



Case Report

Rare Complication of Sigmoid Colon Perforation by Migrated Plastic Biliary Stent: Two Case Reports and Literature Review

Shih-Wei Chiang^{1,2*}, Yi-Lin Huang^{1,3}

¹Division of Colorectal Surgery, Taiwan, ROC

²Department of Surgery, Taichung Veterans General Hospital Chiayi Branch, Chiayi City, Taiwan, ROC

³Department of Surgery, Taichung Veterans General Hospital, Taichung City, Taiwan, ROC

***Corresponding author:** Shih-Wei Chiang, Department of Surgery, Taichung Veterans General Hospital Chiayi Branch, Chiayi City, Taiwan, ROC

Citation: Chiang SW, Huang YL (2023) Rare Complication of Sigmoid Colon Perforation by Migrated Plastic Biliary Stent: Two Case Reports and Literature Review. J Surg 8: 1741 DOI: 10.29011/2575-9760.001741

Received Date: 20 February, 2023; **Accepted Date:** 24 February, 2023; **Published Date:** 28 February, 2023

Abstract

Objective and Introduction: The endoscopic insertion of biliary stents is an alternative solution for biliary tree obstruction in benign or malignant diseases. Despite the availability of a safe and convenient method that has been used for many years, complications still exist. We reported two cases of rare complication of biliary migration resulting in colon perforation.

Conclusion: Biliary stent migration is usually asymptomatic. Early intervention should be considered in case of suspicion of peritonitis or severe abdominal pain.

Introduction

The endoscopic insertion of plastic biliary stents plays an important role in benign or malignant disease affecting hepatobiliary and pancreatic system. Proximal (into the duct) and distal (out of the duct) biliary stent migration accounts for 4.9% and 5.9% of patients, respectively, and the latter results in bowel perforation in several case reports [1]. In general, distal biliary stent migration could pass through bowel tract without complications [2]. However, rare complications have been noted wherein the stents could not pass safely and affect the bowel wall, such as perforation, intra-abdominal abscess, fistula formation (enterocutaneous, and colovesical), and pelvic abscess formation [3]. Distal migration with colon perforation is an extremely rare complication with poorly defined treatment [4]. This report addresses two cases of sigmoid colon perforation caused by migrate biliary stent and further discusses the etiology, diagnosis, and treatment of bowel perforation caused by a migrating biliary stent.

Case 1 Presentation

A 72-year-old male patient came to our outpatient clinic at a branch hospital presenting abdominal pain and bloating for 3 days. According to the patient's statement and chart, he complained of intermittent stabbing abdominal pain and had a history of intrahepatic duct stones with status of post lateral segmentectomy, cholecystectomy, T-tube drainage, and intraoperative choledochoscopy 10 years ago. Initial survey and examinations showed conjugated hyperbilirubinemia and Common Bile Duct (CBD) dilatation excess 1 cm from Computed Tomography (CT) scan image. CBD stones were not found in the image study. The patients was advised of Endoscopic Retrograde Cholangiopancreatography (ERCP) examination after Gastroenterologist (GI) evaluation. ERCP was performed with endoscopic papillotomy, and a straight 10 Fr/7 cm plastic biliary stent was smoothly inserted into CBD. One month later, follow-up ERCP was arranged for residual stone extraction. Distal stent migration was discovered, and the GI doctor removed it and

inserted a new 10 Fr/7 cm plastic stent after stone extraction. At this time, the patient felt left lower abdominal pain and bloating 5 months after the procedure and then developed nausea sensation and vomiting. He went to branch hospital for evaluation and was arranged for abdominal plain film (KUB, Figure 1). The image showed the stent located at the LLQ of abdomen. Under the impression of stent migration, abdominal CT (Figure 2) was immediately conducted and revealed the migration of biliary stent accompanied by the formation of abscess that made a connection between perforated small bowel and adjacent sigmoid colon. The patient was immediately transferred to our hospital, and the surgeon was consulted for emergent operation. Operative findings (Figure 3 and 4) revealed a sigmoid colon perforated by penetrating biliary stent with pericolic abscess formation. Hartmann procedure was then performed, and the patient was sent to the ward for post operative care. After appropriate treatment and rehabilitation, he recovered gradually and was able to ingest food without further abdominal pain. He was discharged and underwent regular outpatient clinic follow-up.



Figure 1: Biliary stent migration into left pelvic region with small bowel loop formation.



Figure 2: Abdominal CT (coronal view): A biliary stent migrated to LLQ of abdomen with local abscess formation.



Figure 3: Segment of sigmoid colon with a biliary stent penetrated from mucosa to intraperitoneum.

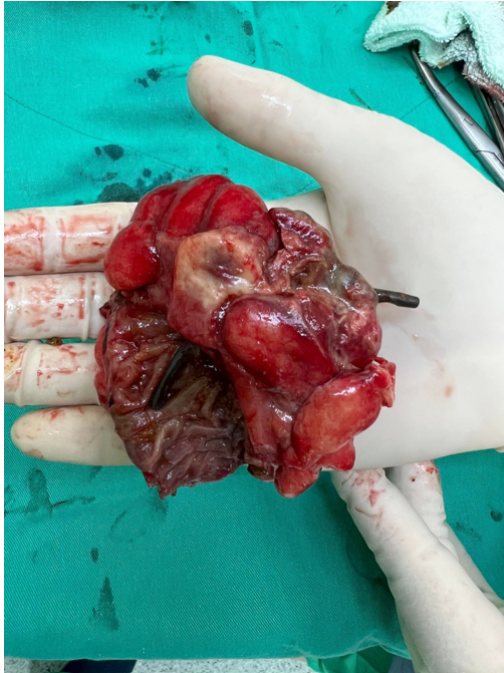


Figure 4: Segment of sigmoid colon with serosal necrosis and local abscess formation.

Case 2 Presentation

A 66-year-old male patient came to our emergency department because of abdominal pain for 1 day. He had multiple medical diseases including diabetes mellitus, end-stage renal disease under regular hemodialysis, esophageal cancer status post-esophagogastrectomy and post-operative radiation, and coronary artery disease with single vessel involvement status post plain old balloon angioplasty with stent. The patient was discharged from our hospital's GI ward 3 weeks ago. According to the last medical chart, he received ERCP with a 10 Fr/7 cm biliary stent insertion for relief of biliary tree obstruction related to regional lymphadenopathy. Post-ERCP pancreatitis was also mentioned during the admission course. Physical examination in the ER showed right lower quadrant of abdomen tenderness without rebounded tenderness. Blood panels were checked and revealed a relative high level of C-reactive protein (CRP, 3.18 mg/dL). KUB (Figure 5) was arranged and showed biliary stent migration into pelvic region. Hence, abdominal CT scan (Figure 6) was arranged and revealed the placed biliary stent has dislodged and highly suspected to cause intestinal perforation and protrusion into peritoneal cavity. Given these circumstances, a colorectal surgeon was consulted for these emergent situations. Abdominal exploratory laparotomy was performed, and operative finding (Figure 7) showed sigmoid colon perforation by biliary stent. The stent was pulled out of the sigmoid colon, the 2 mm hole was sutured, and a diversion loop colostomy over transverse colon

was matured. Post-operative course was smooth, and the patient recovered his food intake function without further abdominal pain. He was then discharged under stable condition.



Figure 5: Migrated biliary stent dislodged in the pelvic region.



Figure 6: Abdominal CT (coronal view): A biliary stent migrated to pelvic region with suspicion of penetration into the intraabdominal cavity.

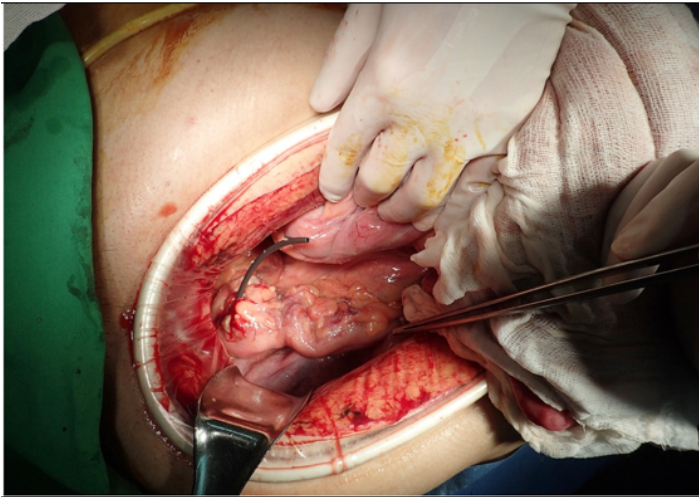


Figure 7: Operation finding: A biliary stent penetrates into the intraabdominal cavity.

Discussion

The endoscopic insertion of stents was first described in 1980 by Soehendra et al. [5]. This method has the advantage of maintaining the flow of the bile into the duodenum and could be considered as an alternative to choledochoduodenostomy. It improves the patients' benefits but is associated with a risk of significant complications when performed during or after the above procedures, such as ERCP and biliary tract cannulation.

Complications including stent occlusion by clogging with possible subsequent cholecystitis or cholangitis, pancreatitis from biliary manipulation, hemorrhage, stent rupture, and stent migration have been described comprehensively [4,6-9]. Biliary stent complications have an incidence rate of 5% to 10% [6-9] and can be further categorized into proximal and distal migration. The distally migrated stents could pass through the bowel without complications. Bowel perforation is an extremely rare event but a serious complication and can occur in any part of the small bowel or large bowel. Plastic biliary stent migration to the colon is an extremely rare event: from 1994 to 2021, only 30 reports were published according to Park TY et al. case review [10]. Sigmoid colon seems to be the most involved segment, and the colonic diverticulum is the strong risk factor that contributes to bowel perforation. Most patients receive surgery for the relief of symptoms. Surgical managements include colon segmentectomy with or without anastomosis, Hartmann procedure, or primary suture over perforation site. In our report, two patients received Hartmann procedure under consideration of the patients'

conditions and risks at the moment. Owing to the lack of standard procedures, the clinical physician should make a prompt decision by taking into account the patient's conditions and multimodality examinations, including physical examinations, plain abdomen, colonoscopy, and CT scan. Temporary stoma maturation without primary anastomosis is a safe procedure to decrease post-operative complications and damage control in patients with colon perforation by biliary stent migration. The method is not well established due to rare cases and different patients' conditions encountered by surgeons.

Conclusion

We report two cases of sigmoid colon perforation caused by a migrated biliary stent. In asymptomatic patients with biliary stent dislocation from CBD, serial plain abdominal radiographs and physical examination are needed until confirmation of spontaneous passage through stool. Early intervention should be considered in case of suspicion of peritonitis or severe abdominal pain.

References

1. Johanson JF, Schmalz MJ, Geenen JE (1992) Incidence and risk factors for biliary and pancreatic stent migration. *Gastrointest Endosc* 38: 341-346.
2. Wang X, Qu J, Li K (2020) Duodenal perforations secondary to a migrated biliary plastic stent successfully treated by endoscope: case-report and review of the literature. *BMC Gastroenterology* 20.
3. Zorbas KA, Ashmeade S, Lois W, Farkas DT (2021) Small bowel perforation from a migrated biliary stent: A case report and review of literature. *World J Gastrointest Endosc* 13: 543-554.
4. Virgilio E, Pascarella G, Scandavini CM, Frezza B, Bocchetti T, et al. (2015) Colonic perforations caused by migrated plastic biliary stents. *Korean J Radiol* 16: 444-445.
5. Soehendra N, Reynders-Frederix V (1980) Palliative bile duct drainage - a new endoscopic method of introducing a transpapillary drain. *Endoscopy* 12: 8-11.
6. Arhan M, Odemiş B, Parlak E, Ertuğrul I, Başar O (2009) Migration of biliary plastic stents: experience of a tertiary center. *Surg Endosc* 23: 769-775.
7. Güngör G, Okur N (2016) A Fatal Complication: Intestinal Perforation Secondary to Migration of a Biliary Stent. *Pol J Radiol* 81: 170-172.
8. Güngör G, Okur N (2016) A Fatal Complication: Intestinal Perforation Secondary to Migration of a Biliary Stent. *Pol J Radiol* 81: 170-172.
9. Yılmaz Ö, Kiziltan R, Aydın O, Bayrak V, Kotan Ç (2015) A Rare Complication of Biliary Stent Migration: Small Bowel Perforation in a Patient with Incisional Hernia. *Case Rep Surg* 2015: 860286.
10. Park TY, Hong SW, Oh HC, Do JH (2021) Colonic diverticular perforation by a migrated biliary stent: A case report with literature review. *Medicine (Baltimore)* 100: e28392.