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An Invading Stent: Conservative Management of a Penetrating Splenic Injury by a Migrated Pancreatic Duct Stent

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An Invading Stent: Conservative Management of a Penetrating Splenic Injury by a Migrated Pancreatic Duct Stent

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Abstract

Pancreatic duct (PD) stenting is a common treatment modality for PD calculi or strictures, which are common complications of chronic pancreatitis. PD stent migration is a described complication of the procedure. Penetrating splenic injury may result in life-threatening hemorrhage, often requiring splenic artery embolization or splenectomy. Herein, we describe a unique case of a 49- year-old female with chronic pancreatitis and PD stent who presented with abdominal pain. A computed tomography of her abdomen revealed the distal end of her PD stent to have migrated internally through her spleen with an associated perisplenic fluid collection. After initial clinical stabilization she underwent an endoscopic retrograde cholangiopancreatography which revealed the proximal end of the migrated stent in the duodenum and the stent was successfully with improvement in clinical status.

Keywords

Stent, Pancreatitis, Splenic injury

Conflict of Interest Statement

No COI

Cover Page Footnote

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CASE REPORT

An Invading Stent: Conservative Management of a Penetrating Splenic Injury by a Migrated Pancreatic Duct Stent

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Pancreatic duct (PD) stenting is a common treatment modality for PD calculi or strictures, which are common complications of chronic pancreatitis. PD stent migration is a described complication of the procedure. Penetrating splenic injury may result in life-threatening hemorrhage, often requiring splenic artery embolization or splenectomy. Herein, we describe a unique case of a 49- year-old female with chronic pancreatitis and PD stent who presented with abdominal pain. A computed tomography of her abdomen revealed the distal end of her PD stent to have migrated internally through her spleen with an associated perisplenic fluid collection. After initial clinical stabilization she underwent an endoscopic retrograde cholangiopancreatography which revealed the proximal end of the migrated stent in the duodenum and the stent was successfully with improvement in clinical status.

Keywords: Stent, Pancreatitis, Splenic injury

1. Introduction

Chronic pancreatitis is a pathologic fibroinflammatory syndrome of the pancreas in individuals with genetic, environmental, and/or other risk factors who develop persistent pathologic responses to parenchymal injury or stress.[1] Pancreatic duct (PD) obstruction can occur because of stones or strictures and require decompression procedures like ERCP with sphincterotomy, stone clearance, stricture dilation, and PD stenting.[2] PD stents have been known to cause several complications and stent migration can occur in about 5.2−7.5% of patients.[3] Migration of PD stents out of the pancreatic parenchyma has not been reported before. We report a unique case of a PD stent that migrated through the spleen and resulted in a penetrating splenic injury.

2. Case presentation

A 49-year-old female with chronic pancreatitis and PD strictures status post PD stenting who presented to the emergency department with fever, abdominal pain, vomiting and diarrhea for 2 days. She had a past medical history of recurrent pancreatitis, portal vein thrombosis on anticoagulation, and PD stenting for strictures. A month prior to admission, she underwent ERCP with stent exchange for PD strictures and was found to have a PD leak of the tail of the pancreas. At that time, two stents measuring 18 cm (Fig. 1) and 7 cm in length were placed to facilitate ampullary pancreatic drainage and the PD leak was expected to resolve spontaneously. At current admission, she was tachycardic, normotensive and physical examination revealed left upper quadrant tenderness with an otherwise soft abdomen.

Laboratory data revealed a WBC count of 9.3×10^3 u/L, 22% bands, hemoglobin of 11.8 g per deciliter, total bilirubin − 0.4 mg/dL, AST − 77 U/L, ALT − 80 U/L, ALP − 149 U/L, lipase 278 U/L (reference range: 31−235 U/L), and blood cultures growing *Escherichia coli*. A computed tomography (CT) scan of the abdomen revealed chronic pancreatitis and a

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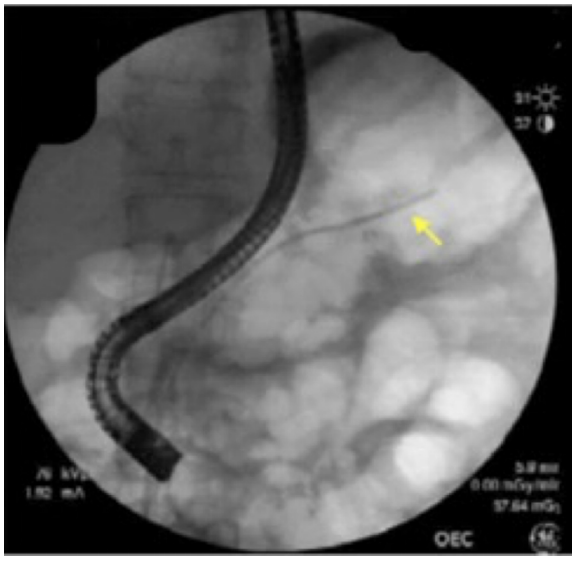

Fig. 1. Fluoroscopy from ERCP prior to admission showing placement of the PD stent (yellow arrow).

long PD stent with one end terminating in the duodenum and the other end traversing the splenic parenchyma (Fig. 2). There was a new organized fluid collection in the left subdiaphragmatic space and left retroperitoneum. The position of the shorter stent was unchanged. Percutaneous drainage of the peri-splenic fluid collection revealed thick pus and grew E.coli on culture. Surgery and gastroenterology were consulted, and a decision was made to proceed with non-surgical, endoscopic stent retrieval.

The patient's anticoagulation was held. She was treated with intravenous fluids and antibiotics for E.coli sepsis. Octreotide infusion was started to minimize pancreatic secretion. After initial stabilization, endoscopic retrograde cholangiopancreatography (ERCP) was performed 5 days after hospitalization. Duodenal ends of both stents were visualized at the ampulla. Fluoroscopy revealed that the distal end of the 18-cm stent had traversed beyond the pancreatic tail. A snare was passed beyond the stent and was used to gently separate the stent from the splenic parenchyma. Both stents were removed atraumatically. Pancreatogram revealed diffuse nonocclusive ductal narrowing and organized extravasation of contrast beyond the pancreatic tail. A single plastic stent (7Fr, 5 cm) was placed traversing the most significant PD stricture with adequate drainage of the PD. Octreotide was continued to reduce pancreatic secretions and aid in the healing of the PD leak. There were no procedure-related adverse events. The patient was hemodynamically stable during the hospital stay with improvement in clinical status. She was discharged 4 days later on subcutaneous octreotide to accelerate healing of the PD leak, a modified low fat diet, and an oral antibiotic. The patient was advised follow up in the GI clinic for evaluation of upsizing versus exchange of her PD stent however she did not follow up as directed.

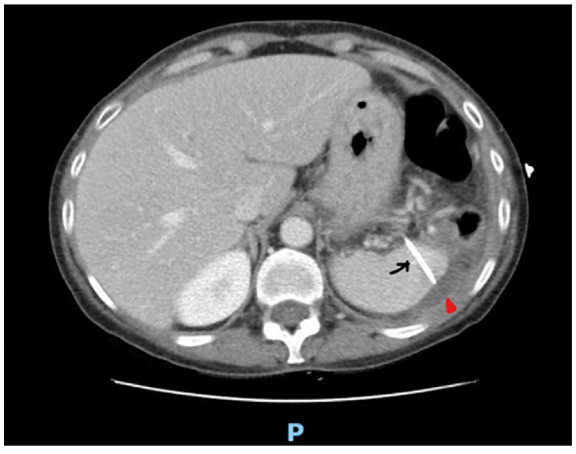

Fig. 2. Computed tomography (CT) scan of abdomen showing the distal end of the stent traversing the splenic parenchyma (black arrow) with associated perisplenic fluid collection (red arrowhead).

3. Discussion

This is a unique case of a migrated PD stent causing splenic injury that was retrieved using ERCP. Splenic injuries from gastrointestinal stents are rare.[4,5] Khan et al. reported a case of a metallic stent migration from the esophagus to the spleen leading to splenic laceration requiring splenectomy.[4] Benasher et al. reported migration of a metallic colonic stent leading to a contained splenic perforation.[5] ERCP as a procedure has been associated with splenic injury regardless of whether a stent was deployed. Interestingly most ERCP associated splenic injuries occurred in patients with chronic pancreatitis. However, most of these cases presented within a week after the procedure.[6] In this case, the presence of a migrated stent through the spleen and the delay in presentation after the prior ERCP made a diagnosis of stent-related splenic injury more likely.

Berg et al.'s review of splenic injuries reported that 187/225 (83%) patients experiencing penetrating splenic injuries (PSI) required emergent laparotomy. A subgroup of 38 clinically stable patients underwent a trial of non-operative management (NOM) and 17/38 eventually ended up needing a laparotomy. Factors predicting successful NOM were hemodynamic stability, absence of hollow

viscus injury, and peritonitis.[7] According to the American Association for the Surgery of Trauma (AAST)[8] scale for splenic injuries, our patient's grade based on the depth of stent parenchymal invasion was Grade-III (>3 cm). The World Society of Emergency Surgery (WSES) established a classification for splenic trauma and management guideline.[9] Although these have been studied in the context of external penetrating splenic injuries (PSI), a grading system for stent related PSI does not exist. Based on the WSES guidelines, presence of factors predictive of successful NOM and clinical judgement, a conservative management approach was pursued.

Stent removal was purposefully delayed for 5 days until initial stabilization to minimize the risk of splenic bleeding which the stent could have been tamponading. The patient responded well to percutaneous drainage of fluid collection, remained hemodynamically stable without evidence of splenic hemorrhage (drop in hemoglobin, clinical deterioration). ERCP-guided stent removal with stent exchange was successful without any adverse events. Stent migration in our case occurred perhaps due to the placement of an excessively long stent in the presence of a pancreatic duct leak. Although a long stent was possibly necessary to ensure PD drainage in the presence of diffuse strictures, utmost efforts should be made to optimize stent size prior to deployment.

To conclude, this case report describes a non-operative management for transplenic migration of a long pancreatic duct stent successfully retrieved by ERCP.

Acknowledgement

We would like to thank the Johns Hopkins Gastroenterology Department for their help in providing the patient's stent placement procedure notes and images.

Abbreviations

PD	Pancreatic Duct
CT	Computed tomography
ERCP	Endoscopic Retrograde Cholangiopancreatography
PSI	Penetrating Splenic Injuries
NOM	Non-operative management
AAST	American Association for the Surgery of Trauma
WSES	World Society of Emergency Surgery

Conflict of Interest

The authors declare no conflict of interest.

References

1. Whitcomb DC, Frulloni L, Garg P, et al. Chronic pancreatitis: an international draft consensus proposal for a new mechanistic definition. *Pancreatology*. 2016;16(2):218–224. https://doi.org/10.1016/j.pan.2016.02.001.
2. Choi EK, Lehman GA. Update on endoscopic management of main pancreatic duct stones in chronic calcific pancreatitis. *Korean J Intern Med (Engl Ed)*. 2012;27(1):20–29. https://doi.org/10.3904/kjim.2012.27.1.20.
3. Johanson JF, Schmalz MJ, Geenen JE. Incidence and risk factors for biliary and pancreatic stent migration. *Gastrointest Endosc*. 1992;38(3):341–346. https://doi.org/10.1016/s0016-5107(92)70429-5.
4. Khan S, George N, Tharian B. Extraluminal migration of an esophageal metal stent causing splenic injury. *Endoscopy*. 2016;48(S 01):E326. https://doi.org/10.1055/s-0042-116817.
5. Benasher D, Guttmann S, Rahmani R, Tsirlin Y, Mayer I. A self-expanding metal colonic stent causing a contained splenic perforation. *Am J Gastroenterol*. 2015;110(11):1533. https://doi.org/10.1038/ajg.2015.58.
6. Gaffney RR, Jain V, Moyer MT. Splenic injury and ERCP: a possible risk for patients with advanced chronic pancreatitis. *Case Rep Gastroenterol*. 2012;6(1):162–165. https://doi.org/10.1159/000337499.
7. Berg RJ, Inaba K, Okoye O, et al. The contemporary management of penetrating splenic injury. *Injury*. 2014;45(9):1394–1400. https://doi.org/10.1016/j.injury.2014.04.025.
8. Tinkoff G, Esposito TJ, Reed J, et al. American association for the Surgery of trauma organ injury scale I: spleen, liver, and kidney, validation based on the national trauma data bank. *J Am Coll Surg*. 2008;207(5):646–655. https://doi.org/10.1016/j.jamcollsurg.2008.06.342.
9. Coccolini F, Montori G, Catena F, et al. Splenic trauma: WSES classification and guidelines for adult and pediatric patients. *World J Emerg Surg*. 2017;12:40. https://doi.org/10.1186/s13017-017-0151-4.