

Case Series

Cystoductojejunostomy for pseudocyst associated with chronic pancreatitis

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ABSTRACT

Pseudocyst is frequently associated with chronic pancreatitis (CP). We describe our experience of managing seven patients for pseudocyst associated with CP by bile duct preserving pancreatic head resection (BDPPHR) and cystoductojejunostomy. 88 patients were operated on for chronic pancreatitis between April 2021 till May 2023 out of which 7 patients underwent BDPPHR and cystoductojejunostomy for pseudocyst associated with CP. Key steps of surgery include meticulous dissection with exposure of the pancreatic head to tail, head excision up to the posterior capsule with laying open of the pancreatic duct till the tail and reconstruction incorporating pancreatic duct (PD) and pseudocyst to a single loop of jejunum. All seven patients were successfully treated with BDPPHR and cystoductojejunostomy. Mean operative time and mean blood loss was 478 minutes and 450 ml respectively. Mean hospital stay was 4.5 days. On follow-up at a one-year minimum, all patients had complete pain relief. In patients with pseudocyst associated with CP, surgery preferably needs to address both the pseudocyst and the underlying chronic pancreatitis to improve the quality of life. A combined anastomosis to the PD and cyst may be termed as cystoductojejunostomy.

Keywords: Chronic pancreatitis, Pancreatic duct, Pancreatic head resection, Pseudocyst

INTRODUCTION

Chronic pancreatitis (CP) is characterized by progressive inflammatory changes leading to fibrosis and structural changes in the pancreas with exocrine and endocrine insufficiency. Pain abdomen is the most common and debilitating symptom of chronic pancreatitis. The ongoing inflammation can lead to duct disruption or obstruction of main or branch pancreatic ducts causing localised fluid collection surrounded by wall of fibrous tissue.¹ Pseudocyst is frequently associated with chronic pancreatitis with incidence between 20-40%.^{2,3} Pseudocyst associated with chronic pancreatitis rarely

resolve spontaneously and requires intervention.^{4,5} Management of chronic pancreatitis with pseudocyst should address surgical intervention for chronic pancreatitis and decompress the pseudocyst. Although some investigators propose that a decompression of the main pancreatic duct may decompress the cyst as well, this may not be the case in a significant proportion because of the lack of ducto-cystic communication. Bile duct preserving pancreatic head resection (BDPPHR) as described by the authors in a previous paper defines the extent of head resection and the addition of "cystoductojejunostomy" for pseudocyst decompression is the proposed surgical technique for pseudocyst

associated with CP.⁶ We describe our experience of managing seven patients in the last two years for pseudocysts associated with CP by BDPPHR and cystoductojejunostomy.

CASE SERIES

88 patients were operated on for chronic pancreatitis between April 2021 till May 2023 out of which 7 patients underwent bile duct preserving pancreatic head resection (BDPPHR) and cystoductojejunostomy for pseudocyst associated with chronic pancreatitis. All patients underwent routine blood investigations and a contrast-enhanced computed tomography (CECT) of the abdomen. On imaging, patients who had pseudocyst associated with chronic pancreatitis were identified and planned for cystoductojejunostomy. Abdomen is opened with a rooftop incision and self-retaining abdominal retractors are placed. The steps for bile duct preserving pancreatic head resection have been previously described.⁶

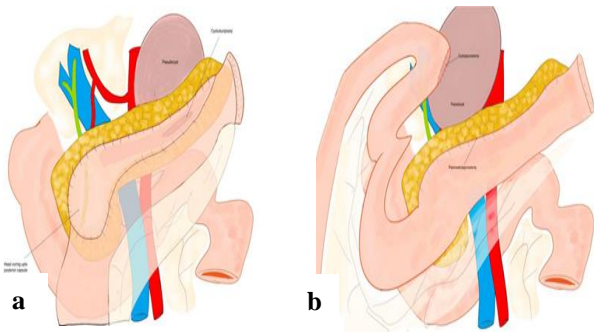


Figure 1 (a and b): Bile duct preserving pancreatic head resection and cystoductojejunostomy for pseudocyst in communication with main pancreatic duct, bile duct preserving pancreatic head resection and cystoductojejunostomy for pseudocyst which is not in communication with main pancreatic duct.

Cystoductojejunostomy entails identifying the pseudocyst, laying open the pseudocyst and the body and tail duct and inclusion of the pseudocyst wall in the anastomosis with the roux limb of jejunum as shown in the Figure 1 (a & b) depending on the location of the pseudocyst. Pseudocysts in the head of pancreas will be decompressed during head coring as shown in Figure 2 (a) and cyst wall is included in the anastomosis. Pseudocysts which were not in communication with the main pancreatic duct were decompressed and the cyst wall was anastomosed with the roux limb of jejunum as shown in Figure 1 (b) with two separate enterotomies.

All 7 patients were males. 5/7 patients had history of alcohol consumption and in the remaining, the etiology

was idiopathic. 2/7 patients had history of previous surgery (cystogastrostomy and cystojejunostomy) for pseudocyst pancreas. Three patients had collaterals and splenomesenteric thrombosis. One patient required Roux en Y hepaticojejunostomy in addition to the cystoductojejunostomy. Three patients had exocrine insufficiency prior to surgery however on follow up all 7 patients did not have exocrine insufficiency. Two patients had diabetes mellitus prior to surgery and one patient continued to have diabetes mellitus during follow-up and the remaining were normoglycemic.

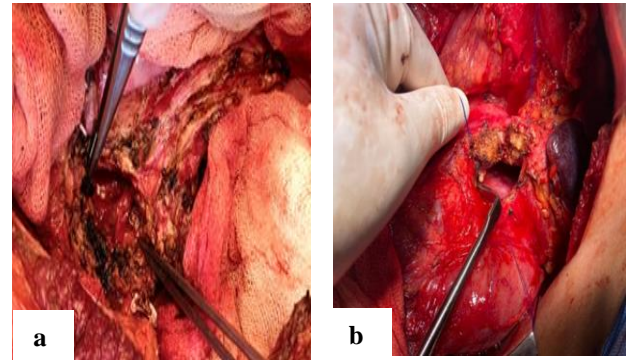


Figure 2 (a and b): Pseudocyst noted in the head of pancreas which is in communication with main pancreatic duct, pseudocyst in the tail of pancreas with calculus (white arrow head) projecting into the lumen of cyst.

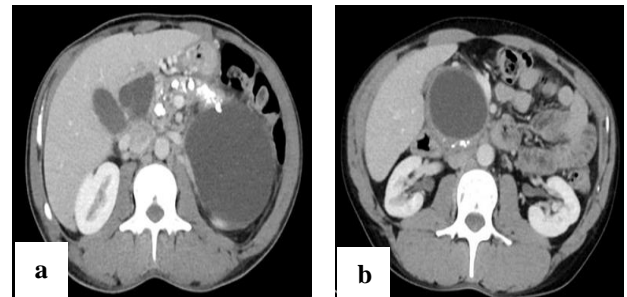


Figure 3 (a and b): Computed tomography image acquired in portal phase showing intraductal and parenchymal calcifications, computed tomography showing pseudocyst in the head and uncinate process pancreas of size 5.7×5.5×5 cm with intraparenchymal calcifications.

The mean operative time was 478 minutes and the mean blood loss was 450 ml. Oral diet started on the first postoperative day in all patients. Abdominal drain was removed within postoperative day three in all patients. The mean hospital stay was 4.5 days. All patients who underwent BDPPHR and cystoductojejunostomy had relief of pain at a minimum of one year follow up.

Table 1: The preoperative features of patients with chronic pancreatitis and pseudocyst.

Patient no.	Age (years)	Duration of pain (months)	Exocrine insufficiency prior to surgery	Endocrine insufficiency prior to surgery	Location of the pseudocyst
1	37	30	No	No	Head and tail of pancreas
2	29	12	Yes	No	Lesser sac
3	39	72	Yes	Yes	Head of pancreas
4	56	4	No	No	Lesser sac
5	39	12	No	Yes	Tail of pancreas
6	41	60	No	No	Head of pancreas
7	24	60	Yes	No	Head of pancreas

DISCUSSION

Pseudocyst formation is one of the most common complications of chronic pancreatitis.⁷ Pseudocyst associated with chronic pancreatitis is more common in alcohol induced chronic pancreatitis.⁸ The clinical presentation of pseudocysts associated with chronic pancreatitis may be varied. Pain is the most common symptom of chronic pancreatitis and pseudocyst. Pseudocysts can cause gastric outlet obstruction, biliary obstruction or venous thrombosis due to compression. They can also present with acute complications like hemorrhage due to pseudoaneurysm rupture and infection.⁹ All our patients had history of pain abdomen and Visual Analog Score (VAS) was used to objectively assess the pain. Most of our patients had VAS score ranging from 7-9 with a significant reduction in pain noted after surgery. The location of pseudocyst associated with chronic pancreatitis is in the pancreatic head in 34.4-67.6% cases.⁷

There are various methods described for pseudocyst drainage via percutaneous drainage, endoscopic drainage or surgical drainage and no clear conclusions were made regarding the best practice for pseudocyst drainage.¹⁰ Pseudocysts due to chronic pancreatitis rarely resolve spontaneously and will require surgical intervention. In non-resolved pseudocysts associated with chronic pancreatitis, the presence of ductal stones and strictures will mitigate the chances of relief with endoscopic interventions alone and hence there is need for surgical drainage in most. Long-term results with follow-up of 10 years after cystojejunostomy alone have pain relief in only 31%.¹¹ There is an increased risk of recurrence even after initial surgical drainage of the pseudocyst during long-term follow-up as was noted in two of our patients who had undergone surgical drainage of pseudocyst earlier. Most of the pseudocysts will have a demonstrable communication with the pancreatic duct which will be persistent however inflammation and fibrosis can seal off the communication in upto one-third of cases.⁹ Munn et al published their experience in treating 26 patients who underwent combined drainage of pancreatic duct and pseudocyst and found it to be safe and effective.¹² In their series they have incorporated the pseudocyst into the

Roux en Y loop which was used for lateral pancreatojejunostomy.¹² Schlosser et al have performed duodenum preserving pancreatic head resection with additional pseudocyst-jejunostomy in 3 patients out of the 169 patients who underwent operations for chronic pancreatitis.¹³ They concluded that pancreatic head resection is a preferable surgical option for patients with pseudocysts in complicated chronic pancreatitis with morphological alterations in the head of the pancreas. The results of the ESCAPE trial reiterate the importance of early surgical intervention for pain relief in chronic pancreatitis.¹⁴ Optimum treatment of non-resolved pseudocysts with CP demands surgical intervention to address both pseudocyst and CP simultaneously.

CONCLUSION

In patients with pseudocyst associated with chronic pancreatitis, operation preferably needs to address both the pseudocyst and the underlying chronic pancreatitis to improve the quality of life. We propose BDPHR and cystoductojejunostomy in patients with pseudocyst associated with CP. A combined anastomosis of the pancreatic duct and cyst may be termed as cystoductojejunostomy for recording and auditing.

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