Combined EUS-guided gallbladder drainage with rendezvous ERCP for treatment of concomitant cholecystitis, cholelithiasis, and choledocholithiasis

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OVERVIEW

In recent years, interventional EUS has opened new doors for the management of biliary diseases that would otherwise not be amenable to traditional endoscopic methods. EUS-guided gallbladder drainage (GBD) for cholecystitis represents one such example; studies have demonstrated its safety and efficacy to be equivalent to that of traditional percutaneous drainage and laparoscopic cholecystectomy in patients at high operative risk.[1,2] EUS-GBD also offers an alternative biliary drainage modality in cases of malignant biliary obstruction and may even be safe for patients with coagulopathy or on anticoagulation.[3,4] Here, we report a case of acute cholecystitis, cholelithiasis, and choledocholithiasis successfully treated with EUS-GBD followed by biliary rendezvous ERCP via the cystic duct directly through the gallbladder.

CASE REPORT

The patient was a 71-year-old man with a history of noncirrhotic portal hypertension due to nodular regenerative hyperplasia who presented with abdominal pain, fever, and scleral icterus. Laboratory tests were remarkable for total bilirubin of 3.5 mg/dL, alkaline phosphatase of 185 IU/L, aspartate aminotransferase of 20 units/L, and alanine aminotransferase of 20 IU/L. MRCP was concerning for cholecystitis with a 2-cm gallstone in the gallbladder neck. Surgical consultation determined that the patient was a poor operative candidate because of his severe portal hypertension, and the decision was made to proceed with EUS-GBD.

EUS demonstrated a common bile duct dilated to 7 mm, a stone in the common bile duct, and a large stone with sludge in the gallbladder. Because the best window for gallbladder drainage was seen in the antrum of the stomach, a cholecystogastrostomy (Fig. 1) was performed using a 15- × 10-mm lumen-apposing metal stent (LAMS) (AXIOS, Boston Scientific, Marlborough, Mass, USA). A large amount of pus immediately drained through the LAMS (Fig. 2). Dilation of the LAMS with a 10-11-12-mm balloon dilator was then performed to a maximum of 12 mm to facilitate cholecystoscopy. The echoendoscope was then exchanged for a standard gastroscope, and direct cholecystoscopy was performed through the LAMS. Copious amounts of pus were present, and a large 2-cm gallstone was visualized in the gallbladder neck (Fig. 3). Using saline solution irrigation, we found that electrohydraulic lithotripsy (Autholith, Northgate Technologies, Inc, Elgin, Ill, USA) was successful in fragmenting the gallstone. The cystic duct insertion (Fig. 4) was directly visualized, and an angled 0.025-inch × 450-cm guidewire (Visiglide, Olympus, Center Valley, Pa, USA) was passed anterograde through the cystic duct into the bile duct and out through the duodenum and eventually the stomach. The guidewire was grasped using a pediatric forceps, and the gastroscope was then removed and exchanged for the duodenoscope. The duodenoscope was reinserted over the guidewire (Fig. 5). The bile duct was then deeply cannulated with the sphincterotome over the guidewire in a rendezvous fashion, followed by biliary sphincterotomy and balloon sweep, with 1 stone successfully removed from the common bile duct. One 10F × 3-cm double pigtail stent was left in the gallbladder through the LAMS.

This patient did well after the procedure, with improvement in his abdominal pain. He tolerated an oral diet, with improvement in his liver function tests. A follow-up cholecystoscopy was performed with a therapeutic gastroscope with confirmation of gallstone clearance (Fig. 6). The LAMS was then removed and exchanged for a 10F double pigtail stent.

In summary, this video (Video 1, available online at www.giejournal.org) demonstrates the use of EUS-guided gallbladder drainage to treat concomitant cholelithiasis, cholecystitis, and choledocholithiasis in a single session.

DISCUSSION

The role of EUS-GBD has greatly expanded for patients deemed to be too high risk for surgical intervention. Although percutaneous gallbladder drainage has traditionally been the treatment of choice in these patients, 2 randomized controlled trials have shown that EUS-GBD has similar technical (97%) and clinical success (92%-100%) rates compared to percutaneous drainage.[1,5] Furthermore, when using LAMSs, patients treated with EUS-GBD had a lower

Figure 1. Distal flange of lumen-apposing metal stent deployed in the gallbladder as seen on endoscopic ultrasound.

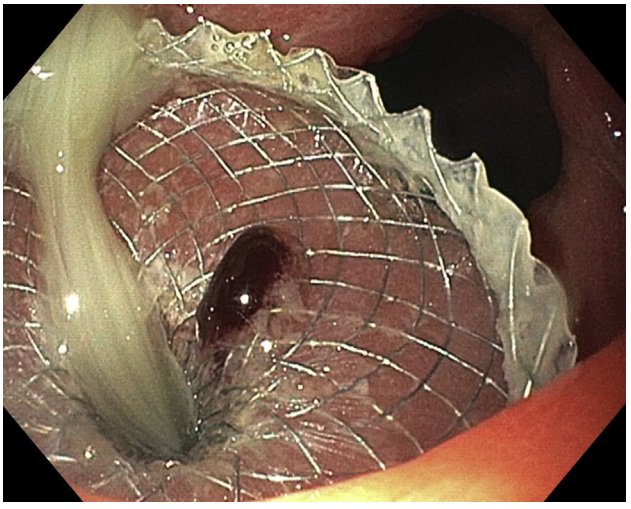

Figure 2. Pus draining upon deployment of lumen-apposing metal stent.

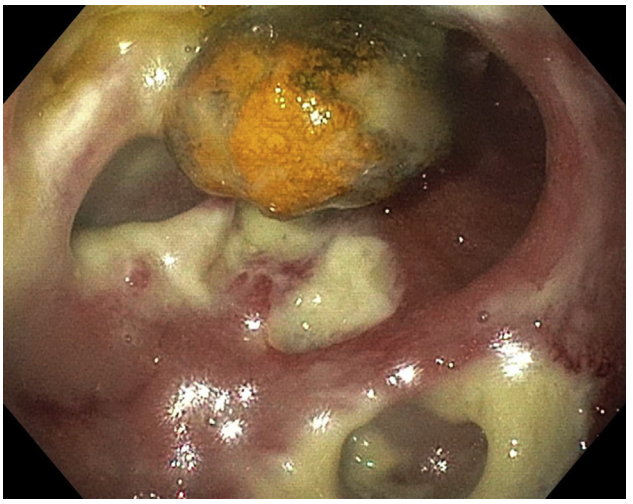

Figure 3. Cholecystoscopy revealing gallstone and pus within the gallbladder.

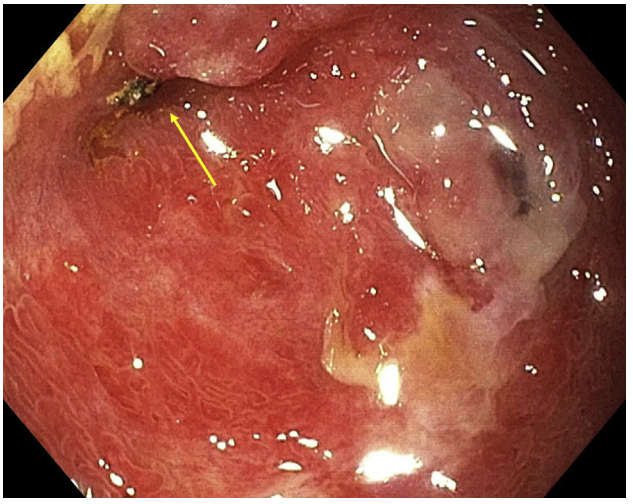

Figure 4. Cystic duct insertion site *(arrow)* as seen on cholecystoscopy.

rate of 30-day and 1-year adverse events and required fewer reinterventions.[1] A meta-analysis including 495 patients from 5 studies confirmed these findings, demonstrating similar technical and clinical success rates between the 2 approaches, but also finding that EUS-GBD was associated with shorter hospital stays, fewer reinterventions, and fewer unplanned admissions.[6] This has culminated with recent guidelines from the European Society of Gastrointestinal Endoscopy recommending EUS-GBD, when available, over percutaneous drainage in patients at high surgical risk with acute cholecystitis.[7]

In this case, EUS-GBD facilitated rendezvous access into the bile duct via the cystic duct, which was chosen over traditional ERCP to ensure access into the cystic duct, thereby allowing for the clearing of any residual stones/sludge from the cystic duct as well. This technique can also reduce the risk of post-ERCP pancreatitis, as seen when the rendezvous approach is performed during cholecystectomy.[8-10] In regard to the location of the LAMS placement, although a transduodenal route is favored over a transgastric route because of a lower risk of food impaction and buried LAMS, in this patient, only the antrum allowed for safe deployment of the LAMS.[11-13] Nevertheless, caution must be taken to avoid blocking the pylorus.

In conclusion, this case highlights an endoscopic option for treating concomitant cholecystitis, cholelithiasis, and choledocholithiasis in a single procedure. Although a recent propensity score analysis demonstrated that EUS-GBD was comparable to laparoscopic cholecystectomy in regard to clinical success, length of hospital stay, 30-day adverse events, recurrent cholecystitis, and reinterventions, further research is certainly needed to refine the indications for EUS-GBD.[2] Nevertheless, this case lends

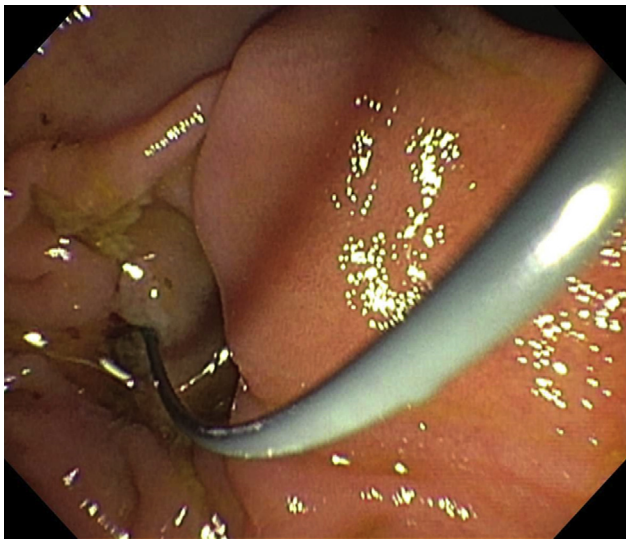

Figure 5. Rendezvous guidewire exiting the major papilla.

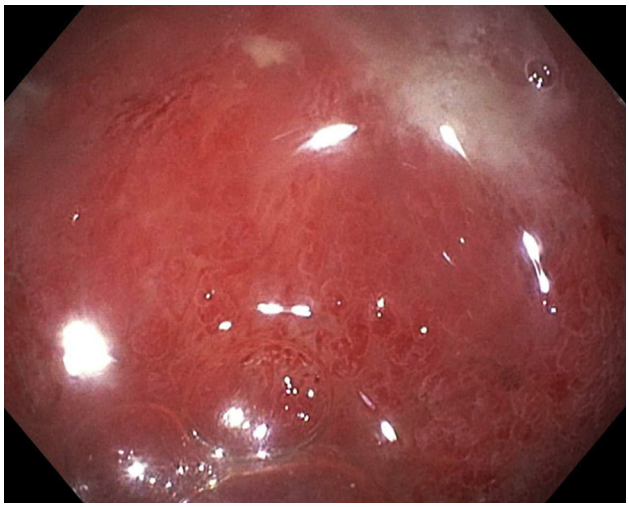

Figure 6. Follow-up cholecystoscopy demonstrating healthy-appearing gallbladder and gallstone clearance.

support to the use of EUS-GBD in patients at high risk for surgery and illustrates a potentially helpful single-session approach to these patients.

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: GBD, gallbladder drainage; LAMS, lumen-apposing metal stent.

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