

Case Report

Small bowel perforation due to migration of a biliary stent: a case report

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ABSTRACT

Endoscopic placement of biliary stents is becoming more common every day, as it is currently one of the best options for the treatment of bile duct pathologies. One of the complications that can occur is the migration of the stent which in very rare cases can cause intestinal perforation. This is a 90-year-old female patient, who underwent endoscopic retrograde cholangiopancreatography (ERCP) a year ago for acute cholangitis and choledocholithiasis. She consulted due to abdominal pain with signs of peritoneal irritation secondary migration of biliary stent. The treatment of these rare complication can be endoscopic, laparoscopic or surgical in case of severe complication. In this occasion, a laparotomy was performed due to perforation of the jejunum secondary to migrated biliary stent. Patients who receive biliary stents require adequate follow-up to avoid complications.

Keywords: Choledocholithiasis, Endoscopic retrograde cholangiopancreatography, Biliary stent, Intestinal perforation

INTRODUCTION

Biliary stents are used in the management of obstructive jaundice for both benign and malignant pathological processes. This endoscopic procedure has very low morbidity and mortality, but as it is increasingly used, some early and late complications have also increased.¹ Biliary stents are classified according to their physical characteristics as metallic, plastic, and biodegradable.² Common complications include stent occlusion, cholangitis, bleeding and pancreatitis. Less common complications include dislocation and migration of biliary stents estimated to occur in 5-10% of patients.³ If the last one occurs, most will spontaneously pass without any complication and will be eliminated in the feces; however, in some cases intestinal perforation, impaction or hemorrhage may occur.⁴ We present a case of a migrated plastic biliary stent causing bowel perforation.

CASE REPORT

A 92-year-old female patient with a history of ERCP for acute cholangitis and choledocholithiasis a year ago prior insertion of a plastic biliary stent (Figure 1). In January 2025, she was admitted at emergency room with a diagnosis of mild acute cholecystitis. A laparoscopic cholecystectomy was performed without complications. Based on the patient's history, an ERCP was performed and demonstrates a major papilla with post-sphincterotomy changes, continuous bile flow without a biliary stent, a 15-mm bile duct with no filling defects and adequate emptying of the contrast medium into the duodenum (Figure 2). The patient had an affordable postoperative progress and remains under domiciliary surveillance without complications.

One month later, the patient presented with cramping pain in the right iliac fossa, associated with vomiting, oral

intolerance and fever. An external physician ordered an abdominal X-ray, which revealed a foreign body in the pelvic cavity, air-fluid levels, and dilated bowel loops (Figure 3). The patient presented to the emergency department with signs of shock, with a blood pressure of 90/40 mmHg, heart rate of 105 beats per minute and a temperature of 38.3°C. The physical examination revealed signs of peritoneal irritation with right lower quadrant tenderness and biochemical test showed lactate level of 10 mmol/l and leukocytosis.

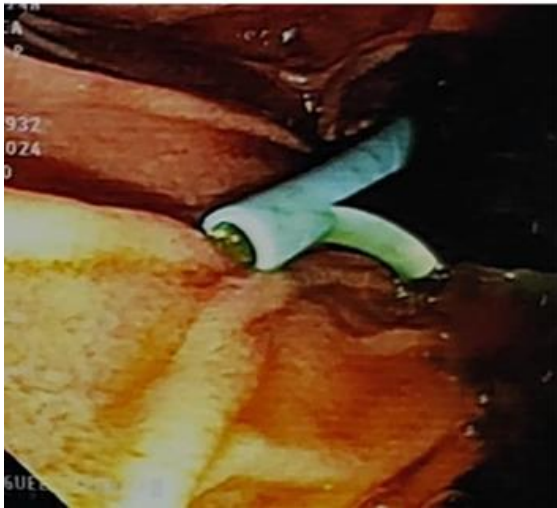


Figure 1: Plastic biliary stent placed in common bile duct.



Figure 2: Absence of biliary stent.

An exploratory laparotomy was performed and revealed a 1-centimeter jejunal perforation secondary to a biliary stent (Figure 4), 40 centimeters from the angle of Treitz and 370 centimeters from the ileocecal valve, 3000 cc of free fluid in the abdominal cavity and a right subphrenic abscess. The biliary stent was removed, and primary closure was performed in site of perforation, peritoneal lavage was made, and a closed suction drain was placed in the parietocolic duct and pelvic cavity. Antibiotic therapy

with meropenem was initiated. The patient was unable to be extubated, and she was maintained on invasive mechanical ventilation and under close monitoring. Despite this, the patient died immediately after surgery.



Figure 3: Abdominal X-ray with foreign body (red arrow) air-fluid levels and dilated bowel loops.

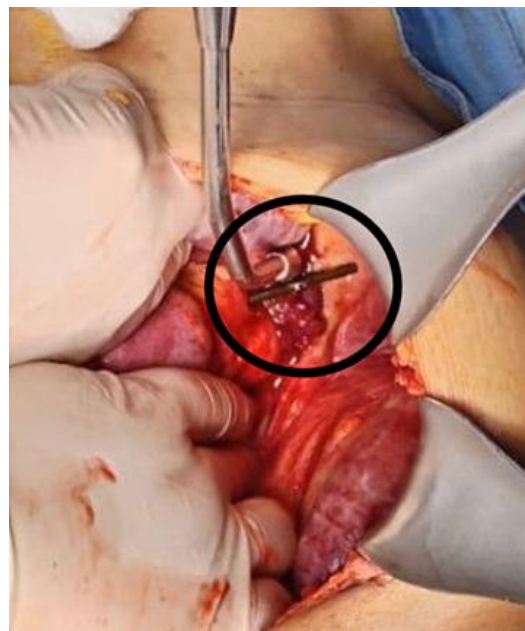


Figure 4: Completely extruded biliary stent at jejunum.

DISCUSSION

ERCP is the most common endoscopic intervention in the management of pancreatobiliary disorders.² The complication rate of ERCP varies according to the series, estimated at 4-16% with a mortality rate of 0-1.5%.⁵

Digestive perforations are fortunately uncommon (0.3-1.4%) but with a high mortality rate (5-36%).⁶ Biliary stents migration occurs in 4-10% of cases and can be proximal or distal.⁷ The main factors related to migration are rigid stents, common bile duct diameter >10 mm, stent duration greater than three months, larger caliber plastic stents and placement in benign biliary strictures.³ Distally migrated biliary stents may be expelled in the feces or cause intestinal obstruction or perforation and fistulas. Intestinal perforations due to migrated biliary stents are most frequent in the duodenum (45%), colon (30%), and small intestine (25%).²

Endoscopic techniques have made the most common initial treatment for migration secondary to biliary stent, with removal of the prosthesis and closure of the defect in case of perforation.⁶ However, a complete extrusion of the prosthesis is very rare and cannot be treated endoscopically. The treatment requires surgery in patients who are often septic and entails high associated morbidity and mortality. For all these reasons, delays in definitive treatment should be avoided and urgent surgical intervention is indicated, generally by open surgery due to the intense inflammatory reaction that makes the laparoscopic approach difficult.⁵

CONCLUSION

Biliary stent migration is a rare complication, and the clinical presentation of this condition is highly variable and depends on the location and severity of the complication. Migration of a biliary stent can cause symptoms ranging from intestinal obstruction to an acute abdomen with intestinal perforation. Patients who undergo biliary stent placement require adequate follow-up to avoid complications. Treatment is endoscopic, laparoscopic or laparotomy. The best option is always to prevent this rare complication. It is recommended that biliary stents be removed three months after insertion.

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