Acute obstructive suppurative pancreatic ductitis (AOSPD) with duodenal obstruction treated by pancreaticoduodenectomy (PD): a rare case report

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Abstract
We report a rare case of acute obstructive suppurative pancreatic ductitis (AOSPD) accompanied by duodenal obstruction in a patient with chronic pancreatitis (CP). A woman in her 40s was admitted to our hospital for intermittent abdominal distension, epigastric pain, and vomiting, which worsened during the previous 6 months. Gastroscopy showed incomplete pyloric obstruction, and computed tomography (CT) revealed calcification in the enlarged head of the pancreas, dilation of the main pancreatic duct (MPD), and thickening of both the gastric antrum and duodenal walls. The patient was preoperatively diagnosed as having an inflamed head of the pancreas, with a stone, and duodenal obstruction. Pancreaticoduodenectomy (PD) was performed to resolve the duodenal obstruction and remove the pancreatic stone. While transecting the neck of the pancreas, frank pus began to flow from the MPD, and the pus was drained and collected. Bacterial culture of the purulent pancreatic juice revealed the presence of Escherichia coli, confirming AOSPD. The patient’s symptoms were relieved, and she recovered fully, after the surgery. In conclusion, AOSPD associated with duodenal obstruction can be treated successfully by PD.
Introduction

Acute obstructive suppurative pancreatic ductitis (AOSPD) was first described in 1995 as a rare condition characterized by suppuration of the pancreatic duct in the absence of a concurrent pancreatic cyst, abscess, or necrosis.\(^1\) Most reported cases of AOSPD occurred in patients with chronic pancreatitis (CP); however, this condition has also been found in patients with pancreatic cancer and intraductal papillary mucinous neoplasm.\(^1\)–\(^7\) In a recent literature research of PubMed, no case of AOSPD associated with duodenal obstruction has been reported. We present a unique case in a CP patient in which we discuss the clinical presentation, imaging and laboratory findings, and treatment.

Case report

A woman in her early 40s was admitted to our hospital with intermittent abdominal distension, epigastric pain, and vomiting, which had gradually worsened during the previous approximately 6 months. During the disease, she suffered a weight loss of 8 kg. Her vital signs were normal on presentation, and she had no history of diabetes mellitus. On admission, gastroscopy showed incomplete pyloric obstruction (the endoscope could not pass through to enter the narrow lumen of the duodenum) (Figure 1), which was later confirmed by an iodinated contrast examination.

Abdominal enhanced computed tomography (CT) revealed an enlarged head of the pancreas with a large calculus, dilated main pancreatic duct (MPD), and thickening of the gastric antrum and the duodenal walls (Figure 2). Magnetic resonance cholangiopancreatography (MRCP) confirmed that the MPD was dilated along its entire length, which is usually seen with an inflamed pancreas. These two radiological findings of the pancreas, combined with the duration of the patient’s symptoms, strongly suggested that the patient was suffering from CP with a large pancreatic stone.

Blood examinations showed normal levels of white blood cells (WBCs; \(7.59 \times 10^9/L\); reference range, 4.5–10.0 \(\times 10^9/L\)) and a slight decrease in the levels of red blood cells (RBCs; \(3.60 \times 10^{12}/L\); reference range, 3.9–5.2) and albumin (36.10 g/L; reference range, 40–55 g/L). Serum amylase and serum lipase concentrations were within normal reference ranges at 73.0 U/L (reference range, 23–85 U/L) and 141.0 U/L (reference range, 0–160 U/L), respectively.

Figure 1. Gastroscopy showing incomplete pyloric obstruction.
The levels of immunoglobulin G (IgG), C-reactive protein, liver function markers, and tumor markers (i.e., carcinoembryonic antigen (CEA) and carbohydrate antigen (CA)19-9) were within the normal reference ranges.

Because the patient had an obstructed duodenum and an enlarged and inflamed head of the pancreas with a large stone, PD was chosen as treatment. Intraoperatively, we found that both the gastric antrum and the duodenal walls had massive adhesions to the head of the pancreas. While transecting the neck of the pancreas, frank pus was seen pouring from the dilated MPD, which was drained, collected, and sent for bacterial culture (Figure 3).

The postoperative pathological report stated “chronic pancreatitis” and that the interstitium of the head of the pancreas was infiltrated by numerous plasma cells, with the presence of granulomas and fibrosis. The purulent pancreatic duct fluid bacterial culture was positive for *Escherichia coli*, confirming the diagnosis of AOSPD. The patient recovered smoothly after surgery and was discharged under observation after 19 days, with anti-inflammatory medications. Follow-up after 6 months showed that she had regained her normal body weight, and her RBCs and albumin levels had returned to normal levels.

The reporting of this study conforms to the CARE guidelines. All identifying information has been removed. The patient provided written consent for treatment.

**Discussion**

AOSPD can manifest in various ways and with varying degrees of severity. Although our case included vomiting and epigastric pain, which are the two most typical symptoms found in AOSPD cases, our case is the first to be associated with duodenal obstruction. The obstruction was due to the formation of fibrosis from the chronically inflamed head of the pancreas and involved the gastric antrum and the duodenal walls, which was confirmed both during
surgery and later by the pathological report.

The etiologies of AOSPD are unclear; however, Kondo et al. concluded that the main etiology of AOSPD involves CP. The postoperative pathological report confirmed that our case also involved CP. A diagnosis of AOSPD was made on positive culture of *Escherichia coli* from the purulent pancreatic duct fluid drained from the MPD. The possible explanation underlying this condition in our patient was the presence of a 20-mm stone in the MPD in the head of the pancreas. The stone obstructed the MPD, resulting in dilatation of the duct and pancreatic juice stasis. This setting promoted duodenal contents and bacteria to reflux into the MPD. Additionally, with CP, the pancreas may be more susceptible to infection owing to impairment of antibacterial agents compared with normal pancreatic secretions. These factors combine to encourage bacterial growth and proliferation, resulting in acute suppuration of the MPD. Furthermore, in our case, pathology showed that there was granulation and inflammation in the tissues surrounding the pancreatic head. The duodenal wall was thickened, most likely owing to either or both of the following factors. First, chronic inflammation owing to pancreatitis can cause granulation in both the pancreas and the surrounding areas. Second, there was suppurative infection, which also affected the surrounding tissues. Therefore, fibrosis and edema were factors contributing to the thickened duodenal wall.

AOSPD can be managed using different drainage methods. Endoscopic retrograde cholangiopancreatography (ERCP) drainage with or without appropriate antibiotic administration can be used. While ERCP has several benefits, it also has some disadvantages. The advantages are that ERCP is minimally invasive, helps relieve the pancreatic duct pressure, and enables the placement of a stent to facilitate drainage and clear any obstruction. In contrast, the disadvantages are that the stent can become obstructed, which results in inadequate drainage, the stent can become dislodged and move from its initial position, and stents can sometimes induce reflux infection. In contrast, Cahen et al. considered that surgical drainage is more effective for treating pancreatic duct obstruction owing to CP compared with endoscopic drainage. Additionally, Gedam et al. reported a case of CP with AOSPD treated with longitudinal pancreaticojejunostomy with Roux-en-Y jejunojejunostomy, with good outcomes. Even though undergoing major surgery may result in marked trauma, we opted to perform pancreateoduodenectomy (PD) for our patient. This procedure achieved good results by decompressing, draining, and resolving the obstruction in the MPD and helped resolve the duodenal obstruction to relieve our patient’s symptoms.

Future studies of AOSPD can help us understand its pathogenesis and various manifestations. After obtaining good results with this patient, we concluded that AOSPD associated with duodenal obstruction could be successfully treated by PD.

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**Author contributions**

All authors participated in the surgery to treat the patient and in drafting and revising the manuscript.

**Data availability**

No dataset was generated for this study.

**Declaration of conflicting interest**

The authors declare that there is no conflict of interest.
Ethics approval and consent
This manuscript has been reviewed and approved by the ethics committee of Nanjing First Hospital, Nanjing Medical University.

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