

# Severe Acute Necrotizing Pancreatitis Managed by Step Up Approach (Initial pigtail drainage followed by Open Necrosectomy)

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## Abstract:

**Background:** Severe Acute necrotizing pancreatitis is a potentially life-threatening form of pancreatitis characterized by pancreatic parenchymal necrosis and systemic inflammatory response. We report a rare case of a 32-year-old male who developed infected pancreatic necrosis requiring exploratory laparotomy and open necrosectomy after failure of conservative management including pigtail drainage. Early recognition, timely imaging, and appropriate escalation of treatment were crucial in improving outcomes. This case highlights the importance of a step-up approach while emphasizing the continued relevance of open necrosectomy in selected critically ill patients.

**Key Word:** acute pancreatitis; necrotizing pancreatitis; Step up approach; Percutaneous drainage; open necrosectomy.

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## I. Introduction

Acute pancreatitis ranges from mild interstitial disease to severe necrotizing pancreatitis with multi-organ failure. Necrotizing pancreatitis occurs in approximately 15–20% of cases and carries a high mortality rate, especially when infection develops. The current standard of care emphasizes conservative and minimally invasive approaches (1) (2); however, open necrosectomy remains necessary in cases with extensive necrosis, sepsis, or failure of less invasive modalities.

This report describes a rare and severe presentation of acute necrotizing pancreatitis requiring surgical intervention (3), detailing clinical presentation, investigations, and management.

## II. Case Presentation

A 32-year-old male presented to the emergency department with severe, sudden-onset epigastric pain radiating to the back for 10 days. The pain was persistent, dull aching in nature, and aggravated by oral intake. It was associated with multiple episodes of non-bilious vomiting, fever, and anorexia. There was history of chronic alcohol abuse for the past 5 years. There was no history of gallstone disease, trauma, or prior similar episodes. Patient was not a known case of Hypertension, Diabetics, Bronchial asthma, Tuberculosis, Coronary artery disease and Epilepsy.

On examination, the patient appeared toxic, febrile (38.5°C), tachycardic (110 bpm), decreased Spo<sub>2</sub>-87%, and hypotensive (BP: 80/55 mmHg). Abdominal examination revealed epigastric tenderness with guarding and reduced bowel sounds. There was no evidence of jaundice or organomegaly.

### Investigations

Laboratory findings included:

Serum amylase: 870 IU/L

Serum lipase: 1240 IU/L

Total leukocyte count: 19,000/mm<sup>3</sup>

C-reactive protein: 180 mg/L

Serum creatinine: 1.5 mg/dL

Liver function tests: within normal limits

Arterial blood gas analysis showed metabolic acidosis.

Contrast-enhanced CT (CECT) abdomen performed after 72 hours revealed:

> 75% necrosis of pancreatic parenchyma

Multiple peripancreatic fluid collections

Presence of gas within necrotic areas suggesting infected necrosis

Modified CT severity index: 10/10

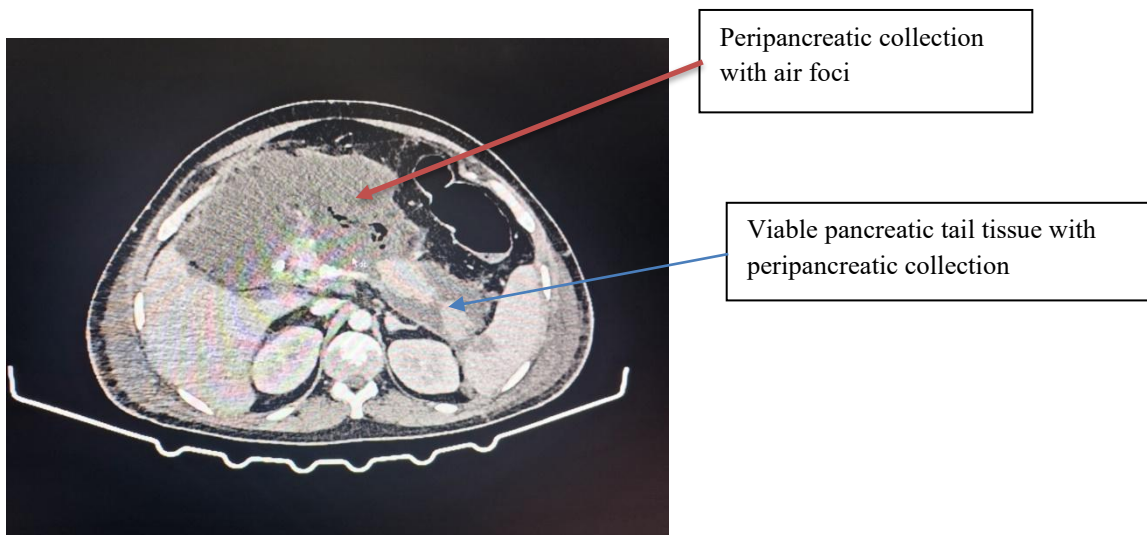


Figure 1 CT Abdomen showing necrotic pancreas and peripancreatic collection

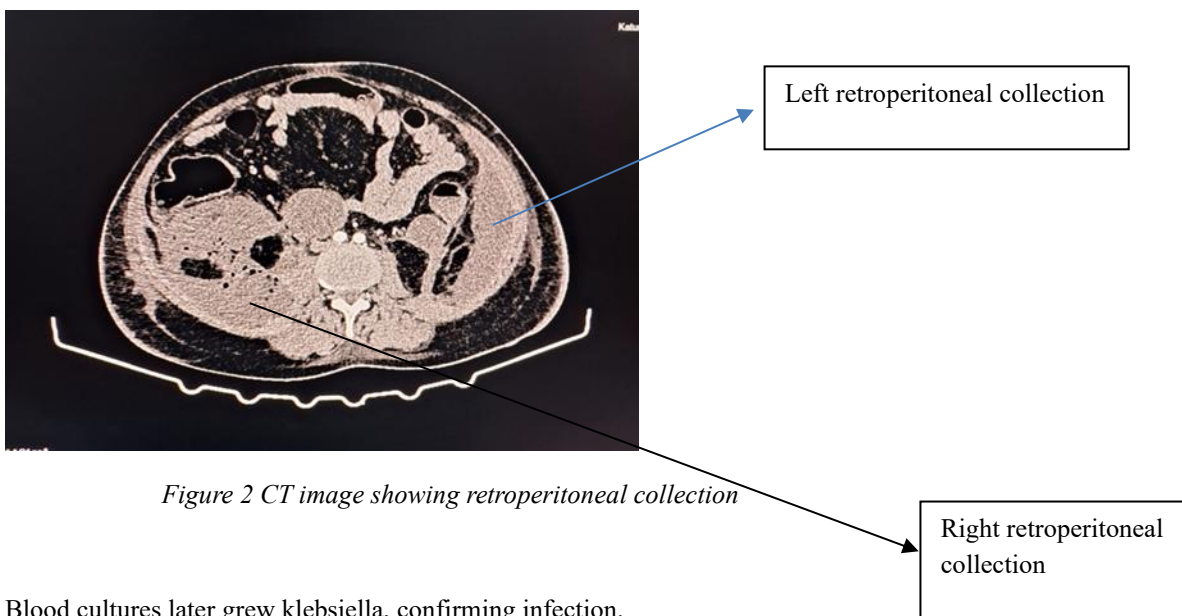


Figure 2 CT image showing retroperitoneal collection

Blood cultures later grew klebsiella, confirming infection.

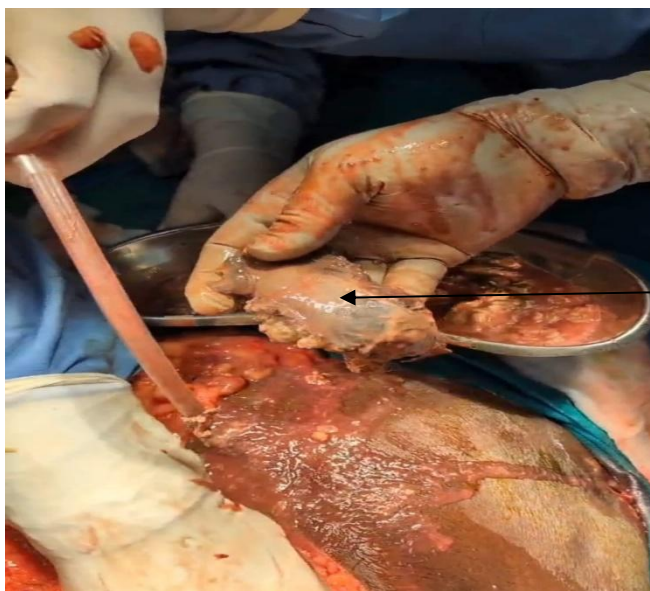
### **Initial Management (Step Up approach)**

Patient was admitted to the intensive care unit and managed with:

- Aggressive intravenous fluid resuscitation
- Broad-spectrum intravenous antibiotics (meropenem)
- Analgesia and proton pump inhibitors
- Oxygen support
- Strict input-output monitoring
- Enteral nutrition was initiated via nasojejunal feeding once the patient stabilized. Despite optimal medical management, the patient showed persistent fever, rising inflammatory markers, and signs of sepsis with worsening organ dysfunction.
- USG imaging showing significant retroperitoneal collection, ultrasound-guided pigtail catheter drainage was performed on Day 4 of admission. Approximately 1200 ml of purulent fluid was drained, and culture grew *E. coli*.
- Due to persistent fever, despite drainage, the patient continued to have sepsis and organ dysfunction. Which ultimately lead to surgical exploration

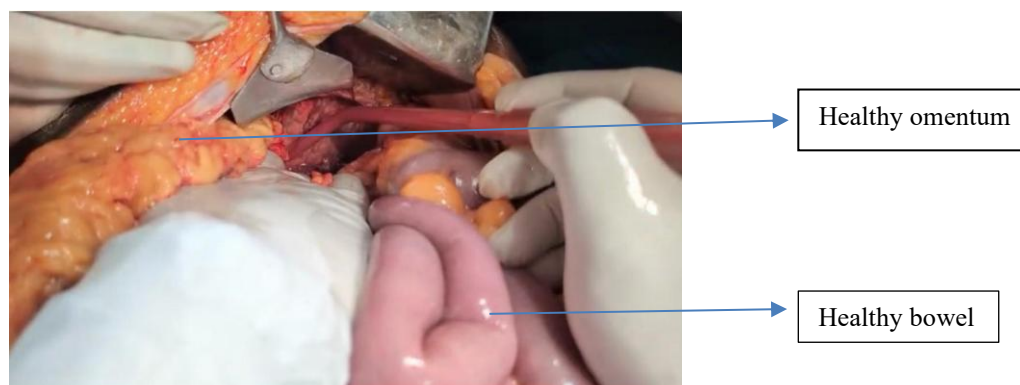
### **Surgical Management**

- On day 8 of admission, due to worsening clinical status, midline exploratory laparotomy was performed.
- Findings included:
  - Extensive necrosis of pancreatic head, neck, body and tail
  - Retroperitoneal extension with purulent and necrotic collection around 1000 ml and lesser sac filled with pancreatic necrotic material and purulent collection of around 1500 ml
  - Purulent collection is totally extraperitoneal as lesser sac collection is sealed off by adherent to anterior abdominal wall
  - No collection is noted in intraperitoneal cavity
  - Bowel and omentum are healthy



Necrotic pancreatic tissue

*Intra Op picture showing Necrotic pancreas tissue*



*Figure 2 Intra Op image showing left retroperitoneal collection*

- Open necrosectomy with thorough debridement and lavage was done. Multiple drains were placed in lesser sac, right and left sides of retroperitoneum, pelvis and right paracolic gutter.

### **Postoperative Course and Complications**

Postoperatively, the patient required ventilatory and inotropic support for the initial 3 days. Gradual improvement was noted in clinical and biochemical parameters. Patient gradually weaned off from ventilator support (Extubated on Post Operative Day 3). On POD 4 patient was transfused with 2 units of PRBC due to decreased haemoglobin.

However, the postoperative period was complicated by:

- Surgical Site Infection (SSI)
  - Presented with purulent discharge from incision
  - Managed with regular dressing, antibiotics, and wound care
- Sheath Dehiscence
  - Partial wound gaping without bowel evisceration
  - Managed conservatively with:
    - Abdominal binders
    - Daily sterile dressing
    - Nutritional support
    - Chest Physiotherapy and Incentive spirometry to avoid lung complications
- Anasarca
  - Due to hypo albuminemia (Sr Albumin- 1.9 mg/dl)
  - Managed with nutritional support including egg, protein powder, milk and amino acids infusion.

No re-exploration was required, and the wound healed by secondary intention.

### **Outcome and Follow-up**

The patient improved gradually and was discharged after 25 days.

#### **At 3-month follow-up:**

- Patient was asymptomatic
- Wound healed completely
- No residual collections on imaging

### **III. Discussion**

This case demonstrates the effectiveness of the step-up approach in necrotizing pancreatitis. Ultrasound-guided pigtail drainage is a minimally invasive initial intervention that can control infection in many patients. However, failure of percutaneous drainage necessitates surgical necrosectomy (4).

During necrosectomy, collection observed only in the retroperitoneum leaving the intraperitoneal cavity, bowel and omentum were healthy, which may be reason for survival in this severe acute necrotising pancreatitis. Open necrosectomy, though less commonly used today, remains vital in critically ill patients with extensive necrosis. Postoperative complications such as SSI and sheath dehiscence are not uncommon, particularly in malnourished and septic patients, but can often be managed conservatively if detected early.

### **IV. Conclusion**

case highlights a severe form of acute necrotizing pancreatitis successfully managed with a combination of percutaneous drainage and open necrosectomy. It also emphasizes that postoperative complications like SSI and sheath dehiscence can be effectively treated with conservative measures. A multidisciplinary and step-wise approach is essential for optimal outcomes (5).

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### **References**

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