ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 6, Issue – 2, March - 2023, Page No. : 567 - 580

A Study of Clinical Presentation and Management of Pseudocyst of Pancreas.

[1]Dr. Pulagam Sainandan Reddy, Final year PG, Department of General Surgery, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari district, Andhra Pradesh, India, 534005

[2]Dr. Srinivas Ayyar, Assistant Professor, Department of General Surgery, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari district, Andhra Pradesh, India,534005

[3]Dr. Dasari Lokanadham, Professor, Department of General Surgery, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, West Godavari district, Andhra Pradesh, India, 534005

Corresponding Author: Dr. Pulagam Sainandan Reddy, Final year PG, Department of General Surgery, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari district, Andhra Pradesh, India, 534005

How to citation this article: Dr. Pulagam Sainandan Reddy, Dr. Srinivas Ayyar, Dr. Dasari Lokanadham, "A Study of Clinical Presentation and Management of Pseudocyst of Pancreas", IJMACR- March - 2023, Volume – 6, Issue - 2, P. No. 567 – 580.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Aim and objectives: To study the clinical features and different modes of management of pancreatic pseudocyst and their outcome

Materials and methods: This is a prospective study done from June 2021 to December 2022. In this study 32 patients were selected, who were diagnosed as pseudo pancreatic cyst admitted in Alluri Sitarama Raju Academy of Medical Sciences, Eluru from June 2021 to December 2022. All the Patients underwent definitive treatment. Data related to the objectives of the study was collected

Results: From our study it is observed that

1. Majority of patients belonged to the age group of 31-50 years, which constituted 16 (50%) patients in the study. M: F is 4.33:1.
2. Most commonetio logical factor was alcohol.
3. Most common mode of presentation was pain abdomen followed by abdominal distension /mass per abdomen.
4. Incidence of palpable mass was in 75% of the patients studied, but with the usage of USG and CT scan, Pseudocyst was detected Nall the patients.
5. Conservative treatment was use Fuli nun com plicated, acute pseudo cyst still they regressor mature when surgery became necessary. The results of internal d rain age were excellent, which was done in 56. 25 % of the patients in our study.
6. The post operative complications include pain abdomen and wound infection seen in 9 patients of the

study.

Conclusion

We conclude that, the pseudo pancreatic cyst is the most common complication of pancreatitis. Early diagnosis and timely management with the use of serial USG and internal drainage for mature cyst, external rain age for complicated cyst results in good prognosis.

Keywords: Pseudo pancreatic cyst, internal drainage, External drainage, USG, CT scan.

Introduction

Pancreatic pseudocyst is a localized collection of pancreatic secretions surrounded by a wall of fibrous or granulation tissue that arises as a result of acute or chronic pancreatitis, pancreatic trauma, or obstruction of the pancreatic duct by a neoplasm[1].

Pseudocysts account for about 75% of cystic lesions of the pancreas. They are distinguished from other peri pancreatic fluid collections (cystic neoplasms and con genital, parasitic and extra pancreatic cysts) by their lack of an epithelial lining, high concentration of pancreatic enzymes within the pseudo pancretic cyst and formation at least 4 weeks after an episode of pancreatitis or pan creatic trauma[2]. Pseudocyst is formed by the in flam matory response that occurs after extravasated pancreatic secretions are walled off by the surrounding structure.

The capsule of the pseudocyst can be thin fibrous tissue which can progressively thicken as the pseudocyst matures frequently; the liquid contents of the pseudocyst are gradually reabsorbed by the body, and pseudo cyst resolves indicating that the communication between the pseudocyst and the pancreatic duct has closed.

Persistence of a pseudocyst implies ongoing communi cation with the pancreatic ductal system regardless of whether the ductal system can be demonstrated radio graphically or patho logically[3].

Natural history

Pseudocysts are formed by the inflammatory response that occurs after extravasated pancreatic secretions are walled off by the surrounding structures. Their walls are composed of fibrous and granulation tissue derived from peritoneum, retroperitoneal tissue or serosal surface of adjacent viscera. The capsule progressively thickens as the pseudocyst matures, often the liquid contents of the pseudocyst are gradually reabsorbed by the body and the pseudocyst resolves, indicating that the communi cation between the pseudocyst and the pancreatic duct has closed. The persistence of a pseudocyst implies an ongoing communi cation with the pancreatic ductal system.

Pseudo cyst collections, with an indistinct interface between fluid and adjacent organs, irregular contours with segments of pancreatic wall that are concave are most likely to resolve. Spherical or ovoid collections with sharp margins, especially in association with pancreatic calcifications, are likely to persist. In general, the closer to the onset of acute pancreatitis a fluid collection is detected, the more likely it is to resolve.

Fluid collection may resolve by spontaneous trans peri to Neal reabsorption, decompression of the collection into the pancreatic duct, or erosion of a cyst into a hollow viscus with sub sequent cyst- enteric fistula formation or rarely, by free rupture into the peritoneal cavity.

Cysts larger than 4-6cms are less likely to resolve by themselves. Smaller cysts and cysts which fail to show a decrease in size or those that shows an increase in size during a 3–4-week period of observation are unlikely to resolve. Patients with multiple pseudocysts are unlikely to resolve. Chronic pseudocyst, especially are unlikely to resolve. Traumatic cysts are less likely to resolve as they tend to be more mature at the time of presentation.

Pathogenesis

The pathway by which pseudocysts are formed often follows a progression which includes diffuse peri pan creatic effusion, pancreatic necrosis, lique faction, phleg mon, acute pseudo cyst and finally encapsulation or maturation. In acute pan creatitis, the duct disruption leads to escape of pancreatic juice into the surrounding tissue, since there is no natural barrier. They may be located anywhere from the mediastinum to the scrotum. They are commonly found in lesser sac or anterior para-renal space.

Cysts arising in the setting of chronic pancreatitis, most often without a determinate antecedent flare of acute pancreatitis are referred to as chronic pseudocyst and generally have a mature wall on presentation. Hence the duct ruptures, owing to inspissated duct. Because the pancreatic parenchyma is firm and fibrotic, chronic pseudocyst commonly are located within the substance of the gland.

Aetiology

10-20% of patient with acute pancreatitis. 20-40% of patient with chronic pancreatitis[4].

65% pseudocysts are due to alcohol related pancreatitis.

15% pseudo cysts are due to gall stones induced pancreatitis.[5,6]

5 to 10% are due to traumatic pancreatitis.

45-50% of pseudocysts occur in or around the head of the pancreas and the remainder are evenly distributed along the neck, body and tail of the pancreas.

Clinical features

90% of patients present with epigastric pain. 25-45% with abdominal mass.

50-70% with early satiety, nausea and vomiting. 20-50% with weight loss.

10% with jaundice.

10% with low grade fever.[7,8]

Abdominal pain is the most common symptom in patients with a pseudocyst. Pseudo cysts that follow an episode of acute pancreatitis are often characterized by persistence or recurrence of upper abdominal pain weeks after the initial attacks. The symptoms of early satiety, nausea and vomiting may be secondary to gastro duo denal obstruction caused by a mass effect of the pseudo cyst.

More uncommon modes of clinical presentation include

1. Pruritus and jaundice secondary to common bile duct obstruction.
2. Variceal bleeding secondary to either splenic vein or portal vein obstruction.
3. Evidence of sepsis secondary to pseudocyst infection.
4. Evidence of intra-abdominal hemorrhage secondary to bleeding from a pseudoaneurysm in adjacentv is ceralvessels.

Complications

Infection

Less than 5% of patients with pseudocyst develop a true infection, marked by a clinical presentation of fever, leukocytosis and increased pain[9,10.] The aspiration of purulent fluid from the pseudocyst confirms the presence of an infection. Open operative drainage allows for the complete evacuation of all infected material and external drain may be placed under direct vision. Apan creatic abscess is one clinical situation in which percutaneous drainage is clearly the treatment of choice. Success rates of up to 85 % have been reported in multi pleseries[11,12,] and[13].

Haemorrhage

Arterial hemorrhage may occurinup to 10% of patients with pancreatic pseudo cysts.[9,14,15] the most common source of pseudo cyst associated bleeding is the splenic

artery, with the gastro duodenal and pan creatic duodenal arteries, also accounting for a significant number of hemo rrhage events.[16] Bleeding may also occur from portal, superior mesenteric, or splenic veins, although this occurs less commonly. This is due to erosion of the vessel wall leading on to pseudoaneurysm form ation and eventual rupture. Massive bleeding from the varices of Thes to Mach can occur incases of chronic pan creatitis complicated by apseudocyst.[17]

CT scan with intra venous contrast is an appropriate confirmatory test in as table patient but Angio graphy may be necessary for diagnosis and also provides a mode of treatment.

Embolization of the pseudo aneurysm or sourcevesselis attempted Asan initial management in a hemo dynami cally stable patient. Most of these haemorrhages may be effectively controlled by current embolic techniques. [18,19,20,21] Patients in whom embolic therapy fails, whore-bleed, or who are hemo dynami cally unstable require mergence surgical exploration.

Obstruction

Duodenal obstruction is the most common manifestation of mechanical obstruction secondary to pseudocyst formation, obstruction of the stomach, esophagus, jejunum and colon maybe identified[22-26]. Obstruction of the mesenteric vessels and portal venous system (particularly the splenic vein) may lead to extra hepatic portal hyper tension that causes splenomegaly and gastric varices[27]. Pseudocysts have also been described as obstructing other retro peritoneal structures such as IVC and the ureters.

Congestive heart failure secondary to cardiac com pression by a mediastinal pseudo cyst has also been reported[28]. Biliary obstruction secondary to pseudo cyst formation is also well described, and it leads to complications and cirrhosis. Although biliary obstruction may be caused by direct compression of the bile duct by a pseudocyst, most patients have an associated stricture of the intra-pancreatic portion of the bile duct that does not improve with pseudocyst drain age alone[29].

Rupture

Spontaneous rupture, the least common complication of pseudocyst formation, occur sinless than 3% of patients. Pseudo cyst that ruptures anteriorly into the peritoneal cavity or posteriorly in to the pleural cavity may lead to the develop Ment of pancreatic ascites or pan creatic pleural effusion, respectively[30].

Rupture into the peritoneal cavity may lead to severe acute abdominal pain resulting from chemical peri tonitis. Rupture can also occur into adjacent hollow viscus. Silent rupture of a pseudocyst may also occur. Some pseudocysts are presumed to resolve by rupture or fistulization into an adjacent portion of the stomach or of small bowel, similar to operative endoscopic enteric drainage. No further therapy is needed in these circumstances.

Investigations

Persistent hyper amyl asemia following attack of pan creatitis is clue to the presence of pseudo cyst formation; it is present only in 50% of patients.

Ultrasound

USG is 90% accurate and 98% specific in visualizing pan creas. In 1/3rd of the patients gas obscures the pan creas.

CT scan

Contrast enhanced CT scan is the modality of choice for the frontline evaluation of a pseudo pancreatic cyst in the modern era[49].It provides additional information about retro peri to Neal extension of fluid collections and relationship between pseudo cyst and adjacent enteric

lumen that is not available from USG.

ERCP

ERCP demonstrates abnormalities of the pancreatic duct in up to 90% of the patients with pseudocysts. It should not be done routinely. ERCP is indicated in patients with jaundice to differentiate between common bile duct compression by the cyst and a stricture of the intrapancreatic portion of the common duct caused by fibrotic pancreases.

In the former case, cyst drainage alone would relieve the jaundice, while in the latter case a biliary bypass procedure is required. As it may introduce infection into a previously sterile cyst, ERCP should be performed only when cyst drainage is to be done within 48 hours.

Angiography

Is useful in patient who has had bleeding complications from pseudocyst or those who have portal hypertension. The finding of splenic vein thrombosis with left sided portal hypertension is an indication for splenectomy in patients undergoing operation for drainage of pseudo cysts. There is also therapeutic use of Angio graphy to control bleeding from pseudocyst.

MRI Scan

The use of MRI has been advocated to predict whether solid debris with in a pseudocyst will prevent adequate percuta neous drainage[32]. Conventional MRI also has the potential advantage of being coupled with MRCP to help to define pancreatic duct anatomy relative to pseudo cyst[33].

Barium Meal

Is used in patients when there are features suggestive of compression to adjacent structure by the pseudocyst, mainly the stomach.

Percutaneous Aspiration

To differentiate pseudo cyst from other cyst of the pancreas, fluid is analyzed for amylase content, cytology and relative viscosity.

Management of pancreatic pseudocysts

- Observation
- Percutaneous Aspiration/Drainage
- Endoscopic Aspiration/Drainage
- Trans papillary Endoscopic Drainage or Stenting
- Operative Approaches (Open or Laparo scopic)
- Internal Drainage
- External Drainage
- Pancreatic Resection

Currently, treatment of patients with pancreatic pseudo cysts is based on the clinical setting, the presence or absence of symptoms, the age and size of the pseudo cyst, and the presence or absence of complications.

Timing of the drainage

A pseudocyst that occurs after an episode of alcohol-related pancreatitis has to be observed for 4 to 6 weeks with regular follow up and ultrasound examinations of the abdomen.

After 6 weeks, observation should continue if the size of the cyst is less than 6cm and the patient is asymptomatic or if there is decrease in size.

Therapy is indicated if the patent is symptomatic or if the cyst is more than 6cm, the cyst is increasing in size, the cyst is infected, or there is a suspicion of malig nancy.

Observation is unnecessary and immediate drainage is safe in cysts that have a mature wall or in those arising in chronic pancreatitis.

Asymptomatic pseudocysts regardless of size and duration can be safely observed, provided that they are carefully monitored and are not increasing in size

Percutaneous aspiration

It is aimed at aspirating all pseudocyst fluid at one procedure, without leaving an indwelling drainage catheter. Fewer than 50% of patients undergoing this technique, have complete resolution of their pseudo cyst[12]. The remaining patients will require repeat aspiration. Patients with pseudocyst in the tail of the pan creas and volume less than 100ml with low intracystic amylase levels are the best candidates for the percuta neous aspiration[34].

Percutaneous catheter drainage

It involves placement of an indwelling catheter into a pseudocyst by the Seldinger technique using ultrasound or CT guidance. The pseudocyst is normally entered through a flank or trans gastric approach and the tract may be dilated to accept a catheter ranging in size from no.7 F to no.14 F. Contraindications to percutaneous drainage includes the presence of significant pancreatic necrosis or solid debris in the pseudocyst, lack of a safe access route, pseudocyst hemorrhage, and complete ob struction of the main pancreatic duct. The common complications of percutaneous catheter drainage are drain tract, persistent or recurrent pseudo cyst and pan creatic cutaneous fistula.

Endoscopic approach

Flexible upper GI endoscopy is used to localize and drain pseudocysts by creating a fistulous tract between the pseudocyst and the stomach or duodenum[27]. This communi cation is made using electrocautery, and an end prosthesis is left in place to stent open the fistula. Endoscopic drainage usually requires for the pseudocyst to be located in the head or body of the pancreas which is apposed to and bulging into the intestinal lumen. Endoscopic ultrasound can be used to visualize the pseudo cyst and to choose a site for drainage. The complication of the procedure includes hemorrhage from the gastric or duodenal wall and perforation.

Trans ampullary pancreatic stent-is applicable in pseudo cyst which has obvious communi cation with main pan creatic duct shown by ERCP. If possible, stent is placed through the ampulla, along the pancreatic duct and into the lumen of the pseudocyst; the tip of stent is placed as close as possible crossing any intervening stricture of the pancreatic duct. Complications include post procedure pancreatitis, bleeding and abscess formation secondary to stent obstruction.

Operative approach (open/laparoscopy)

Internal drainage

The three standard options include

Cyst jejunostomy to a Roux-en-Y jejunal limb

advised when a pseudocyst is located at the base of the transverse mesocolon and is not adherent to the posterior gastric wall.

Cyst ogastrostomy

faster procedure and is advised when the pseudocyst is adherent to the posterior wall of the stomach.

Cysto duodenostomy

advised when the pseudocyst is in the pancreatic head or uncinate process that lie within 1cm of the duodenal lumen. Com plications include – duodenal leak and sub sequent fistula.

Cysto jejunostomy and cysto gastrostomy have com parable morbidity, mortality and recurrence rates[35,36].

External drainage

Is indicated when gross infection is found at the site of operation or an immature thin-walled pseudocyst is present which will not allow safe internal drainage. On aspiration if purulent material is found, the content of the pseudocyst cavity is completely evacuated.

Then at least one closed suction drainage catheter is placed into the cavity and is brought out through the abdominal wall. Complications include pancreatic cutaneous fistula, most of which heals spontaneously.

Pancreatic resection

Distal pancreatectomy is done for pseudocyst located in the body or tail of the gland. After distal pan Creat ectomy, a roux-en- y pan creatico - jejunostomy to the remnant pan creas may be required to decompress an ob structed abnormal proximal pancreatic duct.

Pan creatico - duodenectomy is advised in sympto matic pseudocyst present in the head of the pancreas associated with an inflammatory mass. In this case pylorus preserving pancreatico-duodenectomy is the procedure of choice.

Aims and objectives

To study the clinical features and different modes of management of pancreatic psuedocyst and their outcome

Materials and methods

- Site of the study: Alluri Sita Rama Raju Academy of Medical Sciences, Eluru
- Type of the study: Prospective study -Observational
- Period of the study: June 2021 to December 2022
- Sample size: 32

Inclusion criteria

- Patients diagnosed as pseudo pancreatic cyst with help of diagnostic procedure like USG abdomen, Barium meal, CT scan Abdomen.
- 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.

Study parameters

This study has included both adults and pediatric age group patients. Patients with diagnosis of pancreatitis were monitored.

During the course of their illness, if they developed features suggesting of pancreatic pseudo cyst, USG of abdomen was done and if it confirmed the presence of pseudocyst these patients were included in our study.

Those patients only with or chronic pancreatic or peri pan creatic fluid collection without evidence of encapsulation on USG were excluded from the study.

All patients with acute pseudocyst were managed con servatively by withhold ingoralin take, giving I V fluids, analgesics and antibiotics as long as they had pain abdomen, vomiting or ileus.

They were then followed up if the cyst did not regress. Follow up continued till the wall of the cyst matured.

All mature cysts were treated surgically. Data like duration of hospital stay, conservative management and its results and surgical procedure done and their results, complications if any, progress of the pseudocyst on follow up were carefully recorded.

Results

Age in years	No. of patients	Percentage
≤10	2	6.25
11-30	10	31.25
31-50	16	50
≥51	4	12.5

In our study of 32 patients, the age of patients was from1years to 65 years. Pseudo pan creatic cyst was common in age group 31- 50 (50%) with mean of 40 years. (Figure1)

This was probably due to alcohol use which was common in this age group

Figure 1: Showing age distribution of patients

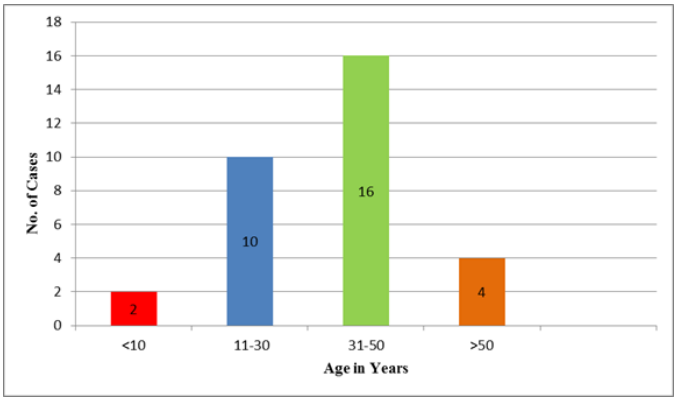


Table 2: sex incidence

Sex	No. of patients	Percentage
Male	26	81.25
Female	6	18.75

In our study of 32 patients, there were 26 (81. 25 %) male patients and 6 (18. 75 %) female patients indicating that the disease is more common in males with ratio of male to female is 4. 33: 1. (Figure 2) This again was due to a higher alcohol intake in males.

Figure 2: Shows sex distribution of patients.

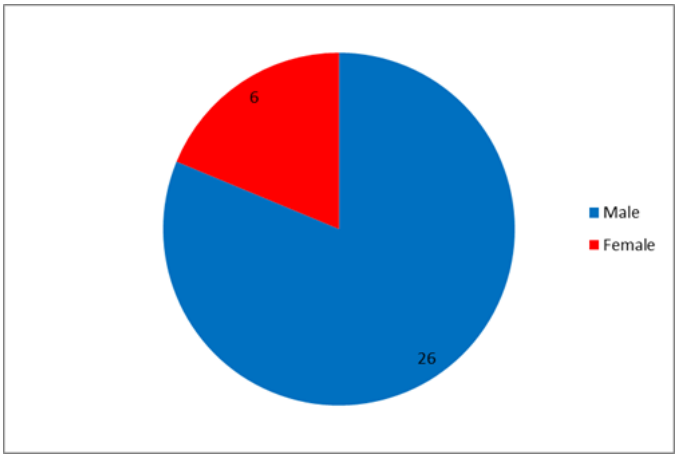


Table 3: Symptoms

Symptoms and signs	No. of patients	Percentage
Abdominal Pain	32	100
Nausea/ vomiting	24	75
Abdominal distension	24	75
Anorexia	8	33.33
Fever	6	18.75
Weight loss	4	12.5
Jaundice	1	3.12

The commonest symptom was upper abdominal pain which was present in all patients (100%), followed by nausea/ vomiting which was present in 75 % of the patients and abdominal distension (mass) present in 75 % of the patients. (Figure3)

Figure 3: Shows number of patients with symptoms.

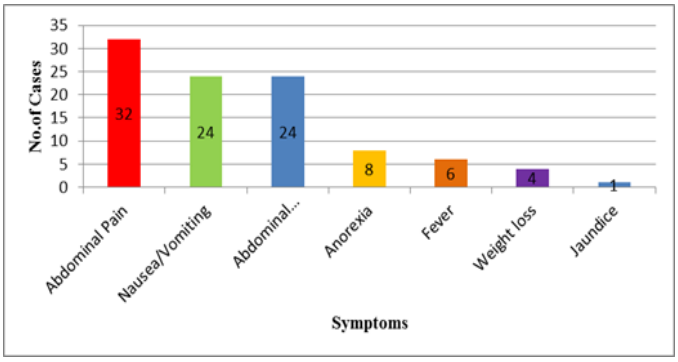


Table 4: signs

Signs	**No. of cases**	**Percentage**
Mass abdomen	24	75
Ascites	1	3.12
Ileus/ intestine al obstruction	1	3.12
Abdominal tenderness	32	100

The commonest sign was upper abdominal tenderness which was present in all the patients (100%), followed by mass per abdomen which was present in 75 % of the patients. (Figure 4).

Figure 4: Shows number of patients with signs.

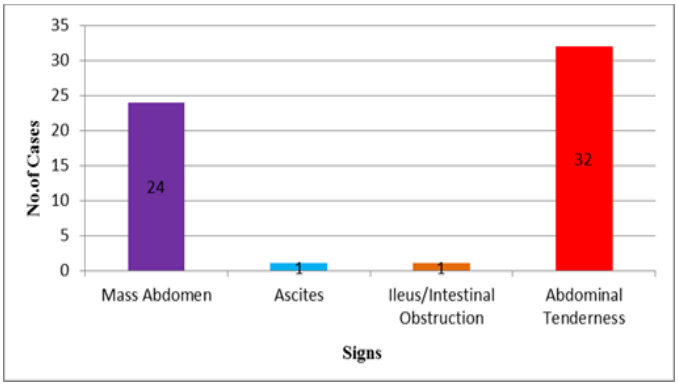


Table 5: Risk factors

Risk factors	No. of cases	Percentage
Alcohol	21	65.62
Blunt trauma	2	6.25
Biliary disease	2	6.25
Idiopathic	7	21.87

The commonest risk factor was alcohol consumption which was present in5.62%of the patients, followed by idiopathic in 21.87 %, blunt trauma was present in 6. 25 % and biliary disease in 6.25 % patients.

Figure 5: Risk factors contribution for Pan creatitis.

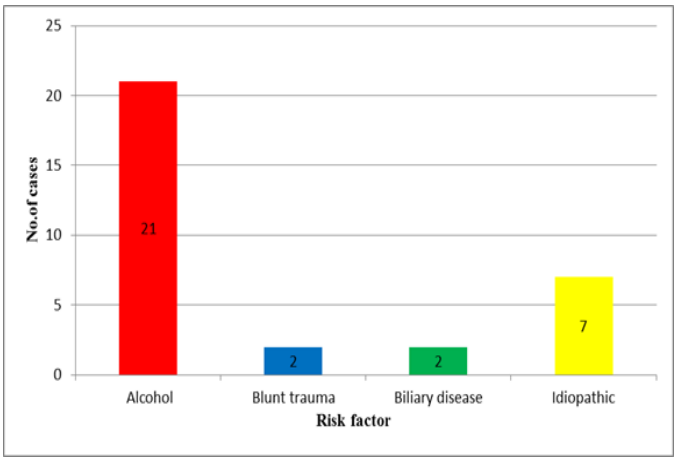


Table 6: associated complications

Complications	No. of cases	Percentage
Infection	6	18.75
Ascites	1	3.12
Obstruction	1	3.12
Rupture	-	-
Hemorrhage	-	-

Infection was the complication found in 18. 75 % of patients followed by ascites and obstruction, 3. 12 % in each group and there were no cases of rupture and hemorrhage.

Figure 6: Complications inpatients

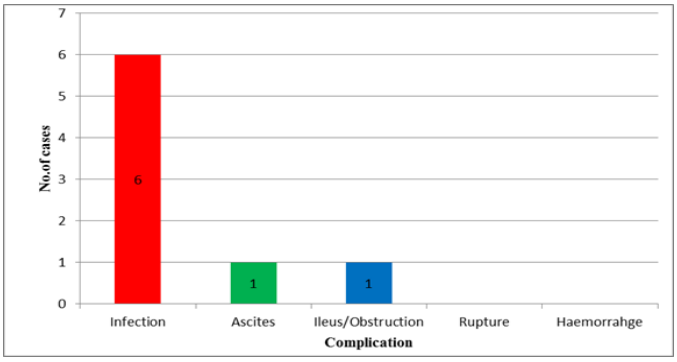


Table 7: investigations

Investigation findings	No. of cases	Percentage
Increased serum amylase	8	25
Increased ascitic amylase	1	3.12
Barium meal (+ve)	8	25
USG (+ve)	32	100
CT scan(+ve)	32	32

Ultra sound was the basic investigation done in all patients (100%). Barium meal was done in 25% of the patients with complaints suggestive of adjacent organ compression mainly stomach. CT-scan was done in all patients to know the extent and complication of the cyst that could not be made out by ultrasound. Serum amylase was done in all the patients and the results were positive in all the patients of acute pancreatitis (8 cases) and asciticamy lase was done in 1 (3. 12 %) of the patients and result was positive.

Figure 7: Shows investigations done inpatients.

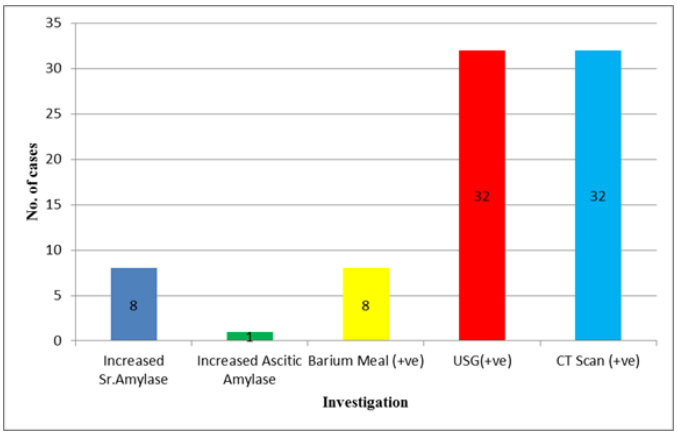


Table 8: Treatment

Treatment	No. of cases	Percentage
Conservative	6	15.62
Percutaneous aspiration	2	6.25
External catheter drain age	7	21.87
Cyst gastrostomy	16	50
Cyst jejunostomy	2	6.25
Distal pancreatectomy	-	-

The commonest treatment was cyst gastrostomy in 50 % of the patients followed by external catheter drainage in 21. 87 %, con servatively managed in 15. 62 % and percutaneous aspiration and cystojejunos to my was done in 6.25%ofpatientsin each group.

Figure 8: Shows treatment given for patients.

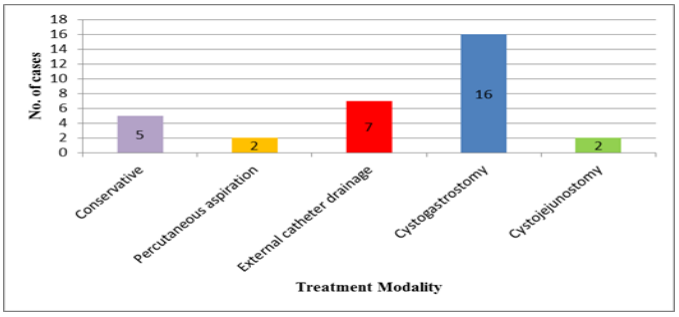
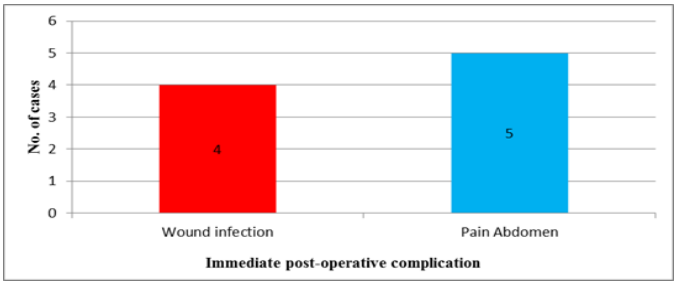


Table 9: immediate post operative complications

Complications	No. of cases	Percentage
Wound infection	4	12.5
Pain abdomen	5	15.62

Immediate post operative persistent pain abdomen was present in 15. 62 % of patients and wound infectionin12 .5 % of patients.

Figure 9: Patients with immediate post-operative com plications



Discussion

Sex incidence

Out of 32, 26 patients were male and 6 patients were female. This is compared with the study of V. Us to fetal (2000)[37] and C. Palanivelu etal (2007)[38].

Table 10:

Sex	C. Palanivelu etal	V. Ustoffetal	Present study
Male	70.37%	75%	81.25%
Female	29.63%	25%	18.75%

The incidence of pseudo pancreatic cystis predo minated in males; this is due to the factthatalcohol consumption is common in males compared to females.

Age distribution

32 cases of pseudo pancreatic cyst have been studied. Out of 32 cases, 2 Were of pediatric age group and 30 were of adult groups.

In our study the common age group was 31 – 50 years (50%) cases, this is compared with a study group of C. Palanivelu, etal (2007) and V. Usat off, etal (2000).

Table 11:

Age in years	C. Palanivelu etal	V. Ust off etal	Present study
Mean age group	44	39	40

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

There were 2 patients under pediatric age group; the cause was unknown. There were 4 patients over the age of 51 in our study.

Clinical features

The commonest presenting symptoms were pain ab do men and abdominal distension/ mass per abdomen. These were compared with the study group of C. Palanivelu, etal (2007) and V. Usat off, etal (2000).

Table 12:

Clinical feature	C. Palanivelu etal	V. Ustoffetal	Present study
Pain abdomen	54.63%	100%	100%
Mass per abdomen	9.25%	70%	75%

All patients in our study group presented with pain abdomen and mass per abdomen in 75 % of the patients.

Risk factors

The common estrisk factor in our study was alcohol con Sumption. This is compared with the following study groups.

Table 13:

Risk factor	C. Palanivelu etal	V. Ust of fetal	Present study
Alcohol Consumption	18.52%	71.42%	65.62%

Alcohol consumption was the common estrisk factor.

Complications

The commonest complication was infection followed by ascites. This is compared with V. Us toffet al (2000).

Table 14:

Complication	V. Ustoffetal	Present study
Infection	8.03%	18.75%
Ascites	1.7%	3.12%

Treatment

Treatment commonly employed Nour study was internal drainage; done in 56. 25 % of patients. This is compared with the following study groups.

Table 15:

Treatment	C. Palanivelu etal	V. Ust off etal	Present study
Internal drainage	92.6%	3%	56.25%
External drainage	7.4%	40%	18.75%

Ina study done by Kim KO, Kim TN (2013)[39], conservative management was done in 19. 42 % of patients. In our study conservative management was done in 15. 62 % of the patients and percutaneous aspi ration in 6.25% of patients in our study group.

Post operative complications

In our study the commonest complication was persistent pain abdomen followed by wound infection in immediate post operative period. This is compared with the study group of Tuulakiviluo to etal (1989) and V. Usat off, etal (2000).

Table 16:

Complication	Tuulakiviluo to etal	V. Ustoffetal	Present study
Pain abdomen	29%	10%	15.62%
Wound infection	2%	4%	12.5%

Immediate post operative complications in our series include, persistent pa in abdomen, present in 15. 62 % of the patients and wound infection in 12. 5 % of the patients.

In our study most of the patients were followed up to periods varying from 3-6 months. There were no complications except recurrence in 2 patients. 3 of the patients were lost to follow up.

Summary

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

- Male patients continue to predominate with incidence of 81. 25%.
- Maximum incidence is in the age group of 31 – 50 years.
- Abdomen pain and tenderness are the most common presenting signs and symptoms seen in 100 % of patients.
- Incidence of palpable mass was in 75 % but with usage of USG and CT - Scan, pseudocyst was detected in all the patients.

- Uncommon presentations were jaundice, ascites and fever.
- Fever was present in6 patients, incases of infected pseudocyst .
- The most common etiological factor was alcohol con Sumption, which was present in 65. 62%. This is followed by idiopathic group which constitutes 21.87%, blunt trauma and biliary disease constitutes 6. 25 % each.
- USG was the best investigating method for the diagnosis of pseudocyst and was able to detect pseudo cyst in all the patients, though extent and complication were clarified by CT-scan. Barium meal was done in 25% of the patients to know the degree of compression on the stomach.
- Infection was a common complication present in 18. 75 % of patients followed by ascites and obstruction in 3. 12 % of cases each. The patients with infection and ascites were managed by external catheter drain age.
- Conservative treatment issue full in uncomplicated, acute pseudocysts till they regress or mature when surgery became necessary.
- USG guided aspiration was done in 6.25% of patients who refused surgery and recurrence was seen in all these patients.
- The results of cysto gastrostomy and cysto jejunosto my was excellent. The choice of procedure was decided upon the location of the pseudocyst, its contents and general condition of the patient. External drainage was done in 21.87% of the patients with infected pseudocyst and in patient with as cites.

Conclusion

- The disease was most common in the age group 31-50 years and was seen mainly in males.
- Most common cause for the pseudocyst is alcohol induced, followed by idiopathic.
- Most common presentation is pain abdomen with ab dominal tenderness.
- Ultra sonography and CT _ Scan were the most use ful investigations for diagnosis and follow - up. Barium meal was required in selected cases.
- Acute pseudocysts were treated conservatively, infected cysts required external drainage. Percutaneous aspiration resulted in recurrence in our cases.
- Anastomoses of the cyst to the nearby bowel, either cysto gastrostomy or cysto jejunostomy was done in the majority of cases with good results.
- Most common post operative complications are persistent pain abdomen and wound infection.
- Total duration of hospital stay ranged from 10 to 15 days.
- Follow up was done for 3 to 6 months, 3 cases lost in follow up. Recurrence is seen in two cases who refused re-admission.

References

1. Ernest L. Rosato, Christopher J. Sonnenday, Keith D. Lillmoe, Carless J. Yeo. Pseudocyst and other com plications of pancreatitis. In: Shackelford's surgery of alimentary tract. carless J Yeo, Danies T. Dempsey, And rewsKhe in, etal., 7 th Ed., Saunders Elsevier. 2013; p. 1144-1167.
2. Bradley EI. Ill, Gonzalez AC, Clements JI, Jr: Acute pancreatic pseudo cysts: Incidence and imply cations. AnnSurg1976; 184:734.
3. Nealon W, Walser E. Duct dra in age alone is sufficient in operative management of pancreatic pseudo cyst with chronic pancreatitis. Ann Surg2003; 237:614.
4. Grace PA and Williams on RCN. Modern manage Ment of pancreatic pseudo cysts. Br J Surg 1993; 80: 573-581.

5. Imrie CW, Buist I J, Shearer NIC: Importance of cause in the outcome of pancreatic pseudo cysts. Am J Surg 1988; 156:159.

6. Nguyen BIT, Thompson JS, Edney JA, et al: In fluence of the etiology of pancreatitis on the natural history of pancreatic pseudocysts. Am J Surg1991; 162: 527.

7. Ephgrave K, Hunt JL: Presentation of pancreatic pseudo cysts: Implications for timing of surgical inter vention. Am J Surg 1986; 151: 749.

8. Mullins RJ, Malangoni MA, Ber Gamini TM, et al: Controversies in the management of pan creatic pseudo cysts. Am J Surg 1988; 155:165.

9. Vitas GJ, Sarr MG: Selected management of pan creatic pseudo - VJ cysts: Operative versus expectant management. Surgery1992; 111:123.

10. Heider R, Meyer AA, Galanko JA, Behrns KE: Percutaneous drainage of pancreatic pseudocysts is associated with a higher failure rate than surgical treat Ment in unselected patients. Ann Surg 1999; 229: 78 1.

11. Von Sonnen berg E, Witt ich GR, Casola G, et al: Percuta neous drain age of infected and non-infected pseudo cysts: Experience in 101 patients. Radiology 19 89; 170:757.

12. Grosso M, Gandini G, Cassin is MC, et al: Percutaneous treatment of 74 pan creatic pseudo cysts. Radiology 1989; 173: 493.

13. Adams DB, Harvey TS, Anderson MC, etal: Percuta neous catheterd rain age of infected pan creatic and peri pancreatic fluid collections. Arch Surg 1990; 125: 1554.

14. Yeo CJ, Bastid as JA, Lynch - Nyhan A, etal: The natural history of pancreatic pseudo cysts documented by computed Tomo graphy. Surg Gynecol Obstet 1990; 170: 411.

15. Adams DB, Zellner JL, Ander son MC: Arterial hemorrhage complicating pan creatic pseudo cyst: Role of Angio graphy. JSurgRes1993; 54:150.

16. Stabile BE, Wilson SE, Debas HT: Reduced mortality from bleeding pseudo cysts and pseudoaneury SMS caused by pancreatitis. Arch Surg 1983; 118: 45.

17. LiTiegang MD, Wang Nana & Zhao Min MM: AmericanJournalofEmergencyMedicine-2011: volume29, issue9; pages1238e1-1238e3.

18. Huizinga WKH, Kalidcen JM, Bryer JV, et al: Control of major hemorrhage associated with pancreatic pseudo cysts and pseudoaneurysms caused by pan creatitis. Br J Surg 1984; 71:133.

19. Steckman ML, Dooley MC, Jaques PF, etal: Major gastro intestinal hemorrhage from peripancreatic blood vessels in pancreatitis: Treatment byembol otherapy. Dig Dis Sci 1984; 29:486.

20. Balachandra S, Siriwardena AK: Systematic appraisal of the management of the major vascular com plications of pan creatitis. Am J Surg 2005; 190:489.

21. Bergert H, Dobrowolski F, Caffier S, et al: Preva lence and treatment in bleeding complications in chronic pancreatitis. Langen-becks Arch Surg2004; 389:504.

22. Aranha GV, Prinz RA, Greenlee HB, et al: Gastric outlet and duo Dena obstruction from inflammatory pan creatic disease. Arch Surg 1984; 119: 833. 61

23. Propper DJ, Robertson EM, Bayliss AP, etal: Ab dominal pancreatic pseudocyst: An unusual case of dys phagia. Postgrad Med J 1989; 65: 329.

24. Winton TL, Bir chard R, Nguyen KT, etal: Es ophageal obstruction secondary to mediastinal pan creatic pseudocyst. Can J Surg1986; 29: 376.

25. Woods CA, Foutch PG, Waring JP, et al: Pancreatic pseudo cyst as a cause for secondary achalasia. Gastro entero logy1989; 96:235.

26. Landreneau RJ, Johnson JA, Keenan RJ, et al: "Sponta neous" mediastinal pancreatic pseudo cyst fistua lization to the esophagus. Ann Thorac Surg 1994; 57: 208.

27. Mc Cor mick PA, Chronos N, Burroughs AK, et al: Pan creatic pseudocyst causing portal vein throm bosis and pan creatico – pleural fistula. Gut 1990; 31:561.

28. Lee FY, Wang YT, Poh SC: Congestive heart failure due to a pan creatic pseudocyst. Cleve Clin J Med 1994; 61:141.

29. Wars haw AL, Rattner DW: Facts and fallacies of common bile duct obstruction by pan creatic pseudo cysts. Ann Surg 1980; 193:33.

30. Lipsett PA, Cameron JL: Internal pan creatic, fistula. Am J Surg 1992; 163: 216.

31. Morgan, Katherine. A. MD, Adams, David B. MD, FACS: Current Surgical Therapy 2014; Pages 454 - 458.

32. Morgan DE, Baron TH, Smith JK, et al: Pancreatic fluid collections prior to intervention: Evaluation with MR imaging compared with CT and US. Radiology 1997; 203: 773.

33. Barishma MA, Yucel EK, Ferrucci JT: Magnetic resonance Chol Angio pancreas to graphy. N Engl Med 1999; 341: 258.

34. Duvnjak M, Duvnjak L, Dodig M, et al: Factors predictive of the healing of pancreatic: pseudo cysts treated by per cutaneous evacuation. Hepa to gastro enterology 1998; 45: 536.

35. Lehman GA: Pseudo cysts. Gastro in test Endosc 1999; 49: S81.

36. Newell KA, Liu T, Aranha GV, etal: cysto gastrostomy and cysto jejunosto my equivalent operations for pancreatic pseudocysts? Surgery 1990; 108: 635.

37. Usat off V, Brancatisano R, and Williams RCN. Operative treatment of pseudo cysts in patients with chronic pancreatitis. Br J Surg2000;87: 1494-1499.

38. Palanivelu. C, Senthil Kumar. K, Madhan Kumar. MV, Rajan. PS, Shetty. AR, Jani. K, Rangarajan. M, Mahesh Kumar. GS; Managament of pan creatic pseudo cyst in the era of laparoscopic surgery-Experience from a tertiary Centre; Surg Endosc. 2007 Dec; 21 (12): 22 62-7.

39. Kim Ko, Kim TN. Acute pancreatic pseudocyst; incidence, risk factors and clinical outcomes: Pan creas 2012; 41 (4);577.81.