



E-ISSN: 2616-3470  
P-ISSN: 2616-3462  
© Surgery Science  
www.surgeryscience.com  
2019; 3(4): 71-74  
Received: 04-08-2019  
Accepted: 08-09-2019

**Asma N Khalife**  
Department of General Surgery, B.  
Y. L. Nair Hospital and T. N.  
Medical College, Mumbai,  
Maharashtra, India

**Sandeep V Sangale**  
Department of General Surgery, B.  
Y. L. Nair Hospital and T. N.  
Medical College, Mumbai,  
Maharashtra, India

**Murtaza M Dadla**  
Department of General Surgery, B.  
Y. L. Nair Hospital and T. N.  
Medical College, Mumbai,  
Maharashtra, India

**Rajeev M Joshi**  
Department of General Surgery, B.  
Y. L. Nair Hospital and T. N.  
Medical College, Mumbai,  
Maharashtra, India

**Corresponding Author:**  
**Asma N Khalife**  
Department of General Surgery, B.  
Y. L. Nair Hospital and T. N.  
Medical College, Mumbai,  
Maharashtra, India

## An observational study of aetiology, clinical presentation, management and outcomes of pseudocyst of pancreas

**Asma N Khalife, Sandeep V Sangale, Murtaza M Dadla and Rajeev M Joshi**

DOI: <https://doi.org/10.33545/surgery.2019.v3.i4b.218>

### Abstract

**Background:** Pancreatic Pseudocyst occurs as complication of acute or chronic pancreatitis and pancreatic trauma. Diagnosis is most often by cross-sectional imaging. Currently, principle forms of active therapy are percutaneous drainage, endoscopic drainage and surgical interventions

**Methods:** We performed a unicentric, retrospective and prospective observational study of 40 patients with pancreatic pseudocyst from June 2017 to Nov 2018 at a tertiary level hospital.

**Results:** Male population of age group 31-50 years was the common. Alcoholic Pancreatitis (77.5%) was the leading etiology. Abdominal pain (85%) and lump in abdomen (15%) were common symptoms. 47.5% patients were operated, 52.5% managed conservatively. 88.9% pseudocysts resolved completely, 5.6% did not resolve while a 5.5% recurred after treatment.

**Conclusions:** Persistent symptoms and the development of complications warrant invasive intervention. Endoscopic approach has gained popularity with surgery reserved for patients who had failed endoscopic or percutaneous drainage.

**Keywords:** Pancreatic pseudocyst, acute pancreatitis, percutaneous drainage

### Introduction

A pseudocyst is a well-circumscribed amylase rich fluid collection bound to the pancreas by non epithelized inflammatory tissue. It occurs after attack of acute pancreatitis, chronic pancreatitis and pancreatic trauma. Usually pseudocyst are single but may develop multiple pseudocysts. Pseudocyst account for 75% of cystic lesion of pancreas and may be located anywhere from the mediastinum to the scrotum but found mostly in the lesser sac. Clinical suspicion for the presence of a pancreatic pseudocyst usually is aroused by the persistence of abdominal pain and lump following resolution of pancreatitis. About 50% of cases of pseudocyst resolve spontaneously over course of 6 weeks and 50% of patient with pancreatic pseudocyst develop symptoms<sup>[1]</sup>.

No definitive laboratory finding are available to establish a diagnosis of pancreatic pseudocyst. Elevated serum amylase and lipase may occur in half of these patients. Contrast enhanced CT abdomen is investigation of choice for diagnosis of pancreatic pseudocyst.

Currently, three principle forms of active therapy are available: percutaneous drainage, endoscopic drainage, and surgical interventions. Previously surgery used to be the main treatment approach for pancreatic pseudocyst, in the recent years management has changed to conservative to less invasive procedures. In the view of low complications and the high success rate of percutaneous and endoscopic drainage as compared with surgery, surgical intervention should be reserved only for certain cases. The emergence of endoscopic ultrasonography (EUS) as a new treatment modality will reduce the risks associated with endoscopic drainage.

### Methods

The study was retrospective and prospective observational study of 40cases with pancreatic pseudocyst from June 2017 to Nov 2018 in a tertiary teaching institute. Adults having pseudocyst of pancreas on radiological imaging were included in the study. The exclusion criteria encompassed Forming Pseudocyst of pancreas i.e. Pseudocysts without a well-defined wall, pregnant females.

A thorough history was taken and a detailed clinical examination was carried out. All the patients were subjected to the biochemical investigations including serum amylase and lipase, blood sugars, serum blood urea nitrogen, serum creatinine, serum electrolytes. Radiological investigations like plain x-ray abdomen AP view, x-ray chest PA view and B-mode ultrasonography (USG) of the abdomen, CT scan of the abdomen were done in all patients. CT scan were done to add to more value to information obtained by sonography with regards to location, number, size wall thickness, presence of gall stones, contents if the pseudocyst, unilocular or multilocular, pancreatic duct details and relation to adjacent viscera to decide further line of management. ERCP and MRCP were done in patients when required. ERCP guided interventions such as endoscopic sphincterotomy and stenting when required.

CT scans were done during follow up period to look for complications or recurrence.

Patients were followed up and at the end of three months the outcome of the patient in form of complete resolution or any evidence of residual pseudocyst or recurrence in any form was noted.

**Results**

The age distribution was 21-30 years (17.5%), 31-40 years (22.5%) 41-50 years (27.5%). predominantly in the prime of life between 21-50 years (67.5%). There was male preponderance with a male: female ratio of 5.6:1. Pain in abdomen (85%) was the commonest complaint, followed by lump in abdomen (15%). Alcoholic Pancreatitis was the most common etiologic factor for pancreatic pseudocyst amounting for 77.5% followed by gall stone which was responsible for 12.5% cases and traumatic pancreatic pseudocyst formed 10% of the cases.

Most common location for pancreatic pseudocyst was the body of pancreas (55%) followed by tail of pancreas (17.5%), the head of pancreas (10%) in our study. Raised amylase was found in 57.5% cases. 52.5% of the patients were managed conservatively and 47.5% required some form of intervention. Of the patients those who underwent intervention, 20% were percutaneously drained, 10% had an open cystogastrostomy and 17.5% were drained ERCP guided.

In our study 90% survived while there was a 10% mortality rate. 88.9% pseudocysts resolved completely, 5.6% did not resolve while a 5.5% recurred after treatment.

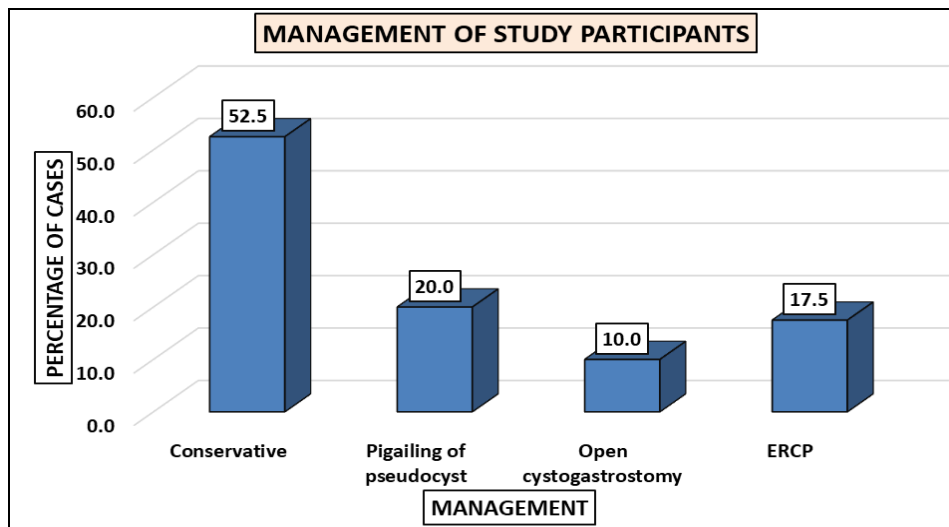


Fig 1: Management of study participants

**Discussion**

Pancreatic pseudocyst is a common complication of pancreatitis. Pancreatic duct leak due to acute or chronic pancreatitis and pancreatic trauma causes extravasation of pancreatic juice which result in a pancreatic fluid collection which gets sealed by inflammatory reaction that lead to development of wall of acute granulation tissue without much fibrosis. This is in contrast to cystic neoplasms of the pancreas, which are characterised by an epithelial lining [1].

Nealon and Walser classify pseudocyst in 2002 based on the ductal anatomy [2].

- Type I: normal duct/no communication with cyst.

- Type II: normal duct with duct-cyst communication.
- Type III: otherwise normal duct with stricture and no duct-cyst communication.
- Type IV: otherwise normal duct with stricture and duct-cyst communication.
- Type V: otherwise normal duct with complete cut-off.
- Type VI: chronic pancreatitis, no duct-cyst communication.
- Type VII: chronic pancreatitis with duct-cyst communication.
- Another classification was proposed by D'Egidio and Schein [3]

Table 1: D' Egidio and Schein classification of pseudocyst and management

|                                  | Context                         | Pancreatic duct           | Duct-Pseudocyst Communication | Primary Treatment                         |
|----------------------------------|---------------------------------|---------------------------|-------------------------------|---|
| Type I                           | Acute postnecrotic Pancreatitis | Normal                    | No                            | Percutaneous drainage                     |
| Type II                          | Acute on chronic Pancreatitis   | Abnormal (no - stricture) | 50-50                         | Internal drainage or resection            |
| Type III (Retention Pseudocysts) | Chronic pancreatitis            | Abnormal - (stricture)    | Yes                           | Internal drainage with duct decompression |

A pseudocyst must be suspected when a patient of acute pancreatitis fails to recover after a week of treatment. Most patients have epigastric discomfort or pain which may be radiating to the back. Early satiety could be the effect of the pseudocyst compressing the stomach or due to the underlying chronic pancreatitis. Lump in abdomen which presents itself due to compression of the surrounding organs. A pseudocyst causing an extrinsic pressure on the CBD can present as obstructive

jaundice. The history of chronic alcohol intake or a previous history of gall stone may be there. Trauma to abdomen followed by development of pancreatitis can also lead to the development of pseudocyst at a later.

The clinical suspicion of a pseudocyst is best confirmed on a contrast enhanced CT scan which can be critical in planning internal surgical drainage. CT imaging yields the highest sensitivity (82-100%) and an overall accuracy of 88-94% [4]



**Fig 1:** Pseudocyst in lesser sac causing gastric compression. The patient later underwent open cystogastrostomy.

The unique diagnostic contribution of ERCP is to accurately delineate a communication between the main pancreatic duct and the pseudocyst. MRCP provides excellent images of the ductal anatomy but has a drawback that no intervention can be done. EUS is the test of choice when attempting to distinguish pancreatic pseudocyst from other cystic lesions of the pancreas [4].

The following features of a pseudocyst are important in deciding the most appropriate treatment: Thickness, location and content of the pseudocyst. In practice type 1 pseudocyst can safely be managed by percutaneous drainage. Type 2 pseudocysts are best managed by internal drainage, especially when there is a communication between the duct and the pseudocyst. Endoscopic, laparoscopic and radiologic approaches have an emerging role in expert hands. With type 3 pseudocysts, consideration needs to be given to decompression of the pancreatic duct and relieving the stricture at the same time as drainage of the pseudocyst [5].

In our study the maximum number of patients were between the age group of 31-50 years with mean age 44. Of the 40 patients 34 were male (85%) Females comprised about 15% cases. Male: female ratio was 5.6:1. In the study by Mohammed H Al Jawher *et al.* the patients were aged between 10-63 years old with a mean age of 39 years and male predominance that mirrored the male predominance in the incidence of pancreatitis [6]. Alcoholic Pancreatitis (77%) was the most common etiological factor Traumatic pancreatic pseudocyst formed 10% of the study group. According to Pitchumoni *et al.* alcohol-related pancreatitis accounts for 59-78% of all pseudocysts [7]. In our study group, Raised amylase was found in 57.5% cases. In a study by Goulet *et al.* the overall incidence of the multiplicity of pseudocysts in the 91 patients reviewed was 14% while in our study it was 13% [8].

52.5% of the patients were managed conservatively and 47.5% required some form of intervention in our study. A total of 88.9% (32 cases) of the 40 cases resolved completely after conservative or interventional procedures, and there was a 5.5% recurred after treatment. Yeo *et al.* reported that expectant management was successful in 50% of 75 patients with pseudocysts in their study group [9].

### Conclusion

Pseudocyst of pancreas is more common after alcohol-induced than after non-alcohol-related pancreatitis. The cyst may develop as a consequence of an acute exacerbation of the underlying disease or blockage of a major branch of the pancreatic duct. Persistent symptoms and the development of complications warrant invasive intervention. Endoscopic approach has gained popularity with surgery reserved for patients who had failed endoscopic or percutaneous drainage.

### Acknowledgements

None

### Declarations

**Funding:** This study did not receive any external or internal funding

**Conflict of interest:** All the authors state that they have no conflict of interest

**Ethical approval:** Institute ethics approval was taken for the study.

### References

1. Kloppel G. Pseudocysts and other non-neoplastic cysts of

- the pancreas. *Semin Diagn Pathol* 2000; 17:715. [PMID10721803]
2. Nealon WH, Walser E. Main pancreatic ductal anatomy can direct choice of modality for treating pancreatic pseudocysts (surgery versus percutaneous drainage). *Ann Surg.* 2002; 235:751-8. [PMID12035030]
  3. D'Egidio A, Schein M. Pancreatic pseudocysts: a proposed classification and its management implications. *Br J Surg* 1991; 78:981-4. [PMID1913122]
  4. Linder JD, Geenen JE, Catalano MF. Cyst fluid analysis obtained by EUS-guided FNA in the evaluation of discrete cystic neoplasms of the pancreas: a prospective single-center experience. *Gastrointest Endosc.* 2006; 64:697-702
  5. Rosso E, Alexakis N, Ghaneh P, Lombard M, Smart HL, Evans J *et al.* Pancreatic pseudocyst in chronic pancreatitis: endoscopic and surgical treatment. *Dig Surg* 2003; 20:397-406.
  6. Mohamed H AlJawher, Jasim D Saud, Mushtaq Ch Abo Al-Hael. Selected Management of Pancreatic Pseudocyst, *Bas J Surg*, 2005
  7. Pitchumoni CS, Agarwal N. Pancreatic pseudocysts. When and how should drainage be performed? *Gastroenterol Clin North Am* 1999; 28:615-39. [PMID 10503140]
  8. Goulet RJ, Goodman J, Schaffer R, Dallemand S, Andersen DK. Multiple pancreatic pseudocyst disease. *Ann Surg* 1984; 199:6-13. [PMID 6691732]
  9. Yeo CJ, Bastidas JA, Lynch-Nyhan A, Fishman EK, Zinner, MJ, Came JL. The natural history of pseudocysts documented by computed tomography. *Surg Gynecol Obstet.* 1990; 411-417, 170.