EUS-guided hepaticogastrostomy for management of cholangitis, hepatolithiasis, and anastomotic stricture after Roux-en-Y hepaticojejunostomy

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BACKGROUND

Endoscopic retrograde cholangiography (ERC) can be technically challenging in patients with surgically altered gastrointestinal anatomy (SAGA). Historically, patients with SAGA have required device-assisted enteroscopy, percutaneous transhepatic biliary drainage, or invasive surgical procedures for management of biliary disease. EUS-guided hepaticogastrostomy (EUS-HG) is a novel endoscopic technique that provides alternate access to the biliary tree.

CASE REPORT

A 43-year-old woman with a history of Roux-en-Y hepaticojejunostomy (HJ) presented with obstructive jaundice and cholangitis. Magnetic resonance cholangiopancreatography showed 3 stones at the confluence of the right and left hepatic ducts measuring up to 8 mm (Fig. 1). After discussion with the patient, a decision was made to perform EUS-HG for further management (Video 1, available online at www.VideoGIE.org).

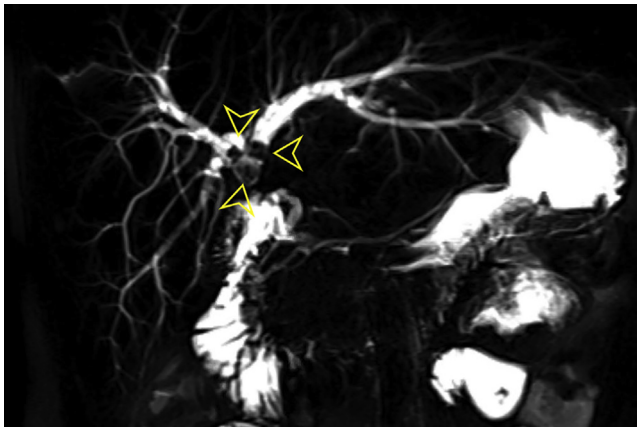

Figure 1. MRCP showing 3 stones (*yellow arrowheads*) at the confluence of the right and left hepatic ducts in a patient with Roux-en-Y hepaticojejunostomy.

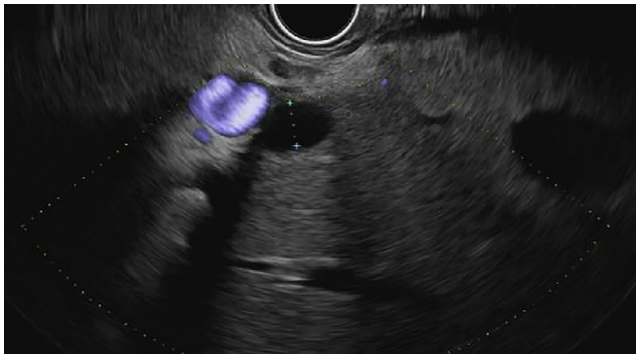

Figure 2. EUS showing a dilated segment 3 biliary radicles.

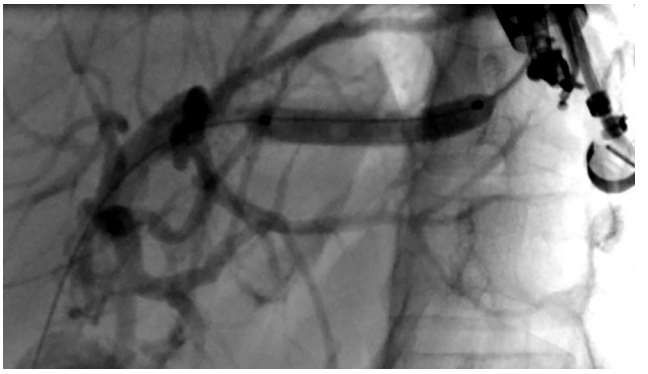

Figure 3. Balloon dilation of the hepaticogastrostomy tract using a 4-mm biliary dilating balloon.

Figure 4. Endoscopic image after hepaticogastrostomy stent deployment showing less than 2 cm stent length in the stomach.

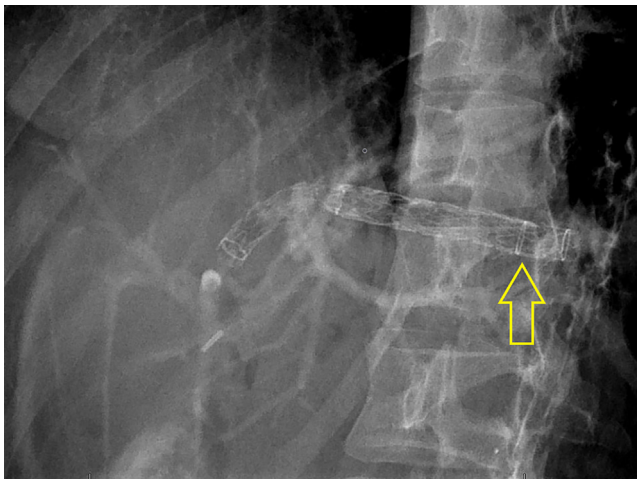

Figure 5. Fluoroscopic imaging showing placement of a second fully covered metal stent through the existing metal stent with a greater length deployed in the stomach. The *yellow arrow* shows the distal end of the first hepaticogastrostomy stent.

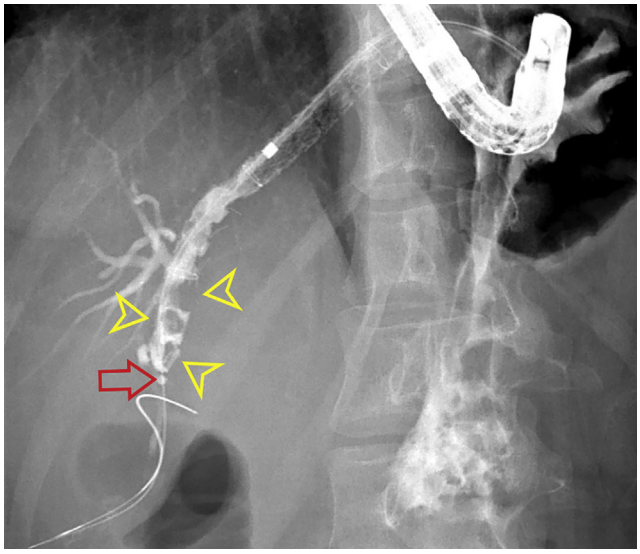

Figure 6. Fluoroscopic imaging showing intrahepatic stones (*yellow arrowheads*) and hepaticojejunostomy anastomotic stricture (*red arrow*).

Using a linear echoendoscope, we identified a dilated B3 radicle from the stomach and punctured it with a 19-gauge FNA needle (Fig. 2). Cholangiogram showed an HJ stricture and intrahepatic stones. A 4-mm biliary dilating balloon was advanced over a 0.025-inch guidewire (placed in the biliary tree), and segmental dilation of the hepaticogastrostomy (HG) tract was performed (Fig. 3).

An 8- × 80-mm fully covered self-expanding metal stent (FCSEMS) was placed across the HG tract. After deployment, the stent length in the stomach was less than 2 cm (Fig. 4). A second FCSEMS was placed through the existing metal stent with a greater length deployed in the stomach to prevent stent dislodgment and migration in the peritoneal cavity (Fig. 5).

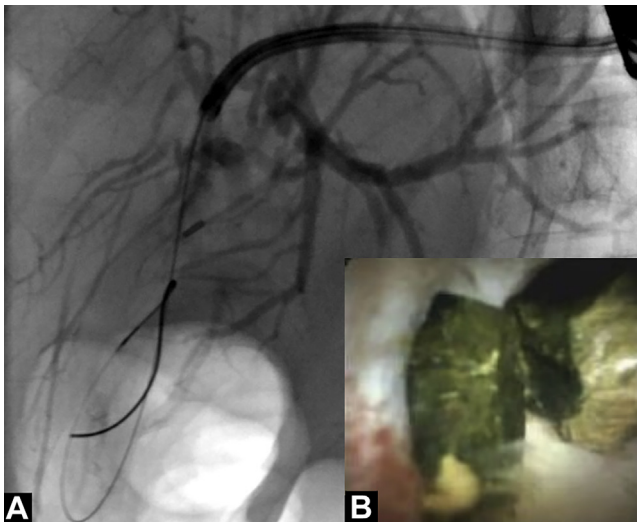

Figure 7. A, Fluoroscopic image showing SpyScope DS in the left hepatic duct. **B,** Digital cholangioscopy with visualization of stones proximal to the hepaticojejunostomy anastomotic stricture.

The patient was discharged home and scheduled for stricture dilation and intrahepatic stone management in 4 weeks. On follow-up ERC, a high-grade HJ stricture was seen on cholangiogram, and 3 stones were visualized proximal to it (Fig. 6). A 0.025-inch guidewire was advanced through the HG tract past the HJ stricture into the small bowel.

Initial attempts to dilate the HJ stricture (to facilitate antegrade stone removal) were unsuccessful. The HG metal stents were then removed, and a digital cholangioscope was advanced through the HG tract with visualization of intrahepatic stones (Fig. 7). Electrohydraulic lithotripsy was performed using saline irrigation until the stones were fragmented (Fig. 8A). After retrograde removal of stone fragments with balloon sweeps (Fig. 8B), the HJ stricture was dilated to 7F using a graduated dilation catheter (Fig. 9A). An FCSEMS was placed across the HG tract to establish drainage. A 7F × 15-cm double-pigtail biliary stent was placed through the HG metal stent with the proximal end past the HJ stricture into the small bowel and the distal end in the stomach (Fig. 9B).

The patient returned for a follow-up ERC 8 weeks later. The plastic and metal HG stents were seen in the stomach. The plastic stent was removed using a snare. Cholangiogram showed free flow of contrast past the HJ anastomosis into the small bowel. The HJ anastomosis was visualized on cholangioscopy and appeared normal. No residual stones were seen in the biliary tree.

The metal stent was subsequently removed using a snare, and the patient was discharged home. A follow-up laboratory examination 4 weeks after the procedure showed normal bilirubin and aminotransferases. She is scheduled for follow-up in 3 months for close monitoring for stricture recurrence.

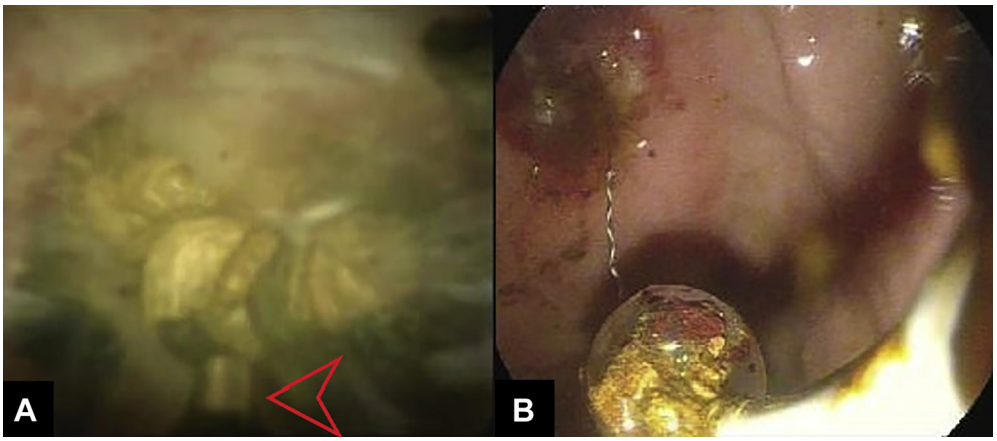

Figure 8. A, Electrohydraulic lithotripsy probe (*red arrowhead*) in close proximity to intrahepatic stones. **B,** Stone fragments cleared with balloon sweeps after electrohydraulic lithotripsy.

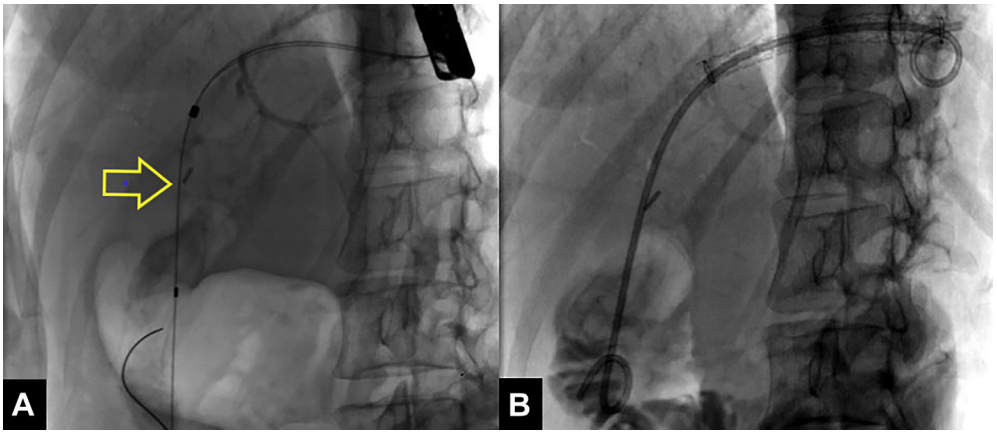

Figure 9. A, Fluoroscopic image showing dilation of hepaticojejunostomy anastomotic stricture (*yellow arrow*) using a dilating catheter. **B,** Fluoroscopic image showing a plastic double-pigtail biliary stent placed through the hepaticogastrostomy metal stent with the proximal end past the anastomotic stricture into the small bowel and the distal end in the stomach.

CONCLUSIONS

EUS-HG provides a safe alternative to surgery and percutaneous transhepatic biliary drainage in patients with SAGA and biliary pathology. Once the EUS-HG tract is established, it can serve as a port to the biliary tree, thus allowing advanced endoscopic procedures to be performed effectively.

DISCLOSURE

Dr Pawa is a consultant for Cook Endoscopy. All other authors disclosed no financial relationships.

Abbreviations: ERC, endoscopic retrograde cholangiography; EUS-HG, endoscopic ultrasound-guided hepaticogastrostomy; FCSEMS, fully covered self-expanding metal stent; HJ, hepaticojejunostomy; SAGA, surgically altered gastrointestinal anatomy.

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