

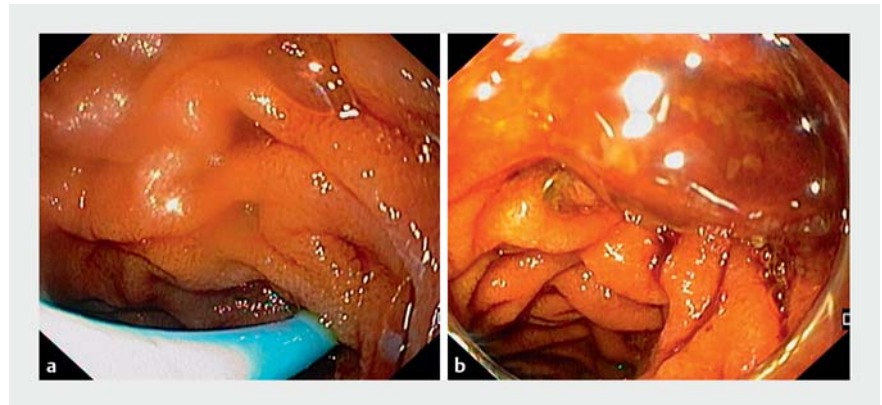
## Endoscopic closure of lateral duodenal wall perforations caused by displacement of plastic biliary stents

We describe three patients with lateral duodenal wall perforations caused by the migration of plastic biliary stents after endoscopic retrograde cholangiopancreatography (ERCP)-guided biliary drainage.

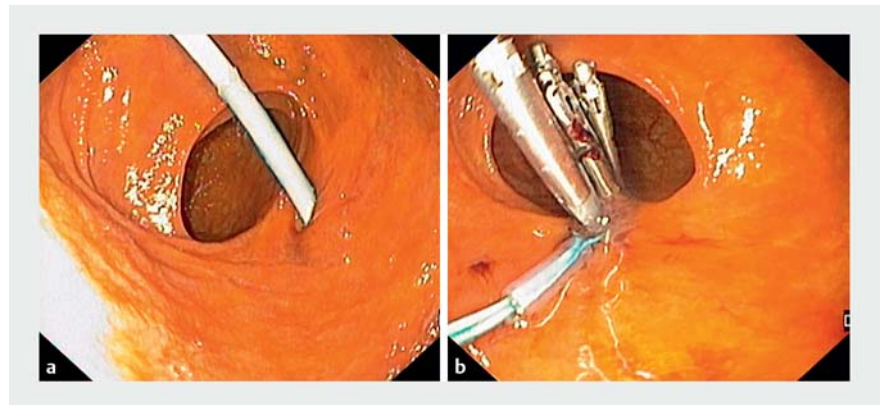
The first patient was a 59-year-old man with a hilar lesion suspicious of a Bismuth IV cholangiocarcinoma, in whom a straight plastic stent (8.5Fr×15 cm) was placed in the left hepatic duct. He presented 24 hours later with diffuse abdominal pain due to stent migration and perforation of the third portion of the duodenum (►Fig. 1a). After the stent had been removed with a foreign body biopsy forceps, closure was achieved with an over-the-scope clip (OTSC) (►Fig. 1b).

The second patient was a 60-year-old man with Crohn's disease and a hilar lesion suspicious of a Bismuth IV cholangiocarcinoma, in whom a straight plastic stent (10Fr×12 cm) was placed. He presented 48 hours later with abdominal pain and systemic inflammatory response syndrome due to stent migration and perforation of the second portion of the duodenum (►Fig. 2a). After stent removal, closure was achieved using a variation of the tulip bundle technique, with the placement of four through-the-scope clips and a detachable snare beneath all the clips (►Fig. 2b).

Finally, we report the case of a 60-year-old man with liver cirrhosis who underwent ERCP because of biliary stones. After removal of the stones, a straight plastic stent (10Fr×12 cm) was placed because of the presence of a hilar stricture. He presented 2 months later with ascites and peritonitis due to stent migration and perforation of the second portion of the duodenum (►Fig. 3). After stent removal, closure was achieved with the same variation of the tulip bundle technique (►Video 1).



►Fig. 1 Endoscopic images from patient #1 showing: **a** a perforation of the duodenal wall by a plastic biliary stent; **b** the appearance after endoscopic closure with an over-the-scope clip.



►Fig. 2 Endoscopic images from patient #2 showing: **a** a duodenal wall perforation caused by a plastic biliary stent; **b** the appearance after endoscopic closure using a variation of the tulip bundle technique, with the placement of through-the-scope clips and a detachable snare beneath the clips.

No contrast extravasation was observed in any of the patients. After closure of the perforation, biliary drainage was achieved with nasobiliary tubes in all of the patients.

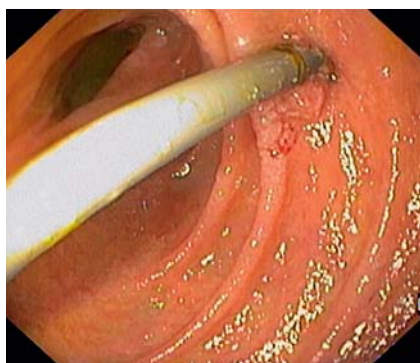
Duodenal wall perforation occurs in 1% of plastic stent migrations after biliary drainage [1]. The main causes of perforation have been reported to be the use of longer stents, stents being placed in the left intrahepatic duct, and delayed stent migration [2]. Endoscopy plays a major

role in the management of this type of perforation, especially if it is diagnosed early.

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### Competing interests

The authors declare that they have no conflict of interest.



► **Fig. 3** Endoscopic image from patient #3 showing a duodenal wall perforation caused by a plastic biliary stent, which was subsequently closed with the same tulip bundle technique that was used for patient #2.



► **Video 1** Endoscopic closure of lateral duodenal wall perforations caused by displacement of plastic biliary stents in three patients.

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## Bibliography

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