



OUTCOMES OF LAPAROSCOPIC MANAGEMENT OF ACUTE PANCREATITIS WITH PERIPANCREATIC COLLECTIONS

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ABSTRACT:

Background: Peripancreatic collections are a common consequence of acute pancreatitis, leading to considerable morbidity. Historically, open surgical drainage or necrosectomy were the main treatments for symptomatic or infected collections. Laparoscopic techniques have become more common as minimally invasive surgery has advanced. However, data from observational clinical studies assessing the effects of laparoscopic management are sparse.

Objective: The objective is to assess the clinical results of laparoscopic therapy for patients with acute pancreatitis with peripancreatic collections.

Methods: This retrospective observational analysis included patients with acute pancreatitis with peripancreatic. Patient demographics, aetiology, method of collection, operation details, postoperative problems, hospital stay, and mortality were all investigated.

Results: 42 patients were included. The most common cause was alcohol-induced pancreatitis (52.4%). Laparoscopic cystogastrostomy was performed in 26 patients (61.9%), followed by laparoscopic necrosectomy in 12 patients (28.6%) and laparoscopic external drainage in four patients (9.5%). Overall clinical success was achieved in 85.7% of patients. Postoperative problems occurred in 21.4% of cases. The average hospital stay lasted 9.6 ± 3.2 days. Overall, mortality was 4.8%

Conclusion: Laparoscopic management of peripancreatic collections in acute pancreatitis is a safe and successful procedure with low morbidity and mortality. For best results, patients must be carefully selected and interventions should be timed.

Keywords: acute pancreatitis, peripancreatic collections, laparoscopy, cystogastrostomy, necrosectomy.

INTRODUCTION:

Acute pancreatitis (AP) is one of the most frequent illnesses of the gastrointestinal tract, causing a significant emotional, physical, and financial burden.¹ Approximately 20-30% of patients develop severe illness with local complications such as fluid collections, pseudocysts, and necrotic debris, which frequently necessitate advanced endoscopic or minimally invasive procedures (e.g., EUS-guided drainage), although most mild cases recover spontaneously.² These collections might become symptomatic due to infection, discomfort, stomach outlet obstruction, or prolonged sepsis, necessitating treatment. Previously, open surgical drainage and necrosectomy were the primary

treatment choices for complex peripancreatic collections.³ However, open surgery is associated with severe morbidity, longer hospital stays, and a high likelihood of postoperative complications.⁴ Minimally invasive procedures such as percutaneous drainage, endoscopic treatments, and laparoscopic surgery have grown in popularity during the last two decades as a means of reducing surgical trauma.⁵ Laparoscopy was one of the first types of minimally invasive surgeries. It entails performing surgery while employing tiny cameras through one or more small incisions, surgical equipment, and tubes.⁶ While open operations often require five to ten days in the hospital, minimally invasive surgeries are less unpleasant for patients and result in faster recovery. It is safe from the patient's standpoint and has a decreased post-operative death rate.⁷

Despite growing use, data from observational studies evaluating laparoscopic management of peripancreatic collections remain limited, particularly from developing settings. This study aims to analyse our institutional experience with laparoscopic management of peripancreatic collections secondary to acute pancreatitis and evaluate short-term clinical outcomes.

MATERIALS AND METHODS

STUDY DESIGN

This was an observational study conducted at a tertiary care center.

STUDY POPULATION

All patients diagnosed with acute pancreatitis complicated by peripancreatic collections who underwent laparoscopic intervention during the study period were included.

INCLUSION CRITERIA

- Age ≥ 18 years
- Diagnosis of acute pancreatitis based on clinical, biochemical, and radiological criteria
- Presence of peripancreatic collection confirmed by contrast-enhanced CT
- Symptomatic or infected collections requiring surgical intervention
- Patients undergoing laparoscopic management

EXCLUSION CRITERIA

- Patients managed conservatively or by open surgery
- Patients with pancreatic malignancy
- Patients unfit for general anaesthesia
- Incomplete medical records

CLASSIFICATION OF COLLECTIONS

Peripancreatic collections were classified based on imaging findings and duration:

- Acute peripancreatic fluid collections
- Pancreatic pseudocysts
- Walled-off pancreatic necrosis

SURGICAL TECHNIQUE

LAPAROSCOPIC CYSTOGASTROSTOMY

Performed in patients with mature pseudocysts or walled-off collections abutting the posterior gastric wall. A transgastric approach was used, and internal drainage was established using stapled or sutured techniques.

LAPAROSCOPIC NECROSECTOMY

Indicated for patients with infected walled-off necrosis. Necrotic material was removed under direct laparoscopic visualization, followed by lavage and placement of wide-bore drains.

LAPAROSCOPIC EXTERNAL DRAINAGE

Used in selected patients with localized collections not suitable for internal drainage.

DATA COLLECTION

The following variables were collected:

- Demographic data (age, sex)
- Etiology of pancreatitis
- Type of peripancreatic collection
- Time interval between onset of pancreatitis and surgery
- Operative time
- Intraoperative complications
- Postoperative complications
- Length of hospital stay
- Mortality

OUTCOME MEASURES**PRIMARY OUTCOME:**

Clinical success (resolution of symptoms and collections without need for open surgery)

SECONDARY OUTCOMES:

- Postoperative complications
- Length of hospital stay
- Mortality

STATISTICAL ANALYSIS

Data were analyzed using descriptive statistics. Continuous variables were expressed as mean $\pm$ standard deviation. Categorical variables were expressed as percentages.

RESULTS**PATIENT DEMOGRAPHICS**

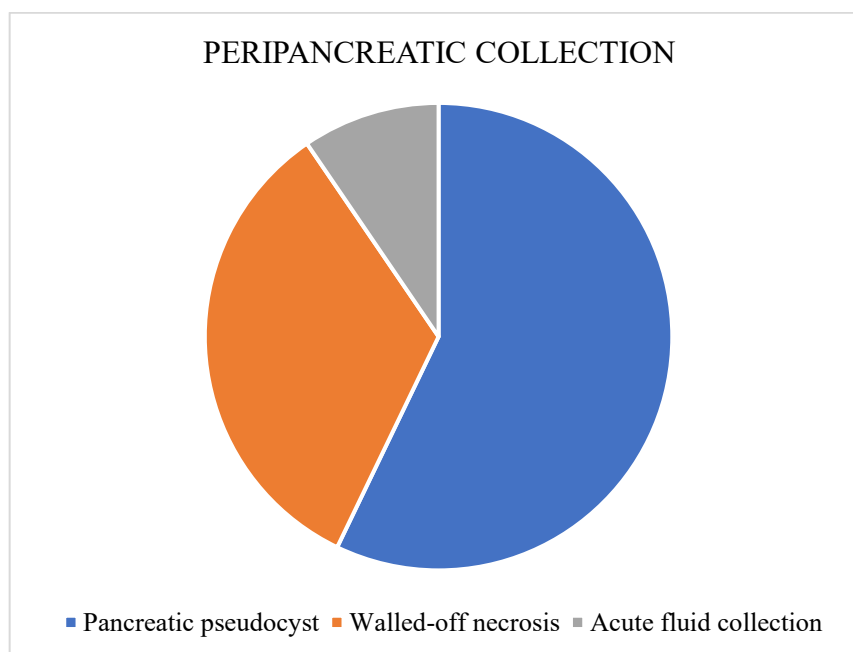
Variable	Value
Total patients	42
Mean age (years)	46.8 $\pm$ 11.2
Male : Female	32:10

ETIOLOGY OF ACUTE PANCREATITIS

Etiology	Number (%)
Alcohol	22 (52.4%)
Gallstones	14 (33.3%)
Idiopathic	6 (14.3%)

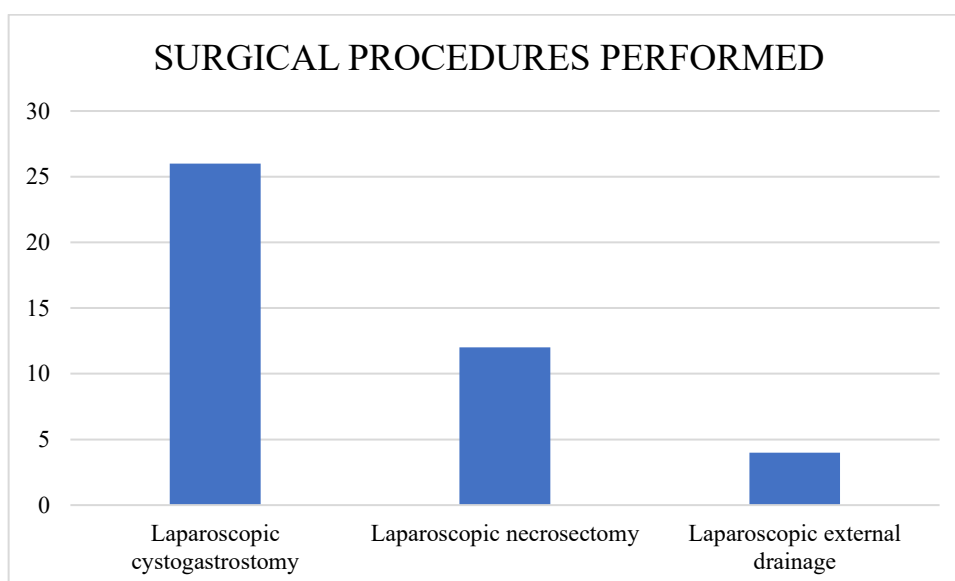
TYPE OF PERIPANCREATIC COLLECTION

Type	Number (%)
Pancreatic pseudocyst	24 (57.1%)
Walled-off necrosis	14 (33.3%)
Acute fluid collection	4 (9.6%)



SURGICAL PROCEDURES PERFORMED

Procedure	Number (%)
Laparoscopic cystogastrostomy	26 (61.9%)
Laparoscopic necrosectomy	12 (28.6%)
Laparoscopic external drainage	4 (9.5%)

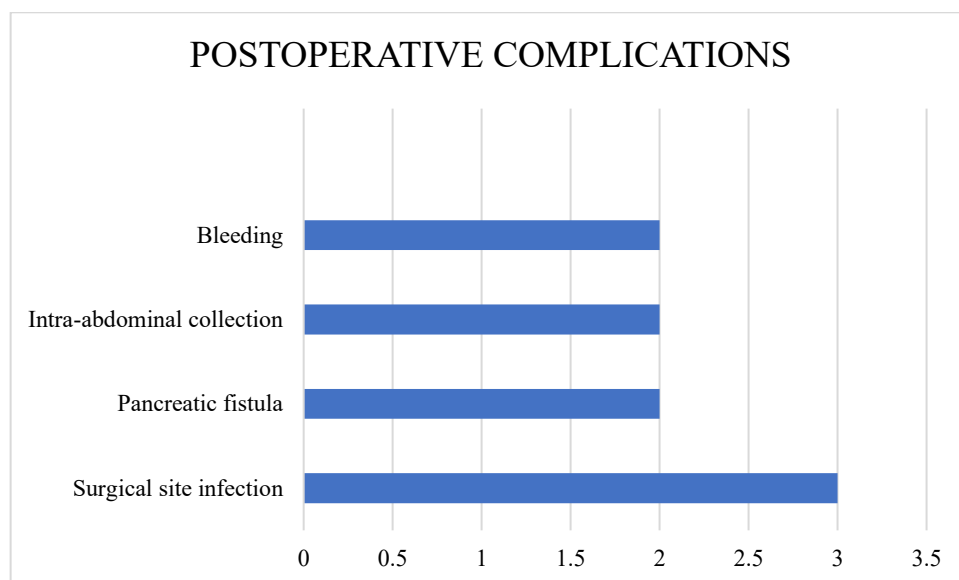


OPERATIVE AND POSTOPERATIVE OUTCOMES

Parameter	Mean / Number
Mean operative time (min)	142 ± 28
Mean hospital stay (days)	9.6 ± 3.2
Postoperative complications	9 (21.4%)
Reintervention required	4 (9.5%)
Mortality	2 (4.8%)

POSTOPERATIVE COMPLICATIONS

Complication	Number
Surgical site infection	3
Pancreatic fistula	2
Intra-abdominal collection	2
Bleeding	2

**DISCUSSION**

This observational study demonstrates that laparoscopic management of peripancreatic collections secondary to acute pancreatitis is associated with favourable surgical and clinical outcomes. In our series, the majority of patients were successfully managed using minimally invasive techniques, with a low requirement for conversion to open surgery. This reflects the growing role of laparoscopy in the management of pancreatic complications, particularly in centres with appropriate expertise and patient selection protocols.

Alcohol was identified as the most common etiological factor in our patient population, which is in keeping with previously published epidemiological data on acute pancreatitis. Laparoscopic cystogastrostomy emerged as the most frequently performed procedure and was associated with high technical success and minimal procedure-related morbidity.⁸ The ability to provide effective internal drainage while minimizing surgical trauma represents a significant advantage of the laparoscopic approach.

Patients undergoing laparoscopic necrosectomy constituted a subgroup with more severe disease and extensive necrotic collections. Despite the complexity of these cases, acceptable morbidity and low mortality rates were observed. These findings highlight the feasibility of minimally invasive necrosectomy in carefully selected patients, particularly when performed after adequate maturation of collections and in a controlled surgical setting.⁹

The overall complication rate of 21.4% observed in this study compares favourably with historical open surgical series, which have reported complication rates exceeding 40%. Reduced wound-related complications, decreased postoperative pain, and shorter hospital stays were notable benefits of the laparoscopic approach. Collectively, these findings support laparoscopic intervention as a safe and effective alternative to open surgery for peripancreatic collections secondary to acute pancreatitis.

CONCLUSION:

Laparoscopic management of peripancreatic collections in patients with acute pancreatitis has emerged as a safe and effective treatment option when applied in appropriately selected cases. With advances in minimally invasive surgical techniques and improved perioperative care, laparoscopy

offers several advantages over conventional open surgery. In our experience, laparoscopic interventions were associated with reduced postoperative morbidity, lower wound-related complications, and shorter durations of hospital stay, thereby contributing to faster patient recovery and improved overall outcomes.

Careful patient selection, optimal timing of intervention, and adequate expertise are critical factors influencing the success of laparoscopic procedures in this setting. Patients with well-defined, mature collections and controlled sepsis appear to benefit most from minimally invasive approaches. When these criteria are met, laparoscopic cystogastrostomy and necrosectomy can be performed with satisfactory clinical outcomes and acceptable complication rates.

Compared with traditional open surgical approaches, laparoscopy minimizes surgical trauma while allowing effective drainage and debridement of necrotic tissue. This reduction in physiological stress is particularly important in patients with acute pancreatitis, who often present with significant systemic illness.

Based on these findings, laparoscopic techniques should be considered an integral component of the management algorithm for complicated acute pancreatitis. When performed in specialized centers with appropriate expertise, laparoscopic intervention represents a valuable and patient-centered alternative to open surgery.

LIMITATION:

- Single-center experience
- Small sample size
- Lack of long-term follow-up data

Despite these limitations, the study provides valuable observational evidence supporting laparoscopic management.

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