

Full metal jacket: salvage of EUS-guided gallbladder drainage

Kevin D. Platt, MD,¹ Ravi J. Kankotia, MD,¹ Allison R. Schulman, MD, MPH^{1,2}



ERCP is the current reference standard for managing malignant biliary obstruction, but it may not be possible in patients with duodenal stenosis or malignant ampullary infiltration. To address this, EUS-guided techniques have gained attention as a means of providing internal biliary decompression to obviate the need for percutaneous drains.¹ EUS-guided gallbladder drainage (EUS-GBD) is a safe and effective option when ERCP and other methods fail.²⁻⁴ In this article, we present a case demonstrating the effectiveness and durability of EUS-GBD in this scenario and describe a salvage technique in the case of tumor progression (Video 1, available online at www.videogie.org).

A 53-year-old man presented with abdominal pain, 30-pound weight loss, and night sweats. Laboratory test results were notable for elevated liver biochemistries, and cross-sectional imaging revealed a large infiltrative pancreatic head mass with obstruction of the distal common bile duct and multiple bilobar hepatic metastases (Fig. 1). Biopsy of a liver lesion showed metastatic high-grade neuroendocrine carcinoma. ERCP was attempted; however, the major papilla could not be identified because of very edematous duodenal folds (Fig. 2).

To facilitate biliary drainage, the decision was made to pursue EUS-guided drainage. There was no adequate window for hepaticogastrostomy or choledochoduodenostomy. On review of imaging, the cystic duct appeared to be patent and the gallbladder was very distended owing to distal biliary obstruction (Fig. 3). EUS-GBD was successfully performed using a 15- × 10-mm electrocautery-enhanced lumen-apposing metal stent (LAMS) between the gallbladder and the duodenum (Fig. 4). A 10F × 3-cm plastic double-pigtail stent was placed through the LAMS to prevent migration and occlusion. There were no periprocedural adverse events, and the patient's liver biochemistries normalized. He then started palliative chemotherapy.

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

Copyright © 2023 American Society for Gastrointestinal Endoscopy. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). 2468-4481

<https://doi.org/10.1016/j.vgie.2023.07.013>

Division of Gastroenterology, University of Michigan, Ann Arbor, Michigan (1), Department of Surgery, University of Michigan, Ann Arbor, Michigan (2).

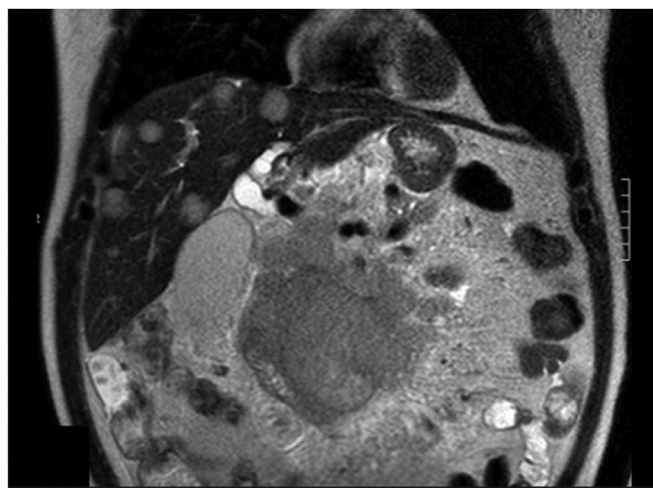


Figure 1. CT image with pancreatic neuroendocrine tumor and liver metastases.

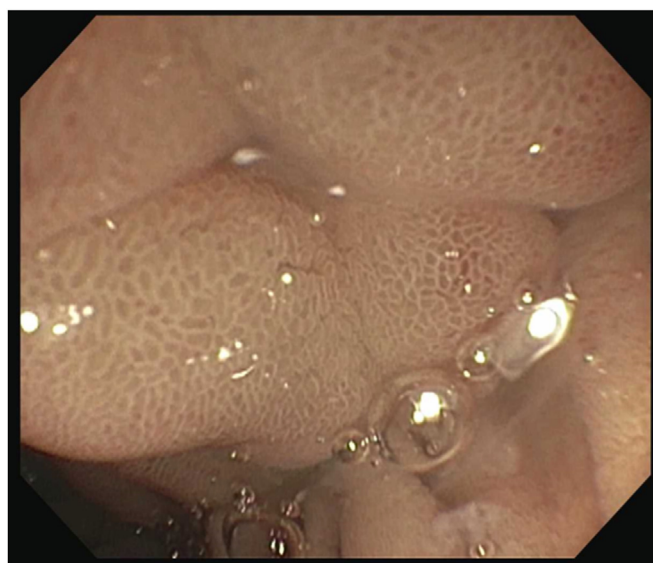


Figure 2. Edematous duodenal folds precluding ampullary access for ERCP.

After 6 months of therapy with good response, the patient was placed on an observation protocol. However, 4 months later, he was hospitalized for symptoms of gastric

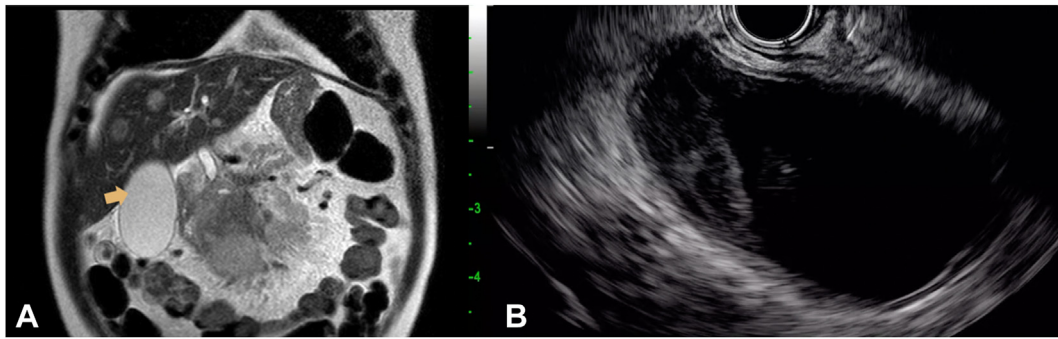


Figure 3. Magnetic resonance (A) and EUS (B) images of distended gallbladder due to distal biliary obstruction.

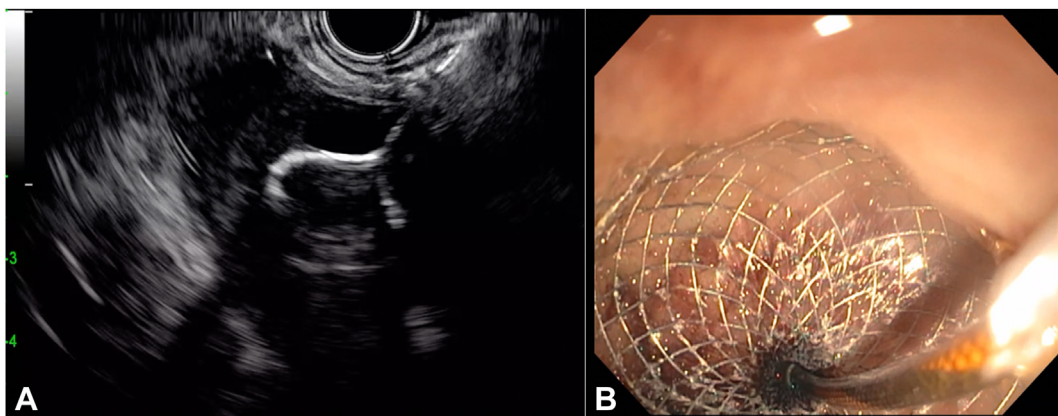


Figure 4. A, EUS-guided gallbladder drainage, with deployment of distal flange in the gallbladder. B, Deployment of proximal flange in the proximal duodenum.

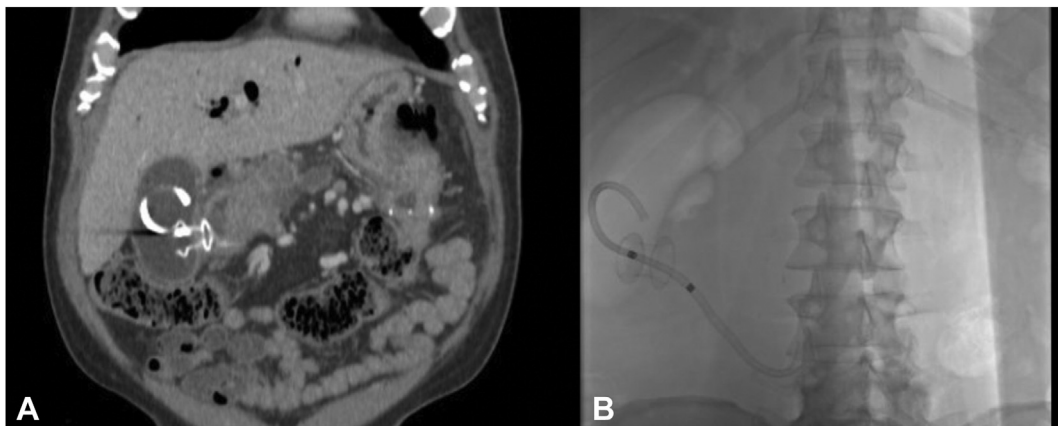


Figure 5. CT (A) and fluoroscopic (B) images showing lumen-apposing metal stent in place after 16 months.

outlet obstruction and subsequently underwent a surgical gastrojejunostomy with improvement. He was then restarted on chemotherapy.

Six months following this, the patient presented to the hospital with fevers and jaundice with bilirubin 4. Imaging showed that the LAMS and plastic stent placed more than

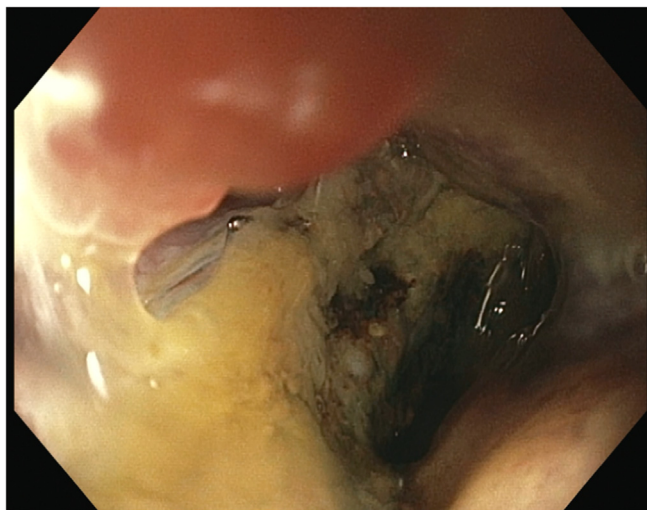


Figure 6. Biliary obstruction due to occluded lumen-apposing metal stent from tumor involvement and duodenal invasion.

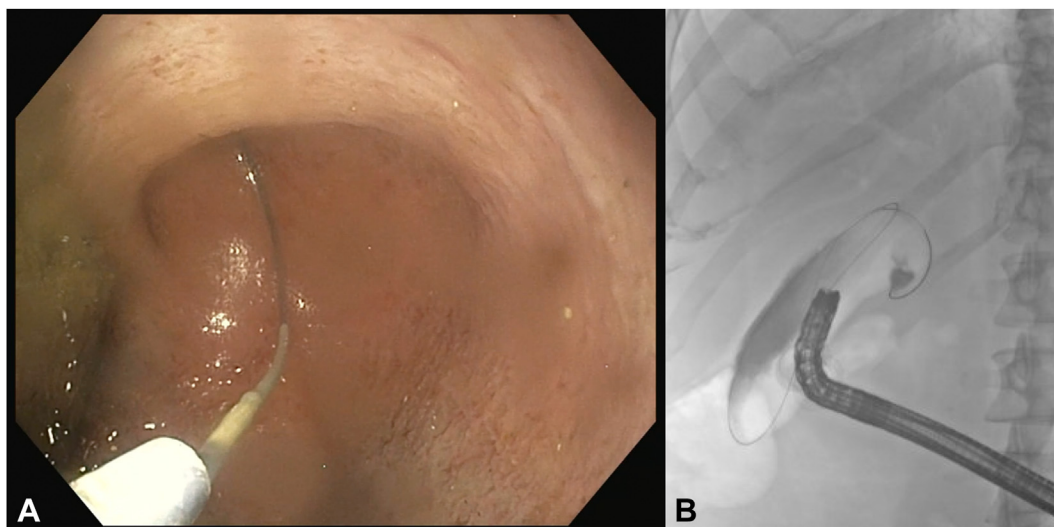


Figure 7. Endoscopic (A) and fluoroscopic (B) images of endoscope and wire advancement in the gallbladder.

16 months prior were present (Fig. 5), but there was an increase in biliary dilation.

On endoscopic evaluation, it became clear that the biliary obstruction was due to a completely occluded LAMS from progressive tumor involvement and duodenal invasion (Fig. 6). Subsequently, 2 overlapping 10-mm \times 10-cm fully covered self-expandable metal stents were used to bridge the area of narrowing and ensure ongoing drainage and patency despite rapid tumor growth (Figs. 7 and 8). The patient's liver enzymes remained normal 3 months following this procedure. He remains on therapy.

EUS-GBD offers a durable option for malignant biliary obstruction and may be particularly useful when transpapillary

access and other EUS-guided approaches are not feasible. Despite its durability, disease progression may ultimately lead to stent obstruction and ineffective drainage. Salvage maneuvers using the existing cholecystoduodenostomy should be considered to avoid the need for percutaneous interventions.

DISCLOSURE

Dr Schulman is a consultant for Apollo Endosurgery, Boston Scientific, MicroTech, and Olympus and has research/



Figure 8. Fluoroscopic images of overlapping covered metal stents facilitating biliary drainage via the gallbladder and upper GI tract.

grant support from GI Dynamics and Fractyl. The other authors did not disclose any financial relationships.

REFERENCES

1. Elmunzer BJ, Maranki JL, Gómez V, et al. ACG clinical guideline: diagnosis and management of biliary strictures. *Am J Gastroenterol* 2023;118:405-26.
2. Imai H, Kitano M, Omoto S, et al. EUS-guided gallbladder drainage for rescue treatment of malignant distal biliary obstruction after unsuccessful ERCP. *Gastrointest Endosc* 2016;84:147-51.
3. Issa D, Irani S, Law R, et al. Endoscopic ultrasound-guided gallbladder drainage as a rescue therapy for unresectable malignant biliary obstruction: a multicenter experience. *Endoscopy* 2021;53:827-31.
4. Kamal F, Khan MA, Lee-Smith W, et al. Efficacy and safety of EUS-guided gallbladder drainage for rescue treatment of malignant biliary obstruction: a systematic review and meta-analysis. *Endosc Ultrasound* 2023;12: 8-15.