

Journal of Interventional Gastroenterology

Successful diagnosis and management of recurrent biliary colic caused by pancreaticojejunostomy stent migration after Whipple procedure.

--Manuscript Draft--

Manuscript Number:	JIG-D-12-00019R1
Full Title:	Successful diagnosis and management of recurrent biliary colic caused by pancreaticojejunostomy stent migration after Whipple procedure.
Article Type:	Case Report
Section/Category:	Clinical Section
Keywords:	Pancreatic duct migration; Recurrent biliary colic
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Successful diagnosis and management of recurrent biliary colic caused by pancreaticojejunostomy stent migration after Whipple procedure.

Running title:

Post Whipple procedure pancreatic duct stent migration

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Conflict of Interest: None

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Abstract:

Pancreatic duct stents placement during Whipple procedure considered a common and relatively safe practice to maintain the patency of pancreatico-enteric anastomosis and to prevent complications (i.e. failure of anastomosis and leakage). However, pancreatic duct stent placement has its own potential complication, i.e. retained stents or migration into the biliary system.

Keywords:

→ Pancreatic duct migration

→ Recurrent biliary colic

Introduction:

Pancreatic duct stent placement during Whipple procedure considered a common and relatively safe practice to maintain the patency of pancreatico-enteric anastomosis and to prevent complications (i.e. failure of anastomosis and leakage). However, these stents have their own potential complication, i.e. retained stents or migration into the biliary system (as in our patient).

Case:

A 52-year-old Caucasian female was referred to our facility for recurrent episodes of post-prandial right upper quadrant abdominal pain and biliary colic. This was associated with 12 pounds weight loss over a period of one year. Her past medical history was significant for adenocarcinoma of duodenum treated with Whipple procedure two years ago. Pancreatic stent was placed at the pancreatico-enteric anastomosis during the surgery. She is a former smoker, denies use of alcohol or any other recreational drugs. Current medication includes omeprazole and Naproxen. Her vital signs were normal, and abdominal examination revealed the right upper quadrant tenderness with no guarding or rebound. Rest of the examination was unremarkable.

Laboratory revealed: White cell count of 6.4 Thou/mm³, hemoglobin of 14 g/dL, Platelets of 260 Thou/mm³, Amylase 27 U/L, Lipase 12 U/L, Total Bilirubin 2.1 md/dL, Albumin 4.5 g/dL, Alkaline Phosphatase 116 U/L, AST 22U/L and ALT of 18 U/L. Liver

ultrasound was unremarkable. CT scan of abdomen was ordered due to previous history of duodenal malignancy which revealed dilated biliary tree and small stent lodged in the common bile duct (CBD) through choledochoduodenostomy site. No new evidence of mass around the surgery site and no abdominal adenopathy were seen. ERCP was planned and the patient was referred to our institution to evaluate the biliary tree and retrieve the migrated pancreatic stent.

Pediatric colonoscope was used during the ERCP to reach the choledochoduodenostomy site. The migrated pancreatic stent was seen protruding out of the CBD into the duodenal lumen through the choledochoduodenostomy orifice (Fig 1 and 2). The stent was successfully removed with the snare (Fig 3). Multiple stone fragments and large amount of sludge was removed from the biliary tree with retrieval balloon. The patient was discharged after the procedure and her symptoms resolved completely.

Discussion:

Pancreatic duct stents placement during Whipple procedure is a common practice for bridging the pancreatic anastomosis¹, to prevent failure of anastomosis site and leakage of proteolytic enzymes from pancreas. This leakage of pancreatic enzymes could cause autolysis of normal tissue leading to further disruption of healing anastomosis and surgical wound². The incidence of pancreatic fistula is as high as 24% and it can lead to bleeding, abscess, sepsis and death³⁻⁶. Published studies have reported inconsistent outcome in regards to the effectiveness of internal vs. external pancreatic stenting in a

patient with pancreaticojejunostomy anastomosis. There was no substantial variation in morbidity, mortality and hospital stay between the external and the internal pancreatic duct stent groups^{7,8}.

Most of the pancreatic duct stents will ultimately migrate into the small bowel and clear from the intestine spontaneously. Other potential courses of these stents include a) retained stents at the pancreatico-enteric anastomosis site, b) inward migration of stent into the pancreatic duct, c) outward migration of stents into the biliary tree through the choledocho-duodenostomy site (as in our case). Early complications from the pancreatic ductal stent placement include pancreatitis, ductal rupture and bleeding^{9, 10}. Late complications include infection, bleeding, pancreatitis, stent occlusion, erosions, ductal perforation, stent fracture, intestinal obstruction, stent migration into the biliary tree and liver abscess^{2, 11}. In one report, inward and outward migration developed in 5.2% and 7.5% of patients, respectively¹². According to one study the approximate time for the detection of stent migration was about a year¹³.

ERCP is considered the first option of therapy for retrieving the pancreatic stents when they migrate into the biliary tree. While side-viewing duodenoscope is widely used to perform ERCP, this can be challenging in patients with anatomical changes caused by surgery (i.e. Pancreatico-jejunostomy). Pediatric colonoscope (like in our patient) or enteroscope may be an option for performing an ERCP when using a duodenoscope is not feasible¹⁴. Deep enteroscopy techniques including double-balloon enteroscopy represent a significant advancement for performing ERCP in patients with surgically altered anatomy¹⁵. However, they are not yet widely performed and often incompatible with ERCP accessories. More invasive therapeutic options (i.e. surgery or percutaneous

approaches) are used for removal of migrated pancreatic stent into the biliary system in patients who fail ERCP¹⁶.

Conclusion:

In post Whipple procedure, pancreaticojejunostomy stent migration into the biliary tree through the choledochoduodenostomy site is a potential cause of recurrent biliary colic. ERCP for stent retrieval is a safe and effective modality for removing these stents and clearing the biliary tree.

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Figure Legend

Fig 1: Migrated Stent in the Choledocho-duodenostomy orifice

Fig 2:

Thick Arrow: Pneumobilia

Thin Arrow: Migrated pancreatic stent

Fig 3: Migrated pancreatic stent after removal

Figure 1
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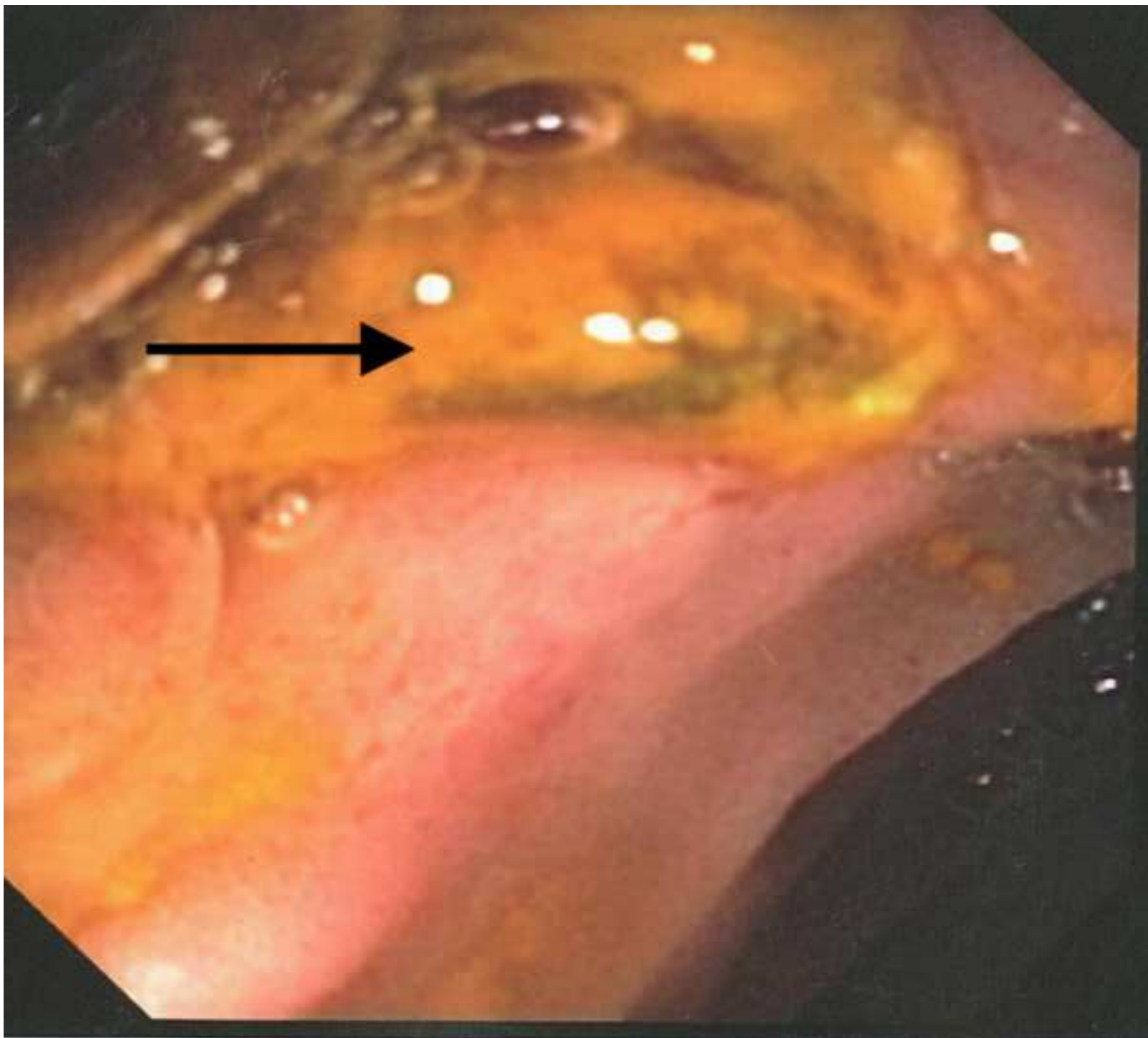


Figure 2
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