ACG CASE REPORTS JOURNAL

CASE REPORT | PANCREAS

Osteomyelitis as a Result of Pancreaticojejunostomy Stent Migration after Whipple Procedure

Assad Munis, DO[1], Brad Solomon, DO[2], Andrew Mazulis, MD[2], and Timothy Laurie, DO[2]

[1]*Department of Internal Medicine, Advocate Lutheran General Hospital, Park Ridge, IL*
[2]*Division of Gastroenterology, Advocate Lutheran General Hospital, Park Ridge, IL*

ABSTRACT

Pancreaticoduodenectomy, or Whipple procedure, is a high-risk surgical procedure commonly performed for tumors of the pancreatic head. The pancreatico-enteric anastomosis is an important component of this procedure. The maturation and adequate healing of this anastomotic site is critical to decrease the risk of postoperative pancreatic fistulas. The use of stents can help in the healing of this anastomotic site. We present a patient with pancreatic adenocarcinoma who underwent pancreaticoduodenectomy, and presented with progressively worsening lumbar pain 7 years later. The patient was found to have osteomyelitis as a complication from an entero-spinal fistula secondary to a migrated pediatric feeding tube that was placed at the pancreaticojejunal anastomosis.

INTRODUCTION

Pancreaticoduodenectomy (PD), or Whipple procedure, is a high-risk surgical procedure that is commonly performed for tumors of the pancreatic head. PD involves a distal gastrectomy with removal of the pancreatic head, duodenum, the first 15 cm of the jejunum, common bile duct, and the gallbladder.[1,2] The pancreatico-enteric anastomosis is an important component in the PD. It is vital to ensure adequate healing of the anastomosis site, as 11% of patients develop clinically relevant postoperative pancreatic fistula (CR-POPF), which can lead to increased morbidity and mortality.[3,4] One method to facilitate the development of the anastomotic site and prevent anastomotic leakage involves the use of a transanastomotic stent.[5] Typically, spontaneous migration of this stent into the small bowel occurs after anastomotic maturation.

CASE REPORT

A 69-year-old woman with a history of stage IIB pancreatic adenocarcinoma status post PD with adjuvant chemotherapy and radiation 7 years prior presented with severe lumbar back pain radiating to both lower extremities. She denied any loss in bowel or bladder control. In the emergency department she was noted to be febrile. Magnetic resonance imaging (MRI) with and without contrast of the lumbar spine revealed discitis at the L3–L4 level, extensive marrow infiltration involving the L3 and L4 vertebral bodies, and enhancing ventral epidural phlegmon at the L4 level that resulted in mild to moderate spinal stenosis (Figure 1). She was placed on intravenous antibiotics and taken for emergent L3–L4 laminectomy with evacuation of the epidural abscess. Intraoperatively, the patient was suspected to have an entero-spinal fistula related to the pancreatic-small-bowel stent. Postoperatively, she was managed with intravenous antibiotics and intravenous opioids for pain control.

Due to the suspicion for entero-osseous fistulous communication, a computed tomography (CT) and magnetic resonance cholangiopancreatography (MRCP) confirmed an entero-spinal fistula with demonstration of the retained pancreatic stent (Figure 2). Endoscopic retrieval of the migrating pancreaticojejunal tube was attempted. The afferent limb was entered with an adult variable-stiffness colonoscope, and the scope was advanced 90 cm from

ACG Case Rep J 2018;5:e67. doi:10.14309/crj.2018.67. Published online: September 26, 2018.

Correspondence: Assad Munis, Advocate Lutheran General Hospital, Internal Medicine, 775 Dempster St, Park Ridge, IL 60068 (assadm89@gmail.com).

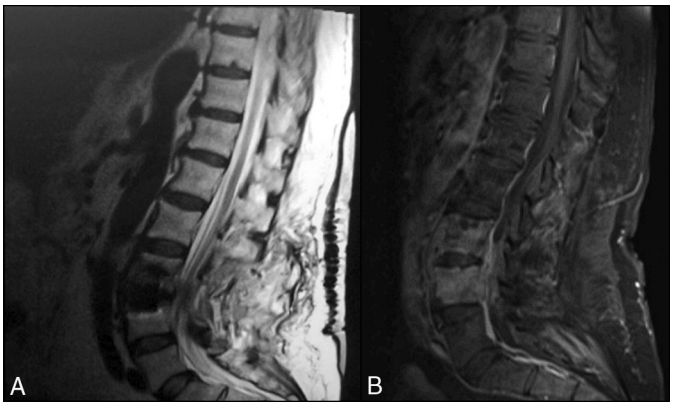

Figure 1. (A and B) Magnetic resonance imaging of L3–L4 vertebrae with extensive marrow infiltration, epidural phlegmon, and discitis.

the incisors where a jejunal stricture was encountered (Figure 3). Numerous attempts were made to traverse this area with a guide-wire and balloon catheter, but the endoscope could not further advance. The patient remained septic with persistent back pain, and she was unable to undergo balloon enteroscopy. During exploratory laparotomy, significant small-bowel adhesions to the retroperitoneum were noted along with migration of the stent through the jejunum into the L3–L4 paravertebral musculature. Postoperatively, she completed antibiotics for osteomyelitis, and her clinical condition significantly improved. She was discharged home in stable condition.

DISCUSSION

Pancreatic anastomotic leakage is a well-known serious complication following PD. Anastomotic dehiscence can lead to various complications, such as delayed gastric emptying, pancreatic fistulas, postoperative hemorrhage, peripancreatic collections, and intra-abdominal abscess.[4] It has been

Figure 2. Computed tomography showing entero-spinal fistula with retained pancreatic stent.

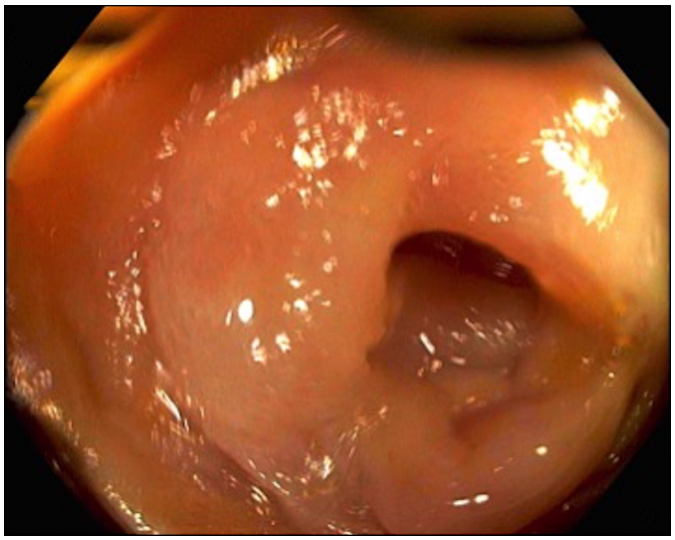

Figure 3. Colonoscopy showing jejunal stricture 90 cm from the incisors.

reported that 50–60% of abscesses noted after PD are related to the pancreatic anastomotic leakage.[4] The occurrence of CR-POPF poses a great challenge in the postoperative period. Strategies to mitigate this continue to evolve, such as the technique of pancreatogastrostomy.[3] Nonetheless, bridging of the pancreatico-enteric anastomosis is typically performed with a stent to facilitate the passage of pancreatic enzymes, and in essence, to prevent leakage. These stents generally migrate into the small bowel and are excreted over time.[6]

Retention of the pancreaticojejunal tube with subsequent migration is a well-documented adverse effect. The majority of documented stent migration is either into the pancreatic duct or the biliary tree.[7] We found no reports of osteomyelitis, discitis, or epidural abscess as a result of pancreaticojejunal stent migration in our literature review.

Ammori and White[8] reported a case of chronic pancreatitis as a result pancreaticojejunostomy stent migration further into the pancreas 4 years after PD. Biffl and Moore[9] illustrated a case of intestinal obstruction in the ileum due to bezoar formation around the migrated pancreatic stent almost 3 years after PD. Rezvani et al.[10] presented a case of stent migration into the intrahepatic bile duct leading to a hepatic abscess 4 years after a surgically placed internal stent across the pancreaticojejunostomy anastomosis. These cases differ from our case in that the stent did not migrate through the small bowel into the lumbar paravertebral musculature. It has been illustrated that there is potential for stent migration into the distal bowel, pancreas, or liver leading to perforation, chronic inflammation, or infection.[11,12]

Our case is a very rare presentation of delayed pancreaticojejunal stent migration into the lumbar spine with subsequent

osteomyelitis. This is the first report of such a presentation in the literature. With recent advancements, various strategies to alleviate the incidence of CR-POPF have been developed using surgical techniques and pharmacological methods, and it remains to be seen whether the use of internal stents at the anastomotic sites will remain in practice in the future.[13]

DISCLOSURES

Author contributions: All authors contributed equally to reviewing the literature, acquiring the images, and writing and editing the manuscript. T. Laurie is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received April 9, 2018; Accepted June 25, 2018

REFERENCES

1. Whipple AO, Parsons WB, Mullins CR. Treatment of carcinoma of the ampulla of Vater. *Ann Surg*. 1935;102(4):763–79.
2. Cameron JL, Riall TS, Coleman J, Belcher KA. One thousand consecutive pancreaticoduodenectomies. *Ann Surg*. 2006;244(1):10–5.
3. Ecker BL, McMillan MT, Maggino L, et al. Pancreatogastrostomy vs. pancreatojejunostomy: A risk-stratified analysis of 5316 pancreatoduodenectomies. *J Gastrointest Surg*. 2018;22(2):68–76.
4. Crippa S, Salvia R, Falconi M, Butturini G, Landoni L, Bassi C. Anastomotic leakage in pancreatic surgery. *HPB (Oxford)*. 2007;9(1):8–15.
5. Barreto SG, Shukla PJ. Different types of pancreatico-enteric anastomosis. *Transl Gastroenterol Hepatol*. 2017;2:89.
6. Kadowaki S, Miura F, Amano H, et al. Whereabouts of an internal short stent placed across the pancreaticojejunostomy following pancreatoduodenectomy. *J Hepatobiliary Pancreat Sci*. 2012;19:566–77.
7. Bawany MZ, Rafiq E, Thotakura R, McPhee MD, Nawras A. Successful management of recurrent biliary colic caused by pancreatic stent migration after Whipple procedure. *J Interv Gastroenterol*. 2012;2(2):97–8.
8. Ammori BJ, White CM. Proximal migration of transanastomotic pancreatic stent following pancreaticoduodenectomy and pancreaticojejunostomy. *Int J Pancreatol*. 1999;25:211–5.
9. Biffl WL, Moore EE. Pancreaticojejunal stent migration resulting in bezoar ileus. *Am J Surg*. 2000;180:115–6.
10. Rezvani M, O'Moore PV, Pezzi CM. Late pancreaticojejunostomy stent migration and hepatic abscess after Whipple procedure. *J Surg Educ*. 2007;64:220–3.
11. Mari G, Costanzi A, Monzio N, et al. Small bowel perforation caused by pancreaticojejunal anastomotic stent migration after pancreaticoduodenectomy for periampullary carcinoma. *JOP*. 2015;16:185–8.
12. Mari G, Costanzi A, Rosato A, et al. Pancreaticojejunal anastomotic stent-related complications after pancreaticoduodenectomy: Review of the literature. *JOP*. 2015;16(5):413–6.
13. Ecker BL, McMillan MT, Asbun HJ, et al. Characterization and optimal management of high-risk pancreatic anastomoses during pancreatoduodenectomy. *Ann Surg*. 2018;267(4):608–16.