Duodenal perforation caused by a plastic biliary endoprosthesis

Clinical History:

Abdominal pain and fever following placement of a biliary stent.

Imaging Findings:

The patient was admitted with increasing jaundice (total bilirubin level 6.4mg/dl). Abdominal ultrasound showed dilatation of the intrahepatic biliary system caused by infiltrating gallbladder carcinoma. An endoscopic retrograde cholangiopancreatography (ERCP) confirmed the dilatation of the intrahepatic biliary ducts and showed a high-grade stenosis of the common hepatic duct. A 10-French 12cm plastic endoprosthesis was subsequently placed through the stenosis, with the proximal tip draining the intrahepatic biliary system and the distal tip properly protruding into the duodenum. Twenty-four hours later, the patient complained of severe abdominal pain with clinical signs of peritoneal irritation and fever (39°C). A plain abdominal film did not show intraperitoneal free air. Abdominal spiral computed tomography (CT) with maximum intensity projection (MIP) and 3D volume rendering reconstructions revealed perforation of the transverse duodenum by the plastic prosthesis, which had migrated caudally through a hole in the duodenal wall into the retroperitoneal space. A large retroperitoneal fluid collection with air bubbles was also observed. Despite prompt percutaneous drainage of the collected fluid and endoscopically-guided replacement of the stent, the patient worsened and died 2 days later.

Discussion:

Biliary stenting is a well-established method for palliative treatment of bile duct strictures. On account of its increasing use, numerous complications are being reported, including cholangitis, cholecystitis, stent occlusion, rupture or migration. Duodenal perforation is a complication rarely reported after plastic stent implantation, while is more common with metallic stents. The stent can migrate downwards, impacting and puncturing the wall, especially in a duodenal diverticulum where the wall is thinner. Excessive protrusion of the endoprosthesis into the lumen of the duodenum may be a cause of duodenal wall perforation. Although uncommon, duodenal perforation secondary to biliary stent dislocation should be considered in all patients presenting with fever and abdominal pain after biliary stent insertion.

Differential Diagnosis List: Duodenal perforation by a plastic biliary endoprosthesis
**Final Diagnosis:** Duodenal perforation by a plastic biliary endoprosthesis

**References:**

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Duodenal perforation as a complication of an endoscopically placed biliary stent.
Ital J Gastroenterol Hepatol 1999 Aug-Sep;31(6):522. (PMID: 10575574)

Thumbe VK, Houghton AD, Smith MS.
Duodenal perforation by a Wallstent.

Gould J, Train JS, Dan SJ, Mitty HA.
Duodenal perforation as a delayed complication of placement of a biliary stent endoprosthesis.
**Figure 1**

**a**

**Description:** CT shows the biliary stent perforating the lateral wall of the duodenum and entering the anterior pararenal retroperitoneal space where air-fluid collection may be observed. **Origin:**

**b**

**Description:** Multiplanar MIP reconstruction shows the complete course of the biliary stent, perforating the duodenal wall. Various duodenal tracts may be easily observed. **Origin:**
Description: 3D volume rendering reconstruction shows a panoramic view of the abdominal organs and main aortic visceral vessels, confirming duodenal wall perforation by the biliary stent. Origin: