

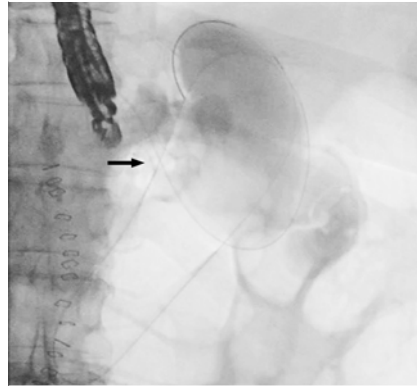
One-step endoscopic ultrasound-directed gastro-gastrostomy ERCP for treatment of bile leak

A 32-year-old woman with a history of obesity who underwent Roux-en-Y gastric bypass in 2005 presented with acute cholecystitis. She underwent laparoscopic cholecystectomy, which was converted to open cholecystectomy owing to significant inflammation and adhesions. On postoperative Day 2, 300 mL of bilious output was noted in the Jackson-Pratt drain, which raised concerns about a bile leak. The gastrointestinal department was consulted for endoscopic retrograde cholangiopancreatography (ERCP) and management of bile leak.

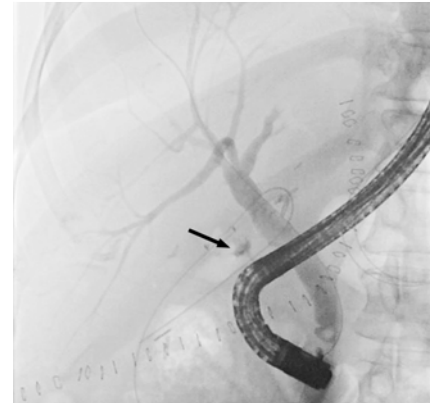
Laparoscopy-assisted ERCP was felt to be high risk and difficult because of the patient's recent open cholecystectomy with significant adhesions and inflammation. Enteroscopy-assisted ERCP was felt to have a low likelihood of success owing to a Roux limb length of >150 cm. A decision was made to pursue endoscopic ultrasound (EUS)-directed gastro-gastrostomy ERCP in one step (EDGE).

EDGE involves the creation of a gastro-gastrostomy fistula to gain access into the bypassed stomach. Conventional ERCP is then performed through the gastro-gastrostomy fistula after fistula maturation, which usually takes 4–6 weeks. Given the acute bile leak, EDGE was performed in one session with creation of the gastro-gastrostomy fistula tract under EUS guidance using a 15 mm lumen-apposing metal stent (▶ **Fig. 1**), followed by conventional ERCP during the same session (▶ **Video 1**). ERCP showed an active bile leak (▶ **Fig. 2**), and a fully covered metal stent was placed for biliary drainage.

On postprocedure Day 1, the Jackson-Pratt drain output was no longer bilious and had decreased in volume. On postprocedure Day 2 the patient was discharged home. The patient returned for outpatient ERCP with stent removal 8 weeks later, and resolution of the bile leak was seen on the cholangiogram. After stent removal, the gastro-gastric



▶ **Fig. 1** Fluoroscopy confirmed placement of the lumen-apposing metal stent (arrow) across the bypassed stomach, creating a gastro-gastrostomy fistula.



▶ **Fig. 2** Cholangiogram showed a bile leak (arrow) near the cystic duct remnant.

fistula tract was closed with endoscopic suturing.

EUS-guided gastro-gastrostomy ERCP has previously been described in a case series as a feasible multi-step alternative approach to balloon-assisted or laparoscopy-assisted ERCP in patients with altered anatomy from gastric bypass [1]. The technical success rate in creation of the gastro-gastrostomy fis-

tula was 100%, and successful ERCP via the fistula tract was performed in 60% of cases. A mid-term follow-up study involving 16 patients showed improved clinical success approaching 90% [2]. The procedure was typically performed in multiple steps to allow for full maturation of the fistula. We describe here a case of the successful management of bile leak via the EDGE proce-



▶ **Video 1** Endoscopic ultrasound-directed gastro-gastrostomy endoscopic retrograde cholangiopancreatography for the treatment of postoperative bile leak.

ture in one step, and demonstrate that this is a feasible solution in patients with difficult gastric bypass anatomy who require ERCP.

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Competing interests

None

The Authors

Ming-ming Xu¹, Carlos Carames¹, Aleksey Novikov¹, Monica Saumoy¹, Che Afaneh², Michel Kahaleh¹, Reem Z. Sharaiha¹

- 1 Division of Gastroenterology and Hepatology, New York Presbyterian Hospital Weill Cornell Medical Center, New York, New York, United States
- 2 Department of Surgery, New York Presbyterian Hospital Weill Cornell Medical Center, New York, New York, United States

Corresponding author

Reem Z. Sharaiha, MD

Gastroenterology and Hepatology, Joan and Sanford I Weill Medical College of Cornell University, 1305 York Avenue 4th Floor, New York NY 10021, United States
 Fax: +1-646-9620110
 rzs9001@med.cornell.edu

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