment for uncomplicated ureteral fistulas including watchful waiting before moving on to ureteral stent or percutaneous nephroureteral stent placement<sup>1</sup>. When necessary, surgical options include the excision of fistula with anastomosis or grafting. Ureterocutaneous fistulas are rare and seldom discussed in literature. We report a case of ureterogluteal fistula with concurrent presacral abscess secondary to previous pelvic radiation history and potential iatrogenic trauma.

## Case Presentation

An 85-year-old female presented to the emergency department with vaginal pain, subjective fevers, and clear discharge from her left buttock for two days (Figure 1). The patient's past medical history included a known draining, presacral abscess involving the left gluteal muscle and stage IIb cervical cancer diagnosed 11 years prior to initial presentation treated with cisplatin and radiation. This was complicated by retroperitoneal fibrosis causing extrinsic compression of bilateral ureters requiring bilateral nephroureteral stents. History included chronic urinary tract infections (UTI) with extended spectrum beta-lactamases (ESBL) *Klebsiella*. On presentation, the patient's blood pressure was 112/58 mmHg, pulse of 80 beats/minute, respiratory rate of 16 breaths/minute, a temperature of 99.3°F, and oxygen saturation of 98%. The patient's creatinine was 1.71 mg (milligram) / dL (deciliter), white blood cell (WBC) count of 5.7 x 10<sup>3</sup> uL (microliters), and lactate of 3.5 mg/dL. Urinalysis displayed 3+ protein, 4+ blood, positive nitrites, 4+ leukocytes, and many bacteria, suggestive of UTI. A computed tomography (CT) of the abdomen and pelvis without contrast was performed, revealing a 6 x 5.4 x 3-centimeter (cm) presacral abscess involving the left gluteus maximus muscle with fistulous communication to the skin surface, and bilateral severe hydronephrosis (Figure 2). In the ED, the patient was started on empiric vancomycin and aztreonam and admitted for gluteal abscess and acute kidney injury. During the patient's admission, wound fluid creatinine measured 55 mg/dL, serum creatinine (1.16 mg/dL), and lactate (1.8 mg/dL), leading to suspicion of a ureteral fistula. As the gluteal abscess was draining clear fluid on presentation, general surgery recommended extending the drainage site, however the patient refused intervention. Urine cultures also revealed *Klebsiella pneumoniae*, requiring ceftazidime and avibactam per infectious disease. The *Klebsiella* infection was believed to be due to a suspected fistula. As a result of the continued infection, general surgery deferred to urology and interventional radiology (IR). A cystoscopy with bilateral retrograde pyelogram for bilateral nephroureteral stent exchange was performed per the patient's extensive history of UTIs and chronic stents. A cystogram and retrograde ureterogram was performed but did not reveal any extravasation indicative of a fistula at the time. (Figure 3).

During this time the patient was continued on meropenem for the gluteal abscess and gram-negative UTI. On day six of admission, IR performed a CT-guided aspiration and catheter placement of the left presacral collection. The CT-guided aspiration was delayed as the patient was not agreeable until then to any drainage or incision, despite advice from the managing team. Cultures from the collected abscess also showed *Klebsiella pneumoniae*, along with *Candida glabrata*, and anidulafungin was added. On day nine in the hospital, the patient's presacral drain was exchanged by IR due to dislodgement. During exchange, contrast was seen collecting in the presacral space as well as the distal left ureter and urinary bladder, suggestive of a fistulous tract with the distal left ureter (Figure 4). Due to this fistulous tract, the patient's left nephroureteral stent was removed and converted to a left percutaneous nephrostomy (PCN) catheter. This was done to decrease drainage output to the affected area and promote healing. The patient was ultimately discharged with a left PCN and gluteal drain due to continued high output and instructed to follow-up with urology as an outpatient.



Figure 1. Clear discharge from fistulous tract of left buttock from initial patient presentation to the ED.

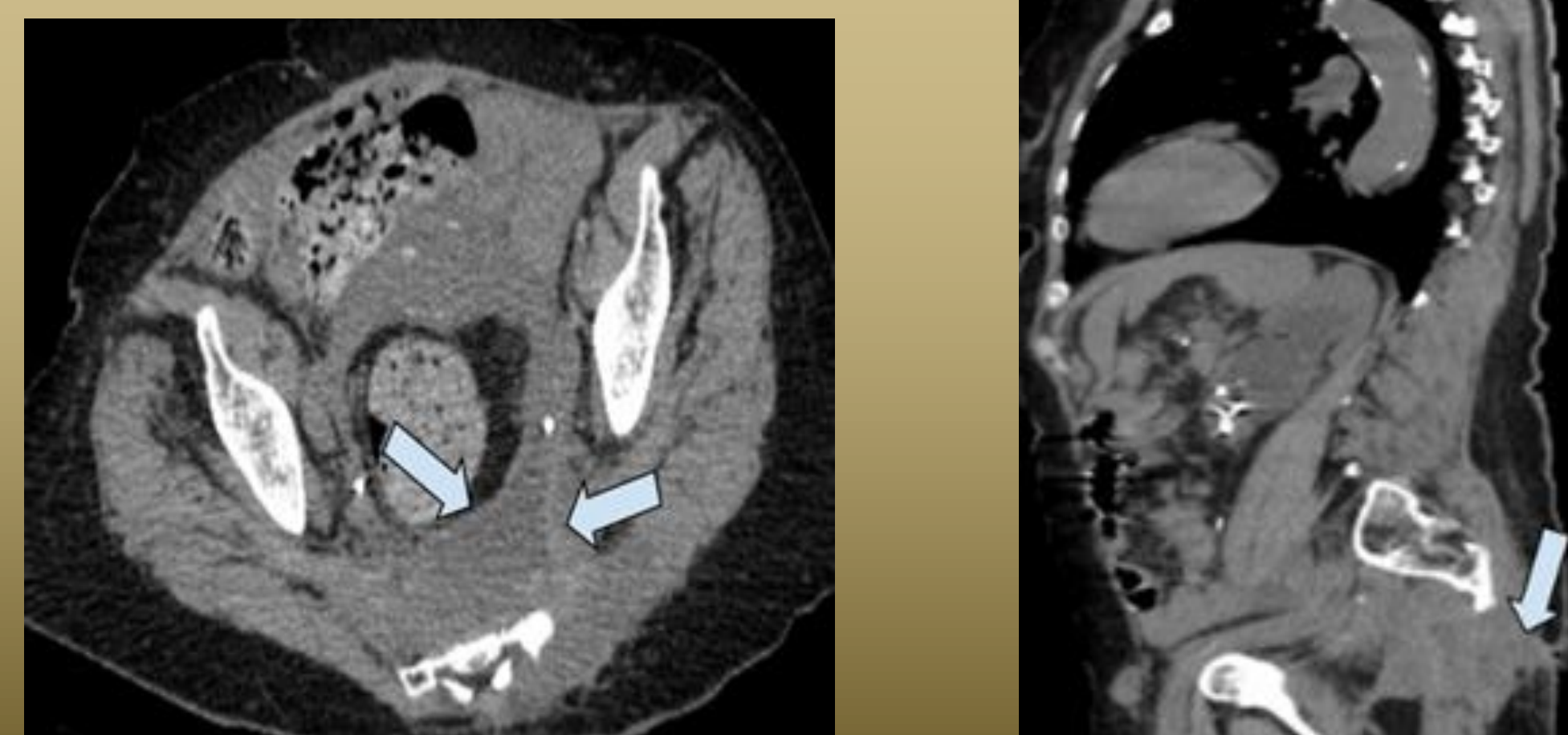


Figure 2. CT of the abdomen and pelvis (CTAP) without contrast in transverse plane (left panel) showing a 6 x 5.4 x 3 cm presacral abscess (arrow) involving the left gluteus maximus muscle. Sagittal plane CTAP without contrast (right panel) displaying presacral abscess with fistulous communication to the skin (arrow).

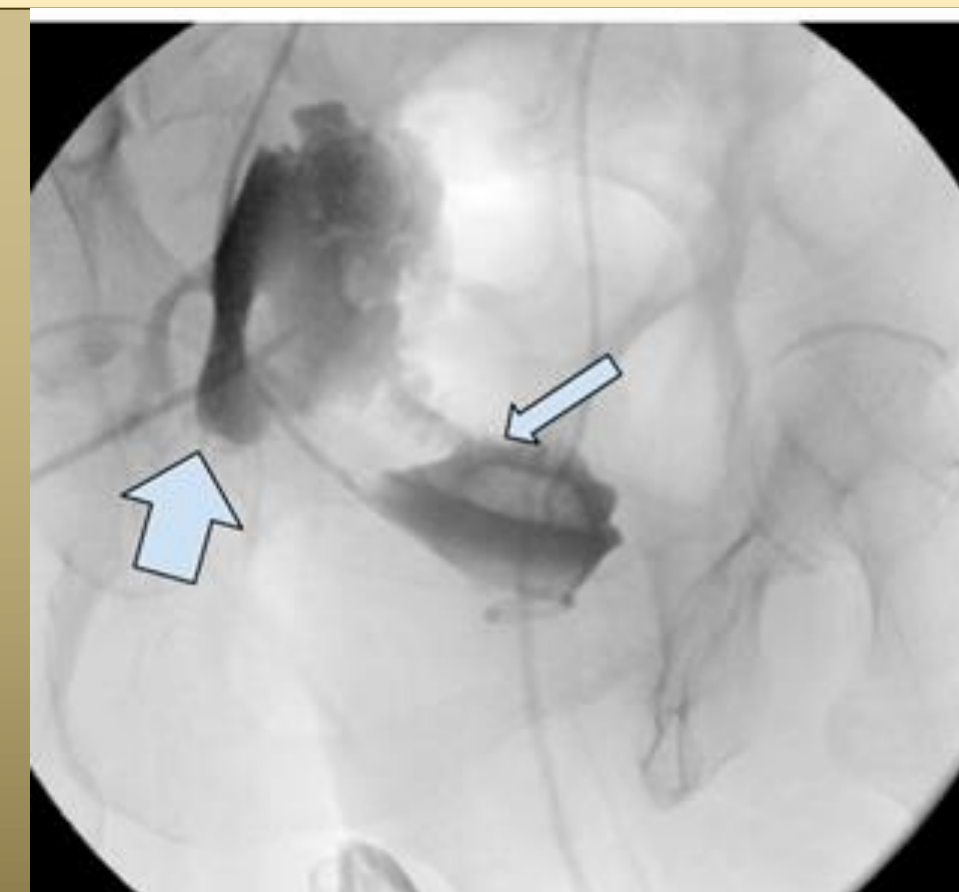


Figure 3. IR study of injected contrast into the presacral region revealing collection of contrast in presacral space (thick arrow) as well as collection within the left distal ureter (thin arrow) and urinary bladder, suggestive of a fistulous tract between the ureter and presacral space

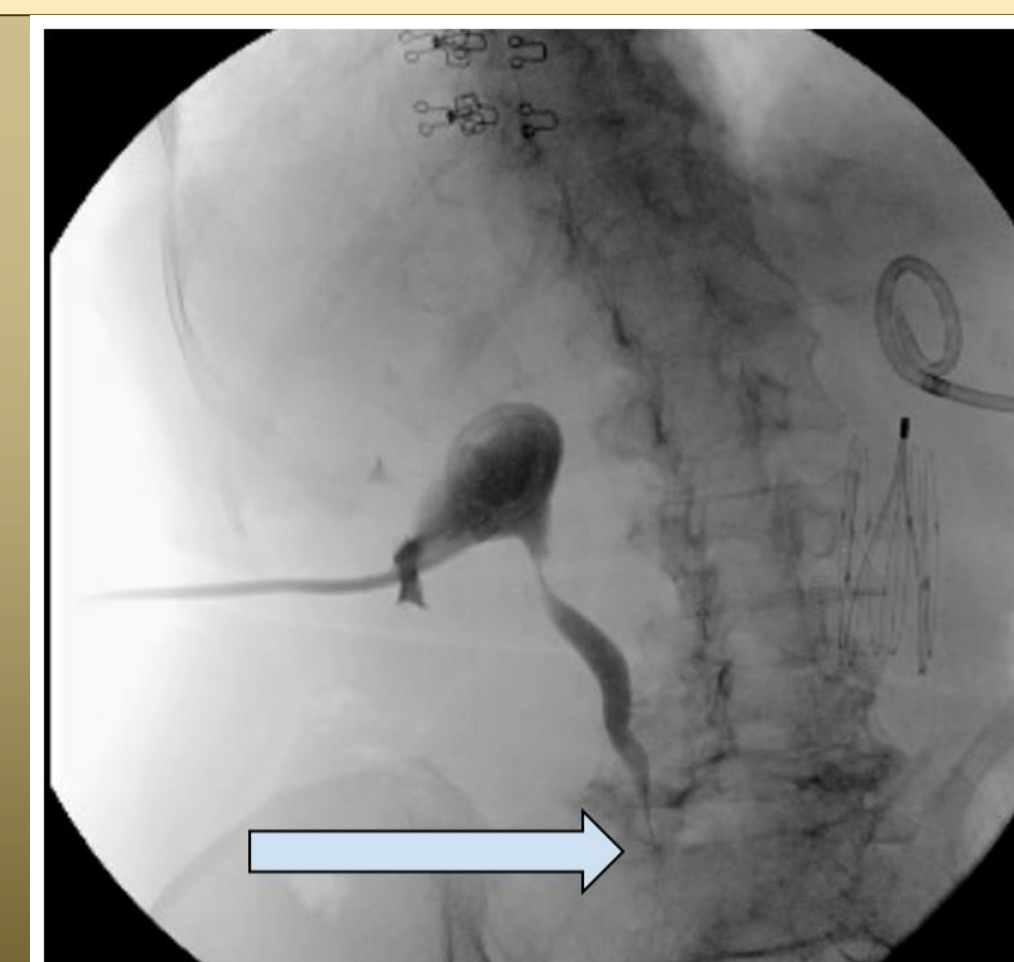


Figure 4. Antegrade nephrostogram showing contrast extravasation at the level just below the iliac crest to the abscess.

## Case Presentation (Continued)

Approximately nine months after initial presentation, the patient returned to the ED with a chief complaint of PCN displacement. The patient mentioned she had experienced some drainage from the initial gluteal site and mild left flank pain. Urinalysis revealed no bacteria growth, creatinine was 0.82 mg/dL, and a WBC count of 7.8 x 10<sup>3</sup> uL. On examination, no fluid was identified in the gluteal abscess drain. CT abdomen and pelvis without contrast showed resolution of bilateral hydronephrosis and the fluid collection previously found in the left presacral space was no longer present. The patient was instructed to undergo routine nephrostomy catheter exchange in 4 - 6 weeks as an outpatient to manage the persistent fistula of the left ureter.

## Discussion

The fistula in this case was likely a complication of several processes including the inflamed collection, prior radiation, stent placement, and gluteal abscess drain placement. Prior radiation for cervical cancer in this patient possibly induced obliterative endarteritis leading to tissue hypoxia, denervation, and fibrosis of the tissue. The vascular insult to the ureter caused mucosal breakdown, making it susceptible to the formation of the fistula<sup>5,6</sup>. The fistula resulted from the chronic inflammatory state, concomitant with a presacral abscess at presentation, and the radiation induced tissue injury preventing it from resolving<sup>7,8</sup>. A ureterocutaneous fistula is rare in nature as radiation is a risk factor.

Nearly half of fistulas can be attributed to radiation. Previous literature reports 0.3-3% secondary to brachytherapy, 0.6% related to external beam radiotherapy, and 2.9% in combination therapy<sup>9</sup>. There is no current evidence that states that radiation induced fistulas differ in outcomes when compared to abscess induced fistulas. Treatment of ureterocutaneous fistulas is well-described in literature. Conservative management can lead to the spontaneous resolution of fistulae in 35.7% of patients<sup>10</sup>. Nephroureteral stent placement is the first preferred method of treatment for ureteral fistulas, with a success rate of 63% for patients with uterovaginal fistulas<sup>11</sup>. Percutaneous nephrostomy tube placement can be employed for urinary diversion. PCN placement treated fluid in this patient's presacral abscess with a persistent left ureteral fistula. However, as these cases are rare and often involve prior iatrogenic trauma, we find that management must be personalized for each patient.

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