

Acute Necrotising Pancreatitis with Walled-off Necrosis Complicated by Left Renal Vein Thrombosis: A Case Report

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ABSTRACT

Acute necrotising pancreatitis represents a severe form of pancreatic inflammation associated with substantial morbidity and mortality, particularly when complicated by walled-off necrosis and vascular thrombosis. We report a case of a middle-aged male with acute-on-chronic pancreatitis who presented with acute epigastric pain. Contrast-Enhanced Computed Tomography (CECT) demonstrated extensive pancreatic necrosis with a large haemorrhagic walled-off necrotic collection, severe ascites, and a focal eccentric thrombus involving the left renal vein, causing partial luminal narrowing with preserved renal enhancement. The Modified CT Severity Index (MCTSI) score was 10/10, indicating severe disease. Clinical deterioration necessitated intensive care management, following which ultrasound-guided percutaneous drainage was performed as part of a step-up approach. The patient improved with conservative management, including anticoagulation, antibiotics, and metabolic optimisation. This case highlights the importance of comprehensive CT evaluation in severe pancreatitis, early recognition of rare vascular complications, and the effectiveness of minimally invasive management strategies.

Keywords: Computed tomography, CT severity, Luminal narrowing, Pancreatic necrosis, Vascular complications

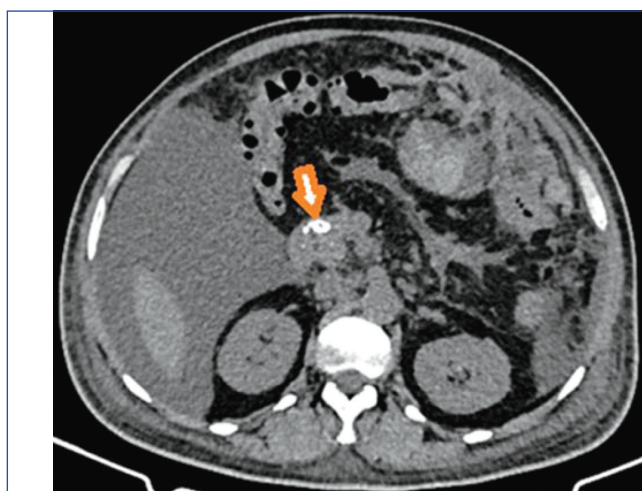
CASE REPORT

A 40-year-old male patient with a four-year history of acute on-chronic pancreatitis and type 2 diabetes mellitus on oral hypoglycaemic agents presented with three days of acute pain in the epigastric region. The pain was sudden in onset, progressive in nature, without vomiting, fever, or bowel and bladder related complaints. The patient was a chronic alcoholic for about 15 years, drinking on average a minimum of 5-6 units/day, and had been abstinent for the past three months.

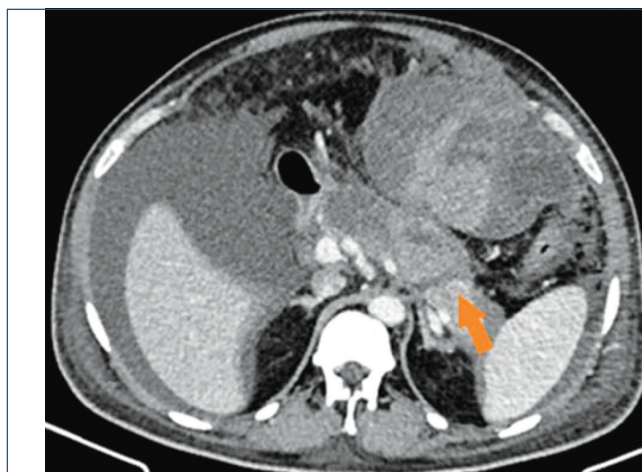
Examination revealed that the patient was haemodynamically stable, conscious, and oriented. Abdominal examination showed epigastric tenderness, no guarding, and no rigidity. Laboratory investigations showed elevated pancreatic enzymes, with serum lipase of 740 U/L (Normal: 0-60 U/L) and serum amylase of 360 U/L (Normal: 30-110 U/L). C-Reactive Protein (CRP) of 282 mg/L (Normal: <10 mg/L) and leucocyte count of 8840/mm³ (Normal: 4000-11000/mm³). Coagulation profile showed mildly increased International Normalised Ratio (INR) of 1.4 (Normal: 0.8-1.2).

Ultrasonography revealed an atrophic pancreas with a large peri-pancreatic collection extending into the lesser sac. Plain and CECT of the abdomen demonstrated heterogeneous pancreatic enhancement with extensive non-enhancing necrotic areas involving the body and tail, along with intraparenchymal calcifications in the pancreatic head and uncinate process, consistent with acute-on-chronic pancreatitis [Table/Fig-1,2]. A large walled-off necrotic collection of size ~11.6×10.1×8.9 cm extended into the lesser sac, causing compression of the stomach. Internal hyperdense areas were indicative of haemorrhagic necrosis, with peri-pancreatic fat stranding and gross ascites [Table/Fig-3a-c].

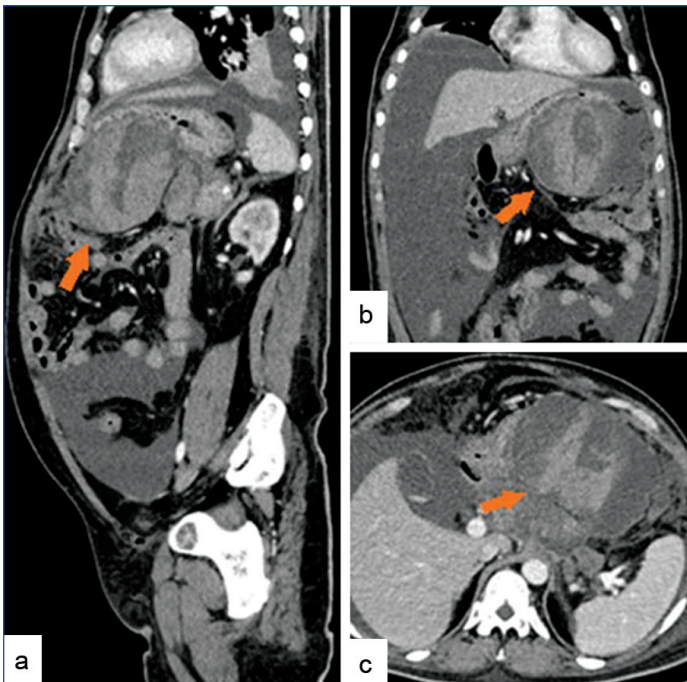
The vascular examination showed an eccentric filling defect at the left renal vein origin with a resultant luminal narrowing of about 50 percent, which is typical of renal vein thrombosis [Table/Fig-4]. This was differentiated from renal vein compression because the vessel's calibre was not compromised; only its patency was, and there was no extrinsic compression. Distal venous opacification and preserved left renal parenchymal enhancement were observed [Table/Fig-5a,b].



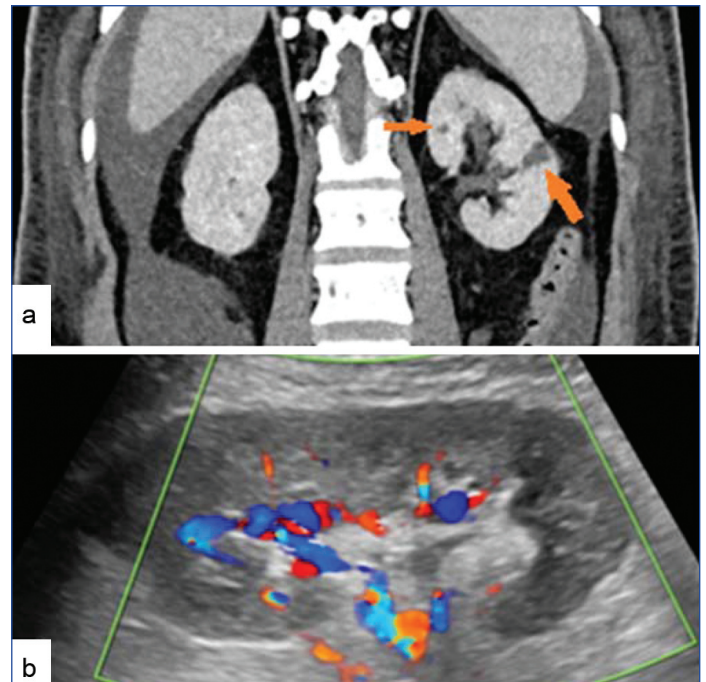
[Table/Fig-1]: Plain CT Abdomen axial section showing atrophy of the head and uncinate process and intraparenchymal calcifications (orange arrow), bulky and heterogeneous body of pancreas, consistent with acute-on-chronic pancreatitis.



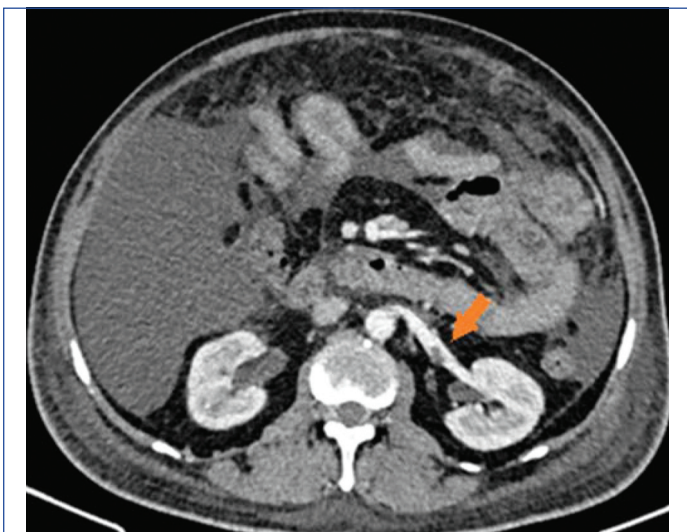
[Table/Fig-2]: Contrast-enhanced CT (CECT) abdomen, portal phase, axial section demonstrating bulky body of pancreas with heterogeneous enhancement with non-enhancing areas consistent with pancreatic necrosis (orange arrow).



[Table/Fig-3a-c]: Contrast-enhanced CT (CECT) abdomen, portal phase, sagittal, coronal and axial sections demonstrating a large walled-off necrotic collection extending into the lesser sac, compressing the stomach, with internal hyperdense areas suggestive of haemorrhage (orange arrows).

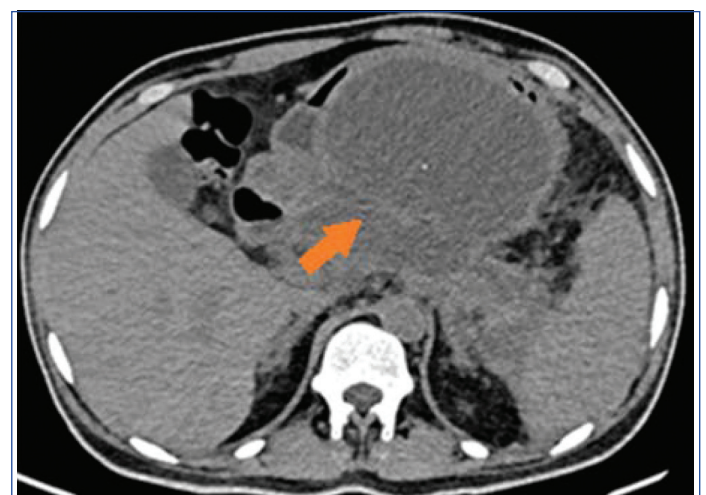


[Table/Fig-5]: a) Contrast-enhanced CT (CECT), delayed phase coronal section showing normal left renal enhancement with few hypodense renal cortical cysts (orange arrows); b) Ultrasound colour doppler imaging showing, normal colour uptake in left kidney.



[Table/Fig-4]: Contrast-enhanced CT (CECT), portal phase, axial section showing focal eccentric filling defect at the origin of the left renal vein (orange arrow) causing approximately 50% luminal narrowing, consistent with renal vein thrombosis, with preserved distal flow.

near-complete resolution of the haemorrhagic component with mild residual peri-pancreatic collection [Table/Fig-6].



[Table/Fig-6]: Follow-up plain CT, axial image after ten weeks showing completely replaced pancreatic parenchyma with mild reduction in the peri-pancreatic collection and near complete resolution of the haemorrhagic component (orange arrow).

The MCTSI was 10/10, which is severe acute pancreatitis with extra-pancreatic complications.

The patient experienced increasing abdominal pain, tachycardia, and fever, which required admission to the intensive care unit during the hospitalisation. In view of the large symptomatic walled-off necrotic collection and clinical deterioration, ultrasound-guided percutaneous pigtail catheter drainage was performed. The drained fluid was turbid, with a markedly elevated amylase level of 35,625 U/L.

The patient was managed using a step-up approach, including broad-spectrum antibiotics (Inj. Meropenem 1 g TDS), anticoagulation (inj. enoxaparin 60 mg subcutaneously every 12 hours), a somatostatin analogue (inj. octreotide 50 µg OD), strict glycaemic control, and supportive care. Anticoagulation was initiated in view of imaging-confirmed renal vein thrombosis to prevent thrombus progression, after ensuring haemodynamic stability and absence of active bleeding. It was started after percutaneous drainage under close clinical monitoring. The patient showed gradual clinical improvement and was hospitalised for 10 days, following which he was discharged in stable condition. Follow-up imaging at 10 weeks demonstrated

DISCUSSION

Necrotising pancreatitis is associated with high morbidity due to local and systemic complications. The revised Atlanta classification distinguishes acute necrotic collections from walled-off necrosis based on timing and encapsulation, with important implications for management [1,2]. Walled-off necrosis typically develops after four weeks and often requires intervention when symptomatic or infected [1].

The CECT plays a central role in the evaluation of necrotising pancreatitis. It helps with the accurate assessment of the extent of pancreatic parenchymal necrosis, the characterisation of peri-pancreatic collections, and the identification of associated vascular complications [3,4].

Severity assessment using the MCTSI further provides valuable prognostic information and correlates well with patient outcomes. The MCTSI incorporates the extent of pancreatic necrosis and extra-pancreatic complications and correlates well with clinical outcomes, including need for intervention and length of hospital stay. In the

present case, an MCTSI score of 10/10 accurately reflected the severe disease course [5].

Only a limited number of cases describing renal vein thrombosis in association with acute pancreatitis have been reported in the literature, highlighting its rarity. Chan WF and Toh YN reported a case of acute necrotising pancreatitis complicated by multiple splanchnic venous thromboses and bilateral renal infarctions in the setting of recent COVID-19 infection [6]. Similarly, Alagappan A et al., described a case of necrotising pancreatitis with gastric perforation and renal vein thrombosis, emphasising the role of CECT in identifying these rare complications [7].

Dawra S et al., reported cases of pancreatitis complicated by renal vein thrombosis, further supporting the rarity of this entity [8]. In another report, renal vein thrombosis associated with inferior vena cava thrombosis was described in acute pancreatitis, suggesting that such complications may occur as part of a broader thrombotic spectrum [9].

Early detection on CT and timely initiation of anticoagulation contributed to a favourable clinical outcome.

CONCLUSION(S)

Severe acute-on-chronic necrotising pancreatitis may rarely be complicated by extra-splanchnic venous thrombosis, such as isolated left renal vein thrombosis, which is an exceedingly uncommon entity compared to splanchnic venous involvement.

This case highlights the importance of meticulous CECT evaluation not only for assessing pancreatic necrosis and its complications but also for identifying rare vascular manifestations.

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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: Mar 22, 2026
- Manual Googling: May 02, 2026
- iThenticate Software: May 05, 2026 (10%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

Date of Submission: **Mar 11, 2026**

Date of Peer Review: **Apr 01, 2026**

Date of Acceptance: **May 07, 2026**

Date of Publishing: **Jun 01, 2026**