



EUS-Guided hepaticogastrostomy in a pregnant patient with Roux-en-Y hepaticojejunostomy anatomy

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Endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) is a therapeutic biliary drainage procedure that can be utilized as an alternative procedure in patients who fail conventional ERCP and have sufficiently dilated left-sided biliary ducts. Herein, we describe an EUS-HGS to obtain biliary drainage in a pregnant patient with previous Roux-en-Y hepaticojejunostomy (RYHJ) reconstruction.

A 22-year-old woman presented 17 weeks pregnant with worsening nausea, vomiting, and inability to tolerate oral intake. Eight months prior, she underwent a bile duct transection during cholecystectomy requiring RYHJ reconstruction. She developed a bile leak and had previously undergone a technically difficult balloon-assisted enteroscopy ERCP (BAE-ERCP) with placement of a plastic stent leading to resolution and stent removal. Present labs were notable for leukocytosis ($15 \times 10^9/L$), elevated alkaline phosphatase (532 IU/L), and total bilirubin (2.2 mg/dL). MRCP revealed mildly dilated intrahepatic bile ducts up to 5 mm extending to the level of the hepaticojejunostomy (HJ), suggestive of an anastomotic stricture.

After multidisciplinary discussions with colleagues in obstetrics, hepatobiliary surgery, and interventional radiology, treatment options were reviewed with the patient. The primary goal was to limit radiation and anesthetic exposure during the remainder of her pregnancy. Given the need for repetitive interventions when considering BAE-ERCP and percutaneous transhepatic biliary drainage (PTBD), the decision was made to perform EUS-HGS with the intent of performing a single procedure until she was postpartum.

Under endosonographic guidance, a dilated peripheral biliary radical was punctured using a 19-gauge needle (Video 1, available online at www.giejournal.org). A guidewire was advanced through the left hepatic duct and across the HJ. Cholangiogram demonstrated intrahepatic bile duct dilation and evidence of a HJ stricture (Fig. 1). The hepaticogastrostomy (HG) tract (Fig. 2) and HJ stricture were both dilated (Fig. 3). The HG was created with 2 overlapping fully covered self-expandable metal stents (FCSEMS). Two 7Fr \times 12-cm double plastic pigtail stents (DPPS) were then deployed coaxially through the FCSEMS across the HJ stricture and terminated in the gastric lumen (Fig. 4). General anesthesia was used for the procedure. The total procedure time was 2 hours and 30 minutes. There was difficulty in identifying an ideal target for biliary access, so extra care was taken. The total fluoroscopy time was 35 minutes. This was the 1-time dose for the entire

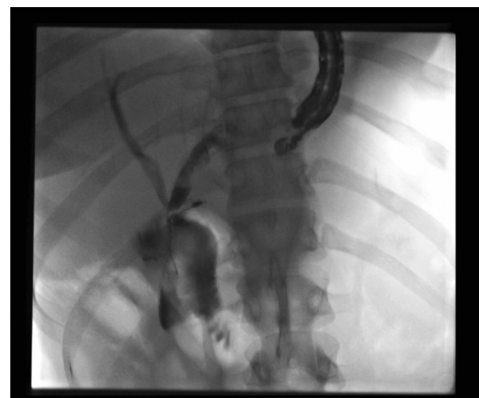


Figure 1. Fluoroscopic image showing antegrade cholangiogram with hepaticojejunostomy stricture.



Figure 2. Fluoroscopic image demonstrating dilation of the hepaticogastrostomy.

duration of the pregnancy, almost certainly less than what would be required for repeat balloon-assisted ERCP or PTBD exchanges. The patient did well postprocedure and eventually delivered her child uneventfully. At subsequent transmural ERCP 4 months postpartum, all indwelling stents were removed. Cholangiogram was notable for persistent HJ stenosis. Four 7Fr \times 12-cm DPPS were placed across the HG and HJ. Final transmural ERCP was notable for free flow of contrast across the HJ with no resistance with extraction balloon pull-through. The patient remains well 2 months postprocedure.



Figure 3. Fluoroscopic image demonstrating dilation of the hepaticojejunostomy anastomosis.



Figure 4. Fluoroscopic image demonstrating indwelling covered metal stents to create hepaticogastrostomy and coaxially placed plastic pigtail stents across hepaticojejunostomy.

Endoscopic retrograde cholangiopancreatography in pregnancy has been reported to be safe.¹ The literature in regard to ERCP in pregnant patients with altered anatomy is currently lacking and further investigation is needed. This case posed unique challenges as the RYHJ anatomy made biliary access difficult with conventional endoscopy. Given her pregnancy, alternate options considered were laparoscopic-assisted ERCP (LA-ERCP) and BAE-ERCP, both of which have significant limitations. LA-ERCP requires

significant logistical coordination and is costly, with inability to perform repeat biliary interventions. The risk of a LA-ERCP in pregnancy is unknown; however, recent surgical literature has suggested that laparoscopic-assisted surgery in the third trimester can be safe. BAE-ERCP is technically difficult, time-consuming, and has limited rates of technical success. Although the patient previously underwent successful BAE-ERCP, the procedure was challenging and the goal of our procedure was to limit fluoroscopy and perform a single procedure with a high technical success rate. Furthermore, BAE-ERCP with a gravid uterus would likely increase case difficulty. PTBD was less than ideal because of the need for frequent tube changes, exposure to fluoroscopy, and the nuisance of an external drainage catheter.

In conclusion, pregnant patients with surgically altered gastrointestinal anatomy pose a unique therapeutic challenge when presenting with biliary disease. In our case, EUS-HGS was safe and effective in this pregnant patient to gain biliary access and treat her bilioenteric anastomotic stricture in a minimally invasive fashion.

DISCLOSURE

Dr Law is a consultant for Olympus, Medtronic, and Conmed. Dr Bhalla, Dr Sondbi, and Dr Prabhu disclosed no financial relationships.

Abbreviations: BAE-ERCP, balloon-assisted enteroscopy ERCP; DPPS, double plastic pigtail stents; EUS-HGS, EUS-guided hepaticogastrostomy; FCSEMS, fully covered self-expandable metal stent; HG, hepaticogastrostomy; HJ, hepaticojejunostomy; LA-ERCP, laparoscopic-assisted ERCP; PTBD, percutaneous transbiliary drainage; RYHJ, Roux-en-Y hepaticojejunostomy.

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