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Uncommon Fistulous Complications in Pancreatitis: Rare Radiological Findings

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ABSTRACT

Background: Fistulous complications arising from pancreatitis are uncommon but can lead to significant diagnostic and therapeutic challenges. These abnormal communications with adjacent organs result from enzymatic tissue destruction, necrosis, or chronic inflammation.

Objective: To present a case series of rare pancreatitis-associated fistulas—choledochogastric, pancreaticocolonic, and pancreaticopleural—and to highlight their diverse radiological findings, diagnostic difficulties and clinical presentations.

Methods: Three patients with a history of acute or chronic pancreatitis presented with non-specific symptoms including abdominal pain, diarrhea, respiratory complaints, and fever. Multimodality imaging—CT, MRCP, DWI, and transhepatic cholangiography—was employed to identify and characterize the fistulous tracts.

Results:

Case 1: A choledochogastric fistula was diagnosed in a post-Frey's procedure patient with persistent abdominal pain and fever. Cholangiography revealed communication between the hepatic duct and the gastric antrum.

Case 2: A pancreaticocolonic fistula was identified in a patient with interstitial pancreatitis presenting with diarrhea. CT and diffusion-weighted imaging showed colonic communication with an inflammatory collection.

Case 3: A pancreaticopleural fistula was found in a patient with necrotizing pancreatitis and respiratory symptoms. Imaging demonstrated extension of air-fluid levels through the esophageal hiatus into the pleural cavity.

Conclusion: Pancreatitis-related fistulas are rare but clinically significant complications with varied and often misleading presentations. High clinical suspicion, supported by advanced imaging, is essential for timely diagnosis. Management should be tailored to the fistula's location, severity, and associated complications, emphasizing a multidisciplinary approach to optimize outcomes.

1. INTRODUCTION

Acute and chronic pancreatitis can result in a wide array of local and systemic complications. Among these, the development of internal fistulas involving adjacent organs is rare but clinically important. These fistulas are often the consequence of enzymatic digestion, tissue necrosis, or persistent inflammation eroding into surrounding structures, leading to abnormal communications.

Though internal pancreatic fistulas are uncommon, their clinical presentation varies significantly based on the organs involved. Pancreaticopleural fistulas may manifest primarily with respiratory symptoms due to large, recurrent pleural

effusions, often without overt abdominal signs. Pancreaticocolonic fistulas are typically associated with gastrointestinal bleeding, sepsis, or persistent diarrhea, and carry a high risk due to colonic contamination of pancreatic collections. Choledochogastric fistulas are exceptionally rare and pose diagnostic and therapeutic challenges due to their atypical clinical features.

These fistulas frequently mimic other pathologies, which may delay diagnosis and complicate management. Radiological imaging—such as Magnetic Resonance Cholangiopancreatography (MRCP), Computed Tomography (CT), and contrast-enhanced studies—plays a critical role in detecting fistulous tracts and planning appropriate treatment strategies. Therapeutic options range from conservative medical management to endoscopic interventions or surgical correction, based on the patient's clinical status and the complexity of the fistula.

In this case series, we present three rare manifestations of pancreatitis-associated fistulas: a choledochogastric fistula, a pancreaticocolonic fistula, and a pancreaticopleural fistula. Through these illustrative cases, we aim to emphasize the diagnostic challenges and multidisciplinary management required in these complex sequelae of pancreatitis.

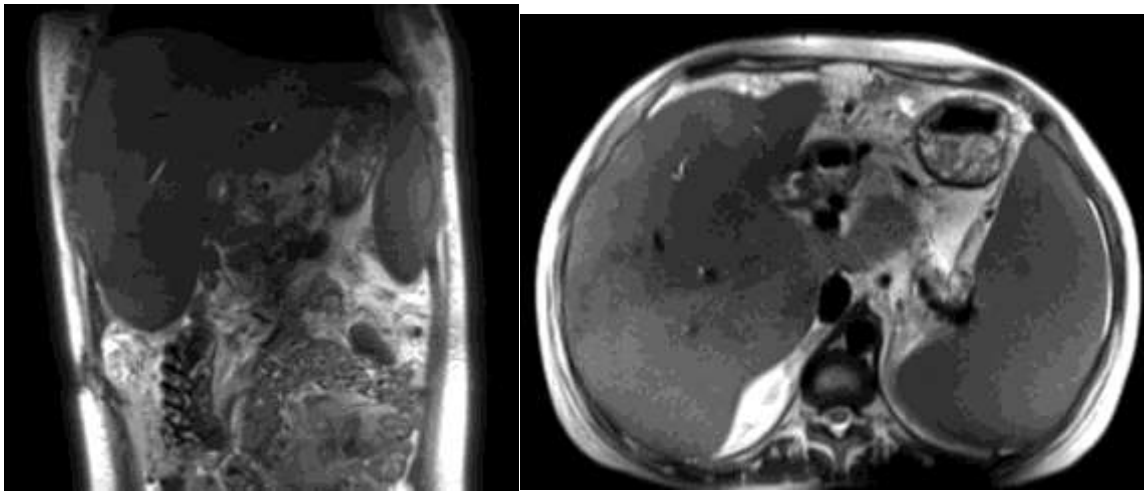
2. CASE DISCUSSIONS

Case 1: Choledochogastric Fistula

Patient Profile: 36-year-old male

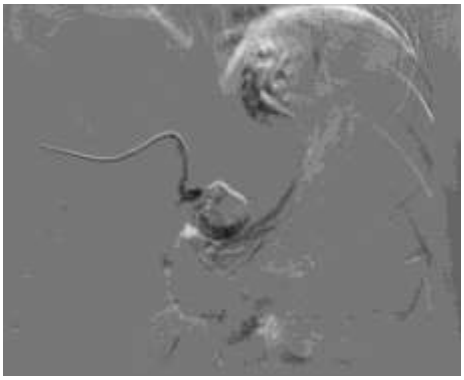
History: Previous laparoscopic cholecystectomy for acalculous cholecystitis; Frey's procedure in September 2020 for chronic calcific pancreatitis

Presenting Complaints: Abdominal pain for 3–4 weeks; fever for 4 days Radiological Findings:



Communication between hepatic duct and antrum of stomach

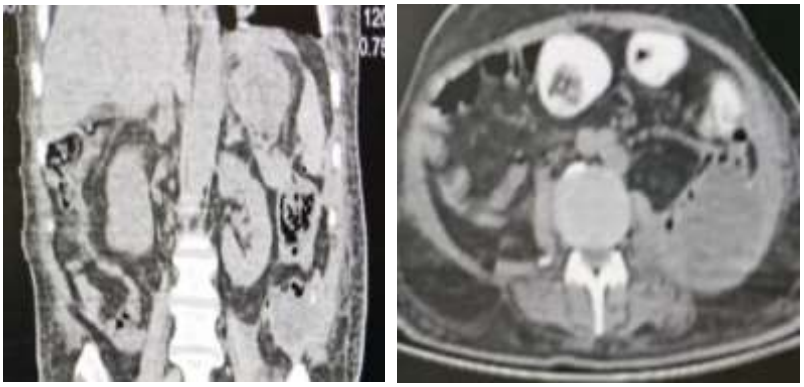
Contrast-enhanced images demonstrate a communication between the common bile duct (CBD) and the antrum of the stomach.



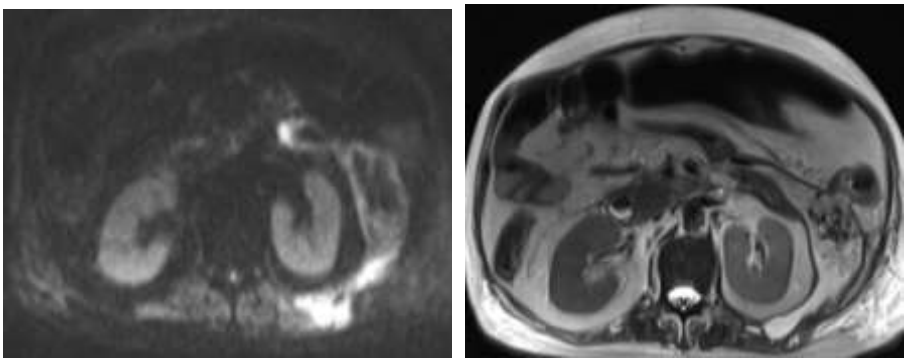
Transhepatic cholangiogram confirms abnormal communication between the hepatic duct and the gastric antrum.

Case 2: Pancreaticocolonic Fistula

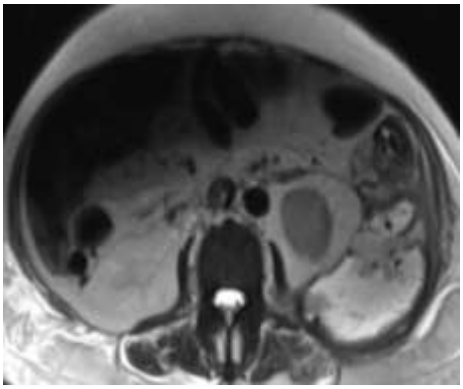
Presenting Complaints: Diarrhea and abdominal pain for the past 6 days History: Known case of interstitial edematous pancreatitis Radiological Findings:



CT imaging reveals a defect in the descending colon with direct communication to a peripancreatic collection.



Diffusion-weighted imaging (DWI) shows restricted diffusion within the collection, suggestive of infection or necrosis.

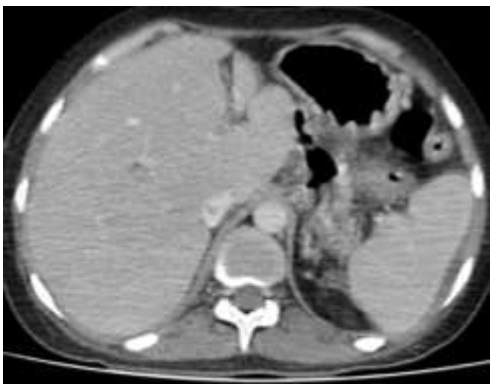


Defect in colon communicating with the collection

Case 3: Pancreaticopleural Fistula

Patient Profile: 40-year-old female History: Known case of acute necrotizing pancreatitis Presenting Complaints: Dyspnea and cough for one month Radiological Findings:

Multiple cystic lesions identified in the pancreatic head and body (consistent with necrotizing pancreatitis).



Presence of air-fluid levels within the pancreatic parenchyma adjacent to the main duct.

Extension of the air-fluid levels through the esophageal hiatus into the thoracic cavity, indicative of a pancreaticopleural fistula.

3. DISCUSSION

Fistulous complications of pancreatitis, though rare, present significant diagnostic and therapeutic challenges due to their varied anatomical presentations and potential for severe morbidity. These abnormal communications result primarily from enzymatic digestion and necrosis, and they can involve nearly any neighboring organ.

According to the Revised Atlanta Classification (2012), such complications are more frequently associated with severe or necrotizing pancreatitis [1].

Pancreaticopleural Fistula (PPF):

PPFs are seen in less than 1% of pancreatitis cases [2]. These occur due to ductal disruption or pseudocyst rupture into the pleural cavity. Patients usually present with respiratory symptoms and large pleural effusions, often with minimal abdominal findings. Diagnostic confirmation involves elevated amylase levels in pleural fluid, as well as imaging modalities such as

MRCP or ERCP, which can directly visualize the fistulous tract [3]. Earlier studies, such as those by Kaman et al., have emphasized the need for clinical suspicion and the role of imaging in detecting internal pancreatic fistulas, particularly in patients with ascites or pleural effusions [4]. While conservative measures—such as bowel rest, somatostatin analogues, and drainage—can be effective initially, endoscopic stenting of the pancreatic duct has become the preferred modality in persistent cases [5]. Surgery is reserved for refractory or complicated presentations.

Pancreaticocolonic Fistula:

These fistulas generally result from infected pancreatic necrosis breaching the colonic wall. Clinical symptoms include diarrhea, GI bleeding, or sepsis. CT and contrast studies are essential for diagnosis. Due to high morbidity from bacterial translocation, conservative management often fails, necessitating surgical intervention [6].

Choledochogastric Fistula:

Extremely rare in the context of pancreatitis, this condition is more commonly associated with gallstone disease or iatrogenic injury. Inflammation may weaken the bile duct wall, leading to fistula formation. These can present with cholangitis, upper GI bleeding, or biliary obstruction. ERCP is diagnostic and can allow for therapeutic stenting [7], although surgery may be required for complex cases.

This case series highlights the diverse anatomical involvement and varied clinical implications of pancreatitis-associated fistulas. Prompt diagnosis using advanced imaging and a high index of suspicion is vital. Treatment must be tailored to the patient's condition, fistula type, and the presence of complications. A multidisciplinary approach involving gastroenterology, surgery, and interventional radiology is essential to optimize outcomes.

Furthermore, adherence to standardized classification systems—such as those proposed by the International Study Group for Pancreatic Fistula (ISGPF) [8]—aids in systematic reporting and inter-institutional comparisons.

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