

MANAGEMENT OF PANCREATIC PSEUDOCYSTS AT A TERTIARY CARE HOSPITAL IN SOUTH INDIA: A RETROSPECTIVE STUDY

Dr. Dwaarakesh M. S^{*1}, Nanditha Gudi², Smruti Paramjyoti³

¹*Department of General Surgery, Saveetha Medical College and Hospital, Thandalam, Chennai, Tamil Nadu, India, Email: msdwarak@gmail.com

^{2,3}Department of General Surgery, Saveetha Medical College and Hospital, Thandalam, Chennai, Tamil Nadu, India

*Corresponding Author: Dr. Dwaarakesh M. S, Email: msdwarak@gmail.com

ABSTRACT

Background: Pancreatic pseudocysts are encapsulated, non-epithelialised peripancreatic fluid collections that most often complicate acute or chronic pancreatitis, and their management ranges from observation to percutaneous or surgical drainage depending on cyst characteristics and symptoms. This study describes the demographic profile, clinical presentation, diagnostic evaluation, treatment modalities, and outcomes of patients managed for pancreatic pseudocysts at a tertiary care hospital in South India.

Methods: We retrospectively analysed 50 patients diagnosed with pancreatic pseudocysts at Saveetha Medical College and Hospital, Chennai, between January 2021 and December 2023. Patients with cystic neoplasms or other non-inflammatory pancreatic cysts were excluded. Demographic, clinical, imaging, treatment, and follow-up data were extracted from hospital records and summarised using descriptive statistics.

Results: Chronic pancreatitis was the underlying condition in 70% of patients, acute pancreatitis in 20%, and trauma in 10%. Abdominal pain was the predominant symptom (82%). Conservative management was used in 50% of patients, percutaneous catheter drainage in 30%, and surgical cystogastrostomy in 20%. Over a follow-up period of 6–18 months, 78% of patients achieved resolution without recurrence, complications occurred in 12%, and there were no deaths.

Conclusion: Most pancreatic pseudocysts in this cohort were managed successfully with conservative measures or percutaneous drainage, with surgery reserved for complicated cases, supporting an individualised, stepwise approach to management in a tertiary care setting.

KEYWORDS: Pancreatic pseudocyst; retrospective study; tertiary care; South India; management; outcomes

INTRODUCTION

A pancreatic pseudocyst is an encapsulated collection of pancreatic fluid, walled off by fibrous or granulation tissue rather than a true epithelial lining, that typically requires four or more weeks to mature following an episode of pancreatitis, trauma, or ductal injury [1,2]. This maturation interval distinguishes true pseudocysts from acute peripancreatic fluid collections and walled-off necrosis under the revised Atlanta classification, and correct classification carries important management implications, since pseudocysts, necrotic collections, and cystic neoplasms are treated quite differently [1]. Pseudocysts are among the more common local complications of pancreatitis, developing in roughly 5–16% of patients after acute pancreatitis and in a substantially higher proportion, up to 20–40%, of those with chronic pancreatitis [3]. In a 15-year series of over 4,000 patients with pancreatitis from a tertiary hospital in China, pseudocysts developed in 17.3% of cases, with alcohol-related aetiology among the strongest predictors of formation [4]. Because pseudocysts can cause infection, haemorrhage, obstruction, or rupture, and because they must be distinguished from cystic neoplasms and other pancreatic cysts on imaging, their evaluation and management continue to demand an individualised approach [1].

This study aims to retrospectively evaluate the demographic characteristics, clinical presentation, diagnostic evaluation, treatment strategies, and outcomes of patients managed for pancreatic pseudocysts at Saveetha Medical College and Hospital, Chennai, Tamil Nadu, India.

2. METHODS

2.1 Study Design

This is a retrospective observational study conducted approximately over a three-year period, from January 2021 to December 2023.

2.2 Setting

The study was conducted at Saveetha Medical College and Hospital, a tertiary care centre located in Chennai, Tamil Nadu, India.

2.3 Study Population

The study population comprised 50 patients diagnosed with pancreatic pseudocysts. The criteria for selection were as follows. Inclusion: patients diagnosed with pancreatic pseudocysts via imaging studies. Exclusion: patients with cystic neoplasms or other non-inflammatory pancreatic cysts.

2.4 Data Collection

Data were extracted from medical records, focusing on demographics, clinical presentation, imaging studies, treatment modalities, and outcomes. The variables collected included age, sex, symptoms, imaging findings, laboratory results, treatment methods, and follow-up outcomes.

2.5 Statistical Analysis

Descriptive statistics were used to summarise patient demographics, clinical presentations, and outcomes. Continuous variables were expressed as mean $\pm$ standard deviation, while categorical variables were presented as frequencies and percentages. Analysis was performed using SPSS 2023.

3. RESULTS

3.1 Patient Demographics

The study included 50 patients, with 30 males (60%) and 20 females (40%), with an average age of 48.5 ± 10.8 years. The majority (70%) had a history of chronic pancreatitis, 20% had acute pancreatitis, and 10% had trauma-related pseudocysts.

Table 1. Patient demographics

Characteristic	Value
Total patients	50
Mean age ($\pm$ SD), years	48.5 ± 10.8
Male, n (%)	30 (60%)
Female, n (%)	20 (40%)

Table 2. Underlying condition associated with pseudocyst formation.

Underlying condition	n	%
Chronic pancreatitis	35	70%
Acute pancreatitis	10	20%
Trauma	5	10%
Total	50	100%

3.2 Clinical Presentation

The most common symptoms were abdominal pain (82%), nausea/vomiting (50%), and abdominal distension (28%); patients frequently presented with more than one symptom. The mean duration of symptoms before presentation was 5.2 ± 1.9 weeks.

Table 3. Clinical presentation (not mutually exclusive).

Symptom	n	%
Abdominal pain	41	82%
Nausea/vomiting	25	50%
Abdominal distension	14	28%

3.3 Diagnostic Methods

All patients underwent imaging studies. Abdominal ultrasound was performed in 85% of cases, detecting cystic lesions. Contrast-enhanced CT scans were conducted in 75% of patients for further evaluation, and MRI was used in 25% of cases for complex presentations.

Table 4. Diagnostic imaging modalities used (patients could undergo more than one).

Diagnostic modality	% of cohort
Abdominal ultrasound	85%
Contrast-enhanced CT	75%
MRI	25%

3.4 Treatment Modalities

Conservative management (observation and medical treatment) was applied in 25 patients (50%) with small, asymptomatic pseudocysts. Percutaneous catheter drainage was performed in 15 patients (30%) with larger or symptomatic pseudocysts. Surgical intervention (open or laparoscopic cystogastrostomy) was necessary in 10 patients (20%) due to complications such as infection or rupture.

Table 5. Treatment modalities.

Treatment modality	n	%
Conservative management	25	50%
Percutaneous catheter drainage	15	30%
Surgical cystogastrostomy	10	20%
Total	50	100%

3.5 Outcomes

The follow-up period ranged from 6 to 18 months. Most patients (78%) experienced successful resolution of pseudocysts with no recurrence. Complications occurred in 12% of patients, including infection (6%) and haemorrhage (4%) [Authors: these two categories sum to 10%, two percentage points short of the reported overall 12% — please confirm whether an additional complication category was omitted]. There were no fatalities in this study.

Table 6. Clinical outcomes at follow-up (6–18 months).

Outcome	n	%
Resolution without recurrence	39	78%
Complications (total)	6	12%
– Infection	3	6%
– Haemorrhage	2	4%
Mortality	0	0%

4. DISCUSSION

4.1 Interpretation of Results

Most pseudocysts in our cohort were managed successfully without surgery: conservative observation and percutaneous drainage together accounted for 80% of cases, with surgical cystogastrostomy reserved for the 20% of patients who developed complications such as infection or rupture. This pattern broadly mirrors a recent Indian series from a tertiary centre in central India, in which conservative management, percutaneous drainage, and surgical cystogastrostomy were used in a comparable stepwise fashion, with surgery achieving definitive resolution and no recurrences among patients who required it [5]. In that series, however, percutaneous drainage carried a substantial recurrence rate, with nearly half of initially successful cases eventually requiring surgical intervention, a pattern our own follow-up data may not have fully captured given its relatively short 6–18 month duration [5].

None of the patients in our cohort underwent endoscopic drainage, which has become an increasingly preferred first-line option for pseudocysts amenable to transmural or transpapillary access in centres with the necessary expertise. In a randomised trial comparing endoscopic and surgical cystogastrostomy, both approaches achieved equal treatment success, but endoscopic drainage was associated with shorter hospital stay, lower cost, and better physical and mental health scores during recovery [6]. Endoscopic drainage outcomes also appear to differ by pseudocyst chronicity, with chronic pseudocysts generally responding less predictably to endoscopic drainage than acute pseudocysts or walled-off necrosis [7]. Percutaneous catheter drainage, the modality used most often after conservative management in our series, has itself been validated in large early case series, including one of 101 patients with infected and non-infected pseudocysts, as an effective option particularly where endoscopic or surgical expertise is not readily available [8]. The absence of endoscopic drainage in our cohort likely reflects local resource availability rather than patient selection, and represents a gap relative to contemporary international practice worth addressing in future service planning.

Where available, endoscopic ultrasound (EUS)-guided drainage has shown excellent outcomes in the region: in a Pakistani series of 71 patients undergoing EUS-guided pseudocyst drainage, technical success was achieved in all cases, clinical success in 97%, and there was no procedure-related mortality, with complications limited mainly to stent migration and bleeding [9]. This experience, together with the broader shift toward minimally invasive management of pancreatic fluid collections evident in techniques such as minimal-access retroperitoneal necrosectomy for infected pancreatic necrosis [10], suggests that expanding access to endoscopic and EUS-guided drainage could further reduce the proportion of patients in settings like ours who require open or laparoscopic surgery.

Correct classification of a pancreatic cystic lesion is essential before selecting a management strategy, since pseudocysts, cystic neoplasms, and walled-off necrosis are managed very differently. Cystic neoplasms such as mucinous cystic lesions,

for example, have in some settings been treated with EUS-guided ethanol lavage rather than the drainage-based approaches used for pseudocysts [11], reinforcing why this study excluded patients with cystic neoplasms or other non-inflammatory pancreatic cysts at the outset. The relatively long mean symptom duration in our cohort before presentation (5.2 ± 1.9 weeks) is consistent with the four-week interval generally required for a pseudocyst wall to mature under the revised Atlanta classification [1].

4.2 Strengths and Limitations

Strengths of this study include a comprehensive two-year review of a substantial single-centre pseudocyst cohort, offering insight into local management practices in a resource setting where advanced endoscopic drainage is not always available. Limitations include its retrospective, single-centre design, which may limit generalisability, and a follow-up period (6–18 months) that may be too short to capture later recurrences, particularly after percutaneous drainage, which has been associated with higher recurrence rates than surgical drainage in comparable series [5]. As noted in Section 3, the complication breakdown and imaging-modality percentages reported for this cohort contain minor internal inconsistencies that the authors should verify before submission.

4.3 Implications for Practice

These findings emphasise the importance of individualised, stepwise management for pancreatic pseudocysts, tailored to cyst size, symptoms, and complications, while acknowledging that access to endoscopic drainage varies across centres. Further prospective, ideally multi-centre, studies incorporating endoscopic drainage arms and longer follow-up are recommended to refine management protocols in Indian tertiary care settings.

5. CONCLUSION

This retrospective review from Saveetha Medical College and Hospital demonstrates effective management of pancreatic pseudocysts through a combination of conservative, percutaneous, and surgical approaches, with the large majority of patients achieving resolution without recurrence or mortality. These findings support an individualised, stepwise treatment strategy for pancreatic pseudocysts in tertiary care settings, while highlighting endoscopic drainage and longer-term follow-up as areas for future study.

Acknowledgements

We extend our gratitude to Saveetha Medical College and Hospital for developing the online patient database MIAS, which made data collection considerably easier. We also thank the Department of General Surgery and Surgical Gastroenterology for their help in sorting the data and resolving our queries.

Conflicts of Interest: The authors declare no conflicts of interest.

Funding: None declared.

REFERENCES

1. Banks PA, Bollen TL, Dervenis C, et al. Classification of acute pancreatitis–2012: revision of the Atlanta classification and definitions by international consensus. *Gut*. 2013;62(1):102–111.
2. Bradley EL 3rd. A clinically based classification system for acute pancreatitis. Summary of the International Symposium on Acute Pancreatitis, Atlanta, Ga, September 11 through 13, 1992. *Arch Surg*. 1993;128(5):586–590.
3. Misra D, Sood T. Pancreatic Pseudocyst. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023.
4. Tan JH, Zhou L, Cao RC, Zhang GW. Identification of risk factors for pancreatic pseudocysts formation, intervention and recurrence: a 15-year retrospective analysis in a tertiary hospital in China. *BMC Gastroenterol*. 2018;18:143.
5. Anand K. Pancreatic pseudocysts: a retrospective comparative study of contemporary management strategies at a tertiary care centre in central India. *Cureus*. 2026;18(5):e108946.
6. Varadarajulu S, Bang JY, Sutton BS, Trevino JM, Christein JD, Wilcox CM. Equal efficacy of endoscopic and surgical cystogastrostomy for pancreatic pseudocyst drainage in a randomized trial. *Gastroenterology*. 2013;145(3):583–590.e1.
7. Baron TH, Harewood GC, Morgan DE, Yates MR. Outcome differences after endoscopic drainage of pancreatic necrosis, acute pancreatic pseudocysts, and chronic pancreatic pseudocysts. *Gastrointest Endosc*. 2002;56(1):7–17.
8. vanSonnenberg E, Wittich GR, Goodacre BW, Casola G, D’Agostino HB. Percutaneous drainage of infected and noninfected pancreatic pseudocysts: experience in 101 cases. *Radiology*. 1989;170(3 Pt 1):757–761.
9. Kazim E, Taj MA, Zulfikar I, Azeem J. Endoscopic ultrasound guided pancreatic pseudocyst drainage experience at a tertiary care unit. *Pak J Med Sci*. 2020;36(4):637–641.
10. Raraty MGT, Halloran CM, Dodd S, et al. Minimal access retroperitoneal pancreatic necrosectomy: improvement in morbidity and mortality with a less invasive approach. *Ann Surg*. 2010;251(5):787–793.
11. Gan SI, Thompson CC, Lauwers GY, Bounds BC, Brugge WR. Ethanol lavage of pancreatic cystic lesions: initial pilot study. *Gastrointest Endosc*. 2005;61(6):746–752.