Duodenal perforation as a consequence of biliary stent migration can occur regardless of stent type or duration

Biliary stents are the preferred method of managing malignant and benign biliary obstruction [1]. However, they are not without potential complications, including occlusion, migration, and intestinal perforation [1]. We report two cases of duodenal perforation as a result of migration of metal and plastic biliary stents. A 70-year-old man with biliary obstruction secondary to an adenocarcinoma of the pancreatic head and gastric outlet obstruction that prevented transpapillary biliary access underwent antegrade placement of a 6-cm fully covered metal biliary stent (Wallflex 10mm×60 mm; Boston Scientific, Natick, Massachusetts, USA) using an endoscopic ultrasound (EUS)-guided antegrade technique (Fig. 1). He presented 3 months later with diabetic ketoacidosis. An abdominal computed tomography (CT) scan revealed evidence of a mild pneumoperitoneum (Fig. 2). An exploratory laparotomy identified an intraperitoneal perforation of the third portion of the duodenum. The stent was removed, gastrointestinal flow was diverted with an antrectomy and gastrojejunostomy, and a percutaneous biliary tube was inserted for biliary diversion. Following this, the patient recovered and he was discharged after 7 days.

A 67-year-old man underwent endoscopic retrograde cholangiopancreatography (ERCP) with biliary sphincterotomy and insertion of a 10-Fr×12-cm straight plastic biliary stent (Cotton-Leung; Wilson-Cook, Winston-Salem, North Carolina, USA) for management of an anastomotic biliary stricture (Fig. 3) after an orthotopic liver transplant. The patient presented 1 week after the ERCP with fevers and elevated values on liver function testing. A CT scan revealed

---

Fig. 1 Fluoroscopic images showing: a successful wire insertion through the bile duct into the duodenum, crossing a 3-cm stricture (white arrow), b a metallic biliary stent being deployed across the biliary stricture (yellow arrow).

Fig. 2 Coronal computed tomography (CT) scan of the abdomen showing the metal stent (yellow arrow) and the pneumoperitoneum (white arrows).
signs of a sealed perforation in the second portion of the duodenum (Fig. 4). An intraoperative ERCP was performed (Fig. 5), followed by an exploratory laparotomy with repair of the duodenal perforation with a Graham patch and a jejunal serosal patch. A percutaneous biliary drain was inserted. The patient died 4 weeks later because of sepsis and multiorgan failure.

Migration of biliary stents, whether metal or plastic, has been reported to occur in 8%–10% of cases; however, subsequent perforation is a rare event [2]. Notably, patients can present with nonspecific symptoms; therefore, a high index of suspicion for perforation should be maintained when evaluating these patients, irrespective of the duration of the stent placement [3,4]. Our two cases demonstrate that duodenal perforation can occur in both benign and malignant settings, regardless of the type of stent or its length of time in place.

**Competing interests:** Mouen A. Khashab is a consultant for Boston Scientific and Olympus America and has received research support from Cook Medical. Payal Saxena has received consultancy fees from Boston Scientific and has received research support from Cook Medical.

**References**
1 Issa H, Nahawi M, Bseiso B et al. Migration of a biliary stent causing duodenal perforation and biliary peritonitis. World J Gastrointest Endosc 2013; 5: 523–526

**Bibliography**
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

**Corresponding author**
Mouen A. Khashab, MD
Division of Gastroenterology and Hepatology
Johns Hopkins Hospital
1800 Orleans St, Suite 7125 B
Baltimore
MD 21205
USA
Fax: +1-443-683-8335
mkhasha1@jhmi.edu