

# Cecum perforation due to biliary stent migration

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## ABSTRACT

على مر أكثر من عقد من إجراء عملية المسار منظارى للدعامات الصفراوية لأمراض الصفراء الحميدة والخبيثة. كان هنالك العديد من المضاعفات لمسار الدعامات وصفت مثل التهاب البنكرياس، والنزيف، والتهاب الأقنية الصفراوية، والثقب. تعد هجرة الدعامات الصفراوية حالة نادرة والتي قد تسبب مضاعفات خطيرة مثل ثقب الجهاز الهضمي. في هذا التقرير نعرض حالة امرأة تبلغ من العمر 26 عام أصيبت بثقب معي نتيجة هجرة الدعامات الصفراوية ونستعرض الحالة الثانية لثقب المعى نتيجة هجرة الدعامات الصفراوية.

The endoscopic placement of biliary stents for benign and malignant biliary disease has been performed for over a decade. Several complications of stent placement have been described such as pancreatitis, hemorrhage, cholangitis, and perforation. Migration of biliary stents is a rare event, which can cause severe complications such as gastrointestinal tract perforation. We report the case of a 26-year-old woman with a cecum perforation due to biliary stent migration. We present the second case of cecal perforation related to the migration of a biliary stent.

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The first use of a plastic stent was described in 1980. Endoscopic biliary stenting is now regarded as a well-established treatment of choice for many obstructive biliary diseases.<sup>1</sup> The use of this modality is associated with low morbidity rates although potential complications such as pancreatitis, hemorrhage, perforation, and cholangitis occur in approximately 5-10% of the cases.<sup>1,2</sup> Migration of the biliary stents (either proximal or distal) occurs in up to 10% of cases.<sup>2</sup> Stent migration with subsequent passage per rectum is relatively frequent, but perforation of the gut is exceedingly rare, reported in less than 1%.<sup>3</sup> According to the recent literature, most (92%) of the cases of intestinal perforation involve the duodenum. However, only 11 cases of colonic perforation have been reported in the English medical literature. Among colonic perforations, cecum perforation has been rarely reported.<sup>4</sup> We report a case of cecum perforation related to the migration of a biliary stent. Our objective in presenting this case is to highlight cecum perforation as a rarely seen complication of biliary stent migration which was successfully treated by surgery.

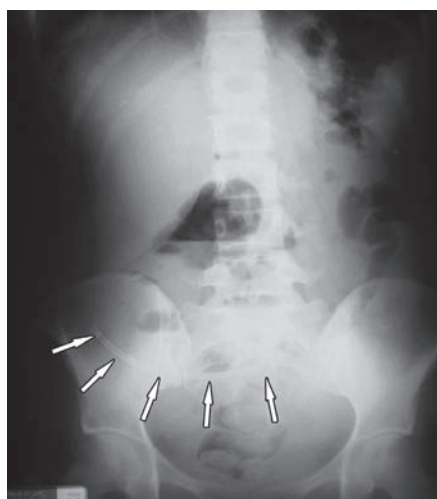
**Case Report.** A 26-year-old woman presented with a 2-day history of abdominal pain, nausea, and vomiting. She had a laparoscopic cholecystectomy 11 months ago complicated by benign biliary stricture that was managed with endoscopic insertion of a plastic stent (10 Fr and 10 cm). The patient had no follow-up until she was admitted to the emergency room. On physical examination, she had a moderate-grade fever (38.3°C), her pulse rate was 100 beats/min (regular), and the respiratory rate was 30/min. She also had rebound tenderness, and muscular defense on all abdominal quadrants. Other system examinations were normal. Her leukocyte count was 13000/mm<sup>3</sup>. Abdominal x-ray showed a stent lying on the right iliac bone and air-fluid levels (Figure 1). She underwent an emergency laparotomy with the diagnosis of acute abdomen. Nasogastric decompression was performed intraoperatively and was removed at the completion of the operation. At laparotomy, the biliary stent had perforated the antimesenteric surface of the cecum (Figure 2A). We observed that the contamination was

minimal because of the adhesions around the cecum. The stent was removed (Figure 2B & C), and the perforation was repaired with primary sutures using double layers. The abdomen was irrigated with warm saline, and a soft Silastic drain was inserted into the right iliac fossa. No complication was observed through the follow-up period, and she was discharged uneventfully 4 days after the operation.

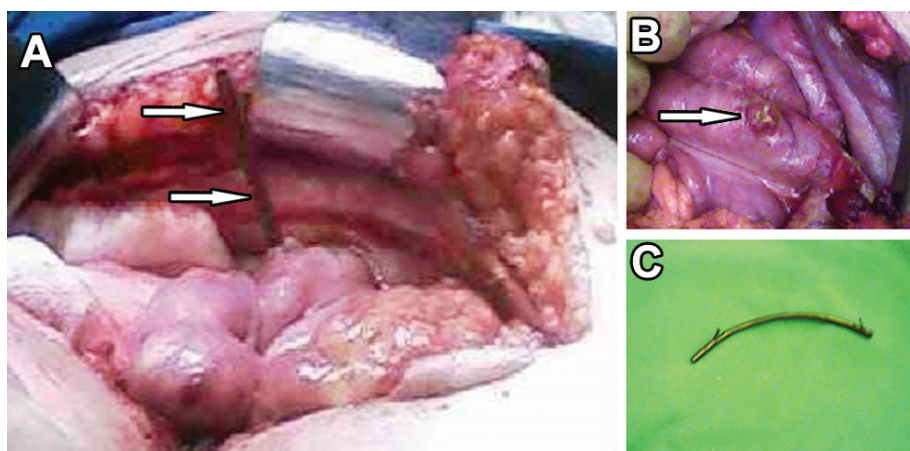
**Discussion.** Endoscopic biliary tract stenting is well-established as a routine treatment for obstructive biliary obstruction, and the treatment of postoperative biliary leaks.<sup>5</sup> A variety of prostheses can be used and differ according to the size, design, and material.<sup>6</sup>

They are generally classified into 2 types - plastic and metal stents.<sup>7</sup> The plastic stents are used preferentially for benign strictures as they are easy to insert and to remove, and they are inexpensive.<sup>8</sup> Proximal and distal stent migrations are infrequent complications, but occur in up to 10% of cases. Most of these stents pass through the intestinal tract without any problems. Migration is more common with plastic stents than with metallic stents.<sup>1,8,9</sup> The factors increasing the risk of biliary stent migration include benign strictures, large diameter stents, and short stents.<sup>8</sup> In the present case, a benign biliary stricture was carried out with endoscopic insertion of a plastic stent (10 Fr and 10 cm). Generally, to prevent migration or clogging in patients with a plastic stent, the stent must be changed or removed every 3-6 months.<sup>1,4,8,10</sup> The present case had no follow-up for 11 months until she was admitted to the emergency room.

Intestinal perforation is an exceedingly rare complication, and most (92%) of the cases of these perforations were observed in the duodenum.<sup>1,7,10</sup> Migration of the biliary stents can cause impaction in the distal gut (ileum and colon) and the most common cause is an extrinsic fixation or irregularity of the intestinal wall such as the ligament of Treitz, parastomal hernias, abdominal hernias, adhesions, colonic diverticula and, rarely, in the orifice of the appendix. Complications emerging after stent migration have been broadly classified into penetration, perforation, intraabdominal sepsis, and intestinal obstruction, fistula formation (duodenocolic, colovesical, enterocutaneous, duodenoscrotal), appendicitis, perforation of colonic diverticulum, and necrotizing fasciitis. It is rare to see



**Figure 1** - Abdominal x-ray film shows migration of biliary stent (white arrows) and air-fluid levels.



**Figure 2** - Intraoperative photograph shows: A) antimesenteric surface of the cecum perforated by the biliary stent; B) perforated cecum; C) removed stent (10 F and 10 cm).

this type of complication in other cavities or organs such as pleura, pancreas, or groin.<sup>1</sup> A review of the English medical literature revealed 11 cases of colonic perforation.<sup>2,9</sup> We present a rarely reported case of cecal perforation related to the migration of a biliary stent.

A migrated biliary stent, symptomatic or not, should be removed immediately.<sup>2,9,10</sup> The management of perforations depends on their location or containment in the peritoneal or retroperitoneal space and clinical presentation of the patient. Among endoscopic management reports,<sup>3</sup> the reported cases of intestinal perforation complicating biliary stent migration have been managed by surgical methods. It is a method usually undertaken to avoid further contamination and prevent intraabdominal abscess.<sup>1-3,9,10</sup> In the present case, the patient underwent emergency surgery with the diagnosis of acute abdomen. At laparotomy the cecum perforation, due to the stent migration, was detected and treated uneventfully.

We conclude that the use of biliary stents is a useful and effective procedure for decompression of the biliary system. However, medicine practitioners should be alert and aware of their complications. Our report highlights a rarely seen complication of biliary stent migration which was successfully dealt with ultimate care and treated by surgery.

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## Case Reports

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