



A CLINICAL STUDY ON PSEUDOCYST PANCREAS WITH SPECIAL REFERENCE TO ITS SURGICAL MANAGEMENT

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ABSTRACT

Background: Pancreatic pseudocyst is a common complication of acute and chronic pancreatitis and continues to present diagnostic and therapeutic challenges. Management ranges from conservative treatment to minimally invasive and surgical interventions depending on cyst characteristics and complications.

Objective: To evaluate the clinical profile of patients with pancreatic pseudocyst and assess treatment modalities with respect to outcomes, complications, and recurrence.

Methods: This hospital-based prospective observational study was conducted in the Department of General Surgery, Assam Medical College and Hospital, Dibrugarh. A total of 62 patients diagnosed with pancreatic pseudocyst were included. Clinical evaluation, laboratory investigations, ultrasonography, and contrast-enhanced computed tomography were performed. Patients were managed conservatively, by percutaneous drainage, or surgically based on clinical presentation and cyst characteristics. Outcomes were assessed in terms of resolution, complications, recurrence, and mortality.

Results: Most patients were males (83.9%), predominantly in the 41–50 years age group. Alcohol-related pancreatitis was the leading etiological factor (61.3%). Most pseudocysts were single (71.0%), located in the lesser sac (45.2%), and measured 6–10 cm (48.4%). Surgical management was the most common treatment modality (51.6%), with cystogastrostomy being the most frequently performed procedure. Complete resolution was achieved in 77.4% of patients. Recurrence occurred in 12.9%, mainly in conservatively or percutaneously managed cases. Infection was the most common complication, while mortality was low (1.6%).

Conclusion: Pancreatic pseudocyst predominantly affects middle-aged males and is commonly associated with alcohol-related pancreatitis. Surgical management, especially internal drainage, provides favorable long-term outcomes with low recurrence in symptomatic and complicated cases.

KEYWORDS: Pancreatic Pseudocyst, Pancreatitis, Surgical Management, Cystogastrostomy, Outcomes, Complications.

Introduction

Pancreatic pseudocyst is one of the most common complications of pancreatic diseases, particularly following acute and chronic pancreatitis, and remains an important cause of morbidity and mortality. It is defined as an encapsulated collection of pancreatic fluid rich in enzymes, blood, and necrotic debris, surrounded by a well-defined wall of fibrous or granulation tissue without an epithelial lining. Pancreatic pseudocysts account for approximately 75–85% of all cystic lesions of the pancreas and continue to present diagnostic and therapeutic challenges despite advances in imaging and intervention[1].

Pancreatic pseudocysts commonly develop following acute pancreatitis, chronic pancreatitis, or pancreatic trauma. In acute pancreatitis, disruption of the pancreatic duct results in leakage of enzyme-rich fluid into surrounding tissues, which gradually becomes encapsulated. In chronic pancreatitis, persistent ductal obstruction and ongoing inflammation contribute to pseudocyst formation[2]. Alcohol abuse remains the leading etiological factor worldwide, particularly in developing countries, followed by gallstone disease, abdominal trauma, and postoperative pancreatic duct injuries[3].

The clinical presentation of pancreatic pseudocyst varies widely, ranging from asymptomatic incidental lesions to severe life-threatening complications. Abdominal pain is the most common presenting symptom and is often associated with nausea, vomiting, abdominal fullness, early satiety, and weight loss. Large pseudocysts may exert pressure on adjacent structures, leading to gastric outlet obstruction, biliary obstruction, vascular compression, or portal hypertension. Complications such as infection, hemorrhage, rupture, and fistula formation significantly increase morbidity and may become life-threatening if not managed promptly[4].

Accurate diagnosis requires a combination of clinical evaluation and radiological imaging. Ultrasonography is commonly used as an initial screening tool because of its accessibility and non-invasive nature. However, contrast-enhanced computed tomography remains the preferred imaging modality for detailed evaluation of cyst size, location, wall maturity, internal contents, and relation to surrounding structures[5]. Additional modalities such as magnetic resonance cholangiopancreatography and endoscopic ultrasonography are useful for assessing pancreatic duct anatomy, ductal communication, and differentiating pseudocysts from cystic neoplasms[6].

Management strategies for pancreatic pseudocyst have evolved considerably over recent decades. Small asymptomatic pseudocysts may resolve spontaneously and can be managed conservatively with close observation. Intervention is generally indicated for persistent, enlarging, symptomatic, or complicated pseudocysts. Treatment

options include percutaneous drainage, endoscopic drainage, and surgical intervention. Although minimally invasive techniques have gained increasing popularity due to reduced postoperative morbidity and shorter hospital stay, surgical management continues to play a vital role in large, recurrent, infected, or complicated pseudocysts, particularly when associated pancreatic pathology or suspected malignancy is present.

Given the wide variability in clinical presentation, etiology, complications, and treatment outcomes, management of pancreatic pseudocyst must be individualized. This study was undertaken to evaluate the clinical profile, etiological factors, diagnostic modalities, treatment strategies, and outcomes of pancreatic pseudocyst, with special emphasis on the role of surgical management in a tertiary care centre[7].

Research Question

What are the different treatment modalities for pancreatic pseudocyst and its outcomes with reference to recurrence and complications in patients presenting to the Department of General Surgery at Assam Medical College and Hospital, Dibrugarh?

Aim

To study the clinical parameters of patients with pancreatic pseudocyst and its different treatment modalities, in a tertiary care hospital of Assam.

Objectives

- To study the distribution of cases.
- To study the complications of pancreatic pseudocyst
- To study the different modalities of treatment - expectant and surgical.

To study the outcomes of different treatment modalities.

This analysis was carried out in the Department of General Surgery, AMCH, Dibrugarh among patients diagnosed with pancreatic pseudocyst and assessed their clinical profile, treatment modalities, and outcomes with special reference to recurrence and complications.

Materials and Methods

Place of Study: Department of General Surgery, Assam Medical College and Hospital, Dibrugarh.

Study Period: 1 year i.e., from 27th September 2024 to 26th September 2025.

Type of Study: Hospital-based prospective observational study.

Source of Data: All the patients admitted in the General Surgery Department of Assam Medical College and Hospital, Dibrugarh with pancreatic pseudocyst were taken up for the study and their data were recorded.

Study Population: Patients diagnosed with pancreatic pseudocyst attending Department of General Surgery, Assam Medical College and Hospital, Dibrugarh during the period

fulfilling the inclusion and exclusion criteria during the study period.

Sample Size: Considering the prevalence of Pancreatic pseudocyst to be 20%, as per the review article cited in references (1), sample size for the present study is calculated to be 62 with 95% confidence and margin error of 10%.

Inclusion Criteria

- Patients aged ≥ 14 years
- Patients diagnosed with pancreatic pseudocyst based on clinical features and radiological imaging.
- Pseudocysts following acute pancreatitis, chronic pancreatitis, or pancreatic trauma.
- Patients willing to give informed written consent

Exclusion Criteria

- Patients with true pancreatic cysts or cystic neoplasms.
- Patients with pancreatic abscess or walled-off necrosis.
- Patients unfit for surgery or intervention due to severe comorbid conditions.
- Patients unwilling to participate or lost to follow-up.

Ethical Clearance

Institutional Human Ethics Committee of AMCH, Dibrugarh approved with ethical clearance for this thesis work before the commencement.

Methods of Study

Patients diagnosed with pancreatic pseudocysts attending the tertiary care centre at Assam Data collection were carried out systematically using a pre-designed and pre-tested structured proforma for all patients diagnosed with pancreatic pseudocyst and included in the study. The following steps were followed:

Patient Identification and Enrollment

- Patients presenting to the Department of General Surgery, Assam Medical College and Hospital, Dibrugarh with a provisional diagnosis of pancreatic pseudocyst were screened.
- Diagnosis was confirmed based on clinical evaluation and radiological investigations.
- Eligible patients fulfilling the inclusion criteria were enrolled after obtaining written informed consent.

Demographic Data Collection

- Age of the patient
- Sex
- Residential address
- Occupation and socioeconomic status (where relevant)

Clinical History

- A detailed clinical history was obtained and recorded, including:
 - Presenting complaints such as:
 - Abdominal pain

- Abdominal distension or mass
- Nausea and vomiting
- Fever
- Jaundice
- Weight loss or anorexia
- Duration of symptoms
- History of acute or chronic pancreatitis
- History of alcohol consumption - duration and quantity
- History of gallstone disease
- History of abdominal trauma
- Past surgical or endoscopic interventions

Physical Examination

- A thorough general and systemic examination was performed and documented:
 - Vital parameters (pulse, blood pressure, temperature)
 - Signs of anemia, icterus, edema, or dehydration

Abdominal examination findings

- Tenderness
- Palpable mass (site, size, consistency, mobility)
- Ascites
- Examination of other systems to assess comorbid conditions
- Laboratory Investigations

Relevant laboratory investigations were carried out and recorded

- Complete blood count
- Serum amylase and lipase levels
- Liver function tests
- Renal function tests
- Blood sugar levels
- Other investigations as indicated clinically

Radiological Evaluation

- Radiological assessment was performed to confirm diagnosis and guide management:
 - Ultrasonography of the abdomen to identify cystic lesions
 - Contrast-enhanced CT (CECT) scan to assess:
 - Size, number, and location of pseudocyst
 - Wall thickness and maturity
 - Presence of internal debris or infection
 - Relationship with adjacent organs
 - MRI/MRCP where indicated to evaluate pancreatic ductal anatomy

Documentation of Complications

- Presence of complications was assessed and documented, including:
 - Infection
 - Hemorrhage

- Rupture
- Gastric outlet obstruction
- Biliary obstruction
- Fistula formation

- Treatment Details

Treatment modality adopted for each patient was recorded in detail:

- Expectant (Conservative) Management- Indications for conservative management
- Duration of observation
- Medications administered
- Serial imaging findings

Surgical Management- Indication for surgery

- Type of surgical procedure performed:
 - Cystogastrostomy
 - Cystojejunostomy
 - Cystoduodenostomy
 - External drainage
 - Resectional procedures
- Intraoperative findings
- Duration of surgery
- Post-Treatment Monitoring

Post-treatment data were collected systematically:

- Postoperative or post-procedure complications
- Duration of hospital stay
- Requirement of intensive care
- Time to symptom resolution

Follow-Up and Outcome Assessment

- Patients were followed up at regular intervals on an outpatient basis
- Follow-up included:
 - Clinical assessment for symptom recurrence
 - Ultrasonography or CT scan where indicated

Outcomes were assessed based on:

- Resolution of pseudocyst
- Recurrence
- Late complications
- Need for re-intervention

Data Recording and Storage

- All data were entered into the structured proforma and later transferred to an electronic database.
- Confidentiality of patient information was strictly maintained.
- All data were used exclusively for research purposes.

Table 1: Age-wise distribution of study participants

Age Group (in years)	Number of Patients (n)	Percentage (%)
14–20	2	3.2
21–30	8	12.9
31–40	18	29.0
41–50	20	32.3
51–60	10	16.1
60 and above	4	6.5
Total	62	100

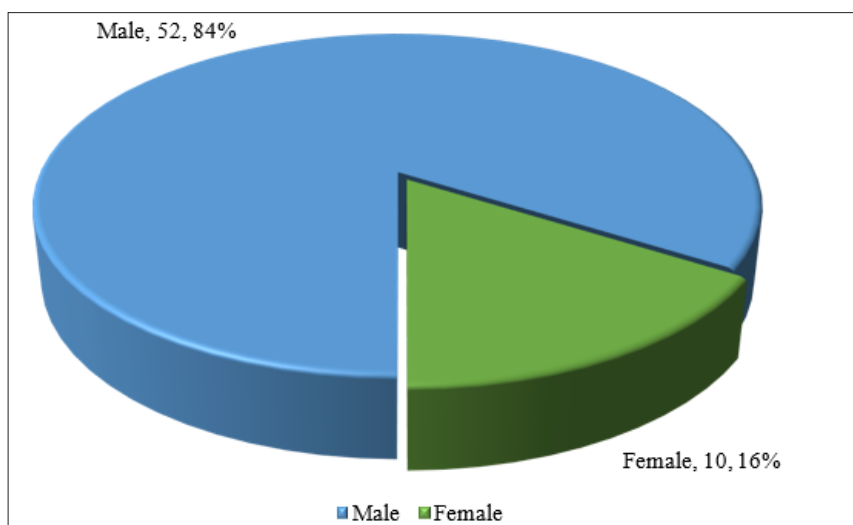


Figure 2. Gender-wise distribution of study participants

There was a marked male predominance, with 52 (83.9%) males and 10 (16.1%) females among the 62 patients with pancreatic pseudocyst.

1. Number of Pseudocysts

Table 3: Number of Pseudocysts

Number Pseudocysts	Number of Patients (n)	Percentage (%)
Single	44	71.0
More than one	18	29.0
Total	62	100

Most patients (71.0%) had a single pancreatic pseudocyst, with the lesser sac (45.2%) being the most common location, followed by the head and neck of pancreas (22.6%).

2. Location of Pseudocyst

Table 4: Location of Pseudocyst

Location	Number of Patientsn(n)	Percentage (%)
Lesser sac	28	45.2
Head & neck of pancreas	14	22.6
Body of pancreas	10	16.1
Tail of pancreas	6	9.7
Others	4	6.4
Total	62	100

Table 5: Procedure-wise distribution of post-treatment complications

Procedure	Bleeding	Infection / Abscess formation	Perforation	Anastomosis leakage	Pneumo-peritoneum
Percutaneous drainage	1	3	0	0	0
Cystogastrostomy	1	1	0	1	0
Cystoduodenostomy	0	0	0	0	0
Cystojejunostomy	1	1	0	1	0
Distal pancreatectomy	1	1	0	1	0
Open external drainage	1	2	0	0	0

Infective complications were the most common adverse events, particularly after percutaneous and open external drainage, while internal drainage procedures showed fewer and milder complications. Complications such as bleeding and anastomotic leakage were infrequent and mostly managed conservatively.

Table 6: Distribution of complications in patients with pancreatic pseudocyst

Complication	Number of Patients (n)	Percentage (%)
Infection / abscess formation	12	19.4
Bleeding	6	9.7
Obstructive symptoms	5	8.1
Rupture	3	4.8
No complications	36	58.1
TOTAL	62	100

58.1% of patients had no complications, while infection/abscess formation (19.4%) was the most common complication; bleeding, obstruction, and rupture were less frequent but clinically significant, highlighting the importance of early diagnosis and timely intervention.



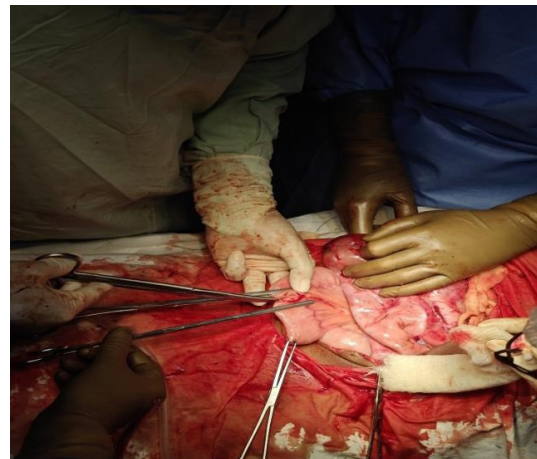
A



B



C



D

Figure 1.A) Pre operative picture showing lump abdomen, B) Pseudocyst visible after opening the abdomen, C) Cyst prior to internal drainage & D) After internal drainage (cystojejunostomy)

Discussion

The present study evaluated the clinical profile, treatment modalities, and outcomes of pancreatic pseudocyst in 62 patients managed at a tertiary care center. Pancreatic pseudocyst was most commonly observed in the fourth and fifth decades of life, with the highest incidence in the 41–50 years age group, consistent with previous studies. A marked male predominance (83.9%) was observed, likely reflecting the strong association between pancreatic pseudocyst and alcohol-related pancreatitis.

Alcohol-related pancreatitis was the leading etiological factor (61.3%), followed by biliary pancreatitis, in agreement with previous literature. Most pseudocysts were single, located in the lesser sac, and measured 6–10 cm, indicating that cyst size and location remain important determinants of management.

Surgical intervention was the most common treatment modality (51.6%), followed by conservative management

and percutaneous drainage. Among surgical procedures, cystogastrostomy was the most frequently performed, particularly for pseudocysts located in the lesser sac. Internal drainage procedures demonstrated favorable outcomes with fewer complications compared to external drainage.

A favorable outcome with complete pseudocyst resolution was achieved in 77.4% of patients. Recurrence occurred in 12.9% of cases, predominantly among patients managed conservatively or with percutaneous drainage, suggesting better long-term efficacy of surgical drainage in selected patients. Infective complications were the most common adverse events, especially following external drainage.

The findings support that management of pancreatic pseudocyst should be individualized based on cyst size, location, symptom severity, complications, and ductal anatomy. Surgical drainage, particularly cystogastrostomy, remains a safe and effective treatment option for large, symptomatic, or complicated pseudocysts, with low recurrence and favorable outcomes.

Conclusion

Pancreatic pseudocyst commonly affects middle-aged men, with alcohol-related pancreatitis being the leading cause. Surgical management, particularly internal drainage procedures such as cystogastrostomy and cystojejunostomy, provides favorable outcomes with high resolution and acceptable morbidity. Although conservative and percutaneous approaches are effective in selected cases, they are associated with higher recurrence and infection rates. Careful patient selection and individualized treatment based on clinical presentation, cyst characteristics, and pancreatic duct anatomy remain essential for optimal long-term outcomes.

Conflict of Interest

None

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