

Serendipitous Dramatic Resolution of a Large Infected Pancreatic Pseudocyst through a Pancreaticopleural Fistula after Acute Pancreatitis: Case Report and Review of Literature

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Abstract

Acute pancreatitis is a common clinical condition with a wide spectrum of local and systemic complications. Pancreaticopleural fistula (PPF) is a rare thoracic complication, more frequently associated with chronic pancreatitis and only infrequently reported following acute pancreatitis. We report a unique case of a 21-year-old female with alcohol-induced acute pancreatitis who developed infected walled-off necrosis (WON), complicated by a pancreaticopleural fistula just prior to planned surgical necrosectomy. We managed the condition with intercostal drainage and conservative therapy, resulting in complete clinical and radiological resolution without surgery. This case highlights an unusual mechanism of spontaneous internal drainage of infected necrosis into the pleural cavity, leading to clinical improvement and avoidance of major surgery. We also present a brief literature review.

Keywords: Acute pancreatitis; Pancreaticopleural fistula; Walled-off necrosis; Pleural effusion; Octreotide; Conservative management

INTRODUCTION

Acute pancreatitis is an inflammatory condition most commonly caused by gallstones and alcohol consumption and represents a significant cause of hospital admissions worldwide. While most cases are mild and self-limiting, severe disease may lead to local complications such as pancreatic fluid collections and systemic complications including respiratory failure and pleural effusion, which may occur in up to 70% of severe cases¹

Pancreaticopleural fistula (PPF) is a rare but serious thoracic complication resulting from disruption of the pan-

creatic duct or extension of a pancreatic collection into the thoracic cavity². It is most associated with chronic pancreatitis, particularly of alcoholic etiology, and is infrequently reported following acute pancreatitis^{3,5}. Diagnosis is often delayed because of nonspecific respiratory symptoms and requires a high index of suspicion.

We report a rare case of infected walled-off necrosis (WON) following acute pancreatitis that underwent spontaneous decompression into the pleural cavity through a pancreaticopleural fistula, resulting in dramatic clinical improvement and avoidance of surgical intervention.

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CASE PRESENTATION

A 21-year-old female presented with severe epigastric pain, vomiting, and hypotension following a history of binge alcohol consumption. On examination, she was tachycardic and hypotensive (90/60 mmHg), with abdominal distension and tenderness. Laboratory investigations revealed elevated serum amylase (1230 U/L). Ultrasonography did not demonstrate gallstones. A diagnosis of alcohol-induced acute pancreatitis was made.

She was managed conservatively with intravenous fluids, analgesia, electrolyte correction, and early enteral nutrition. The patient improved clinically and was discharged after seven days. A chest radiograph during this admission did not reveal significant pleural effusion.

Approximately four weeks later, she re-presented with fever, worsening abdominal pain, vomiting, and features of sepsis. Examination revealed tachycardia, hypotension, and dehydration. Contrast-enhanced computed tomography demonstrated multiloculated peripancreatic collections with internal debris and air foci, consistent with infected walled-off necrosis (Figure 1). Based on the Revised Atlanta Classification, this was classified as infected WON rather than a pseudocyst.

Laboratory investigations showed leukocytosis and electrolyte imbalance. A chest radiograph revealed a mild left-sided pleural effusion.

TREATMENT AND CLINICAL COURSE

The patient was initiated on broad-spectrum antibiotics and supportive care, including parenteral nutrition. Due to worsening sepsis and clinical deterioration, exploratory laparotomy with necrosectomy was planned. A step-up approach was considered; however, it was limited by the diffuse, multiloculated nature of the collections, absence of a well-defined drainage window, and restricted availability of advanced endoscopic interventions.

At induction of anesthesia, we noted high airway pressures. We inserted an emergency left-sided intercostal drain, which yielded approximately 3.5 liters of seropurulent fluid. This resulted in immediate clinical improvement, with reduced abdominal distension. Intraoperative ultrasound confirmed marked reduction in intra-abdominal collections, and surgical necrosectomy was deferred.

Pleural fluid analysis revealed markedly elevated amylase (3935 U/L) and lipase (41,286 U/L) levels with mixed gram-negative organisms. Subsequent imaging showed a diaphragmatic rent (Figure 2), and MRCP suggested communication between the pancreatic collection and pleural cavity, confirming pancreaticopleural fistula.

The patient had a complicated intensive care course, including type 1 respiratory failure and a leukemoid reaction. She was managed conservatively with continued antibiotics, octreotide therapy (100 mcg subcutaneously three times daily for two weeks), chest physiotherapy, and gradual reintroduction of enteral nutrition.

OUTCOME AND FOLLOW-UP

The patient showed progressive improvement over three weeks, with resolution of collections and pleural effusion. The intercostal drain was removed after approximately three weeks. A follow-up chest radiograph showed marked improvement (Figure 3).

She was discharged approximately 15 weeks after the initial episode. Follow-up MRCP at four months demonstrated normal pancreatic and biliary ducts with complete resolution of inflammation (Figure 4A, 4B). At eight months, the patient remained asymptomatic.

The clinical course can be summarized as initial acute pancreatitis, followed by development of infected WON at four weeks, intraoperative diagnosis of PPF with intercostal drainage, and subsequent recovery with complete resolution (Table 1).

Table 1 Timeline of Clinical Events

Time Point	Clinical Event
Day 0	Initial admission with acute pancreatitis
Day 7	Discharge after conservative management
Week 4	Re-presentation with sepsis and infected WON
Pre-operative period	Planned exploratory laparotomy
Intra-operative	Intercostal drain insertion; diagnosis of PPF
ICU course (Week 1)	Respiratory failure and leukemoid reaction
Week 3	Clinical improvement
Discharge	Approximately 15 weeks from initial episode
4 months	MRCP showing resolution
8 months	Asymptomatic follow-up

DISCUSSION

Pancreaticopleural fistula (PPF) is an uncommon but clinically significant complication of pancreatitis, reported in approximately 0.4% of cases and more frequently associated with chronic pancreatitis than acute pancreatitis⁶. It typically results from disruption of the pancreatic duct, allowing pancreatic secretions to track retroperitoneally and enter the thoracic cavity through diaphragmatic hiatuses or direct erosion of the diaphragm^{2,5}.

In the present case, the pancreatic collection is more accurately classified as infected walled-off necrosis (WON)

rather than a pseudocyst, per the Revised Atlanta Classification. Internal debris and air foci, along with evolution beyond four weeks, support this classification. Furthermore, organisms in the pleural fluid support infected pancreatic necrosis with secondary fistulization.

Clinically, PPF often presents with respiratory symptoms that may overshadow abdominal findings. A high index of suspicion is required, especially when pleural effusion is disproportionate to abdominal pathology⁴

Diagnosis relies on elevated pleural fluid amylase levels and imaging findings. CT and MRCP play complementary roles in identifying pancreatic collections and fistulous communication¹⁰⁻¹²

Management is individualized. Conservative treatment, including drainage and octreotide, is often effective, while endoscopic or surgical interventions are reserved for selected cases^{6,10,11}. In the present case, the step-up approach was limited by diffuse collections and resource constraints.

Table 2 summarizes a comparison of previously reported cases. Most cases are associated with chronic pancreatitis and pseudocysts, whereas cases following acute pancreatitis are rare. Notably, spontaneous resolution of infected WON through pleural drainage, as observed in this case, is exceedingly uncommon.

CONCLUSION

Pancreaticopleural fistula is a rare complication of acute pancreatitis requiring high clinical suspicion. Conservative management with pleural drainage can be effective. This case highlights a rare mechanism of spontaneous resolution of infected walled-off necrosis, avoiding surgical intervention.

Learning points

- Pancreaticopleural fistula should be suspected in pancreatitis patients with large pleural effusion
- Pleural fluid amylase is a key diagnostic marker
- Walled-off necrosis should be distinguished from pseudocyst
- Conservative management can be effective in selected cases
- Surgery should be reserved for refractory disease

Ethics statement

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Care statement

This case report has been prepared in accordance with the CARE guidelines. The CARE checklist is provided as supplementary material.

Author (Year)	Etiology	Type of Collection	Fistula Type	Management	Outcome
Present case	Alcohol-induced acute pancreatitis	Infected WON	PPF	ICD + conservative (octreotide)	Complete resolution
Moorthy et al. (2007)⁵	Acute pancreatitis	Pseudocyst	PPF + mediastinal extension	Conservative	Recovered
Sut et al. (2009)⁵	ERCP-induced acute pancreatitis	Pseudocyst	PPF	Surgery (cystogastrostomy)	Recovered
Poulsen et al. (2011)⁵	Acute pancreatitis	Not specified	PPF	Conservative	Recovered
Pandey et al. (2014)⁴	Mixed (acute & chronic pancreatitis)	Pseudocysts	PPF / bronchial fistula	Conservative ± endoscopic	Variable (mostly recovered)
Choe et al. (2014)²	Recurrent pancreatitis	Minimal peripancreatic inflammation	Mediastinal fistula	Surgery (distal pancreatectomy)	Recovered
Shah et al. (2012)¹¹	Chronic pancreatitis	Pseudocyst	PPF	Endoscopic (ERCP stenting)	Recovered
Francisco et al. (2015)¹²	Pancreatitis (likely chronic)	Pseudocyst	PPF	Conservative	Recovered
McCormick et al. (1990)⁹	Chronic pancreatitis	Pseudocyst	PPF	Mixed (medical/surgical)	Recovered

Table 2 Comparison of Present Case with Reported Pancreaticopleural Fistula Cases

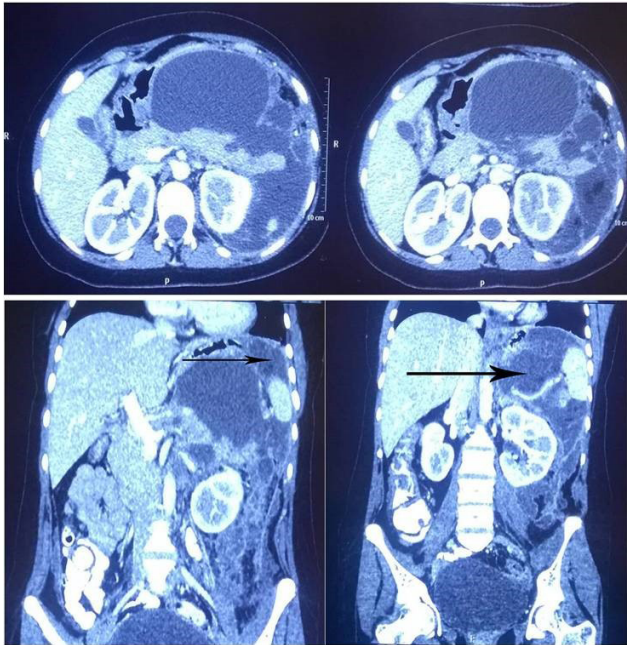
**Figure 1**

Figure 1A (top two): Cross-sectional image of contrast-enhanced CT abdomen showing a multiloculated hypodense fluid collection with peripheral enhancement, lying in the pancreatic, peripancreatic, gastrosplenic, and pararenal areas, likely pancreatic pseudocysts. No evidence of chronic pancreatitis-like calcifications or communication with the pleural cavity is seen.

Figure 1B (bottom two): Repeat CT abdomen after clinical worsening of the patient, suggestive of similar collections as above but with debris and air foci within (arrows). No communication with the pleural cavity is seen here either.

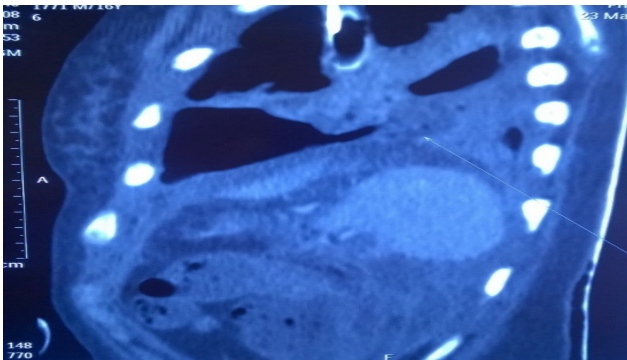


Figure 2 CT abdomen following intercostal drainage demonstrating diaphragmatic rent (arrow) suggesting pancreaticopleural fistula.



Figure 3 Chest radiograph showing marked improvement in pleural effusion following drainage.

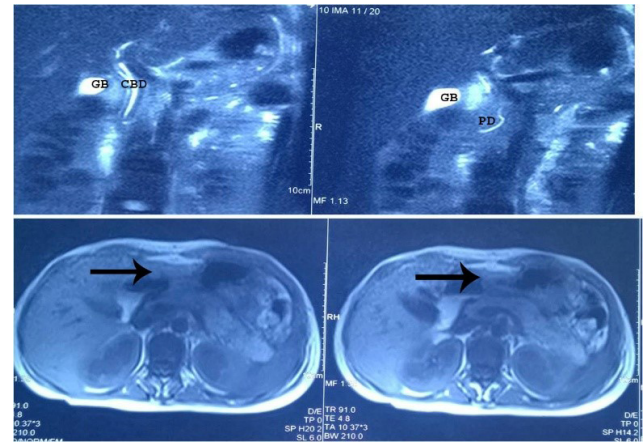
**Figure 4**

Figure 4A (top two): Magnetic Resonance Cholangiopancreatography (MRCP) performed after stabilization of the clinical condition (4 months later) revealed a normal gallbladder (marked 'GB'), biliary duct (marked 'CBD') and pancreatic duct (marked 'PD'), with no strictures or calculi.

Figure 4B (bottom two): Corresponding cross-sectional MR images show significant resolution of the peripancreatic edema and fluid collections (arrows)

REFERENCES

- Párnitzky A, Kui B, Szentesi A, Balázs A, Szűcs Á, Mosztbacher D, et al; Hungarian Pancreatic Study Group. Prospective, Multicentre, Nationwide Clinical Data from 600 Cases of Acute Pancreatitis. *PLoS One* 2016; 11(10): e0165309. doi: 10.1371/journal.pone.0165309.
- Choe IS, Kim YS, Lee TH, Kim SM, Song KH, Koo HS, et al. Acute mediastinitis arising from pancreatic mediastinal fistula in recurrent pancreatitis. *World J Gastroenterol* 2014; 20(40): 14997-5000. doi: 10.3748/wjg.v20.i40.14997.
- Dąbkowski K, Bialek A, Kukla M, Wójcik J, Smereczyński A, Kołacznyk K, et al. Mediastinal Pancreatic Pseudocysts. *Clin Endosc* 2017; 50(1): 76-80. doi: 10.5946/ce.2016.089.
- Pandey S, Shetty SA, Janarthanan K, Balalakshmoji D, Sen KK, Leelakrishnan V. Pancreatico-pleural and bronchial fistulae and associated pseudocysts: case series. *JOP* 2014; 15(5): 478-84. doi: 10.6092/1590-8577/2804.
- Moorthy N, Raveesha A, Prabhakar K. Pancreaticopleural fistula and mediastinal pseudocyst: an unusual presentation of acute pancreatitis. *Ann Thorac Med*. 2007;2(3):122-3. doi: 10.4103/1817-1737.33701
- Sut M, Gray R, Ramachandran M, Diamond T. Pancreaticopleural fistula: a rare complication of ERCP-induced pancreatitis. *Ulster Med J* 2009;78(3):185-6.
- Fielding GA, McLatchie GR, Wilson C, Imrie CW, Carter DC. Acute pancreatitis and pancreatic fistula formation. *Br J Surg* 1989;76(11):1126-8.
- Poulsen A, Sigild UH. (Acute pancreatitis may cause pancreaticopleural fistula). *Ugeskr Laeger* 2011; 173(8): 588-9.
- McCormick PA, Chronos N, Burroughs AK, McIntyre N, McLaughlin JE. Pancreatic pseudocysts cause portal vein thrombosis and pancreaticopleural fistula. *Gut* 1990; 31(5): 561-3.
- Wronski M, Slodkowski M, Cebulski W, Moronczyk D, Krasnodebski IW. Optimizing management of pancreaticopleural fistulas. *World J Gastroenterol* 2011; 17(42): 4696-703. doi: 10.3748/wjg.v17.i42.4696.
- Shah D, Desai AB, Salvi B. Pancreaticopleural fistula complicating chronic pancreatitis. *BMJ Case Rep* 2012; 2012. pii: bcr0320126038. doi:10.1136/bcr-03-2012-6038.
- Francisco E, Mendes M, Vale S, Ferreira J. Pancreaticopleural fistula: an unusual complication of pancreatitis. *BMJ Case Rep* 2015; 2015. pii: bcr2014208814. doi: 10.1136/bcr-2014-208814.