

## Clinical Study of Pseudo Cyst of Pancreas

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### Abstract

The recent rapid development of non invasive imaging techniques helps in the better understanding of pancreatic disease and its pathology. Inflammation of parenchyma of pancreas is called as pancreatitis. It may be acute or chronic. In acute pancreatitis symptoms appear suddenly in a previously healthy individual and the symptoms disappear once the disease subsides. But in chronic pancreatitis the patient may had prior attacks or symptoms of pancreatic insufficiency before the current attack, and their symptoms persists even after the attack. Ability to study these lesions noninvasively at variable point in time allow us to differentiate between acute and chronic pseudo cyst two seemingly similar entities with different natural history and treatment requirement.

**Keywords:** Pseudo Cyst of Pancreas.

### Introduction

The gland Pancreas is the most unforging organ that lead most surgeons to avoid palpating it unless if necessary. It is Located in the retroperitoneum in the "c" loop of duodenum.

The recent rapid development of non invasive imaging techniques helps in the better

understanding of pancreatic disease and its pathology.

Inflammation of parenchyma of pancreas is called as pancreatitis. It may be acute or chronic. In acute pancreatitis symptoms appear suddenly in a previously healthy individual and the symptoms disappear once the disease subsides. But in chronic pancreatitis the patient may had prior attacks or symptoms of pancreatic insufficiency before the current attack, and their symptoms persists even after the attack.

Ability to study these lesions noninvasively at variable point in time allow us to differentiate between acute and chronic pseudo cyst two seemingly similar entities with different natural history and treatment requirement.

### Aims and Objectives

1. To study incidence of pancreatic pseudo cyst among patient admitted with pancreatitis.
2. To study epidemiology of pancreatic pseudo cyst in terms of age / sex / socio-economical status/ riskfactors.
3. To study various clinical features, anatomical consideration likes size / wall thickness / location in pancreas etc. Complication / investigation of pseudo cyst of pancreas.
4. To study various modalities of treatment of pseudo cyst of pancreas.
5. To study recurrence of pancreatic pseudocyst.

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6. To study overall effect of pancreatic pseudo cyst on morbidity of the patients and economic burden on society.

## Materials and Method

### Source Of Data:

Current study was a retrospective study conducted at our hospital.

- Total 50 patients of pseudo pancreatic cyst, fulfilling the inclusion criteria were included in the study.

### Study Period:

- Study was conducted from year January - 2018 to July-2019.

The following inclusion and exclusion criteria were used:

### Inclusion Criteria:

- a) Patients diagnosed as pseudo pancreatic cyst with help of diagnostic procedure like USG abdomen, Barium meal, CT scan Abdomen.
- b) Admitted patients of both sex and all age groups.

### Exclusion criteria:

- a) All the true cyst of pancreas
- b) Neoplastic cystic swelling of pancreas.
- c) Hydatid cyst of pancreas.
- d) Congenital cysts of pancreas.
- e) Chronic pancreatic or peripancreatic fluid collection without Evidence of encapsulation

## Methodology

In this retrospective study has included both adults and paediatric age group patients. Patients with diagnosis of pancreatic pseudo cyst were observed. In Every patient USG of abdomen and contrast enhance computed tomography scan was done. These patients were included in our study. All patients with acute pseudo cyst were managed conservatively by withholding oral intake, giving IV fluids, analgesics and higher antibiotics as long as they had pain abdomen, vomiting or ileus. Most of Mature cysts were treated surgically by cystogastrostomy or cystojejunostomy. Most of the infected cysts were also treated by external drainage by USG guided pigtail insertion. Data were recorded in a Performa and analysed.

## Results

In this randomized retrospective study conducted on 50 patients of pseudo cyst of pancreas admitted to surgery department, following observations were made after evaluation of different epidemiological factors, etiologicopathological factors, serial clinical variables, laboratory values and radiological findings.

### Incidence of pseudocysts in pancreatitis patients

**Table 1:** Incidence.

Review of total number of pancreatitis patients	Total number of patients who developed pseudo cysts of pancreas
310	56 (18%)

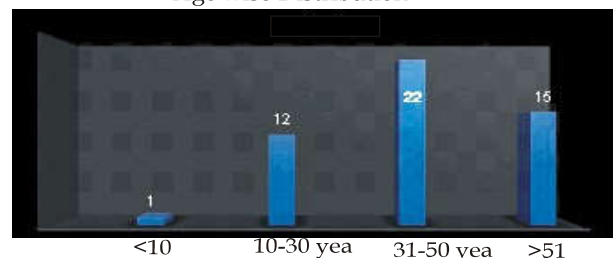
Pseudo cysts were once considered to be an unusual complication of pancreatitis. In our study duration period incident of pseudo cysts after attack of pancreatitis is 18%.

**Table 2:** Age Distribution (Total no. of Patients 50).

Age	No. of Patients
<10 Year	1 (2%)
10-30 YEAR	12 (24%)
>51	15 (30%)

In this study; out of 50 patients, 12 (24%) patients were of 1-30 year age group, 22(44%) patients were of 31-50 year age group, 15(30%) patients were of more than 51 year age group, and two patient was of more than 70 year.

Age wise Distribution



**Table 3:** Sex Distribution (Total no. of Patients 50).

Age	No. of Patients
Male	40 (80%)
Female	10 (20%)

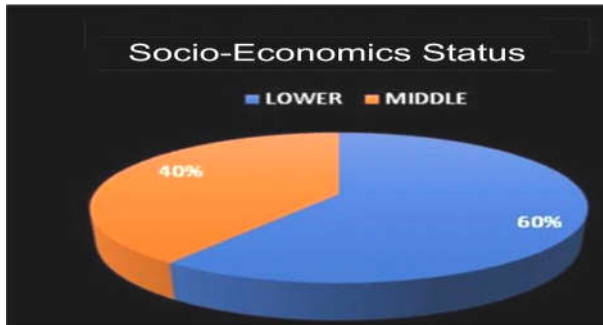
Out of these 50 patients 40 (80%) were male and 10 (20%) were female. Out of which 4 females and 12 males were of 10-30 year age group. 3 females and 22 males were of 31-50 year age group. 3 females and 15 males were of more than 51 year age group.



**Table 4:** Socio-Economic Status (Total no. of Patients 50).

Socio-Economic Status	No. of Patients
Lower	30 (60%)
Middle	20 (40%)

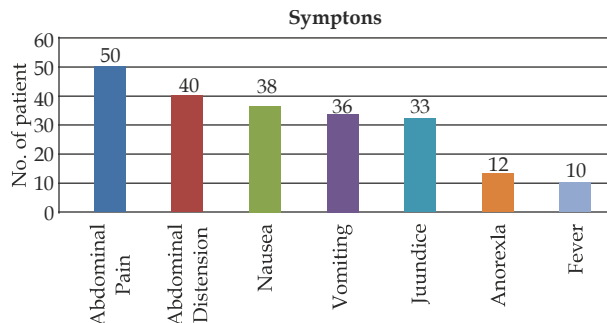
Out of 50 patients 60% came from lower socio-economic status and 40% came from middle class.



**Table 5:** Clinical Symptoms (Total no. of Patients 50)

Symptoms	No. of Patients
Abdominal Pain	50 (100%)
Abdominal Distension	40 (80%)
Nausea	38 (76%)
Vomiting	36 (72%)
Anorexia	33 (66%)
Jaundice	12 (24%)
Fever	10 (20%)

Out of the 50 patients clinical data were evaluated and found that all (100%) presented with pain in abdomen. Fever was present in 10(20%) patients. Nausea- vomiting was present in 76% patients. Abdominal distension was present in 40 patients. Anorexia was present in 33 (66%) patients. Significant jaundice was present in 13 (26%) patients



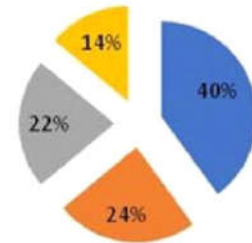
**Table 6:** Clinical Signs (Total no. of Patients 50).

Signs	No of Patients	Percentage
Mass abdomen / epigastric Fullness	20	40%
Abdominal Tenderness	12	24%
Ileus/intestinal Obstruction	11	22%
Ascites	7	14%

Out of these patients 20(40%) patients came with epigastric fullness, 7 patients had ascites and 11(22%) patients came with signs of obstructions and 12(24%) patients came with severe abdominal tenderness.

**No. of Patients**

■ Mass abdomen/epigastric fullness ■ abdominal tenderness  
■ ileus/intestinal obstruction ■ ascites

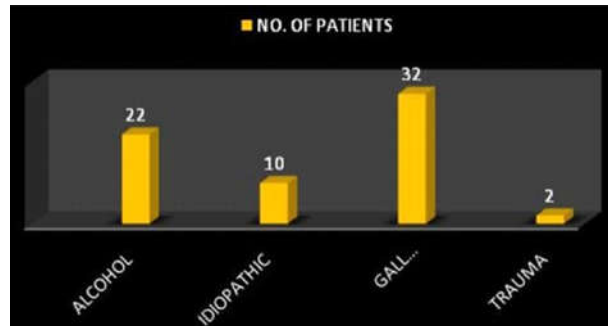


**Table 7:** Risk Factors (Total no of Patients 50).

Risk Factors	No. of Patients
Alcohol	22 (44%)
Idiopathic	10 (6%)
Gall Stone/Cbd Stone	16 (32%)
Trauma	2 (4%)

Out of these patients 20 (40%) patients came with epigastric fullness, 7 patients had ascites and 11 (22%) patients came with signs of obstructions and 12 (24%) patients came with severe abdominal tenderness.

**Rick Factors**

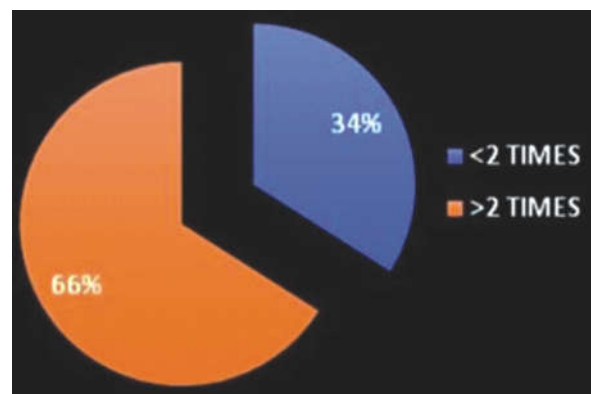


**Table 8:** No. of Previous Attacks (Total no of Patients 50).

No. of Attacks	No. of Patients
>2 times	34

(\*documented by previous admission in hospital) Out of 50 patients study 32% patients were influence by the attack of pancreatitis for ≤2 times and rest had more than 2times

**No. of Attacks of Pancreatitis**



**Table 9 (a):** Size of Cyst.

Size	No. of Patients
≤6CM	28 (56%)
>6CM	22 (44%)

Out of 50 patients, with size of cyst more than 6cm 22 patients and rest had ≤6cm.

**Table 9 (b):** Wall thickness of cyst.

Wallthickness	No. of Patients
≤6CM	27 (54%)
>6CM	23 (46%)

In 23 patient's cyst wall thickness was more than 6mm and rest of the patients had cyst wall thickness less than 6mm.

**Table 9 (c):** Content of Cyst.

Content	No. of Patients
Clear	30 (60%)
Necrotictissue	16 (32%)
Abscess	1 (2%)
Haemorrhagic	3 (6%)

Where In 16 out of 50 patients had necrotic pancreatic tissue as content of cyst. 30 patients had clear fluid, 1 patients had purulent fluid and 3 patients had haemorrhagicfluid.

**Table no 9 (d):** Site of Cyst.

Place Of Pseudocyst	No. of Patients
Head / Uncinate Process	24 (48%)
Tail	16 (32%)
Body	10 (20%)

**Table 9 (e):** Adjacent structure to Cyst.

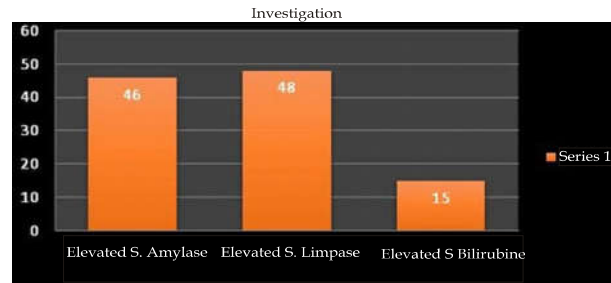
Adjacent Structure	No. of Patients
Bowel Loops	25 (50%)
Stomach Wall	7 (14%)
Both	12 (24%)
Spleen And Splenic Vessles	6 (12%)

In our cases 50% pseudo cysts adjacent to bowel loops both small intestine and large intestine, in 14% cases it was adjacent to stomach wall and in 24% cases it was adjacent to both stomach and bowel loops and 12% cases it was near to spleen or splenicvessels.

**Table 10:** Other Investigations (Total no of Patients 50).

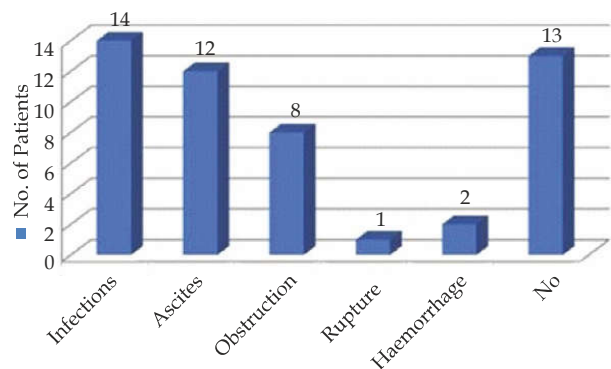
Investigations	No. of Patients
Elevated S. Amylase	46 (92%)
Elevated S.lipase	48 (96%)
Elevated S. Bilirubine	15 (30%)

Out of total 50 patients Increase amylase in 46 patients and increase lipase were found in 48 patients and increase bilirubin was found in 15 patients.

**Table 11:** Complications at the time of presentation (Total no of Patients 50).

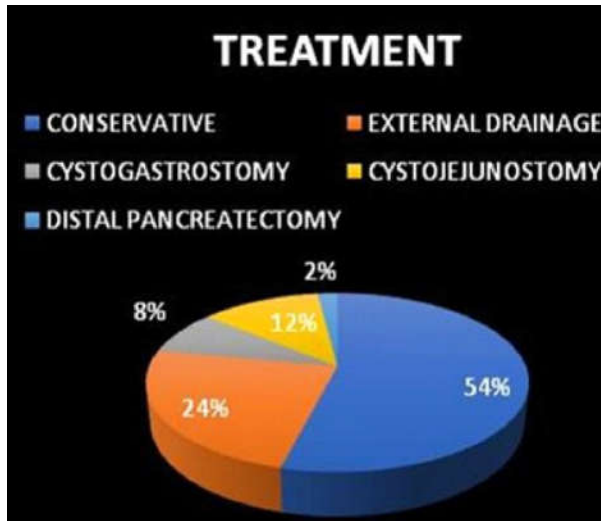
Complications	No. of Patients
Infection	14
Ascites	12
Obstruction	8
Rupture	1
Haemorrhage	2
No	13

Out of 50 patients 27 patients developed local complications from whom 17 patients developed infections, 15 patients developed ascites, 8 patients developed obstruction, 2 patients developed rupture from whom both were died due to systemic complication and 2 patient had developed haemorrhage. And 20 patients developed systemic complications. In this study infection and ascites present in 7 patients. In patient with rupture cyst, moderate ascites also present. One patient present with obstruction withinfection

**Table 12:** Treatment Method (Total no of Patients 50).

Treatment	No. of Patients
Conservative	32 (64%)
External Drainage	10 (20%)
Cystogastrostomy	3 (6%)
Cystojejunostomy	4 (8%)
Distal Pancreatectomy	1 (2%)

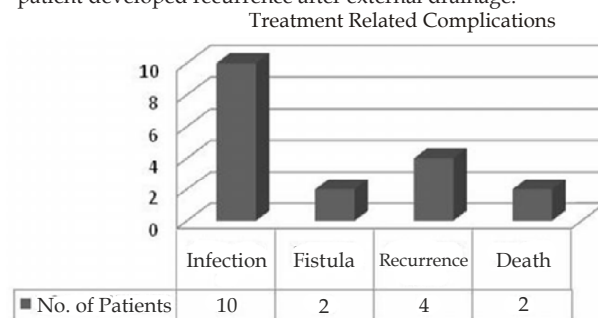
Out of 50 patients, 32 patients were treating conservatively; from rest external drainage was done in 24% patients and internal drainage done in 18%patients.



**Table 13:** Treatment Related Complications (Total no of Patients 20).

Treatment Related	No. of Patients
Complication Infection	10 (50%)
Fistula	2 (10%)
Recurrence	4 (20%)
Death	2 (10%)

In our study 8 patient developed treatment related complication. In 30% patient developed infection after external drainage. In one patient developed pancreatic fistula after external drainage that died due to septicaemia. And one patient developed recurrence after external drainage.



**Table 14:** Recurrence (Total no of Patients 50).

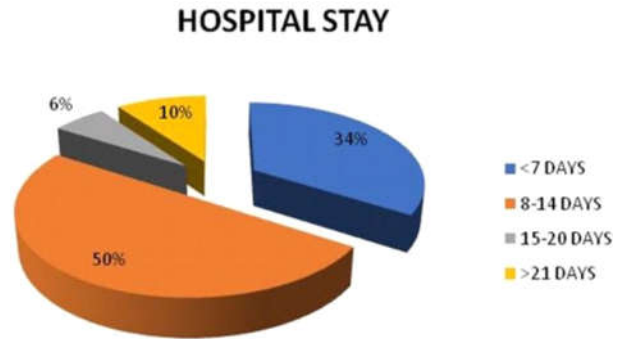
Treatment Related	No. of Patients
Recurrence	1 (2%)

In our study one patient developed recurrence after external drainage, this treated by external drainage again.

**Table 15:** Duration of Hospital Stay.

No. of Hospital Stay	No. of Patients
<7Days	17 (34%)
8-14Days	25 (50%)
15-20Days	3 (6%)
>21Days	5 (10%)

During management of 50 patients of pseudo cysts 17 patients had less than 7 days stay and 25 patients had hospital stay between 8 to 20 days and rest of patients had more than 21 days stay



**Discussion**

In this randomise retrospective study conduct on 50 patients of pancreatic pseudo cysts admitted in our hospital, observation were made after evaluation of different epidemiological factors, etioclino-pathological factors, serial clinical variables, investigative procedures, treatment modalities and complications.

After starting standard treatment as per protocol; inference in terms of favourable and unfavourable outcome was made.

*Incidence*

During the study period total number of pancreatitis patients admitted In our Institute (G.g. Hospital, Jamnagar) were 310 from whom incidence of pseudo cysts of pancreas was total 18%.this is compare with London et. al. study<sup>45</sup>andimrieetal. Study.<sup>45</sup>

Incidence	London et. al.	imrie et. al.	Present
Pseudocyst	14%	7%	18%

*Age Distribution*

50 cases of pseudo pancreatic cyst have been studied. Out of 50 cases, 1 was of paediatric age group and 49 were of adult groups. In our study the common age group was 31-50 years (40%) cases, this is compared with a study group of V. Ustoff et. al. (2000) and C. Palanivelu, et. al. (2007).

Age	V. Ustoff	C. Palanivelu et al	Present
Mean age group	39	44	40

This result was probably due to alcohol consumption was more in this age group.

*Sex incidence:*

In this study Out of these 50 patients 40 (80%) were male and 10 (20%) were female. This is compare with V.Ustoff et. al. (2000)100 and C.Palanivelu, et. al. (2007)

Sex	V. U Staff	C. Palanivelu, et. al.	Present
Male	75%	70.37%	80%
Female	25%	29.63%	20%

The incidence of pseudo pancreatic cyst predominant in males; this is due to alcohol consumption is more common in male than in female.

#### *Socio Economic Status:*

In study of 50 patients, 60% from lower socio economic groups. And 40% from middle socio-economic status. This result was probably due to alcohol consumption is more common in lower socio economic status patients. Usually upper socio-economic class people do not prefer government hospital. But there is no such proper study has been done till date.

#### *Clinical Features*

##### *Symptoms*

Abdominal pain is a consistent finding and is usually located in the epigastrium and upper abdominal quadrants often associated with radiation to back. Frequently patients present with mass abdomen or sometimes with nausea, vomiting, anorexia, jaundice. In our present study also pain abdomen was the commonest complaint being present in 100% & usually located on epigastric region and upper abdominal quadrant often associated with epigastric fullness/mass. These were compared with the study group of V. Ustoffet. al. (2000) and C.Palanivelu, et. al. (2007).

Clinical features	V. Ustoff	C.Palanivelu, et. al.	Present
Abdominal pain	100%	54.63%	100%

##### *Sign*

Physical examination in our study revealed abdominal tenderness in 24% of patients and a palpable mass in 40% of patients. Fever, ascites and jaundice were present in some patients. In many study abdominal tenderness is most common then epigastric fullness/lump.

Clinical features	V. Ustoff	C. Palanivelu, et. al.	Present
Mass P/A, epigastric fullness	70%	70%	40%

##### *Risk Factors:*

Various western countries revealed that alcoholism is the most common cause in pancreatitis leading to pseudo cyst formations. In our study also alcohol consumption most common cause. This is compared with the following study groups

Clinical features	V.Ustoff	C.Palanivelu, et. al.	Present
Alcohol	71.42%	18.52%	44%

Alcohol consumption was the commonest risk factor.

##### *Previous Attacks of Pancreatitis*

In my study of 50 patients, 16 patients were of  $\leq 2$  previous attacks while 34 patients had more than 2 attacks of pancreatitis. Thus pseudo pancreatic cyst was seen more in patients having more than 2 previous attacks of pancreatitis. But there is no such proper study has been done till date.

##### *Description of Cyst*

In our study ultrasonography and CECT scan was done in all patients. Based on this we know about the size, place, adjacent structure, wall thickness and content of pseudo cysts of pancreas.

Several studies have indicated that the size of the cyst and the length of time the cyst has been present are poor predictors of potential for pseudo cyst resolution or complications, but in general, larger cysts are more likely to become symptomatic or cause complications.<sup>111</sup> However, some patients with larger collections do well; therefore, size of the pseudocyst alone is not an indication for drainage.<sup>112,113</sup> The two main indications for invasive intervention are the presence of symptoms or the presence of complications (infection, bleeding, gastric outlet or biliary obstruction). In our study also invasive intervention was done in patients having symptoms, complication and in large mature cysts (wall thickness more than 6mm); only in 23% patients. Others were treating conservatively.

##### *Investigations*

Amylase and lipase levels are often elevated, but may be within reference ranges. Some laboratory tests may provide clues to the underlying aetiology of pancreatitis (e.g. elevated triglycerides or calcium level). Elevated liver chemistries raise the suspicion for biliary pancreatitis.<sup>10</sup> In our present study, serum amylase was raised in 92. Serum lipase was elevated in 96% of patients. And elevated LFT was in 20% patients. This is compare with varunladha study (2015).

Investigations	Varunladha	Present
Elevated S. Amylase	72%	92%
Elevated S. Lipase	64%	96%
Elevated LFT	24%	20%

##### *Complications on Presentation:*

The commonest complication was infection followed by ascites. This is compared with V. Ustoff

et. al. (2000) and Dr. Shridhar Reddy et. al. (2015)

Clinical features	V.Ustoff	Dr.ShridharReddy	Present
Infection	8.03%	18.75%	28%
Ascites	1.7%	3.12%	24%

Rupture of the pseudo cyst may be seen as a surgical emergency with severe acute abdominal pain. It occurs in less than 2% of cases in one case study group of Yin W et. al.(2004). In our study, rupture with peritonitis was seen in 2% cases, from which one patient was dead.

#### Treatment

Commonly employed in our study was conservative. This is compared with the following study groups.

Clinical features	V. Ustoff	C. Palanivelu, et. al.	Present
Conservative	40%	18.75%	54%
Internal drainage	3%	92.6%	18%

The reported long-term success rate for pseudo cyst resolution for USG-guided pseudo cyst drainage is around 50%. Unsuccessful drainages are usually caused by large ductal leaks or obstruction of the main pancreatic duct.<sup>112</sup>

A significantly higher mortality rate is associated with surgical therapy (9%)<sup>113</sup> In our study, there was no mortality associated with surgical therapy. All of patients showed complete resolution.

Success rate of Treatment	Varunladha study (2015)	Present
Percutaneous Drainage	50%	44%
Cystogastrostomy	44.44%	8%
Cystojejunostomy	100%	12%

#### Post operative complications

In our study the commonest complication was infection in immediate postoperative period. Other rare complication also after invasive procedure like pancreatic fistula and recurrence This is compared with the study group of W.F Maule et.al. (2004)

Post-operative/procedure Complications	W. F. Maule	Present
Infection in cyst	18%	20%
Pancreatic Fistula	21%	4%
Recurrence of cyst	22%	8%
Death	23%	4%

Immediate post-operative/procedure \ complications in our series include, infection present in 20% of the patients and pancreatic fistula 4% in after external drainage and recurrence 8% after external drainage of the patients.

#### Hospital Stay

In our study average duration of hospital stay is 8-14 days. In patients who treated conservative had long hospital stay and who developed treatment related complication had long hospitalstay

#### Summary

Pancreatic pseudocyst represents a common problem in patients with acute and chronic pancreatitis.

- Incidence of pseudo cyst in pancreatitis patient is 18%.
- Male patients predominate with incidence of 80%.
- Highest incidence is in the age group of 31-50 years.
- Maximum incidence occurs in cases belonging to low socio-economic class.
- The most common etiological factor was alcohol consumption, which was present in 44%. This is followed by idiopathic group which constitutes 10%, blunt trauma 2% and Gall Stones/CBD stones 16%.
- Abdomen pain and fullness/palpable mass are the most common presenting signs and symptoms.
- Incidence of palpable mass was in 42% but with usage of USG and CT-Scan, pseudo cyst was detected in all the patients.
- Uncommon presentations were jaundice, ascites and fever.
- Fever was present in 6 patients, in cases of infected pseudocyst.
- USG abdomen was the best investigating method for the diagnosis of pseudo cyst and was able to detect pseudo cyst in all the patients, though extent and complication were clarified by CT-scan
- S.amylase, s.lipase raised in most of the patients 96%. And liver function test is altered in all the patients of biliary obstruction.
- Infection was a common complication present in 30% of patients followed by ascites in 24% and obstruction in 14% of cases each. The patients with infection were managed by external catheter drainage.
- Pseudocyst most commonly located in head followed by the tail and body of pancreas.
- Conservative treatment is useful in uncomplicated, acute pseudo cysts till they regress or till the cyst wall becomes mature.

- The results of cystogastrostomy and cystojejunostomy were excellent. The choice of procedure was decided upon the location of the pseudo cyst, its contents and general condition of the patient. External drainage was done in 24% of the patients with infected pseudo cyst and in patient with ascites.
- Most common treatment related complication is infection seen most commonly during external drainage.
- Average hospital stay is 8-14 days.
- Follow up done for 3-6 months, 2 patient lost to follow up. Recurrence was found in 1 case, treated conservatively and they were on follow up.
- Pancreatic pseudo cyst is systemic disease can have high morbidity and mortality but early diagnosis with proper treatment either conservative or surgically improve the outcome of disease.

### Conclusion

- The most common age group in which pseudo cysts of pancreas occur in 31-50 years with marked male predominance.
- Alcohol consumption is the most common cause of acute pancreatitis and the most common complication was pseudo cyst formation.
- Patient most commonly present with abdominal pain and abdominal tenderness.
- Ultrasonography is the most commonly used investigations with the accuracy of 100% in detecting pseudo cyst, which also useful for the follow up the patients.
- Amylase and lipase are often elevated, but may be within reference ranges.
- CT Scan was useful in selected patients.
- Most common complications is infection in cyst and most fatal complication was rupture.
- Acute pseudocysts were treated conservatively and the cysts which not resolved treated surgically, infected cysts were drained externally.
- Surgery is the traditional modality for treating pancreatic pseudocysts, with high success rates and low morbidity and mortality and it still plays an important role in therapy.
- Enteric drainage is done, either by cystogastrostomy or cystojejunostomy in majority of patients with good results.
- Most common complication in immediate post-operative/procedure was abdominal pain and wound infection.
- The average Total duration of hospital stay was 8-15 days because conservative management and patient with complication require long hospital stay.

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