

# Rare Case of Iliopsoas Abscess Secondary to Mucinous Adenocarcinoma of the Colon: A Case Report

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## Learning Point for this Article:

Gastrointestinal or genitourinary causes must be ruled out in cases of psoas abscess with mixed or gram-negative cultures as extremely rare pathologies like carcinoma colon may cause a psoas abscess, which if not detected early may result in high morbidity and mortality.

## Abstract

**Introduction:** Iliopsoas abscess (IPA) has varied clinical symptomatology and various clinical disorders may mimic it. Tuberculosis of spine is the most common source of secondary IPA in the developing countries. However, IPA may be rarely caused by colon cancer which is the most common gastrointestinal malignancy. A mixed culture gives an indication of gastrointestinal or genitourinary etiology. We present here, a rare case of an 86-year-old patient with IPA secondary to adenocarcinoma of colon.

**Case Report:** An 86-year-old female presented with pain in the right thigh in February 2014. Computed tomography (CT) scan and magnetic resonance imaging (MRI) of the abdomen confirmed the clinical suspicion of right IPA which was drained surgically. Intraoperatively, mucinous material was noted, emerging from a small opening in a rounded structure located lateral to the psoas muscle, which could not be identified. On post-operative day 2, the right flank swelling recurred. Culture reports showed a polymicrobial infection with viridans group Streptococci and Pseudomonas aeruginosa. The abscess was re-explored and biopsy of the opening was taken. Histopathology of the tissue sample revealed metastatic cells of a mucin-secreting adenocarcinoma that had infiltrated the psoas muscle with a secondary pyogenic abscess. On reviewing the CT scan, there was a suspicion that the abscess was communicating with a tumor in the colon. No further active intervention was done for the tumor in view of advanced age and stage of tumor. The patient had significant pain relief and was able to resume walking. The infection resolved with 6 weeks of oral linezolid and ciprofloxacin. The patient died 8 months later secondary to metastasis.

**Conclusion:** Although the diagnosis of IPA does not pose problems, diagnosing secondary IPA requires a high index of clinical suspicion. A Gram-negative culture must raise the suspicion of gastrointestinal or genitourinary pathology. Colon carcinoma, although extremely rare, can lead to secondary IPA. CT and MRI though extremely useful, may not pick up the pathology and a definitive diagnosis of colon neoplasia perforating into the psoas muscle may be evident only intraoperatively. Atypical presentation may delay the diagnosis of colon cancer and subsequently result in higher morbidity and mortality.

**Keywords:** Psoas abscess, secondary iliopsoas abscess, colon cancer, Gram-negative psoas abscess.

## Introduction:

Iliopsoas abscess (IPA) is a rare and potentially life-threatening suppurative myositis of the iliopsoas compartment with an incidence rate of 0.5 cases per 10,000 hospital admissions (1993–2004) to 6.5 cases per 10,000 hospital admissions (2005–2007) (urban, tertiary care center) [1]. Primary IPA accounts for more than 90% of cases in Asia and Africa;

although it is less common (30% of all cases) in other parts of the world. Secondary IPA is more common worldwide (70% cases) and is seen more often in Europe [2, 3]. The primary type is caused by hematogenous or lymphatic spread of bacteria; usually from an occult source and is seen in immunocompromised patients such as in diabetics, alcoholics, intravenous drug abusers, patients with HIV, malignancies, or chronic illness. Staphylococcus aureus (88%) is the most

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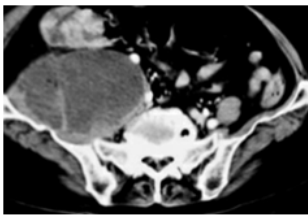


Dr. Mithun S. Jakkan

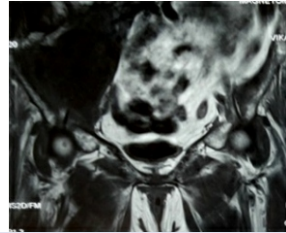
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**Figure 1:** Computed tomography scan of abdomen (axial section) showing a right iliopsoas abscess.



**Figure 2:** T1-weighted magnetic resonance imaging of the abdomen (coronal section) showing right iliopsoas abscess.

common causative microorganism followed by Streptococci (5%) and Escherichia coli (3%) [3]. In recent years, cases with methicillin-resistant *S. aureus* as the causative pathogen are on the rise [1]. The secondary type of IPA occurs as a result of local extension of an infective process. Chronic inflammatory conditions of the digestive tract (Crohn's disease [60%], appendicitis [16%], ulcerative colitis, diverticulitis, and colon cancer [together: 11%]) are the most common source of secondary abscess in developed countries [3]. It is not uncommon to find mixed cultures, with *E. coli* and *Bacteroides* spp. predominating. Other organisms include enteric pathogens, *Staphylococcus* spp., *Enterococcus faecalis*, *Peptostreptococcus*, and *Streptococcus* spp [3]. In contrast, in developing countries, the increasing incidence of tuberculosis of the spine due to has made it the leading cause of secondary IPA. It is seen in approximately 5% cases of tuberculosis of the spine [4]. The classical triad of fever, abdominal or back pain, and limp is seen in only 30% of all patients with IPA [2]. Due to these characteristics, IPA presents a diagnostic and therapeutic challenge. Overall, IPA is a clinical condition with variable clinical symptomatology, and various clinical disorders may mimic IPA since the psoas muscle is in close proximity to various organs such as the kidneys, sigmoid colon, pancreas, appendix, and ureters [2, 5, 6]. Colon cancer is the most common tumor of the gastrointestinal tract [7]. However, IPA secondary to perforation of colon cancer is extremely rare [7, 8, 9, 10]. Such atypical presentation may delay the diagnosis of colon cancer and subsequently result in higher morbidity and mortality [8]. We report here a case of IPA in an 86-year-old immunocompetent female secondary to adenocarcinoma of

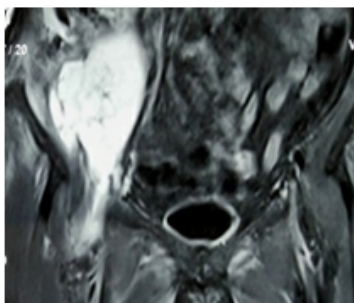
the colon.

### Case report :

An 86-year-old woman presented with severe pain in the anterior aspect of the right thigh and was unable to walk for the past 2 weeks. She was febrile for 5 days before presentation. There was no associated history of trauma radiculopathy, paresthesias, weakness, weight loss, abdominal pain, diarrhea, vomiting, nausea, urinary symptoms, alcohol, or drug use. On examination, the lower limb was in an attitude of flexion and external rotation. There was a tender swelling of 10 cm × 8 cm in the right flank, and a positive psoas sign was elicited. The other findings of the examination were normal. Investigations: Laboratory examinations revealed the following: Hemoglobin, 8 g/dL; whole blood cell count, 28,000/ $\mu$ L (neutrophils 85%); and erythrocyte sedimentation rate, 140 mm/h. Radiographs of the pelvis with bilateral hip joints, right thigh, and lumbosacral spine showed no abnormal findings. Computed tomography (CT) and magnetic resonance imaging (MRI) of the abdomen showed a right-sided IPA measuring 16 cm × 9 cm × 9 cm, extending from the third lumbar vertebra up to the proximal thigh (Figs. 1, 2, 3, 4).

### Management

Psoas abscess drainage was performed through a lateral incision above the right iliac crest by splitting the muscles. On draining the pus, the mucinous material was noted, emerging from a small opening in a rounded structure located lateral to the psoas muscle, which could not be identified (Fig. 5). On pressing this structure, bits of tissues emerged from the same opening. Samples of the pus and tissue were sent for microbiological and histopathological analysis. On post-operative day 2, the right flank swelling recurred. Culture report showed a polymicrobial infection with viridans group Streptococci and *Pseudomonas aeruginosa* was reported. Treatment with oral linezolid 600 mg and ciprofloxacin 750 mg twice a day was initiated. The abscess was re-explored and drained histopathological examination of the tissue sample revealed metastatic cells of a mucin-secreting adenocarcinoma that had infiltrated the psoas muscle with a



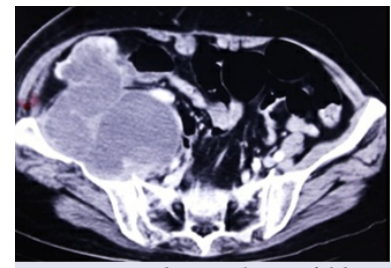
**Figure 3:** T2-weighted magnetic resonance imaging of the abdomen (coronal section) showing right iliopsoas abscess.



**Figure 4:** T2-weighted magnetic resonance imaging of the abdomen (coronal section) showing right iliopsoas abscess.



**Figure 5:** Intraoperative mucinous material mixed with pus from psoas muscle.



**Figure 6:** Computed tomography scan of abdomen (axial section) showing right iliopsoas abscess communicating with tumor in colon.

pyogenic abscess.

### Management:

The CT scan of the abdomen was reviewed again. The psoas abscess was seen to be communicating with a tumor in the wall of the ascending colon measuring approximately 4 cm × 6 cm in size (Fig. 6). In view of the advanced age of the patient and stage of tumor, the gastrointestinal surgeon decided against any further active intervention. The patient had significant pain relief and was able to resume walking without support 1 week after the surgery. The infection resolved with 6 weeks of oral linezolid and ciprofloxacin; however, the swelling persisted. The patient died at 8 months after the diagnosis of the tumor due to metastasis.

### Discussion:

IPA is an uncommon pathology; however, its incidence has increased in recent years due to better awareness, improved diagnostic techniques, and increasing incidence of primary pathologies that cause secondary IPA [10, 11]. Secondary cases occur due to local spread from adjacent infected tissues [10]. Secondary IPA is more common in developed countries and is frequently associated with Crohn's disease, appendicitis, ulcerative colitis, diverticulitis, colorectal carcinomas, urinary system infection and instrumentation, vertebral infections and osteomyelitis and septic arthritis [10]. The classical triad of fever, abdominal or back pain, and limp was reported by Mallick et al. in 30% of their patients [2]. The incidence of the classical triad was reported to be much lower at 5% by Dietrich et al. [5]. The diagnosis of IPA may be delayed since conditions such as arthritis, lumbar strain, vertebral osteomyelitis, or abdominal/urological disorders can present with a similar clinical picture [12]. It needs high clinical suspicion, meticulous clinical examination and imaging studies (CT and MRI are considered the gold standard) [6], microbiological investigations, and histopathological examination since the clinical manifestations are often variable and non-specific, which makes it difficult to diagnose based on physical examination alone. Psoas abscesses may be treated with ultrasound-guided/CT-guided percutaneous drainage or open drainage and appropriate antibiotic therapy. It is important to rule out gastrointestinal and genitourinary pathology in cases where CT/ultrasonography-guided culture reports are suggestive of Gram-negative infection [13]. The fact that carcinoma of the colon could be a cause of psoas abscess should be considered when an unexplained psoas abscess is diagnosed [8]. The incidence of perforation in colon cancer varies from 3% to 10%, while the incidence of these perforations causing an

IPA is only 0.3–4% [14]. The mechanism for psoas abscess formation in patients with colon cancer remains unclear; it may be secondary to the tumor outgrowing the blood supply, with subsequent necrosis and abscess formation in the presence of enteric pathogens [9]. Accurate pre-operative diagnosis of colon carcinoma causing secondary IPA is considered difficult [9]. A diagnosis of an abscess is typically suspected in the presence of pain, fever, palpable mass, or leukocytosis [9]. A history of prolonged symptoms, weight loss, anemia, or palpable mass must alert the surgeon to the possibility of a primary gastrointestinal tumor [9]. An abdominal CT scan is useful in identifying the precise location and extent of colon carcinoma as well as its dissemination into the surrounding soft tissues. It also helps delineate the communication between the carcinoma and the psoas muscle, if any [9]. Occasionally, the colorectal carcinoma appears as a discrete mass or focal wall thickening. However, such changes may be interpreted as non-specific findings, resulting in a significant delay in diagnosis and management [9, 15]. Retrospective analyses of CT scan images showed a thickened colonic wall communicating with the psoas muscle in our patient. Therefore, it is crucial to attempt to identify the underlying cause of IPA before surgical intervention because a limited surgical field of exposure, presence of inflammation, and thickened colonic walls may seal off the colorectal mass completely if it is not initially suspected. Intraoperative frozen section analysis may be useful in suspected cases [9]. Colon cancers complicated by a local abscess have an operative mortality of 50% and a 5-year survival rate of only 20% [16]. Our patient had the classic triad of pain, fever, and limp, and the diagnosis of IPA was confirmed using CT and MRI findings. However, the colon carcinoma was missed and was suspected only intraoperatively, which was confirmed on histopathological examination as metastatic mucin-secreting adenocarcinoma of the colon. The abscess was drained, but the carcinoma was not addressed due to old age and advanced stage of the tumor.

### Conclusion:

We have presented a case of right IPA secondary to colonic perforation caused by a mucin-secreting adenocarcinoma of the colon in an advanced stage. Diagnosing IPA requires a high index of suspicion. A thorough clinical, hematological, and radiological workup is essential to identify the primary cause of secondary IPA. Gram-negative cultures must raise the suspicion of gastrointestinal or genitourinary pathology. It is important to keep in mind the various differentials and remember that colon carcinoma, although extremely rare, can lead to secondary IPA. CT and MRI are extremely useful, although a definitive diagnosis of colon neoplasia perforating



into the psoas muscle may be evident only intraoperatively. Early intervention ensures reduced morbidity and mortality, provided that the primary carcinoma is at an early stage at the time of diagnosis.

### Clinical Message

Tuberculosis is the most common cause of secondary IPA in developing countries; whereas western literature shows that gastrointestinal and genitourinary pathologies are the most common cause in the developed countries. This case report highlights the importance of keeping a differential of gastrointestinal and genitourinary pathologies in case of mixed bacterial cultures; without which diagnosis of the primary pathology may be delayed, causing significant morbidity and mortality.

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