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**Case Report**

# A rare case of an unusual presentation of flank pain

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## ABSTRACT

Iliopsoas abscess (IPA) is an uncommon retroperitoneal infection with insidious onset and nonspecific clinical features. Image-guided percutaneous catheter drainage (PCD) is widely regarded as first-line therapy, but multiloculation, viscous pus, gas formation, and extensive anatomic spread predict PCD failure and warrant open surgical drainage. A 67-year-old woman with hypertension, treated breast cancer, prior stroke, and remote deep venous thrombosis presented with right-sided flank pain and a large fluctuant, tender subcutaneous mass. Computed tomography revealed a 14×2×5.8 cm multiloculated retroperitoneal collection involving the entire length of the right iliopsoas muscle from the crus of the right hemidiaphragm to the iliacus, with extension through the right posterolateral abdominal wall into the subcutaneous fat. She had undergone two unsuccessful interventional radiology-guided drainages at an outside facility. The white blood cell count was 29,000/µl and blood cultures grew methicillin-resistant *Staphylococcus aureus* (MRSA); there was no evidence of osteomyelitis or endocarditis. After culture-directed antibiotics were initiated, the patient underwent staged open exploration through a right flank incision, with drainage of more than one litter of purulent material. Penrose drains were placed and the wound was left open for daily dressing changes. A two-week follow-up computed tomography (CT) demonstrated near complete resolution. Primary IPA is rare and prone to recurrence when initial drainage is incomplete. In multiloculated, anatomically extensive, or PCD-refractory disease, early conversion to open surgical drainage is essential to achieve definitive source control and prevent the cumulative morbidity of repeated unsuccessful intervention.

**Keywords:** Iliopsoas abscess, Methicillin-resistant *Staphylococcus aureus*, Percutaneous drainage, Open surgical drainage, Retroperitoneal infection

## INTRODUCTION

Iliopsoas abscess (IPA) is a rare collection of purulent material within the fascial sheath of the psoas and iliacus muscles, first described by Mynter in 1881 as "acute psoitis".[1]

The reported incidence in the United Kingdom has historically been quoted as 0.4 per 100,000 person-years, although contemporary series suggest the true rate is rising, owing both to liberal use of cross-sectional imaging and to an aging, increasingly comorbid hospitalized population.[2,3] IPA is conventionally classified as primary, arising from hematogenous or lymphatic seeding of an occult focus, or secondary, resulting from contiguous spread from an adjacent visceral, urologic, vascular, or musculoskeletal source.[2] The rich vascular supply of the psoas muscle and its retroperitoneal location, bordering bowel, kidney, ureter, vertebral column, and great vessels, render it both a target for hematogenous infection and a recipient of regional spread.[2,4]

*Staphylococcus aureus* is the most common organism cultured from primary IPA, whereas *Escherichia coli* and other Enterobacteriaceae predominate in secondary cases.[4,5] Over the last two decades, methicillin-resistant *S. aureus* (MRSA) has emerged as a leading pathogen, particularly in healthcare-exposed and immune-compromised hosts.[6]

Because the classic triad of fever, flank or back pain, and limp is present in fewer than 30% of patients, the diagnosis is frequently delayed, and undrained or inadequately drained collections carry mortality approaching 50-100%.[2,3,7] Contemporary management combines broad-spectrum antibiotics with abscess drainage, and image-guided percutaneous catheter drainage (PCD) has largely supplanted open surgery as first-line therapy.[8,9] However, certain abscess characteristics such as multiloculation, viscous or particulate pus, gas formation, and extensive anatomic involvement, predict PCD failure and warrant open operative intervention.[10,11]

We present a 67-year-old woman with an extensive, recurrent, multiloculated MRSA iliopsoas abscess that failed two attempts at PCD and was successfully managed with staged open surgical drainage. The case highlights an unusual presentation of flank pain with a palpable subcutaneous mass, the rising importance of MRSA as a pathogen in IPA, and the indications for abandoning percutaneous in favor of open drainage.

## CASE REPORT

A 67-year-old woman presented to our institution with progressive right-sided flank pain. Her past medical history included hypertension, previously treated breast cancer, a prior ischemic cerebrovascular accident, and a history of deep venous thrombosis. She denied recent trauma, intravenous drug use, or invasive procedures other than her two earlier percutaneous abscess drainages performed at an outside facility.

On examination, she was hemodynamically stable but appeared uncomfortable. Cardiopulmonary examination was unremarkable. Abdominal examination revealed a large, fluctuant, tender subcutaneous mass over the right flank with overlying skin warmth; there were no peritoneal signs. Range of motion at the right hip was limited by pain.

Laboratory investigations were notable for leukocytosis of 29,000/µl with a neutrophilic predominance. Blood cultures drawn on admission subsequently grew methicillin-resistant *Staphylococcus aureus*. Transthoracic echocardiography demonstrated no valvular vegetations, and dedicated bone imaging and spinal magnetic resonance imaging excluded vertebral osteomyelitis or spondylodiscitis as a primary focus.

Contrast-enhanced computed tomography (CT) of the abdomen and pelvis demonstrated a large, multiloculated, contiguous, walled-off retroperitoneal collection in the right hemipelvis and anterior aspect of the right hip, involving the entire length of the right iliopsoas muscle from the crus of the right hemidiaphragm to the iliacus, and extending through the right posterolateral abdominal wall into the subcutaneous fat (Figure 1). The collection measured 14×12×5.8 cm in greatest dimensions, with its retroperitoneal component spanning approximately 29 cm in the craniocaudal axis. There was no soft-tissue gas. The collection produced mass effect on the right kidney and adjacent bowel loops, displacing them anteriorly.

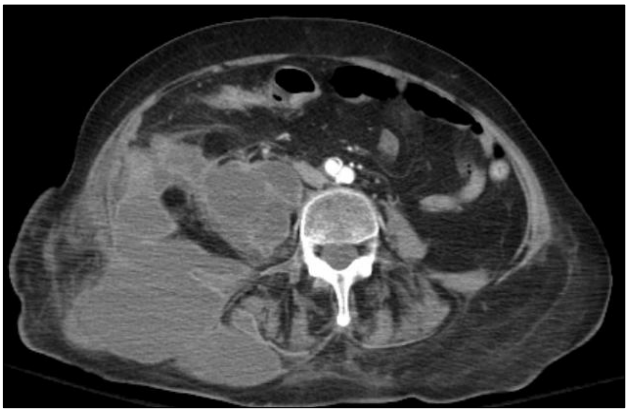

**Figure 1: Preoperative contrast-enhanced axial computed tomography images of the abdomen and pelvis demonstrating a large, multiloculated abscess.**

Of note, the patient had previously undergone two CT-guided percutaneous drainage procedures for the same abscess at an outside facility, with only transient clinical improvement and rapid radiographic and symptomatic recurrence on both occasions.

Empirical intravenous vancomycin was initiated and subsequently continued after MRSA was identified on both blood and intraoperative cultures. Given the size, multiloculation, anatomic extent, and recurrence after two image-guided drainages, the surgical team elected to proceed with staged open exploration and drainage.

Through a right flank incision, the retroperitoneal compartment was entered in an extraperitoneal plane and the abscess cavity unroofed.

More than one liter of thick, purulent material was evacuated; loculations were broken down digitally and under direct vision, and necrotic tissue was sharply debrided.

The cavity was copiously irrigated with warm saline. Multiple Penrose drains were placed throughout the cavity, and the wound was deliberately left open to allow ongoing dependent drainage and daily wet-to-dry dressing changes by the wound-care team. The patient tolerated the procedure well.

Postoperatively, her leukocytosis resolved, and surveillance blood cultures cleared on culture-directed antimicrobial therapy. A two-week interval contrast-enhanced CT demonstrated near complete resolution of the abscess cavity with minimal residual fluid (Figure 2).

She was discharged on a prolonged course of culture-directed parenteral antibiotics with outpatient infectious-disease and surgical follow-up.

**Figure 2: Postoperative contrast-enhanced axial computed tomography images of the abdomen and pelvis obtained two weeks after surgical drainage demonstrating, demonstrating near complete resolution of the previously seen retroperitoneal collection.**

## DISCUSSION

This case illustrates several important features of contemporary iliopsoas abscess management: an atypical presentation with a palpable abdominal-wall mass rather than the classic Mynter triad; the predominance of MRSA as a primary pathogen in healthcare-exposed patients; the limits of percutaneous drainage in extensive multiloculated disease; and the salvage role of open surgery.

### *Etiology and classification*

The psoas muscle receives its vascular supply from the lumbar, iliolumbar, and circumflex iliac arteries, with a rich capillary network that predisposes it to hematogenous seeding.[2,4] Primary IPA, defined as occurring in the absence of an identifiable adjacent source, is more common in younger patients, immunocompromised hosts, intravenous drug users, and patients with diabetes mellitus.[2,3] Secondary IPA arises from contiguous spread, most commonly from inflammatory bowel disease (especially Crohn disease), spondylodiscitis, urinary tract infection, retroperitoneal hematoma, and infected vascular grafts.[2,5,12]

In our patient, exhaustive evaluation excluded endocarditis, vertebral osteomyelitis, and intra-abdominal pathology as alternative foci; combined with MRSA bacteremia, this strongly supported a diagnosis of primary IPA arising from occult hematogenous seeding.

Her history of treated breast cancer, prior stroke, and venous thromboembolism raised the possibility of an immunologically vulnerable host with prior healthcare exposure, both recognized risk factors for MRSA colonization and primary IPA.

### *Microbiology and the rise of MRSA*

Staphylococcus aureus has historically been the most frequent organism isolated from primary IPA, accounting for the majority of cases in classic series by Ricci and López.[4,5] Secondary IPA tends to be polymicrobial, with E. coli and other enteric organisms predominating.[5] Over the past two decades, MRSA has emerged as a particularly important pathogen. Alonso and colleagues at Johns Hopkins reported a dramatic rise in the institutional incidence of IPA, from 0.5 cases per 10,000 admissions in 1993-2004 to 6.5 per 10,000 admissions in 2005-2007, with MRSA accounting for 25% of all cases and 37% of microbiologically confirmed cases in the later period.[6] This epidemiologic shift carries direct therapeutic implications: empiric coverage of suspected IPA should now routinely include vancomycin or an alternative agent active against MRSA, especially in patients with prior healthcare contact, recent hospitalization, or known colonization. Additional reports of community-associated MRSA causing primary IPA in otherwise immunocompetent patients argue for a low threshold to add MRSA coverage even in the absence of classical risk factors.[20]

### *Clinical presentation and diagnosis*

The classic Mynter triad of fever, back or flank pain, and limp or hip flexion deformity is present in fewer than one-third of patients with IPA.[2,7] In a cohort study of 32 patients, only 40.6% exhibited all three classical features, while individual symptoms such as fever (78%), limp (75%), and back pain (69%) were more common but nonspecific.[13] Atypical presentations include isolated thigh, groin, or knee pain; vague abdominal pain; and, when the lumbar plexus is involved, neurological deficits mimicking a lower motor neuron lesion.

Our patient was afebrile despite a markedly elevated white blood cell count, and her most striking physical finding was a large, fluctuant, tender subcutaneous mass over the right flank reflecting direct retroperitoneal extension through the abdominal wall, a relatively uncommon and instructive physical sign. Analogous reports have described extension into the Scarpa triangle, thigh adductors, and gluteal region, sometimes with cutaneous fistulization.[14,15]

Contrast-enhanced CT remains the diagnostic gold standard for IPA, with reported sensitivity exceeding 90%.[2,3] CT defines abscess size, anatomic extent, the number and complexity of loculations, the presence of gas, and any adjacent source of infection. Magnetic resonance imaging offers superior soft-tissue resolution and is preferred when spinal involvement is suspected. Inflammatory markers and blood cultures should be obtained in every case; a positive blood culture for S. aureus should heighten suspicion of IPA in any patient with otherwise unexplained back, hip, or flank pain.

### *Management*

Treatment of IPA rests on two pillars: prompt initiation of culture-directed antimicrobial therapy and timely drainage of the collection. Antibiotics alone are insufficient in all but the smallest collections, and undrained abscesses carry reported mortality of 50-100%.[2] Image-guided percutaneous catheter drainage has been the first-line drainage modality for the past three decades, with reported success rates of 70-90% and mortality below 5% in appropriately selected patients.[8,9,16] Society of Interventional Radiology quality standards endorse PCD as the initial approach for accessible collections.[17]

Several factors consistently predict PCD failure across the literature: multiloculation, viscous or particulate pus, gas-forming organisms, abscess volume greater than approximately 500 ml, extensive craniocaudal extension, and underlying disease (such as enteric fistula or infected hardware) that itself requires definitive surgical management.[10,11,18]

Recurrence after PCD has been reported in 14-29% of cases overall and in as many as 60% of complex collections in some series.[9,19] Open surgical drainage is therefore indicated for failed PCD, multiloculated abscesses not amenable to single-catheter drainage, abscesses associated with bowel disease requiring resection, gas-forming infections, and clinically deteriorating patients despite adequate PCD.[10,12,21]

Both transperitoneal and extraperitoneal (flank) approaches have been described; the extraperitoneal approach minimizes peritoneal contamination and is preferred when feasible. Laparoscopic and retroperitoneoscopic techniques have emerged as minimally invasive alternatives that combine complete drainage and mechanical disruption of loculations with shorter recovery, although their role in extensive multilocular disease remains incompletely defined.[15,21]

In our patient, the abscess was so anatomically extensive, spanning over 29 cm of retroperitoneum and breaching the abdominal wall, that an open right flank approach was selected to ensure complete drainage, mechanical disruption of all loculations, and creation of a dependent, open-wound drainage tract.

The decision to manage the wound open with multiple Penrose drains and daily dressing changes deserves emphasis. While primary closure over closed-suction drainage is appropriate for small, well-irrigated cavities, leaving an extensive, contaminated retroperitoneal cavity open permits ongoing physiologic drainage of residual purulent material, prevents premature superficial closure over residual loculations, and allows direct wound inspection at each dressing change. This strategy contributed to the rapid clinical and radiographic resolution observed at two-week follow-up imaging.

### *Lessons from this case*

Three lessons emerge. First, IPA should be considered in any patient with unexplained flank, back, or hip pain and an inflammatory laboratory profile, particularly when a palpable abdominal-wall or flank mass is appreciated. Second, MRSA must now be considered a leading causative organism, and empiric antimicrobial therapy should reflect this from the outset. Third, repeated PCD attempts in the face of clinical or radiographic failure represent a missed opportunity for definitive source control. Two prior PCD attempts in this patient delayed appropriate therapy and contributed to the size and complexity of the collection at the time of presentation to our institution. Once anatomic or clinical criteria for PCD failure are met, conversion to open surgical drainage should not be deferred.

## CONCLUSION

Primary iliopsoas abscess is rare, frequently misdiagnosed, and increasingly caused by MRSA. While image-guided percutaneous drainage remains the appropriate first-line therapy for most accessible collections, large multiloculated abscesses, particularly those with extensive anatomic spread or recurrence after prior drainage, require open surgical drainage for definitive source control. Early recognition of PCD failure and timely operative intervention are essential to prevent recurrence, sepsis, and the cumulative morbidity of repeated unsuccessful percutaneous procedures.

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