EUS-guided hepaticogastrostomy to facilitate cholangioscopy and electrohydraulic lithotripsy of massive intraductal stones after Roux-en-Y hepaticojejunostomy

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ERCP in patients with Roux-en-Y hepaticojejunostomy has suboptimal success rates with forward-viewing endoscopes. A major limitation of balloon enteroscopy–endoscopic retrograde cholangiography (ERC) is the inability to use the standard accessories, which renders treatment of difficult biliary pathologies challenging. EUS-guided hepaticogastrostomy (EUS-HG) allows direct access to the left biliary tree in patients with difficult surgical anatomy.

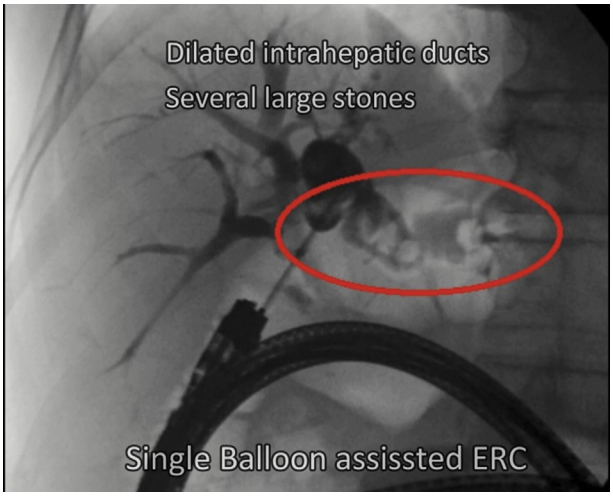

Figure 1. Cholangiographic view of a single-balloon enteroscope showing a massively dilated intrahepatic system and several large obstructing stones.

Figure 2. EUS view showing a dilated left intrahepatic biliary duct with a large gallstone.

CASE PRESENTATION

A 75-year-old man with a history of recurrent pyogenic cholangitis after partial liver resection and Roux-en-Y hepaticojejunostomy who was referred for the management of complex left intrahepatic biliary stones resulting in recurrent cholangitis. Single-balloon enteroscopy-ERC was performed at our institution, and the cholangiogram

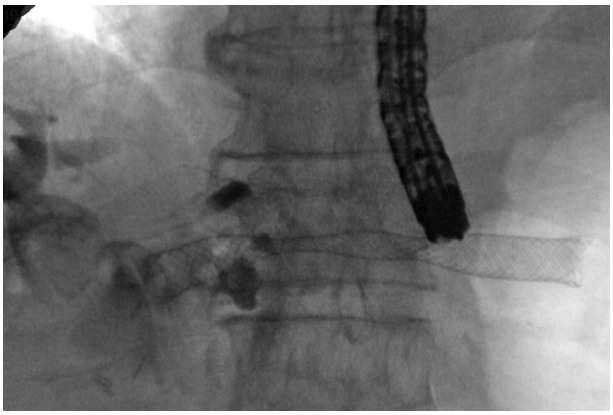

Figure 3. Fluoroscopic image demonstrating successful hepaticogastrostomy with 10- × 80-mm fully covered self-expandable metal stent.

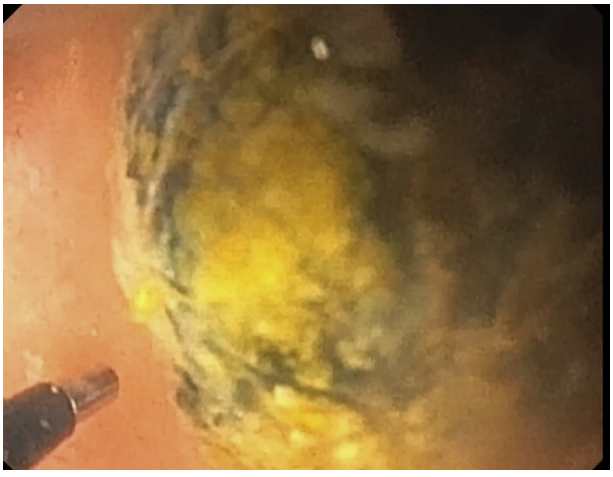

Figure 4. Endoscopic image of the electrohydraulic lithotripsy catheter tip targeting a large stone in the left intrahepatic duct.

Figure 5. A Y-adaptor can be attached to the scope channel to facilitate saline irrigation during electrohydraulic lithotripsy.

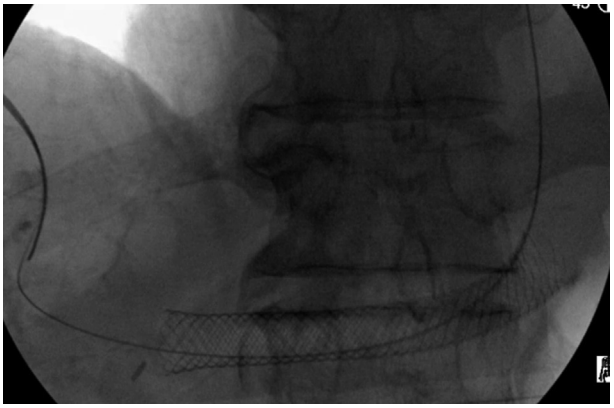

Figure 6. Fluoroscopic image demonstrating placement of a 7F nasobiliary drain to facilitate flushing and spontaneous passage of the stone fragments.

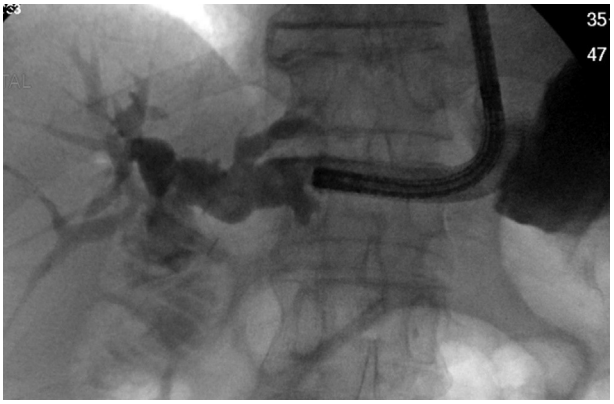

Figure 8. Fluoroscopic view showing no residual stones.

showed a massively dilated left hepatic system with several large obstructing stones (Fig. 1, Video 1, available online at www.VideoGIE.org).

Stone clearance was not possible because of the number and size of the stones. The decision was made to create an EUS-HG to perform subsequent cholangioscopy/electrohydraulic lithotripsy (EHL) through the hepaticogastrostomy (HG). The tract between the stomach and dilated left intrahepatic ducts was interrogated with Doppler imaging to identify interposing vessels (Fig. 2). A dilated left intrahepatic duct was punctured with a 19-gauge FNA needle, cholangiography was performed, and a 0.025-inch guidewire was advanced into the biliary system. A 4-mm biliary dilation balloon catheter was advanced over the wire, and segmental dilation of the HG tract was performed. A 10- × 80-mm fully covered self-expandable metal stent was advanced and deployed across the HG tract (Fig. 3).

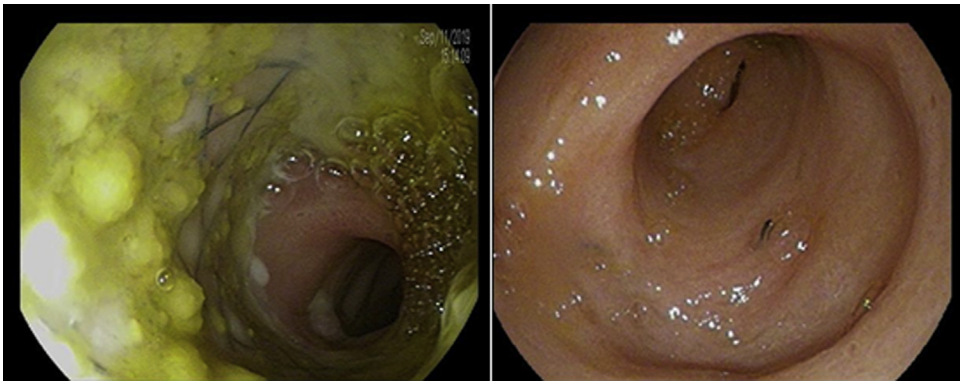

Figure 7. Endoscopic image demonstrating complete clearance of the left intrahepatic ducts after 3 separate sessions of electrohydraulic lithotripsy.

The patient was discharged home and returned for 3 separate sessions of direct cholangioscopy and EHL (Fig. 4). These were performed using an ultra-slim gastroscope. A Y-adaptor was attached to the scope channel to facilitate saline irrigation during EHL (Fig. 5). During the second ERC session, a 7F nasobiliary drain was placed to facilitate flushing and spontaneous passage of the stone fragments (Fig. 6). The patient returned for the final procedure 7 weeks after EUS-HG creation. The direct cholangioscopy and cholangiogram both demonstrated complete resolution of the intrahepatic biliary stones (Figs. 7 and 8). The stent was then removed with forceps.

After EUS-HG removal, the patient was discharged home the same day. He has not had recurrent symptoms of cholangitis at the time of the last follow-up (7 months postprocedure), and no further therapy is planned.

CONCLUSIONS

EUS-HG facilitates durable access to the left intrahepatic bile ducts in patients with surgically altered anatomy. Cholangioscopy and lithotripsy of stones can be subsequently accomplished with an ultra-slim gastroscope in these patients. This case illustrates how EUS-HG simplifies serial biliary access in a complicated patient needing EHL for complex left-sided hepatolithiasis.

DISCLOSURE

Dr Khashab is a consultant for Boston Scientific, Olympus, and Medtronic. All other authors disclosed no financial relationships.

Abbreviations: EHL, electrohydraulic lithotripsy; ERCP, endoscopic retrograde cholangiography; EUS-HG, EUS-guided hepaticogastrostomy; HG, hepaticogastrostomy.

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