Archives of Clinical & Experimental Surgery

Case Report
Arch Clin Exp Surg 2015;4:103-106
doi:10.5455/aces.20131026015742

# Novel technique in the management of obstructive jaundice caused by pancreatic pseudocyst

Gautham Krishnamurthy, Venkatesh Gottumukala, A Rajendran, P Darwin

**ABSTRACT**

Pancreatic pseudocysts are a well-known complication of acute and chronic pancreatitis. The presenting feature of these can be of the pseudocyst per se or due to their complication. Obstructive jaundice caused by a pancreatic pseudocyst has been attributed to various reasons, the most common being an intrapancreatic stricture of the common bile duct. We present a case of a 32-year-old male with a pseudocyst of the pancreas complicated by obstructive jaundice. He was treated by performing choledocho-pseudocystostomy and cystoduodenostomy. The patient made an uneventful recovery. The method adopted provided adequate internal drainage of the pseudocyst content and bile. To our knowledge this is the first time that such an anastomosis is being reported in English literature.

***Key words:*** *Choledocho-pseudocystostomy, obstructive jaundice, pancreatic pseudocyst*

## Introduction

Pancreatic pseudocysts are cystic pancreatic lesions borne as a complication of acute or chronic pancreatitis [1]. In contrast to the true cysts arising from the pancreas which are lined by epithelium, pseudocysts are lined by granulation tissue. The incidence of pseudocysts ranges from 1.6% to 4.5% among the population [2]. Obstructive jaundice is a recognized but rare complication of pancreatic pseudocysts and various modalities of treatment have been described in English literature [1]. Here we present a case of obstructive jaundice complicating a pancreatic pseudocyst treated by a novel technique.

## Case Report

A 32-year-old male was admitted with complaints of upper abdominal pain and jaundice of 3 months duration. A history of a passage of clay-colored stools and high-colored urine was present. The patient gave a history of acute abdominal pain following a binge of alcohol 6 months ago which was managed conservatively. On examination he was icteric and pruritic marks were present all over the body. Abdominal examination revealed an epigastric mass of size 7 x 6 cm, which was firm in consistency, had the upper border not made out, and which did not move with respiration. The liver was enlarged and palpable 3 cm below the right costal

***Author affiliations*** : *Department of General Surgery, Government Stanley Medical College and Hospital, Chennai, India*
***Correspondence*** : *Gautham Krishnamurthy, MD, Department of General Surgery, Government Stanley Medical College and Hospital, Chennai, India*
*e-mail: k.gautham@gmail.com*
***Received / Accepted*** : *October 12, 2013 / October 26, 2013*

margin. Per rectal examination confirmed clay-colored stools. A clinical diagnosis of the pancreatic mass was made — probably a pseudocyst pancreas. Blood investigations including a complete hemogram and renal function test were normal. A raised plasma glucose level was noted and a status of diabetes mellitus was confirmed by serial plasma glucose monitoring. A liver function test showed elevated serum bilirubin of 16 mg/dL (normal < 1 mg/dL), the direct component being 14 mg/dL (< 0.8 mg/dL), and serum alkaline phosphatase was 206 IU/L (normal value 20–140 IU/L). CA 19-9 was within normal limits (less than 10 IU/mL). An ultrasonogram (USG) of the abdomen showed a 8*7cm hypoechoic lesion arising from the head of the pancreas with dilatation of the intrahepatic and extrahepatic biliary tree. The common bile duct (CBD) measured 1.1 cm in diameter. Cholelithiasis was also seen. A magnetic resonance cholangiopancreatogram (MRCP) and contrast-enhanced computed tomography (CECT) confirmed the USG findings of a pseudocyst arising from the head of the pancreas compressing the distal CBD, causing dilatation of biliary radicles (Figure 1). CECT showed additional features of chronic calcific pancreatitis involving the body and tail of the pancreas. Upper gastrointestinal endoscopy showed normal gastric and duodenal mucosa with extraneous compression of the antropyloric region of the stomach and duodenum. The patient was started on insulin for his diabetic status. After optimizing the general condition of the patient and achieving glycemic control, he was taken up for surgery. Intraoperative findings concurred with the imaging studies. In view of the proximity of the cyst to the duodenum, cystoduodenostomy was done. Cholecystectomy was done and an intraoperative cholangiogram performed via the cystic duct showed a stricture in the terminal common bile duct. A choledocho-pseudocystostomy was performed for biliary drainage (Figure 2). The rationale behind the procedure was to provide an internal biliary drainage avoiding a choledochojejunostomy in view of the fact that the patient may require a jejunal loop for the treatment of chronic pancreatitis in the future. The post-operative period was uneventful, with the patient becoming clinically anicteric after 10 days and biochemical parameters normalizing after 25 days. Histopathological examination of the cyst wall was negative for malignancy. The patient has been on follow-up for 8 months with no specific complaints. Follow-up USG showed no residual pseudocyst and a normal intra- and extrahepatic biliary tree.

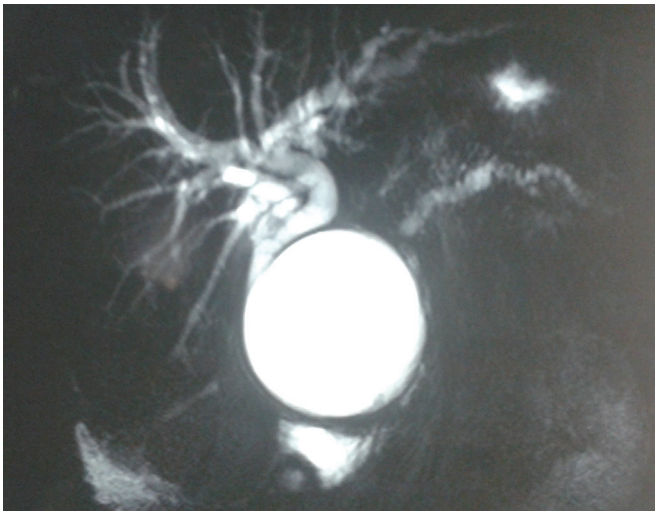

**Figure 1.** Magnetic Resonance Cholangiopancreatogram (MRCP) showing Pancreatic pseudocyst arising from the head of pancreas and the dilated intra and extra hepatic biliary radicals.

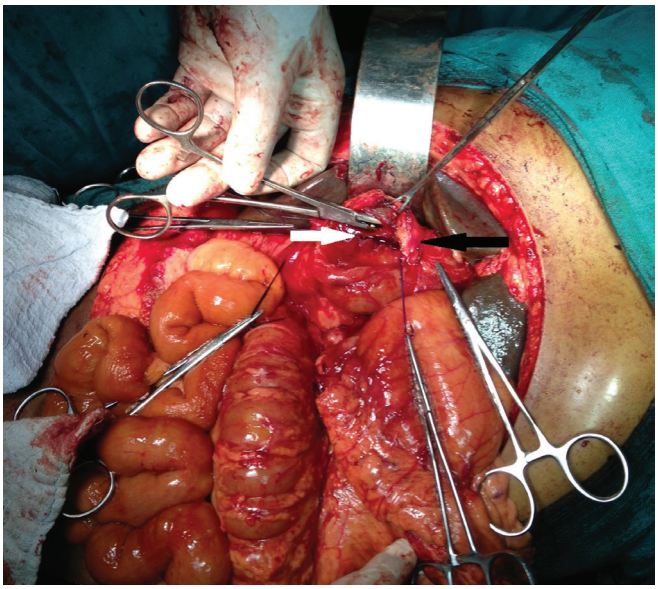

**Figure 2.** Operative image showing the choledocho-pseudocystostomy between the thick walled pseudocyst(black arrow) and common bile duct (white arrow)).

**Discussion**

A pseudocyst of the pancreas is a localized fluid collection that is rich in amylase and other pancreatic enzymes and is surrounded by a wall of fibrous tissue that is not lined by epithelium [3]. Prevalence of pseudocysts following acute pancreatitis ranges from 6% to 18.5%, whereas in chronic pancreatitis it is estimated around 20% to 40% [2]. The occurrence of pseudo-

cysts parallels that of pancreatitis, and the etiology of pseudocysts resembles the causes of pancreatitis closely. Pseudocyst formation is more common after ethanol-related pancreatitis than non-alcohol-related pancreatitis [1]. Various classifications of the pseudocyst exist based on the etiology and anatomy. The most commonly used classification was proposed by Nealon and Walser based on the anatomy of the pseudocyst and provides guidance in individualizing the treatment modality [4]. The pathogenesis of pseudocysts stems from the extravasation of pancreatic secretions due to pancreatic ductal or parenchymal injury following inflammation.

Clinical presentation of a pancreatic pseudocyst is variable. Apart from asymptomatic presentation, the patients can present with acute complications like bleeding, infection and rupture, or with chronic complications in the form of gastric outlet obstruction, biliary tract obstruction and splenic vein thrombosis [3].

Though exact figures are not known, the incidence of jaundice in pancreatic pseudocysts is estimated around 15–25%. While hepatic dysfunction caused by the primary etiological factor results in a hepatocellular variant of jaundice, obstructive jaundice is most commonly caused by a fibrotic stricture of the intrapancreatic part of the common bile duct. Other potential causes of obstruction include choledocholithiasis and constriction of the bile duct by edema [5].

In a study conducted by Weaver et al. in 1987, 256 patients treated for pancreatic pseudocysts were analyzed. Of the 26 who had jaundice, 16 had hepatocellular dysfunction and 10 patients had extrahepatic biliary obstruction [6].

In fact, obstructive jaundice caused by direct compression of the pseudocyst is such a rare entity that there should always be a thorough evaluation of the biliary tree after decompression of the pseudocyst to rule out distal common bile duct stricture [5]. Sidel et al. laid down criteria to identify a pancreatic pseudocyst causing direct compression of the biliary tree [7]. Recognition of this factor is necessary as that biliary drainage would not be complete without a bilioenteric bypass in the presence of a terminal bile duct stricture.

Given the proximity of the pancreatic pseudocyst to the duodenum in all the cases of obstructive jaundice, cystoduodenostomy was the most frequently used surgical procedure to drain the pseudocyst by Weaver et al. [6].

In our patient, after decompression of the pseudocyst, we could not achieve free flow of bile. This was confirmed by an intraoperative cholangiogram which revealed a terminal common bile duct stricture. We performed choledocho-pseudocystostomy to decompress the biliary tree. The success of decompression was evidenced by the post-operative drop in serum bilirubin value and normalization of biliary tree dilatation. The decision was based on the fact that the pseudocyst was mature, thick-walled and uninfected. By avoiding a choledochojejunostomy, as is done usually, the jejunum was left untouched for its probable need in the future for the treatment of chronic pancreatitis.

The possible complications anticipated were ascending cholangitis and bile leak. In 1989, Thompson et al. reported uncomplicated recovery of a patient treated by cystocholedochostomy, performed with the intention of draining the pseudocyst into the common bile duct [8]. The ability of the pseudocyst to withstand bile has not been described elsewhere. In our extensive search of English medical literature we could not find a case report of choledocho-pseudocystostomy.

**Conclusion**

A pancreatic pseudocyst has a myriad of clinical presentation. Obstructive jaundice is a known complication of pancreatic pseudocysts. Thorough evaluation of the cause of the obstruction is necessary for definitive management. An intraoperative cholangiogram is essential to tailor the treatment. The most common cause of obstructive jaundice is a terminal common bile duct stricture which is usually treated by a bilio-enteric anastomosis. We report a case of obstructive jaundice complicating a pancreatic pseudocyst treated by cystoduodenostomy and choledocho-pseudocystostomy. The patient on 8 months follow-up is asymptomatic, with a serial ultrasonogram showing complete resolution of obstruction. To our knowledge, this is the first case report of choledocho-pseudocystostomy.

**Conflict of interest statement**

The authors have no conflicts of interest to declare.

**Acknowledgements**

The authors would like to thank Prof. S. Jeswanth and Dr. Ashwin Rammohan for their valuable comments.

**References**

1. Aghdassi AA, Mayerle J, Kraft M, Sielenkämper AW, Heidecke CD, Lerch MM. Pancreatic pseudocysts-when and how to treat? HPB (Oxford) 2006;8:432-41.
2. Khanna AK, Tiwary SK, Kumar P. Pancreatic pseudocyst: therapeutic dilemma. Int J Inflam 2012;2012:279476.
3. Habashi S, Draganov PV. Pancreatic pseudocyst. World J Gastroenterol 2009;15:38-47.
4. Nealon WH, Walser E. Main pancreatic ductal anatomy can direct choice of modality for treating pancreatic pseudocysts (surgery versus percutaneous drainage). Ann Surg 2002;235:751-8.
5. Warshaw AL, Rattner DW. Facts and fallacies of common bile duct obstruction by pancreatic pseudocysts. Ann Surg 1980;192:33-7.
6. Weaver DW, Bouwman DL, van den Berg PM, Sugawa C, Walt AJ. Biliary tract obstruction caused by pancreatic pseudocysts: treatment and outcome. Dig Surg 1987;4:133–6.
7. Sidel VW, Wilson RE, Shipp JC. Pseudocyst formation in chronic pancreatitis; a cause of obstructive jaundice. AMA Arch Surg 1958;77:933-7.
8. Thompson NW, Demers ML, Lundy E. Pancreatic cystocholedochostomy. First report of a case. Arch Surg 1989;124:1343-6.