

**To Study the Surgical and Interventional Management and its Outcome in Severe Acute Pancreatitis****Manish Shah<sup>1</sup>, Manish Mandal<sup>2</sup>**<sup>1</sup>Senior Resident, Department of Surgical Gastroenterology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar<sup>2</sup>Professor and Head of Department, Department of Surgical Gastroenterology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar

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Conflict of interest: Nil

**Abstract:**

**Background:** An auto-digestion of the gland causes acute pancreas inflammation, which is known as acute pancreatitis. The severity of acute pancreatitis can range from a moderate, self-limited illness to a severe, quickly progressing condition. The developments of pancreatic or peri-pancreatic necrosis, together with general and local consequences that contribute to a high death rate, characterize severe acute pancreatitis in 20–25% of cases. Therapy of sequelae, most notably the therapy of infected walled off necrosis, is the most frequent reason for intervention in acute pancreatitis. The goal is to investigate the effectiveness of surgery in treating severe acute pancreatitis and associated consequences.

**Methods:** There were 36 patients investigated who had sequelae from severe acute pancreatitis that had not improved with conservative care. In this prospective observational analysis, patients were categorized according to the type of treatment they received: endoscopic cystogastrostomy/drainage surgery, necrosectomy (in patients who did not react to prior interventions), and percutaneous drainage with pigtail catheterization.

**Results:** Out of 36 patients in our study, 22 patients received percutaneous drainage with pig tail catheterization, 8 patients received endoscopic cystogastrostomy, 6 patients got necrosectomy (3 patients received minimally invasive laparoscopic necrosectomy and 3 patients received open necrosectomy). Patients who underwent surgical intervention experienced higher complications. Eighty percent of patients who had necrosectomy died. Sepsis coupled with multiple organ failure is the most common cause of mortality.

**Conclusion:** In the interdisciplinary treatment of patients with complex acute pancreatitis, surgeons play a significant role. A step-up approach should be used to address patients with acute pancreatitis. It is not advised to perform surgery right away, not even for necrotizing pancreatitis. An indication for surgery is infected pancreatic necrosis accompanied by sepsis symptoms. When opposed to surgical surgery, patients who get interventional care experience fewer complications. Nearly all patients who underwent necrosectomy experienced substantial early, late, or both problems.

**Keywords:** Necrotizing pancreatitis, infected pancreatic necrosis, sterile pancreatic necrosis, pancreatic abscess.

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**Introduction**

The systemic release of pro inflammatory cytokines and intra-acinar cell stimulation of digestive enzymes are two features of acute pancreatitis [1, 2]. A systemic inflammatory response forms in the early stages of severe acute pancreatitis (first 14 days), and can escalate to multi organ dysfunction due to excessive inflammatory mediator release. Though sepsis from infected pancreatic necrosis typically causes multi-organ failure in the late stage (after two weeks), which occurs in 40% to 70% of patients [3].

Currently, infection-related pancreatic necrosis remains the main cause of severe acute pancreatitis' most dangerous complications, including multiple

organ failure linked to sepsis [4]. The degree of intra and extra pancreatic necrosis correlates with an increased risk of infection [5].

In recent years, rigorous intensive medical therapy has replaced early surgical debridement/necrosectomy as the preferred method of treating severe acute pancreatitis. While the early stages of the disease are treated conservatively, the second stage of the condition requires consideration of surgery. The treatment of many surgical disorders has been transformed by improvements in radiological imaging, interventional radiology, and other low access procedures. Therefore, the current study's goal is to intervene in surgically managing

acute pancreatitis, along with any associated complications and the results of that care.

### Materials and Methods

This prospective study, which had a sample size of 36 patients with severe acute pancreatitis and local sequelae, was carried out at the Department of Surgical Gastroenterology, IGIMS, Patna, Bihar, for six months from May 2019 to October 2019. Patients underwent a thorough clinical examination, which included asking about their age, sex, and medical history.

The following laboratory and radiographic tests were performed on the patients: Complete blood count, Serum electrolytes, Serum calcium, and Serum amylase and lipase levels. All patients will receive an abdominal and pelvic ultrasonogram to confirm the diagnosis of acute pancreatitis and associated complication.

To get a clear view of complications (Pseudocysts, walled off necrosis), contrast an enhanced computed tomography of the abdomen. Patients who met these requirements were accepted for treatment, included in the study, and followed up for a total of six months. Percutaneous drainage with pigtail catheterization, endoscopic cystogastrostomy, and necrosectomy (open and laparoscopic) were the interventions used in this investigation.

Patients older than 18 with one or more of the following symptoms and severe acute pancreatitis pancreatic pseudocyst, peripancreatic necrosis, and/or persistent single or multiple organ failures were included. Other severity indicators included Bedside Index of Severity in Acute Pancreatitis (BISAP) score > 2, modified computed tomography (CT) severity index  $\geq 8$ , and Acute Physiology, Age; Chronic Health Evaluation (APACHE) II score  $\geq 8$ . Patients with acute or chronic pancreatitis requiring surgery at presentation and those with a pigtail catheter before presentation were excluded.

### Results

36 patients with acute pancreatitis and local consequences were assessed in our study. Patients

in the study ranged in age from 18 to 70, with 29 men and 7 women.

Our study's most prevalent age range, with a mean age of 51.4 years, is 18 to 65 years. The gender split, which consisted of only 7 girls and 29 males, was extremely uneven. In 72% of cases (26/36), alcohol misuse was the primary cause of pancreatitis. Nine patients (or 25%) had gallstones as a secondary cause, while one patient (2.7%) had pancreatitis as a result of trauma. Six deaths in all happened during our study. In the surgical group, four patients (80%) passed away from organ failure and infection. Sepsis claimed the lives of two (5%) of the pigtail group's patients following pigtail placement.

The most frequent cause of mortality is multiple organ failure. Pigtail catheters were utilized on 22 individuals. Pig tail catheterization drainage typically lasts 8 days. The on-call radiologist assisted the surgeons throughout every PCD insertion. Four patients experienced secondary infections after pig tail catheterization, and they were all treated with antibiotics based on culture and sensitivity.

Two patients experienced catheter-related problems such gastro intestinal fistula and both of them passed away from sepsis. Endoscopic cystogastrostomy was performed on 8 patients who had a big pseudocyst at the pancreatic neck that was next to the stomach. Six patients had continuous lavage necrosectomy (3 underwent minimally invasive laparoscopic surgery and 3 underwent open surgery). Five patients who experienced enterocutaneous fistulas underwent conservative treatment. Out of five patients, four passed away from sepsis and multiple organ failure. When compared to intervention groups receiving percutaneous drainage (mean hospital stay of 8 days) or endoscopic cystogastrostomy for pseudocysts (mean hospital stay of 12 days), patients treated surgically experience longer hospital stays, with a mean hospital stay of 24 days. Most patients had monomicrobial infection. *Escherichia coli* were most common organism present in the culture. The second most common organism cultured was *Klebsiella*.

Table 1:

	Percutaneous Drainage	Endoscopic Cystogastrostomy	Necrosectomy
Number of patients	22	8	6
APACHE II score	8.05±0.37	8.1±0.4	9.38±1.30
Infection	4(18%)	0	6(100%)
Organ failure	4(18%)	0	4(80%)
Average duration of hospital stay	8 days	12 days	24 days
Mortality	2(9%)	0	4(80%)

## Discussion

Acute pancreatitis (AP) is a condition marked by acute pancreatic inflammation and histologically evident acinar cell death. The following three criteria must be present in order to diagnose AP: (i) abdominal pain indicative of the disease; (ii) biochemical proof of pancreatitis (serum amylase and/or lipase levels greater than three times the upper limit of normal); and (iii) distinctive abdominal imaging findings[6].

The slow liquefaction of the solid debris that forms a collection of liquefied necrosis that can eventually be absorbed is a characteristic of pancreatic necrosis' natural progression. Super infection of the necrotic tissues, which typically necessitates surgical or radiological intervention, may at any point aggravate this process.

To allow for the most effective delineation and liquefaction of the devitalized tissues, necrosectomy should be carried out as late as feasible following the beginning of acute pancreatitis [7]. IPN was originally treated using the percutaneous catheter drainage method by Freeny et al. [8]. In our study, 82% of percutaneous drainage procedures were successful. In studies that are analogous to ours, the success rate of percutaneous catheter drainage in infected pancreatic necrosis ranges from 0 to 78% [8–12]. A meta-analysis of 384 patients from 11 studies using PCD as the primary treatment for necrotizing pancreatitis was published by Van Baal et al. [13]. An incident of acute pancreatitis, chronic pancreatitis, or disruption in the pancreatic duct due to blunt trauma, penetrating trauma, or injury during surgery typically results in pancreatic pseudocysts 4 weeks later [14–16].

On the best way to handle pancreatic pseudocysts, no agreement has been reached to yet. Endoscopic drainage of pancreatic pseudocysts has been done recently due to advancements in the endoscopic era, with varying degrees of effectiveness. The peripancreatic fluid collection (PFC) has traditionally been treated with EUS-guided drainage using a plastic stent like the double-pigtail stent (DPS) and a fully covered self-expanding metal stent. The typical hospital stay is 12 days, which is shorter than a surgical procedure and in line with other research [17]. Since then, "Delay, Drain, and Debride" has become the official treatment protocol of the Dutch Acute Pancreatitis Group[18]. Open necrosectomy is a therapy option available after treatment failure in a minimally invasive step-up protocol for problems resulting from prior procedures or the (peri) pancreatic necrosis itself. Our study's overall fatality rate is consistent with recent cohorts of patients having open necrosectomy [19–22].

## Conclusion

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However, surgical intervention is still used in the treatment of severe acute pancreatitis. In treatment severe acute pancreatitis and its consequences, less intrusive methods such percutaneous drainage using pig tail catheterization and endoscopic drainage techniques play a key role in lowering morbidity and mortality.

The surgeon is still a crucial team member in the multidisciplinary management of acute pancreatitis. Pigtail catheter drainage significantly reduced the incidence of sepsis in our trial, and the majority of patients had full recoveries without the need for surgery. The standard of therapy is the step-up strategy, with initial draining (percutaneous or endoscopic) and open necrosectomy reserved for situations in which these techniques are unsuccessful.

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