

# A Clinical Study on Pseudocyst of Pancreas

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## Abstract

**Background:** Pancreatic pseudocyst is seen in acute and chronic pancreatitis as a complication. It has a well-defined wall which is not made of epithelium. After an acute attack of pancreatitis, pancreatic pseudocyst develops after 4-8 weeks. There is a increased incidence of pancreatitis and complications of pancreatitis, despite of treatment and recent advances. So, I would like to study the clinical features, etiology, various treatment modalities and asses outcome of the patients.

**Methods:** The study is conducted in 50 patients in S.V.R.R.G.G.H hospital, Tirupati in department of general surgery. Thorough history and clinical examination have been recorded. Investigations were done which are basic and definitive. The study patients were managed with different modalities like conservative, external catheter drainage, cysto-gastrostomy, cysto-jejunostomy, percutaneous drainage. Data regarding the age distribution, gender distribution, symptoms, signs, complications, treatment, post op complications, duration in the hospital, follow up were collected. The final outcome is observed in terms of most common age group, most common gender affected, most common etiological factor, symptoms, signs, associated complications and treatment, post complications in S.V.R.R.G.G.H Tirupati, in Department of general surgery.

**Results:** The study conducted in 50 patients shows that, the pancreatic pseudocyst is seen in the age group of 31-50 years(74%). The male patients were affected more when compared to females with 94% male and 3% female. Alcohol consumption is the common etiology. The most common presentation was pain abdomen in all study patients followed by nausea and vomiting in 84% of patients and abdominal distension in 58% of patients. abdominal tenderness is seen in all study patients followed by mass abdomen in 60% of patients. Associated complications include infection which is seen in 12% of patients followed by ascites and ileus/obstruction in 2% of patients. USG and Computed Tomography done in all patients. Conservative treatment was effective in uncomplicated pancreatic pseudocyst. Internal drainage procedure shows good results with 42% of patients with minimal complications. The most common post operative complication includes abdominal pain in 16% followed by infection of wound in 6% of patients.

**Conclusion:** The most common complication of acute pancreatitis is pancreatic pseudocyst. Early diagnosis with USG, CT and intervention with conservative treatment for uncomplicated cyst, internal drainage for mature cyst, external drainage for complicated cyst shows good prognosis.

**Key words:** Ultrasonography, Computed tomography, pancreatic pseudocyst, external drainage, internal drainage.

## I. Introduction

A pseudocyst of pancreas is a circumscribed collection which contains fluid only, it has a well- defined wall.it has been present for 4 or more weeks after disease onset. In Atlanta classification, a pseudocyst was defined as a collection of pancreatic juice enclosed by a wall of fibrous tissue. Pancreatic pseudocyst has a well-defined wall(capsule) without an epithelial lining. It can be differentiated from the cystic neoplasms of pancreas, which are characterized by an epithelial lining.it is not an absolute distinction between the cystic neoplasms and pancreatic pseudocyst. There may be epithelial discontinuation within the cystic neoplasms, probably due to the pressure atrophy and within chronic pseudocyst partial epithelialization is seen. In <20% of cases, more than one pseudocyst is present. Acute pseudocysts are located close proximity to the pancreas especially in lesser sac.<sup>1</sup>

### Pathogenesis And Classification:

The pancreatic pseudocyst development requires pancreatic duct disruption. this pancreatic duct disruption is seen acute pancreatitis in 10%-15% of cases. It is also seen pancreatic duct trauma mostly to the pancreatic neck, in chronic pancreatitis where there will be a multiple pseudocysts due to duct obstruction. There will be a leakage of enzyme rich secretion incites a marked inflammatory reaction in the retroperitoneum, peritoneum and serosa of adjacent viscera. Due to this, the fluid is contained by a developing layer of granulation tissue and fibrosis that matures over time. If there is persistent communication between pancreatic duct and the pancreatic pseudocyst, The pancreatic pseudocyst will continue to enlarge.<sup>2</sup>

The pancreatic pseudocyst usually consists of relatively clear, watery fluid. However with haemorrhage it may contain clot and become xanthochromic. If it contains pus then the pancreatic pseudocyst is infected. If a fluid collection develops in the context of pancreatic necrosis, it will contain solid tissue and should be termed as walled of necrosis. According to Jacobson (2005), pancreatic necrosis (>25%) is a risk factor for development of pseudocyst is infected. If a fluid collection develops in the context of pancreatic necrosis, it will contain solid tissue and should be termed as walled of necrosis. According to Jacobson (2005), pancreatic necrosis (>25%) is a risk factor for development of pseudocyst, and these fluid collections persists and form pseudocysts in 5% to 15% of patients with acute pancreatitis and 40% of patients with chronic pancreatitis. Before demarcation in early phase of acute necrotizing pancreatitis, there will be acute necrotic collections. Walled of necrosis occur 4 weeks after the onset of pancreatitis with identifiable capsule.<sup>3</sup>

### Pancreatic pseudocyst were classified by DEgidio <sup>4</sup>

**TYPE 1**---Pancreatic pseudocyst occur after an episode of acute pancreatitis and associated with normal pancreatic duct anatomy and rarely communicate with the main pancreatic duct.

**TYPE 2**---Pancreatic pseudocyst occur after an episode of acute or chronic pancreatitis and have diseased but do not contain strictured pancreatic duct, there will be a communication between the pancreatic duct and the pseudocyst.

**TYPE 3:** Pancreatic pseudocyst occur in chronic pancreatitis and are always associated with a duct stricture and a communication between the duct and the pseudocyst.

**Aim of the study:** A Clinical study on Pseudocyst of Pancreas

**Objectives of the study:**

1. To Document the various clinical presentation of pseudocyst of pancreas.
2. To Document the various etiologies of pseudocyst of pancreas.
3. To Document the various treatment modalities.
4. To Asses outcome of patients with pseudocyst of pancreas.

## II. Materials and Methods

**Type of study:** It is institution based Prospective Study.

**Source of Data:** The patients admitted in S.V.R.R.G.G. hospital wards with pseudocyst of pancreas.

**Sample size:** The study will be carried out in 50 patients diagnosed with a pseudocyst of pancreas at S.V.R.R.G.G. hospital.

**Inclusion Criteria:**

1. Patients diagnosed with pseudocyst of pancreas with ultrasound scan, Contrast enhanced computerized tomography scan.
2. Patients giving valid written and informed consent.

**Exclusion criteria:**

1. Patients less than 18 years of age, diagnosed with pseudocyst of pancreas
2. Patients diagnosed as cystic neoplasm of pancreas.

**Study Methods**

1. Data will be collected in standardized proforma from all the patients presenting to the Department of General surgery, S.V.R.R.G.G.H Tirupati.
2. Patients fulfilling the inclusion and exclusion criteria are selected.
3. Informed and written consent is taken from the patient and included in study.

### III. Observations and Results

**Table 1 Age Distribution**

Age in Years	No of Patients	Percentage
18-30	8	16%
31-40	20	40%
41-50	17	34%
>51	5	10%

In our study of 50 patients, 8(16%) patients belongs to the age group of 18-30 years, 20(40%) patients belongs to the age group of 31-40 years,17(34%) belongs to the age group of 41-50 years, 5(10%) patients belongs to the age group of >51 years.

**Table 2 Sex Incidence**

Sex	No of Patients	Percentage
Male	47	94%
Female	3	6%

In this study with 50 patients, 47(94%) were male, 3(6%) were female.

**Table 3 Symptoms**

Symptoms	No of Patients	Percentage
Pain abdomen	50	100%
Abdominal distension	29	58%
Nausea / Vomiting	42	84%
Anorexia	9	18%
Fever	5	10%
Weight loss	3	6%
Jaundice	1	2%

Pancreatic pseudocyst presents with pain abdomen in 50 (100%) patients I.e in all patients, followed by nausea/vomiting in 42(84%) patients, then abdominal distension in 29(58%) patients.

**Table 4 Signs**

Signs	No of Patients	Percentage
<b>Mass abdomen</b>	<b>30</b>	<b>60%</b>
<b>Abdominal tenderness</b>	<b>50</b>	<b>100%</b>
<b>Ascitis</b>	<b>1</b>	<b>2%</b>
<b>Ileus / Intestinal obstruction</b>	<b>1</b>	<b>2%</b>

Abdominal tenderness is the most common sign with 100% (i.e all patients), followed by mass abdomen seen in 30 patients(60%).

**Table 5 Etiology**

Etiology	No of Patients	Percentage
<b>Alcohol</b>	<b>47</b>	<b>94%</b>
<b>Idiopathic</b>	<b>2</b>	<b>4%</b>
<b>Blunt trauma</b>	<b>1</b>	<b>2%</b>

The common etiological factor is alcohol consumption which was present in 47(94%) patients, followed by idiopathic in 2(4%) patients and Blunt trauma in 1(2%) patient.

**Table 6 Associated Complications**

Complications	No of patients	Percentage
<b>Infection</b>	<b>6</b>	<b>12%</b>
<b>Ascitis</b>	<b>1</b>	<b>2%</b>
<b>Ileus / Obstruction</b>	<b>1</b>	<b>2%</b>
<b>Rupture</b>	<b>-</b>	<b>-</b>
<b>Haemorrhage</b>	<b>-</b>	<b>-</b>

Pancreatic pseudocyst infection is seen in 6(12%) patients, minimal ascites in 1(2%) patients, ileus/obstruction in 1(2%) patients, but none presented with rupture and haemorrhage.

**Table 7 Investigations**

Investigations	No of Patients	Percentage
<b>Increased Serum Amylase</b>	<b>46</b>	<b>92%</b>
<b>Cyst Fluid Amylase</b>	<b>6</b>	<b>12%</b>
<b>Ultrasound</b>	<b>50</b>	<b>100%</b>
<b>Ct scan</b>	<b>50</b>	<b>100%</b>

In pancreatic pseudocyst, increased serum amylase is seen in 46 (92%) patients, cyst fluid amylase in 6(12%) patients, ultrasound and CT was done in all patients i.e 50(100%).

**Table 8 Treatment**

Treatment	No of Patients	Percentage
<b>Conservative</b>	<b>23</b>	<b>46%</b>
<b>Percutaneous Drainage</b>	<b>3</b>	<b>6%</b>
<b>Open Cysto Gastrostomy</b>	<b>16</b>	<b>32%</b>
<b>Open Cysti Jejunostomy</b>	<b>5</b>	<b>10%</b>
<b>External Catheter Drainage</b>	<b>3</b>	<b>6%</b>

Conservatively 23(46%) patients were treated, percutaneous drainage 3(6%) patients were treated, open cystogastrostomy 16(32%) patients were treated, with open cystojejunostomy 5(10%) patients were treated and with external catheter drainage 3(6%) patients were drained.

**Table 9 Post Operative Complications**

Complications	No of Patients	Percentage
<b>Wound Infection</b>	<b>3</b>	<b>6%</b>
<b>Pain Abdomen</b>	<b>8</b>	<b>16%</b>

Post operatively wound infection is seen in 3(6%) patients, pain abdomen is seen in 8(16%) patients.

## IV. Discussion

### Age Distribution:

The study contains 50 patients diagnosed as pseudocyst of pancreas. The most common age group is 31-50 years (74%). The study is compared with a study group of tuula kiviluoto, et al (1989), V.Ustoff, et al (2000). The mean age group in our study is 40.5, while in tuula kiviluoto, et al (1989) is 44 and in V.Ustoff et al is 39. 31-50 years is the most common age group where alcohol consumption is seen so the results were due to alcohol consumption. In other study conducted by c.palanivelu et al the mean age group is 44. The study conducted by Sridhar reddy et al the mean age is 40, which is 0.5 less than the current study.<sup>5</sup>

### Sex Incidence:

The study contains 50 patients, out of which 47(94%) were male,3(6%) were female. In Tuula kiviluoto et al study group male were 79.41%, female were 20.58%. In V.Ustoff et al study group male were 75% , female were 25%.The study conducted by c.palanivelu et al shows male predominance with 70.37% and female showing 29.63%.The study conducted by Sridhar reddy et al in 32 patients out of which 26 were male and 6 belongs to female category. The percentage of male in Sridhar reddy et al study is 81.25% and female includes 18.75%. Overall the probable reason to explain male predominance is alcohol consumption is common in male when compared to female.<sup>5,7</sup>

### Clinical Features:

The commonest symptom was pain abdomen which is seen in all patients (100%). In tuula kiviluoto, et al (1989) study group pain abdomen was seen in 67.67% patients and in V.Ustoff et al it is 100%.In study conducted by c.palanivelu et al, the percentage of patients presented with pain abdomen are 54.63%. In study conducted by Sridhar reddy et al, the percentage of patients presented with pain abdomen are 100%.<sup>5</sup>

### Etiology:

The common etiology in our study is alcohol in 47(94%). In study group tuula kiviluoto, et al (1989) alcohol consumption is around 85% and in V.Ustoff et al it is 71.42%. the commonest etiology is alcohol consumption. The study conducted by c.palanivelu et al, patients with alcohol consumption are 18.52%.In study conducted by Sridhar reddy et al, patients presents with alcohol consumption are 65.62%.<sup>5, 8</sup>

### Complications:

The commonest complication in our study is infection followed by minimal ascites.

This is compared with v. ustoff.et.al (2000). The study conducted by Sridhar reddy et al, The commonest complication include in his study was infection (18.75%) followed by ascites (3.12%).

### Treatment:

The commonest treatment employed for uncomplicated cyst was conservative treatment (46%). When compared with external and internal drainage, internal drainage was done in 42% patients while external drainage was done in 12%. This is compared with the tuula kiviluoto et al with internal drainage 18% and external drainage 38%, v.ustoff et al with internal drainage 3% and external drainage 40%.

In a study conducted by Sridhar reddy et al, the patients with pancreatic pseudocyst who underwent internal drainage were 56.25% and patients who underwent external drainage were 18.75%. In c.palanivelu et al study, the patients with pancreatic pseudocyst who underwent internal drainage were 92.6% and patients who underwent external drainage were 7.4%.

Pancreatic pseudocysts are managed conservatively mostly, when symptoms are controlled well. 40% of the pancreatic pseudocysts are reabsorbed after pancreatitis resolves. It has been estimated in many studies that the spontaneous resolution of the acute cystic collection can vary from 40% to 85%.

According to Bradley (1979), The success rate of conservative therapy is low (i.e between 3% and 39%) when pancreatic pseudocysts are large enough to cause symptoms (6 cm or greater).

Regardless of size and duration, half of the acute pancreatic pseudocysts remain asymptomatic seen in a study demonstrated by Vitas and Sarr.

Pancreatic pseudocysts which are greater than 6 cm in diameter with abdominal pain, nausea and early satiety should be considered for therapeutic intervention.

Percutaneous drainage is used for the treatment of immature and infected pseudocysts and it can be complicated by the formation of external pancreatic fistula.

Intra-cystic haemorrhage and pancreatic ascites are contraindications to the percutaneous drainage.

In a study conducted by Heider (1999) in 66 patients shows successful percutaneous drainage in only 43% of patients with 16% mortality rate and 64% incidence of complications.

Nowadays endoscopic drainage has been preferred. The comparison of outcomes between the endoscopic and percutaneous drainage shows that the patients managed with endoscopic drainage had fewer interventions which are less compared to percutaneous drainage, lower rates of residual collections and lower needs for surgical intervention.

The most effective treatment of pseudocyst of pancreas involves internal drainage into the enteric lumen whether performed by laparotomy, endoscopic transmural, endoscopic trans-papillary, laparoscopic pseudocyst enterostomy.

The gold standard approach to the pancreatic pseudocyst is changing from the open technique considering less by the most of the experts and showing more interest towards endoscopic method.

The additional advantage of the open technique are more definitive pathologic diagnosis via intra-operative wedge resection of the cyst wall to rule out neoplasm, It provides access for retroperitoneal and cystic contents debridement in the setting of pancreatic of pancreatic necrosis with or without concomitant infection.

Open technique of pancreatic pseudocysts has been successful with a low morbidity and mortality rate. Usatoff reported in 112 patients who are treated for pancreatic pseudocyst resulting from the pancreatitis, the overall morbidity was 28% with an operative mortality rate of 1% and cystic recurrence rate of 3%.

Similar mortality rate approaching 1% seen in Vitas and Sarr (1992) and Yeo et al. (1990).

From the perspective of timing and operative intervention analysed by Shatney and Lillehe (1981) in 114 patients demonstrated that patients who are undergoing surgical therapy during the first 6 weeks following pancreatic pseudocyst formation had higher morbidity, mortality and recurrence rates than those treated later in the course of disease.

Vitas and Sarr (1992) shows nearly 50% of acute cystic collections remained asymptomatic regardless of size and duration. Debate still exists regarding the management of asymptomatic cysts greater than 6cm size.

The decision for intervention made by the clinicians in these patients need to be made on a case-by-case basis with special attention given to the concomitant biliary and duodenal disease as well as complexity of medical comorbidities.



### Post Operative Complications:

Post operatively the common complications was pain abdomen (16%) followed by wound infection (6%). Study is compared with tuula kiviluoto et al study with wound infection 2%, pain abdomen 29% and v.ustoff et al study with wound infection 4%, pain abdomen 10%. In study conducted by Sridhar reddy et al, The most common post operative complication was pain abdomen (15.62%) followed by wound infection (12.5%).

Post operatively patients who are operated for pancreatic pseudocyst were followed for minimum 3-6 months with 11 patients showing post operative complications of which 8(16%) had pain abdomen and 3(6%) had wound infection. These 11 patients were treated conservatively. 2 patients were lost in follow up. Recurrence was found in 3 patients and treated conservatively and were now on follow up.

## V. Conclusion

- Pancreatic pseudocyst is common in the age group of 31-50 years with the mean age about 40.5.
- The disease is common in males.
- Alcohol consumption is the most common etiological factor for acute pancreatitis and the most common complication was pseudocyst of pancreas.
- The common symptom patient presented was pain abdomen, abdominal tenderness, nausea/vomiting followed by mass abdomen.
- Ultrasonography and CT scan were done in all 50 patients.
- 46% of the patients with pancreatic pseudocyst were treated conservatively, 42% of the patients with pancreatic pseudocyst were treated with internal drainage.
- Infected cysts were treated with external and percutaneous drainage.
- Internal drainage of the pancreatic pseudocyst was done either by cysto-gastrostomy or cysto-jejunosotomy with good result.
- The most common Post operative complication was abdominal pain and infection of wound.
- Hospital stay duration range from 10-15 days.
- 3-6 months follow up was done. 3 of the patients who are treated conservatively have shown recurrence and those patients are in follow up.

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