

Pancreatic Pseudocyst: Report Case and Surgical Management

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Abstract

Case Report

The most frequent etiology of pancreatic pseudocyst is acute pancreatitis and exacerbations of chronic pancreatitis, presenting spontaneous resolution in 50% of the cases. Treatment is indicated in symptomatic or complicated persistent pseudocysts. The objective of this article is to present a case and management options of pancreatic pseudocyst defined as a tumor in the omental bursa.

Keywords: Pancreatic pseudocyst.

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INTRODUCTION

A pancreatic pseudocyst is a localized fluid collection, which is rich in amylase and other pancreatic enzymes, contains no solid material and is surrounded by a well-defined wall of fibrous tissue lacking an epithelial lining [1] 40% of patients with chronic pancreatitis and 15% patients with acute pancreatitis develop pancreatic pseudocysts [2]. The increase in the incidence rates of pancreatitis and the advancements made in radiological techniques have facilitated an increased number of diagnoses of pancreatic pseudocyst [3].

The advent of minimally invasive techniques has led to an increase in available treatment options, but the open surgical treatment still has some indications as infection, rupture, bleeding, and obstruction of adjacent structures [4]. Although pancreatic pseudocyst does not lead to malignancies as frequently as other types of pancreatic lesion, it is important to note that there is a

group of tumors with malignant potential, including serous cystadenomas (SCAs), mucinous cystic neoplasms (MCNs) and intraductal papillary mucinous neoplasms (IPMNs) [5].

The optimal method to manage pseudocyst and the best time and choice to administer invasive treatment over conservative treatment options remains under debate [6].

CASE REPORT

We describe the case of a 51year old man, with no previous injury, who presented chronic abdominal pain, nausea and vomiting and a long history of chronic pancreatitis. The CT-scan that revealed a pseudocyst with a well-defined wall which displays as a contrast enhancement measuring 60x53mm. We performed the pseudocyst resection and the pathology revealed a pancreatic pseudocyst.

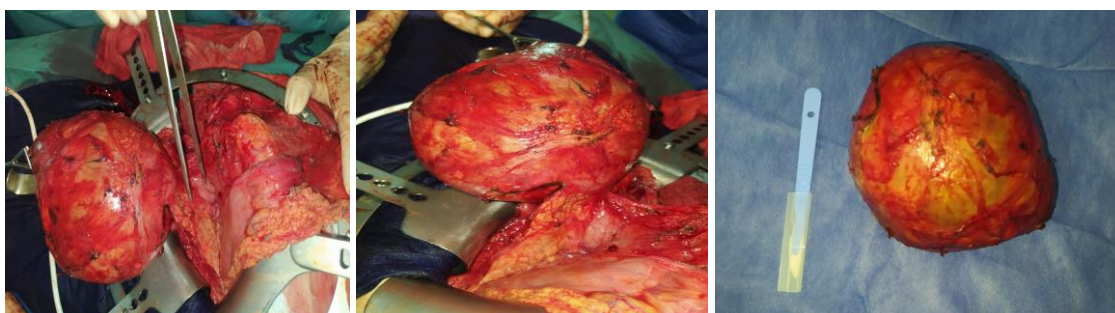


Figure 1 : intraoperative images of pancreatic pseudocyst

Diagnosis

The majority of pancreatic pseudocyst occur following pancreatitis, either acutely or chronically, which makes the history of pancreatitis of the patients crucial. The clinical presentation of patients with pancreatic pseudocyst varies from being asymptomatic to major abdominal catastrophe due to complications [7]. Pseudocysts symptoms are not specific, however, the most frequent symptom is abdominal pain (76-94%), nausea and vomiting (50%) and weight loss (20-51%). Occasionally, patients present with jaundice, fever and pleural effusion from complications of the pseudocysts or even sepsis from an infected pseudocyst [8].

Imaging modalities

Transabdominal ultrasonography (US) has become the most used diagnostic tool in evaluating pseudocysts; pseudocysts are reported to have an apparent anechoic structure with distal acoustic enhancement on US [9]. The pseudocyst will appear round or oval with a smooth wall and clear debris; however, under special conditions, such as hemorrhages or infected cysts, the phenotype of pseudocysts may appear more complex [9,10].

Color Doppler should be performed to ensure that the lesion is not a pseudoaneurysm. Due to its high operator dependence and its limitation of overlying bowel gas, the sensitivity range is 70-90%, making it less sensitive compared to CT, which has a sensitivity of 90-100% [11].

CT-scan: Pseudocysts exhibit fluid density (<15 Hounsfield Units), with a well-defined wall. The wall is smooth and symmetric but varies in appearance, either thin, which is barely perceptible or thick, which displays as a contrast enhancement [12]. It is possible to differentiate between a pseudocyst and walled-off necrosis by recognizing solid components and debris. CT scans also provide detailed information regarding the surrounding anatomy and they are able to highlight additional pathologies, including pancreatic duct dilatation and calcifications, common bile duct dilatation and the extent of the pseudocyst [13].

MRI and magnetic resonance cholangiopancreatography are the most sensitive and accurate diagnostic tools for pancreatic pseudocyst. MRI is also sensitive in detecting bleeding and complex fluid collections. Pseudocysts generally exhibit T1 hypointensity and T2 hyperintensity, hemorrhage or the accumulation of proteinaceous fluid, which may promote T1 hyperintensity. The two techniques are considered to be superior to CT scans in describing debris within the fluid collections [14].

Classification

Edigo and Schein classification is based on the underlying etiology of acute or chronic pancreatitis,

pancreatic duct anatomy and the presence of communication between the cyst and the pancreatic duct [15].

Type I: defined as an acute post-necrotic pseudocyst, which occurs after an episode of acute pancreatitis, and it is associated with normal duct anatomy and rarely communicates with the pancreatic duct.

Type II: post-necrotic pseudocyst, which occurs after an incidence of acute or chronic pancreatitis, exhibits signs of an abnormal pancreatic duct and frequently communicates with the pseudocyst.

Type III: retention pseudocyst, occurs during chronic pancreatitis, is associated with the pancreatic duct structure/obstruction and pseudocyst to duct communication is present.

In 2002, Nealon and Walser proposed a more simple classification based on the pancreatic duct anatomy from endoscopic retrograde cholangiopancreatography (ERCP), which is provided in Table 1 [15,16].

In 2015, using a large retrospective study of 893 patients with pancreatic pseudocyst, Pan *et al* proposed a new classification based on the anatomical location and clinical manifestation of the pseudocysts, along with the relationship between the cyst and the pancreatic duct (Table II) [17].

Treatment

Pancreatic pseudocysts show a variety of clinical presentations ranging from completely asymptomatic lesions to multiple pseudocysts with pancreatic and bile duct obstruction. The latter may require immediate endoscopic or surgical intervention to prevent secondary complications. The management of pseudocysts also depends on the aetiology [18].

Cystic pancreatic lesions, arising after an episode of acute pancreatitis, may resolve without treatment over a period of 4-6 weeks, whereas in chronic pancreatitis spontaneous pseudocyst resolution occurs rarely as maturation of the cyst wall is already complete [19].

Surgery

Despite recent developments in minimally invasive techniques and further progress in CT- and ultrasound- guided therapy, surgical drainage is still a principal method in the management of pancreatic pseudocysts. It traditionally includes internal and external drainage and excision [20].

A surgical approach can be indicated in patients with: a) complicated pseudocysts, i.e. infected and necrotic pseudocysts; b) pseudocysts associated with pancreatic duct stricture and a dilated pancreatic

duct; c) suspected cystic neoplasia; d) coexistence of pseudocysts and bile duct stenosis; and e) complications such as compression of the stomach or the duodenum, perforation and haemorrhage due to erosion of arteries or pseudoaneurysms [21].

pseudocysts can be treated without any delay under the assumption that maturation of the cyst wall has already taken place and can thus withstand sutures, whereas optimal timing in acute or traumatic pseudocysts is more difficult [22].

Timing of surgical intervention depends on maturation of the cyst wall. In chronic pancreatitis








A, Acute pancreatitis		
Type	Description	Illustration
I	Normal duct/no communication	
II	Normal duct/with communication	
III	Normal duct with stricture/no communication	
IV	Normal duct with stricture/with communication	
V	Normal duct/ complete obstruction	
B, Chronic pancreatitis		
Type	Description	Illustration
VI	Abnormal duct/no communication	
VII	Abnormal duct/with communication	

Figure 2: Nealon and Walser classification of pancreatic pseudocysts [14]

Table II. Classification of pancreatic pseudocyst.

Type	Description
I	<5 cm without symptoms, complications and neoplasia
II	Suspected for cystic neoplasia
III	Pseudocyst located in the pancreatic uncinata process
IIIa	Communication with pancreatic duct (+)
IIIb	Communication with pancreatic duct (-)
IV	Pseudocyst located in head, neck or body of pancreas
IVa	Communication with pancreatic duct (+)
IVb	Distance of cyst to gastrointestinal wall is <1 cm
IVc	Neither IVa nor IVb applies
V	Pseudocyst located in the pancreatic tail
Va	Splenic vein involvement or upper gastrointestinal bleeding
Vb	Distance from the cyst to gastrointestinal wall is <1 cm, without splenic vein involvement or upper gastrointestinal bleeding

Figure 3: classification of pancreatic pseudocyst [17]

Complicated pancreatic pseudocysts (one criterion sufficient)
<ul style="list-style-type: none"> ● Compression of large vessels (clinical symptoms or seen on CT scan) ● Gastric or duodenal outlet obstruction ● Stenosis of the common bile duct due to compression ● Infected pancreatic pseudocysts ● Haemorrhage into pancreatic pseudocyst ● Pancreatico-pleural fistula
<p>Symptomatic pancreatic pseudocyst</p> <ul style="list-style-type: none"> ● Satiety ● Nausea and vomiting ● Pain ● Upper gastrointestinal bleeding (10–20%)
<p>Asymptomatic pancreatic pseudocyst:</p> <ul style="list-style-type: none"> ● Pseudocysts >5 cm, unchanged in size and morphology for more than 6 weeks [2] ● Diameter >4 cm and extrapancreatic complications in patients with chronic alcoholic pancreatitis [40] ● Suspected malignancy: median 5-year survival rate after resection 56% [57]

Figure 4: complicated pancreatic pseudocysts [21]

Surgical internal drainage

Internal drainage is the method of choice for uncomplicated mature pseudocysts. Depending on the topographic anatomy, pseudocystogastrostomy is done for cysts directly adherent to the posterior wall of the stomach. Small (B/4 cm) pseudocysts in the head and the uncinate process of the pancreas are eligible for pseudocystoduodenostomy and pseudocystojejunostomy can be performed for all other cysts including extremely large (15 cm) cysts [24].

There is controversy as to whether pseudocystogastrostomy and pseudocystoduodenostomy are equivalent in their outcome: pseudocystogastrostomy has been reported to be simple, quick and less prone to infections, but tends to be associated with more frequent upper gastrointestinal bleedings [25]. Pseudocystojejunostomy seems to be more popular and results are somewhat better than for pseudocystogastrostomy [26].

Pseudocyst resection

Resection is an alternative procedure to internal drainage for chronic pseudocysts and indications include painful chronic pancreatitis, multiple cysts, gastrointestinal haemorrhage from pseudoaneurysm, common bile duct or duodenal obstruction and technical inability to drain pseudocysts located in the uncinate process [27]. Resection is performed by different operation methods including partial left-sided pancreatectomy preserving the spleen if possible, or by partial right-sided pancreatectomy (Whipple's procedure, pylorus-preserving pancreatoduodenectomy, Beger's operation or Frey's procedure) [28].

Laparoscopic surgery

Due to continuing progress in laparoscopic techniques minimally invasive surgery offers new modalities in the treatment of pancreatic pseudocysts. Although laparoscopic pseudocystogastrostomy and pseudocystojejunostomy result in adequate internal drainage and minimal morbidity, experience is limited and long-term outcome of relevant studies is awaited [29].

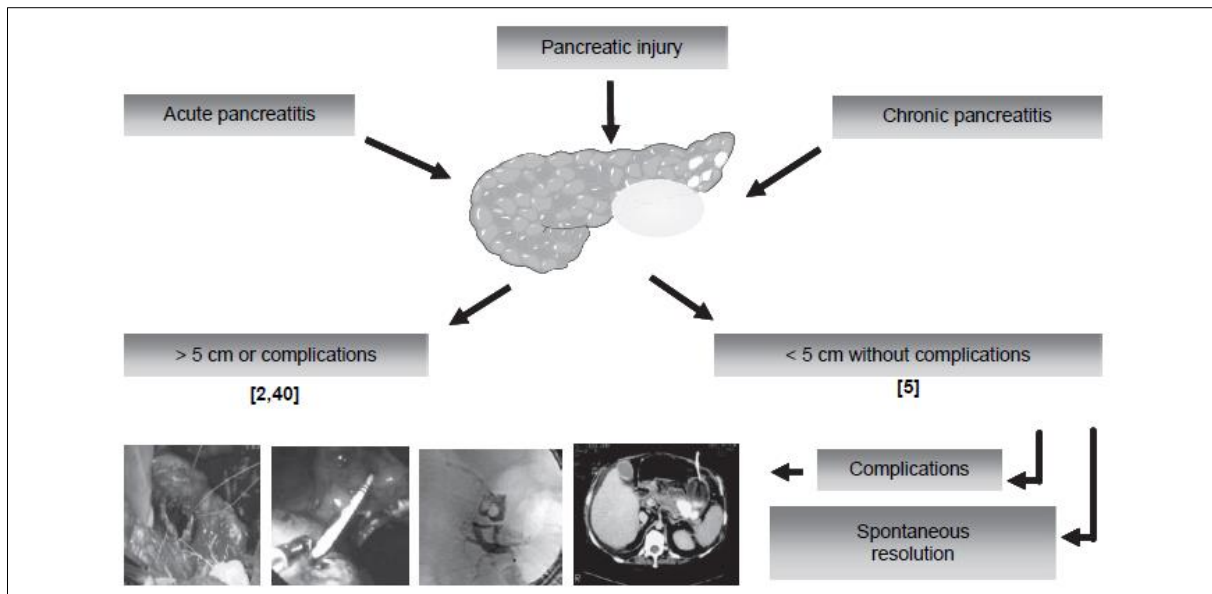


Figure 5 : Management of pancreatic pseudocyst [27, 28, 29]

CONCLUSION

- Pancreatic pseudocysts are a frequent complication of acute and chronic pancreatitis. Chronic pseudocysts over 8 weeks are less likely to resolve spontaneously and it has a high risk of complications.
- Exact classification of pseudocysts is important for the therapeutic strategy.
- 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.

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