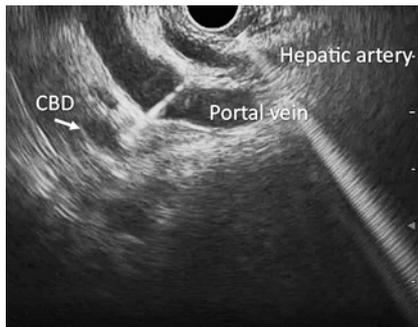
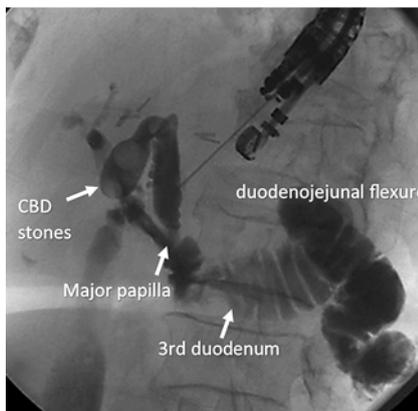


Endoscopic ultrasound-guided transportal cholangiography and jejunoduodenostomy to facilitate through-the-stent ERCP and transmural gallbladder drainage in Roux-en-Y gastrectomy



► **Fig. 1** Ultrasound view of the endoscopic ultrasound (EUS)-guided transvascular puncture of the common bile duct using a 22G needle. CBD, common bile duct.

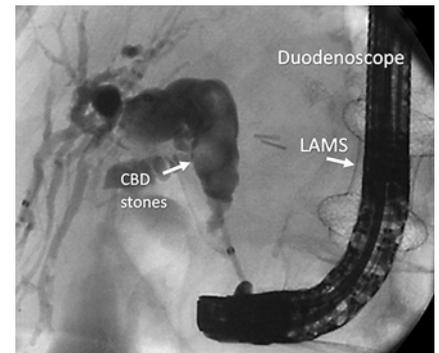


► **Fig. 2** Fluoroscopic view of EUS-guided transportal methylene-blue cholangiography confirming multiple choledocholithiasis. Contrast outflow from the common bile duct through the major papilla outlines the duodenum and proximal jejunum on fluoroscopy.

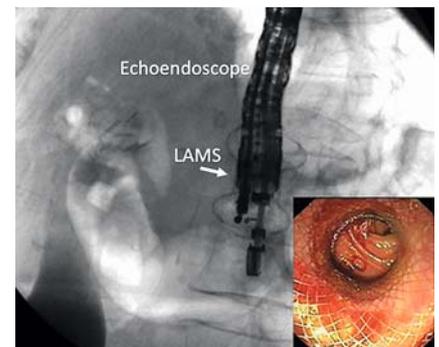
Endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasound (EUS)-guided gallbladder drainage can be combined in one session [1] but remain challenging in postsurgical anatomy [2]. EUS-directed transgastric ERCP has led to favorable results in Roux-en-Y gastric bypass; several other through-the-stent endoscopic procedures are also possible in gastric bypass, including EUS [3]. ERCP may similarly be

performed in Roux-en-Y hepaticojejunostomy by creating a fistula from the stomach or duodenum to the afferent limb using a lumen-apposing metal stent (LAMS) [4].

An 88-year-old woman who had undergone subtotal gastrectomy for gastric adenocarcinoma experienced cholecystitis with common bile duct (CBD) stones. Access to the papilla using ERCP failed. EUS-guided antegrade stone removal was attempted. Lack of intrahepatic dilation precluded transhepatic EUS-guided cholangiography. The CBD was imaged transgastrically under EUS and punctured through the hepatic artery and portal vein with a 22G needle (► **Fig. 1**). Methylene-blue cholangiography confirmed the presence of multiple CBD stones. Contrast outflow into the duodenum provided fluoroscopic mapping (► **Fig. 2**). EUS-puncture of the duodenum from the jejunum next to the surgical gastrojejunostomy using a 19G needle confirmed access by aspiration of blue-tinged fluid. Saline injection through the 19G needle brought about luminal distension prior to freehand duodenal insertion of a cautery-enhanced 20 × 10-mm LAMS at the duodenojejunal flexure (► **Video 1**). After balloon dilation of the LAMS to 18 mm, the echoendoscope was removed. A duodenoscope was passed through the LAMS retrogradely to the papilla (► **Fig. 3**). CBD stones were cleared following over-the-stent needle-knife sphincterotomy and balloon sphincteroplasty. The duodenoscope was removed. An echoendoscope was advanced through the LAMS into the duodenal bulb under careful fluoroscopic monitoring (► **Fig. 4**). A 10 × 10-mm LAMS was advanced freehand under EUS and deployed for cholecystoduodenostomy (► **Fig. 5**). After cholestasis and symptom resolution, the patient was discharged without further event.



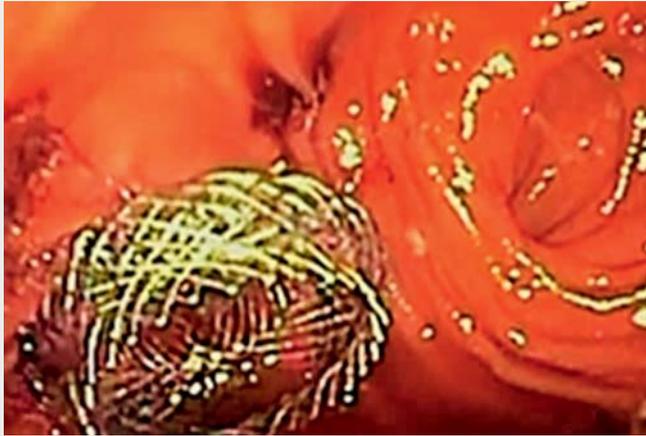
► **Fig. 3** Endoscopic retrograde cholangiopancreatography through the lumen-apposing metal stent (LAMS), monitored by fluoroscopy. Additionally, choledocholithiasis demonstrated on retrograde cholangiography.



► **Fig. 4** Fluoroscopic view of the echoendoscope passage through the LAMS to access the duodenal bulb. Inset: Endoscopic view of the jejunoduodenostomy.



► **Fig. 5** Endoscopic ultrasound view of freehand placement of a 10 × 10-mm LAMS for cholecystoduodenostomy.



Video 1 Endoscopic ultrasound (EUS)-guided transportal cholangiography and jejuno-duodenostomy with a lumen-apposing metal stent allowing through-the-stent retrograde passage of the duodenoscope and echoendoscope for single-session endoscopic retrograde cholangiopancreatography and EUS-guided gallbladder drainage in a patient with Roux-en-Y gastrectomy.

Through-the-LAMS ERCP appears feasible in gastrectomy patients, as in other patients with postsurgical anatomy [3,4]. Transportal EUS-guided puncture may safely be performed for tissue sampling [5]; it may also allow EUS-guided cholangiography in postsurgical anatomy without intrahepatic dilation, facilitating afferent limb mapping on fluoroscopy. Transenteric LAMS allow sequential endoscope passage for combined ERCP and EUS-guided gallbladder drainage as a same-session procedure in high-surgical-risk Roux-en-Y gastrectomy patients.

Endoscopy_UCTN_Code_TTT_1AS_2AD

Competing interests

Dr. Manuel Perez-Miranda is a consultant for Boston Scientific, Olympus, Medtronic, and M.I.Tech.

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