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## Pancreatic pseudocyst extending into psoas muscle mimicking acute complicated diverticulitis: A case report

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## ABSTRACT

**INTRODUCTION AND IMPORTANCE:** Pancreatic pseudocysts (PP) are known sequelae of pancreatitis. In this case, we present a patient with a pancreatic pseudocyst extending to the left psoas muscle, initially masquerading as acute complicated diverticulitis.

**CASE PRESENTATION:** A 43-year-old male with previous episode of pancreatitis presented with a one-week history of abdominal pain. Physical examination revealed left lower quadrant tenderness. A computed tomography (CT) showed a large intraperitoneal fluid collection extending to the left psoas muscle with segmental inflammation of the descending colon. The patient was managed medically with empiric antibiotic therapy for concern of complicated diverticulitis. Ultrasound-guided percutaneous drainage was performed and fluid analysis showed lipase >20,000 U/L. The patient was discharged home with the drain. At one month follow up a repeat CT showed resolution of the left psoas fluid collection. The drain was removed and the patient remained asymptomatic at two month follow-up.

**CLINICAL DISCUSSION:** Pancreatic pseudocysts are well-known complications of pancreatitis. In this case, we describe extension of a pseudocyst to the left psoas muscle. We identified twelve previously reported patients diagnosed with PP involving the psoas muscles. Our case is unique as there is no previously published case in which a pseudocyst masqueraded as complicated diverticulitis. In analysis of the literature, most patients were managed with percutaneous drainage. Only 50% had documented complete resolution on follow up; of those 75% had undergone percutaneous drainage.

**CONCLUSION:** Pancreatic pseudocysts that extend to the psoas muscle can mimic acute complicated diverticulitis upon presentation. These may be effectively managed with percutaneous drainage.

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## 1. Introduction

Pancreatic pseudocysts are known sequelae of pancreatitis. They are most commonly located in the lesser sac, however can also involve other locations such as the retroperitoneum, inguinal canal, pleura and even mediastinum [1–4]. Extensions into the psoas muscles have rarely been described [4–14]. In this case, we present a patient with a pancreatic pseudocyst extending to the left psoas, initially masquerading as acute complicated diverticulitis. Informed patient consent was obtained for publication of the case details. All identifying information has been removed from this case report to protect patient privacy. This work has been reported in line with the SCARE 2020 criteria [21].

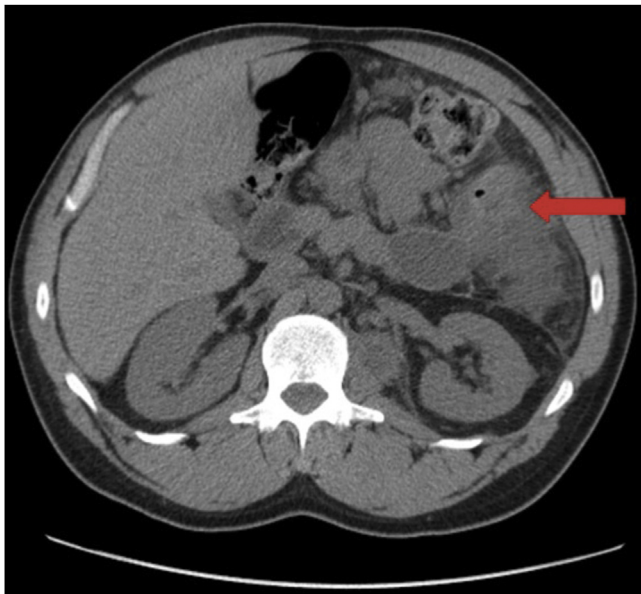
## 2. Case presentation

A 43-year-old male, with past medical history of Diabetes Mellitus Type II and single episode of acute alcoholic pancreatitis 2 years prior, presented with a one-week history of diffuse abdominal pain associated with nausea and vomiting, similar to his prior episode of acute pancreatitis. He denied any recent alcohol intake in the last year. He reported no past surgical history. Physical examination revealed moderate abdominal tenderness, worse in the left lower quadrant without signs of peritonitis. Laboratory abnormalities included leukocytosis of  $26.8 \times 10^9/L$ , glucose 587 mg/dL, creatinine 2.92 mg/dL and lipase 1372 U/L. A CT of the abdomen and pelvis without contrast was obtained and showed a large intraperitoneal fluid collection (largest diameter 12.1 cm) in the left hemiabdomen communicating with another fluid collection (largest diameter 11.4 cm) in the left psoas muscle with segmental inflammation of the descending colon (Figs. 1 and 2).

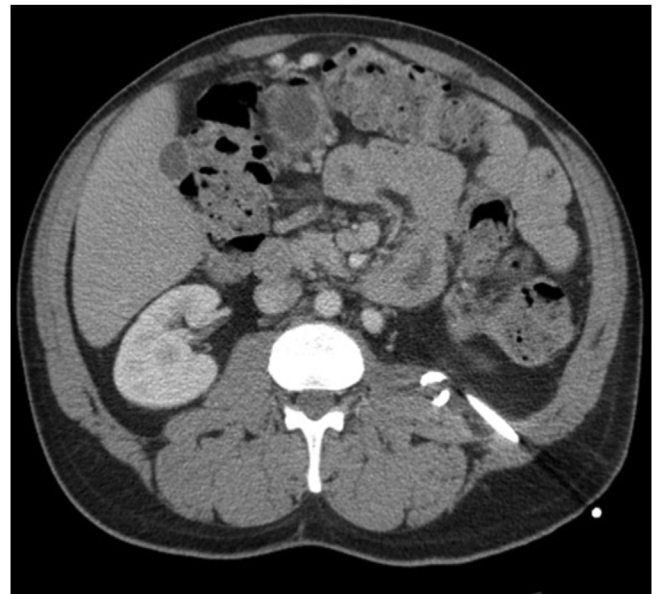
The patient was administered intravenous fluids for resuscitation, insulin drip for management of hyperglycemia and empiric antibiotics therapy with intravenous levofloxacin and metronidazole for concern of complicated diverticulitis. Ultrasound-guided

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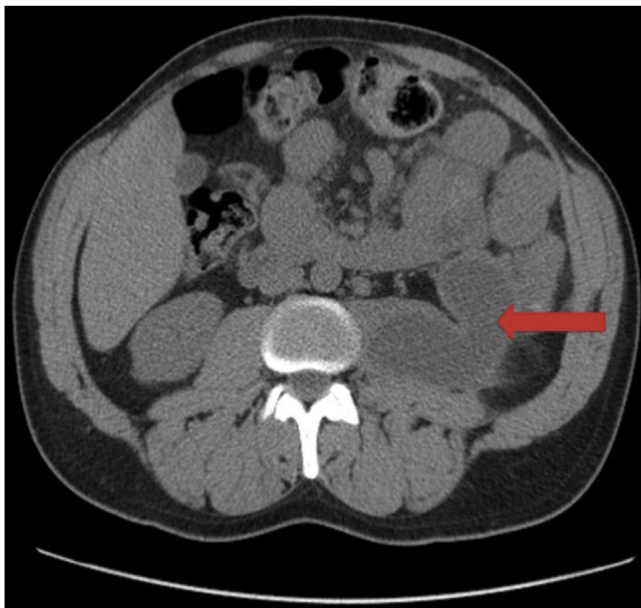
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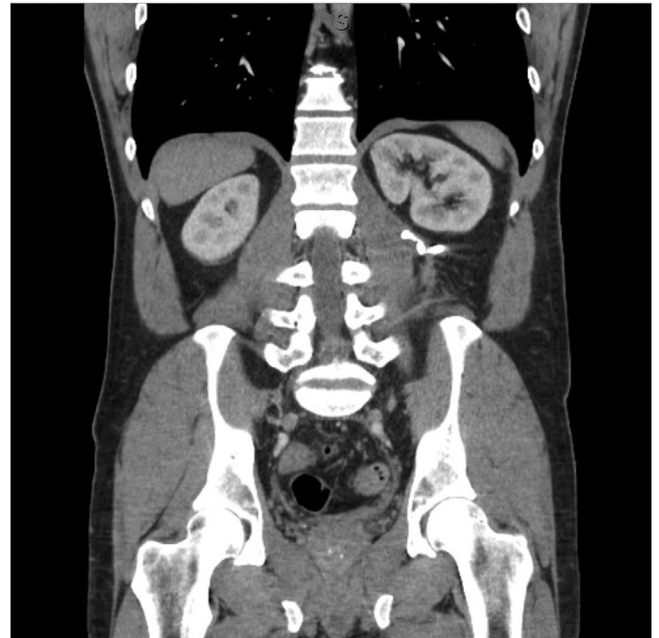
**Fig. 1.** Intra-abdominal fluid collection with segmental inflammation of the descending colon (Red arrow).



**Fig. 3.** Axial view of drain position and resolution of the left retroperitoneal fluid collection.



**Fig. 2.** Large intra-abdominal fluid collection extending into the left psoas muscle (Red arrow).



**Fig. 4.** Coronal view of drain position and resolution of the left retroperitoneal fluid collection.

percutaneous drainage was performed with immediate evacuation of 110 mL of brown-colored fluid; a 12 F pigtail catheter was left in place. One day following the drainage procedure, the patient's abdominal pain, leukocytosis, hyperglycemia and acute kidney injury resolved completely. Biochemical analysis of the aspirated fluid was significant for amylase >2400 U/L and lipase >20,000 U/L, confirming the diagnosis of a pancreatic pseudocyst. The patient continued to be managed with antibiotics and octreotide twice daily. Total drain output throughout the hospital admission was 500 mL (approximately 70cc daily by the day of discharge). No organisms were identified on fluid culture and gram stain. The patient was discharged home with the drain in place.

At one month follow up, the patient remained asymptomatic, with <20 mL output from the drain daily. A repeat CT abdomen and pelvis with intravenous contrast showed residual 2 cm fluid

collection at pancreatic tail with resolution of the left retroperitoneal fluid collection (Figs. 3 and 4). The intra-abdominal drain was removed at this time. The patient remained clinically asymptomatic at two month follow-up.

### 3. Discussion

Pancreatic pseudocysts are well-known complications of both acute and chronic pancreatitis, with prevalence ranging from 5 to 40%[7]. These are localized fluid collections that persist for 4–6 weeks that are histologically enclosed by a lining of granulation tissue and extracellular matrix components [8]. They form as a result of microcirculatory injury, intra-acinar activation of pancreatic enzymes and disruptions of the pancreatic ductal system. While approximately 75% of pseudocysts resolve spontaneously

[15,16], complications may arise. These include infection, local bleeding, compression of adjacent structures and fistulization to surrounding organs.

In the presented case, we describe extension of a pseudocyst to the left psoas muscle. This is a rare but documented occurrence. Eleven previously published articles in English were identified in the PubMed database in August 2020 [4–14]. This comprised a total of twelve patients diagnosed with pancreatic pseudocysts involving the psoas muscles.

Clinical presentation for these patients was highly variable, ranging from nonspecific abdominal and lumbar pain to inguinal bulges and knee swelling [3,4,7,12]. Half of the patients described in the literature developed a pseudocyst after an episode of acute pancreatitis (within 3 months) while the other half stemmed from chronic pancreatitis. In terms of laterality, psoas involvement favored right (7) greater than left (5) in the reported studies. Our patient's presentation was particularly unique as his initial complaint was localized left lower quadrant abdominal pain. This prompted high suspicion for diverticulitis, especially with the left-sided organized collection confirmed on CT scan with clear inflammation of the descending colon. There has been no previously published case in which a pseudocyst masqueraded as complicated diverticulitis. It is important for the medical provider to recognize this as a possible differential diagnosis, in order to select the proper therapeutic approach.

For the majority of patients, management of pancreatic pseudocysts is supportive in nature. However, a subset of patients requires drainage procedures, especially those who are symptomatic due to rapidly enlarging or infected pseudocysts [17]. Minimally invasive techniques have largely replaced surgical drainage [20]. Endoscopic internal drainage is the preferred drainage method as it is associated with decreased morbidity and hospital length of stay [18]. When not technically feasible or there remains a concern for ongoing sepsis, external percutaneous drainage is another valuable minimally invasive technique [19]. In analysis of the literature, most patients (6) were managed with percutaneous drainage. Four patients were managed surgically, one underwent endoscopic drainage and one was managed conservatively. Only six patients (50%) had documented complete resolution on follow up, ranging from 6 weeks to 3 years; of those 75% had undergone percutaneous drainage.

#### 4. Conclusion

Pancreatic pseudocysts that extend to the psoas muscle(s) can mimic acute complicated diverticulitis upon presentation. After appropriate diagnostic workup, these may be effectively managed with percutaneous drainage.

#### Declaration of Competing Interest

The authors report no declarations of interest.

#### Funding

None.

#### Ethical approval

Case reports are exempt from the need of IRB approval in our institute.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Author contribution

Conceptualization, Writing of manuscript, Literature review, Data collection: Sergio Mazzola Poli de Figueiredo, Nikhil Shah.

Data analysis and Reviewing of the final version of the manuscript: Sergio Mazzola Poli de Figueiredo, Nikhil Shah, Joshua Person.

#### Registration of research studies

Not Applicable.

#### Guarantor

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