



## Pancreatic Pseudocyst: A Surgical Dilemma

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### ABSTRACT

*Development of a pseudocyst of the pancreas after an attack of acute pancreatitis is a known phenomenon. The natural history of the pseudocyst is extremely variable ranging from complete resolution to the development of chronicity. Understanding the natural history of pseudo cysts is therefore pivotal in determining the best therapeutic option at each stage of the disease along the natural course of the disease. The paper outlines the various options at each successive stage of the disease process.*

**Key words:** Pancreas, pseudo cysts, management

### INTRODUCTION

Pseudocyst of pancreas is one of the commonest sequel of acute pancreatitis. <sup>[1]</sup> It is usually a collection of fluid in the lesser sac of peritoneum as well as in various other spaces of abdomen. The collection usually has a wall made up of

granulation tissue which differentiates it from acute fluid collections. The collection in the lesser sac attains a very large size causing variety of symptoms due to compression of the adjacent organs. <sup>[1]</sup> The volume of third space sequestration of fluid may at times be so enormous that it can

cause hemodynamic instability. Therefore by virtue of these complications, management of pancreatic pseudocyst poses a big challenge to the attending surgeon. Development of endoscopic techniques for management of pancreatic pseudo cysts has added to the confusion, thereby creating a therapeutic dilemma to the GI surgeons. Understanding the natural history of disease process is pivotal in optimizing the therapeutic option. [2] This paper discusses the application of various therapeutic options for various stages of disease process.

## **PATHOPHYSIOLOGY**

Pseudocyst is a huge collection of fluid usually in the lesser sac of peritoneum. It is devoid of epithelial lining and hence so called. However it is lined by a rim of granulation tissue. The fluid is a mixture of pancreatic enzymes and reactive peritoneal fluid. These collections are sterile to start with but may become infected during the course of disease process. These may be associated with pancreatic necrosis wherein chances of infection are very high. Therefore two types of presentation may develop. First is the pseudocyst without pancreatic necrosis and second is pseudocyst with pancreatic necrosis. [2,3] Pancreatic pseudocyst in either of these groups could get infected or develop life threatening hemorrhage necessitating prompt surgical intervention. [3] Various classification systems for pseudocyst have been described to define the boundaries of various stages during the natural course of disease process. [4,5] However experience

reveals that these classification systems have significant limitations in the therapeutic process. The only relevant issue is as to whether the cyst communicates with the pancreatic duct or not. [5] Meticulous clinical evaluation supported by laboratory investigations and contrast enhanced CT (CECT) holds the promise for making a valued therapeutic decision.

## **CHOICE OF PROCEDURE**

### **Acute Pseudocyst**

It usually develops anytime from the first week after a severe attack of acute pancreatitis. [1,6] It can be very large in size thereby causing compression of abdominal contents as well as cardio- respiratory embarrassment. Such patients are usually in a state of hemodynamic instability and extremely prone to development of metabolic and surgical complications. Endoscopic methods usually tempt the gastroenterologists to drain such a collections endoscopically, but the complications associated with this approach are many. [7,8,9] The most lethal of these complications is an uncontrolled bleeding which is extremely difficult to manage endoscopically. Should a bleeding episode develop following an endoscopic intervention, such a patient requires immediate surgical exploration. However exploration in a metabolically and hemodynamically unstable patient will not only cause an increase in morbidity but also cause a steep increase in the mortality too.

Majority of acute pancreatic pseudo cysts resolve with conservative treatment. [7] It is therefore best

to adopt a wait and watch policy for such patients. This allows close monitoring of response to aggressive supportive care eventually leading to a metabolically and hemodynamically stable patient.

Complications which could deter the continuation of conservative treatment are spontaneous bleeding and infection. Severe bleeding from splenic vessels or gastroduodenal vessels may cause torrential bleeding which in majority of cases is life threatening. Interventional radiology techniques may offer some help to such critically ill patients. However paucity of such expertise may limit the use of this option. Infection is a common complication developing in acute pancreatic pseudo cysts. Utmost care by way of administration of antibiotics usually belonging to the carbapenem group needs to be exercised. Despite availability of higher antibiotics few patients will still develop infection. The same group of patients usually develop pancreatic necrosis. Pancreatic necrosis usually is sterile to start with but it may get infected later. The septic complications in pancreatic pseudocyst are best diagnosed with combination of clinical evaluation, laboratory tests confirmed with CECT.

#### **Pseudocyst with Pancreatic Necrosis**

Pancreatic pseudocyst with sterile pancreatic necrosis requires conservative treatment initially with a close watch on the development of septic complications. However if septic complications supervene surgical drainage with necrosectomy is the only promising option.<sup>[10]</sup>

External drainage by pigtail catheter has been described.<sup>[11]</sup> But in majority of cases as the fluid is too thick in consistency, the catheter usually gets blocked with debris leading to failure of this method. There is usually a chance of development of an external pancreatic fistula. Hence any sort of interventional external drainage during this phase is bound to fail.

Open surgical drainage with accompanying necrosectomy is the best option with pancreatic pseudocyst with infected pancreatic necrosis.<sup>[10, 12]</sup> The collection is best accessed with great care through gastrocolic omentum thereby reducing the chances of gastric and colonic injury. The necrotic pieces of pancreas need to be manually removed without the use of a sharp instrument. A single session of necrosectomy with drainage may not always suffice as such patients may require multiple sessions of debridement and drainage. Creating a laparostomy is an excellent option in such patients. The other option is to keep multiple drains usually two from left and two from right side. This provides an excellent avenue for saline irrigation which not only clears the local septic focus but also smaller bits of necrotic pancreatic tissue. The tubes are kept in situ till the draining fluid is absolutely clear and devoid of necrotic debris supported by promising CECT findings.

#### **Chronic Pseudocyst**

In pancreatic pseudocyst without pancreatic necrosis there may be spontaneous resolution of fluid collection which comes as a great relief not only to the patient but also to attending surgeon.

<sup>[7]</sup> This is in conformity with the traditional

concept that 60% of pancreatic pseudo cysts that are less than 6 cm in size usually resolve by 6 weeks. However if pancreatic pseudocyst continues to remain beyond 6 weeks then chances of spontaneous resolution is very low. Such patients require meticulous follow up. Having ruled out all possible metabolic, infective and hemodynamic complications a CECT in such cases is of significant help as it will reveal site, number, nature and most important of all the thickness of the wall. Wall thickness of the pseudocyst is a major determinant of whether the pseudocyst will resolve spontaneously. Initially in an acute phase the wall comprised only of granulation tissue which may not be picked up as a distinct entity. But as the process of fibrosis increases the wall thickness increases and the pseudocyst wall becomes conspicuous on CECT images. Once this is visible radiologically the chances of spontaneous resolution is negligible. Such a pancreatic pseudocyst with a thick wall needs to be managed by surgical intervention only.<sup>[12]</sup>

Endoscopic and laparoscopic techniques have been suggested however both have technical limitations.<sup>[13,14]</sup> The endoscopic approach to cystogastrostomy is limited by its inability to prevent bleeding from pseudocyst wall. Another shortcoming of the endoscopic method is one cannot access pseudo cysts in other locations of peritoneal cavity. Laparoscopic approaches may be technically demanding in view of inflammatory adhesions. There are high chances of damage to the transverse colon which is usually pulled up

and adherent to the stomach, thereby limiting access via the gastrocolic omentum to the lesser sac. Creating an adequate cystogastrostomy is difficult laparoscopic ally thereby increasing chances of recurrence and hemorrhage. Hence the open surgical approach is the safest for managing chronic pancreatic pseudocyst. The trans gastric approach to perform cystogastrostomy is therefore the mainstay in surgical options.<sup>[15]</sup> Continuous under-running of cut edges with a strong suture material reduces chances of life threatening hemorrhage. Open surgical approach also provides an excellent approach to rigorous irrigation and thorough evaluation of the peritoneal cavity for any other cystic lesion.

## CONCLUSION

Aggressive interventional treatment of pancreatic pseudocyst in an acute phase may be detrimental with disastrous outcomes.

A conservative wait and watch policy is best suited for acute pancreatic pseudocyst as majority of these resolve spontaneously.

Pancreatic pseudocyst which persists beyond 6 weeks and which develops a thick wall determined radiologically needs surgical intervention.

Open surgical cystogastrostomy still continues to be the most promising surgical procedure for chronic pseudocyst of pancreas.

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