A Novel Case of Biliary Stent Migration with Entrapment Within A Sigmoid Diverticulum

Anmol Mittal, MD¹, Afif Hossain, MD¹, Kamel Amer, MD², Siddharth Verma, MD³ ¹Department of Medicine, Rutgers, New Jersey Medical School; ²Department of Gastroenterology, Rutgers New Jersey Medical School; ³Department of Gastroenterology, East Orange Veteran's Administration

Introduction

In the United States, over 20 million Americans suffer from gallbladder disease¹. Of those with gall bladder disease, 1-4% will develop symptomatic gallbladder disease with 4% of the general population developing choledocholithiasis^{2,3}. Although pancreatobiliary obstruction is a rare complication of gall stone disease, it can be life-threatening. Accordingly, biliary stenting with plastic prostheses has become the gold standard in the setting of a biliary ductal obstruction. The patency of biliary stents is highly variable, largely dependent on the type of stent placed and indication for stenting. In general, self-expanding metal stents (SEMS) are patent for longer than plastic stents (PS), with covered stents patent for longer than uncovered stents. Patency for PS is usually less than 4 months and between 6-12 months for SEMS. Generally, there is higher risk for complication with PS compared to SEMS but no difference in mortality at one month⁴. As such, most PS are removed or exchanged within 1-3 months and most SEMS within 3-6 months. Common complications of biliary stenting include migration, pancreatitis given manipulation, and obstruction of the biliary stent (stone vs. sludge) leading to cholangitis⁵. Commonly, stents placed can become dislodged and pass through the gastrointestinal (GI) tract spontaneously. Once they transverse the ileocecal valve, most stents pass spontaneously. Here, we report a unique case of a lower GI bleed secondary dislodgement biliary within plastic stent tO diverticulum five years post placement.

Case Presentation

A 72-year-old veteran with known history of hypertension, peripheral vascular disease, cholecystitis status-post laparoscopic cholecystectomy complicated by biliary leak with subsequent biliary stenting x two, prior polysubstance, and post-traumatic stress disorder presented with a two-month history of functional decline and weight loss failure to thrive. His labs were significant for: WBC 10.3, AST/ALT 153/94, ALP 703, total bilirubin 1.5, procalcitonin 2.24, CRP 190.3, ESR 64, y-GTP 609, fractionated alkaline phosphatase 87% liver isozyme, and CA 19-9 of 494. Given his labs, he underwent a computed tomography (CT) scan of his abdomen which demonstrated dilatation of the intrahepatic and extra-hepatic bile ducts up to two centimeters with stent visualization near the pancreatic ampulla and another within the sigmoid lumen. The patient was subsequently admitted for further management given concern for malignancy. He was started on broad spectrum antibiotics and intravenous fluid resuscitation, however developed three episodes of hematochezia with a drop in hemoglobin from 14.6 to 9.0 and became acutely symptomatic. He underwent an endoscopy and colonoscopy which revealed a dislodged stent with its pigtail entrapped within a sigmoid diverticulum. Bleeding stigmata was visualized adjacent to the stent [Figure 1]. The stent was removed via rat-tooth endoscopic forceps, allowing for control of bleeding and resolution of the patient's hematochezia.





blood clots can be visualized in surrounding diverticula.

There are 40 published cases involving foreign bodies and sigmoid diverticular disease⁶. To our knowledge, only 10 of these cases presented with biliary stent migration causing sigmoid diverticula entrapment or perforation. The persistence of a biliary stent for greater than 3-6 months significantly increases the risk of complication, especially with PS. The risk of postoperative stent migration is estimated between 5-10% and increases depending on the time the stent is in place. PS migrate more frequently than SEMS (10% compared to 1%, respectively)⁷. Fortunately, most displaced stents pass spontaneously, and those that have not passed are successfully retrieved via endoscopic measures with greater than 90% efficacy⁵. Only a minority of cases require surgical intervention. Accordingly, it is extremely uncommon for a stent to remain for five years.

speculate this patient had recent stent dislodgement, leading to common bile duct occlusion and We resultant cholangitis. After localization of the biliary stent in the sigmoid colon on CT, the patient was initially managed conservatively for spontaneous passage through the ileocecal valve. However, once the patient developed hemodynamically significant GI bleed, endoscopic retrieval of the displaced stent became paramount. After endoscopic stent retrieval, intravenous fluids, and blood transfusion, the patient became hemodynamically stable. This case underscores the importance of encouraging and adhering to post-stenting follow-up. As time elapses post-stenting, the risk and severity of complication increases and can have deleterious consequences. Thus, every effort should be made to avoid loss to follow-up to prevent life-threatening complications of biliary stent complications.

References: ¹Everhart K. Prevalence and ethnic differences in gallbladder disease in the United States. Gastroenterology (New York, NY 1943). 1999;117(3):632-639. doi:10.1016/s0016-5085(99)70456-7 ²Almadi MA, Barkun JS, Barkun AN. Management of suspected stones in the common bile duct. CMAJ. 2012 May 15;184(8):884-92 ³Costi R, Gnocchi A, Di Mario F, Sarli L. Diagnosis and management of choledocholithiasis in the golden age of imaging, endoscopy and laparoscopy. World J Gastroenterol. 2014 Oct 7;20(37):13382-401 ⁴Moy B. An Update to Hepatobiliary Stents. *Journal of clinical and translational hepatology*. 2015;3(1):67-77. doi:10.14218/JCTH.2015.00040 ⁵Dumonceau T. Endoscopic biliary stenting: indications, choice of stents, and results: European Society of Gastrointestinal Endoscopy. 2018;50(9):910-930. doi:10.1055/a-0659-9864 ⁶Ross M. Foreign bodies in sigmoid colon diverticulosis. *Clinical journal of gastroenterology*. 2017;10(6):491-497. doi:10.1007/s12328-017-0786-4 ⁷Bagul P. A review of problems following insertion of biliary stents illustrated by an unusual complication. Annals of the Royal College of Surgeons of England. 2010;92(4):W27-W31. doi:10.1308/147870810X12659688852239

Figure 1: A) Sigmoid diverticulum. B) Plastic biliary stent visualized adherent to colonic mucosa and embedded within sigmoid diverticulum. Several distal diverticula can be visualized as well. C) Direct luminal view within sigmoid colon along axis of plastic biliary stent embedded within diverticula. D) Another view of plastic biliary stent following removal from sigmoid diverticulum. Fresh

Discussion

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Fluoroscopy captured during Figure 2: endoscopic retrograde cholangiopancreatography showing plastic biliary stent fibrosed within common bile duct (white arrow) with adherent biliary gravel and stones. Dilated common bile duct with prior large sphincterotomy noted.

