

Gastropancreatic Fistula in Acute Necrotising Pancreatitis with Septicaemia: A Case Report

TUSHAR KALEKAR¹, SHREEYA GOYAL², RUPA MADHAVI KOPPARTHI³, VARSHA RANGANKAR⁴, PARAG PATIL⁵



ABSTRACT

Acute Pancreatitis (AP) is an inflammatory condition with cumbersome side effects. Gastrointestinal (GI) fistula is a rare complication seen in cases with infected pancreatic or peripancreatic necrosis. GI fistulas can result in severe haemorrhage and septicemia. Hereby, the authors present a case of 36-year-old male with a chief complaint of abdominal pain associated with abdominal distension and non bilious vomiting after binge consumption of alcohol for the past 10 days. Computed Tomography (CT) scan showed the presence of free gas in the abdomen. Contrast-Enhanced CT (CECT) imaging revealed diffuse enlargement affecting the head, uncinete process, body, and tail of the pancreas. There were also a few necrotic peripancreatic fluid collections with extensive peripancreatic fat stranding. Based on these findings, the diagnosis of acute necrotising pancreatitis was suggested. Despite treatment with antibiotics and necrosectomy with drainage of the abscess collection, the patient showed no improvement. A repeat CECT examination was performed due to the deterioration of the patient's clinical condition, which showed a complete non enhancing pancreas. Additionally, a large defect measuring approximately 16 mm was observed in the posteroinferior wall of the stomach at the middle third of the body, with extravasation of contrast material into the pancreatic collection, suggestive of fistula formation. Subsequently, the patient underwent pancreatic necrosectomy with closure of the gastric perforation using feeding jejunostomy. A follow-up CT examination was performed four days later due to the deteriorating status of the patient, as well as new onset haematemesis and bloody discharge from the surgical drain. The CT scan revealed a few peripancreatic soft tissue infiltrates adjacent to the pancreatic head. Persistent collections were noted along the anterolateral surface of the right psoas, extending to the adjoining right anterior pararenal space and the left anterolateral abdominal wall in the left hypochondriac region. Thickening of the bilateral lateroconal fascia and anterior and posterior renal fascia was observed, likely due to inflammation. Following this, the patient underwent another surgery, and percutaneous drainage was performed with antibiotic coverage. The patient showed a significant reduction in the collection and improved clinical condition after 10 days. Imaging plays a crucial role in diagnosing such complications, enabling early detection and reducing mortality in these patients.

Keywords: Abdominal pain, Peripancreatic necrosis, Vomiting

CASE REPORT

A 36-year-old man arrived at the emergency room with severe abdominal pain, abdominal distension, and non bilious vomiting. Patient had been binge consuming alcohol for the past 10 days and is a known alcoholic for six years and was also newly diagnosed with diabetes mellitus upon admission and was not currently taking medication. The patient was hospitalised and underwent laboratory and radiological investigations. The laboratory results showed elevated serum amylase (880 U/L) and lipase (1244 U/L). An Ultrasound (US) of the abdomen and pelvis revealed a dirty shadowing throughout the abdomen, likely due to the presence of air, and an ill-defined fluid collection primarily in the pancreatic region with diffuse enlargement of the pancreas. A CT scan confirmed the presence of free gas in the abdomen [Table/Fig-1].

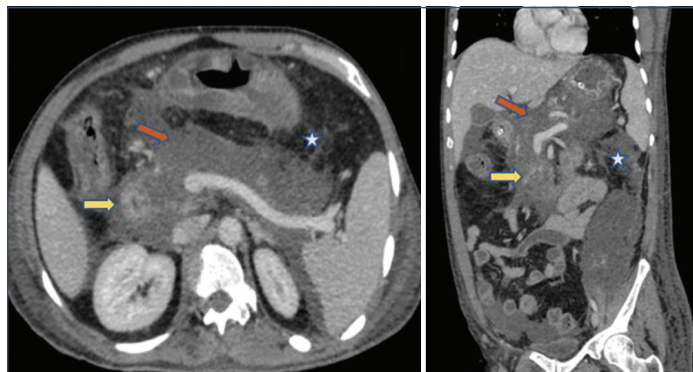
The CECT imaging showed diffuse enlargement affecting the head, uncinete process, body, and tail of the pancreas, with more than 90% non enhancing areas in the head, body, and tail regions, along with a few normally enhancing areas in the uncinete process [Table/Fig-2-4]. No abnormal dilatation of the Pancreatic Duct (PD) or pancreatic or intraductal calcifications were seen. There were also a few necrotic peripancreatic fluid collections with extensive peripancreatic fat stranding. The arterial and venous phases of the CECT scan showed good opacification of the vessels with no evidence of vascular thrombosis. Based on these findings, the diagnosis of acute necrotising pancreatitis was suggested. However, the patient did not show improvement with antibiotics and necrosectomy with drainage of the abscess collection. A repeat CECT scan was performed due to the deterioration of the patient's clinical condition,



[Table/Fig-1]: Computed Tomography showing diffuse intraperitoneal air predominantly in the bilateral lateral aspect of the abdomen (→).

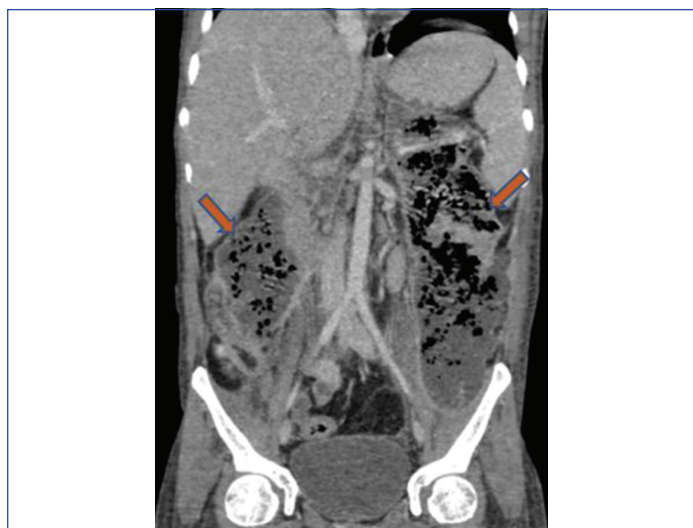
which revealed a completely non enhancing pancreas [Table/Fig-5,6]. The scan showed a pancreatic fluid collection with extensive air foci and surrounding fat stranding, extending into the lesser sac, the root of the mesentery, and the bilateral paracolic gutters. Additionally, there was evidence of a large defect measuring approximately 16 mm in the posteroinferior wall of the stomach, at the middle 1/3rd of the body, with extraluminal extravasation of the contrast material into the aforementioned pancreatic collection, suggestive of fistula formation. Hypodense collections were observed in the lesser sac

of the stomach, root of the mesentery, right paracolic gutter, and left paracolic gutter. The collection in the left paracolic gutter showed extraperitoneal extension into the underlying thoracic muscles of the left hypochondriac region. Consequently, the patient underwent pancreatic necrosectomy with closure of the gastric perforation and placement of a feeding jejunostomy.

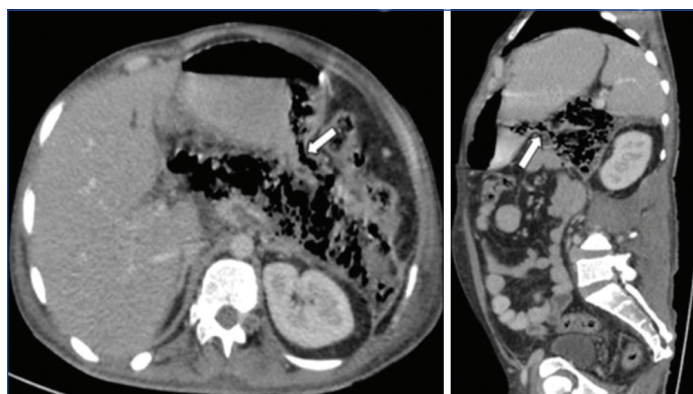


[Table/Fig-2]: CT axial view showing diffuse enlargement of the pancreas with diffuse non enhancing areas (→) and few normally enhancing areas in the uncinate process (→). Surrounding extensive peripancreatic fat stranding and acute necrotic peripancreatic fluid collections seen (★).

[Table/Fig-3]: CT coronal view showing diffuse enlargement of the pancreas with diffuse non enhancing areas (→) and few normally enhancing areas in the uncinate process (→). Surrounding extensive peripancreatic fat stranding and acute necrotic peripancreatic fluid collections seen (★). Thinning of gastric mucosa seen. (Images from left to right)



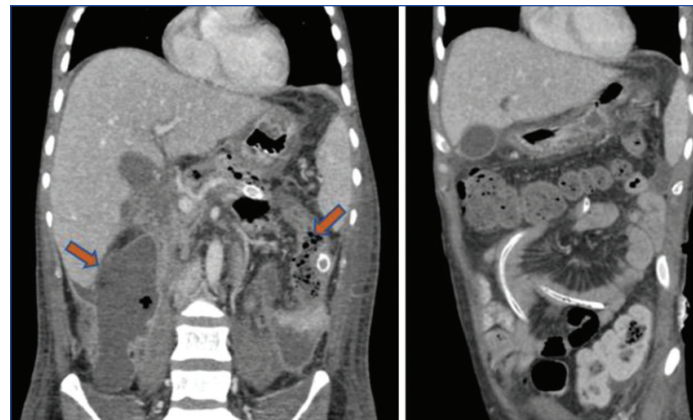
[Table/Fig-4]: CT coronal view demonstrating peripancreatic fluid collection with extensive air foci and surrounding fat stranding is seen (→).



[Table/Fig-5,6]: CT axial view and sagittal view demonstrating a large defect in the postero-inferior wall of the stomach in the middle third of the body of stomach with extraluminal extravasation of the contrast material (→).

A follow-up CT examination was performed four days later due to the deteriorating condition of the patient, as well as new onset haematemesis and bloody discharge from the surgical drain. The scan revealed a few peripancreatic soft tissue infiltrates adjacent to the pancreatic head. The pancreatic body and tail were not

visualised consistent with the history of necrosectomy. The feeding jejunostomy tube and closure of the gastric perforation were noted. Persistent collections were observed along the anterolateral surface of the right psoas, extending to the adjoining right anterior pararenal space, as well as in the left anterolateral abdominal wall in the left hypochondriac region [Table/Fig-7]. Thickening of the bilateral lateroconal fascia and anterior and posterior renal fascia was seen, likely indicating inflammation. Subsequently, the patient underwent surgery again, and percutaneous drainage was performed along with antibiotic treatment. After 10 days, there was a significant reduction in the collection, and the patient's clinical condition improved. [Table/Fig-8] shows CECT coronal view on Postoperative (POD). Finally, the patient was discharged after three weeks.



[Table/Fig-7]: CECT coronal view demonstrating persistent peripancreatic fluid collection (→). **[Table/Fig-8]:** CECT coronal view on POD 14 showing no significant collection in the abdomen. (Images from left to right)

DISCUSSION

Abdominal pain, nausea, vomiting, and increased pancreatic enzymes are typical signs and symptoms of Acute Pancreatitis (AP). In patients without timely treatment and with an immunocompromised state, Gastrointestinal (GI) fistula can be a severe complication [1]. Fistulas refer to abnormal communications between the GI tract and necrotic cavities, the peritoneal space, retroperitoneal spaces, or another internal organ [1]. They can occur when digestive enzymes released by an inflamed pancreas erode the nearby GI tract or when intestinal necrosis is caused by vascular thrombosis in an area of infection and inflammation [2]. In present case, no vascular compromise was observed, so it is more likely that the cause was infection secondary to a GI fistula.

Laboratory findings showed an increased leukocyte count, while blood culture revealed the growth of Gram negative bacteria and degenerated cells. The most common sites for fistulas are the colon (60.5%) and the duodenum (26.6%) [3,4], but in present case, a fistula was present in the gastric region. GI fistulas can have severe clinical consequences, including haemorrhage and worsening sepsis [5,6]. They can manifest as emphysematous changes due to infection caused by Gram negative bacteria such as *Escherichia coli* (the most frequently isolated), *Klebsiella*, *Pseudomonas*, *Enterobacter*, and *Clostridium perfringens*. These bacteria release carbon dioxide and nitrogen through fermentation of glucose, leading to intra-abdominal gas visible in imaging [7]. Laboratory and radiological investigations are important for ruling out pathology and aiding in early management.

Computed Tomography is the preferred method for identifying pancreatic necrosis, determining its location, and assessing its extent. Additional observations that can be made include the presence of fluid collections and gas in the portal venous system. The Modified CT severity index is frequently used to stratify the severity of the condition and predict mortality. This index considers findings such as pancreatic enlargement, inflammation of the pancreas and fat, fluid collection, and necrosis of the pancreatic parenchyma [8]. Ultrasonography has a limited role in evaluating patients with AP due

to the overlying dilated bowel loops, which often make visualising and assessing the pancreas difficult. Another drawback of US is the lack of information regarding the presence or severity of pancreatic necrosis [9]. The main benefit of ultrasonography is its ability to be performed anywhere. This is particularly helpful for patients in critical care settings who cannot easily be transported to a CT scan room.

When evaluating the Pancreatic Duct (PD), Magnetic Resonance Cholangiopancreatography (MRCP) can replace Endoscopic Retrograde Cholangiopancreatography (ERCP) due to its superior ability to detect parenchymal necrosis [10]. MRCP can classify pancreatic and peripancreatic collections or abscesses as partially or fully fluid in consistency, and it does not involve radiation. MRCP's ability to detect bile duct stones and demonstrate the presence of disconnected PD significantly impacts further management. However, there are disadvantages to MRI/MRCP, including longer acquisition periods, difficulty performing the procedure on critically ill patients, gadolinium toxicity in patients with renal insufficiency, and contraindications for patients with pacemakers or other metal objects [11].

Jiang W et al., noted a fistulous connection between the intestine and the pancreas, which led to poor prognosis, intra-abdominal air, and fluid collection [1]. Bansal A et al., highlighted the wide spectrum of complications associated with acute and chronic pancreatitis, ranging from inflammation, ischaemia, and necrosis to obstruction, perforation, and GI fistulae. They emphasised the importance of imaging and clinical manifestations in diagnosis [3]. Ghanimeh MA et al., and Kochhar R et al., discussed the formation of colopancreatic fistula as a complication of recurrent pancreatitis, with similar additional findings in the peripancreatic and pancreatic regions. However, in their cases, the fistulous site was the colon, which is more commonly observed than the gastric communication seen in present case [4,5].

An open necrosectomy was performed to remove the infected necrotic tissue, along with percutaneous drainage of the abdominal cavity collection. Full coverage antibiotics were administered, and electrolyte balance was maintained. The step-up strategy, which involves starting with percutaneous drainage followed by minimally invasive retroperitoneal necrosectomy, was employed. Antibiotic coverage was provided in conjunction with the procedure. Currently, this strategy is more commonly used [12,13].

CONCLUSION(S)

Gastropancreatic fistula is a rare complication of Acute Pancreatitis (AP). Therefore, effective diagnosis, prompt treatment of infection, and control of septic shock are crucial in reducing the incidence and mortality rates. Imaging modalities have made it easier to diagnose and manage patients with pancreatitis and its complications, thereby decreasing mortality. CT is the standard modality for investigation; however, X-ray and ultrasonography are also helpful in providing indirect signs of complications, such as the presence of free air and collections, respectively.

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PARTICULARS OF CONTRIBUTORS:

1. Professor, Department of Radiodiagnosis, Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India.
2. Resident, Department of Radiodiagnosis, Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India.
3. Resident, Department of Radiodiagnosis, Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India.
4. Professor, Department of Radiodiagnosis, Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India.
5. Professor, Department of Radiodiagnosis, Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Shreya Goyal,
Resident, Department of Radiodiagnosis, Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune-411018, Maharashtra, India.
E-mail: goyalshreya@gmail.com

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Nov 24, 2022
- Manual Googling: Mar 17, 2023
- iThenticate Software: Jun 01, 2023 (9%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

Date of Submission: **Nov 18, 2022**

Date of Peer Review: **Mar 10, 2023**

Date of Acceptance: **Jun 03, 2023**

Date of Publishing: **Sep 01, 2023**