

MERCYHEALTH

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INTRODUCTION

- **Incidence and Etiology:** Bile leaks are a known complication of laparoscopic cholecystectomy, occurring in 0.2–2% of cases. While the cystic duct stump is the most frequent site of leakage (94.5%), the Duct of Luschka accounts for the remaining 5.5%. Anatomy of the Duct of Luschka: These are small accessory biliary ducts (1–2 mm in diameter) that typically originate in the right hepatic lobe and course along the gallbladder bed. Because they are inconspicuous and small, they are frequently overlooked during the initial surgery. The combination of a bile leak from the Duct of Luschka in a post-cholecystectomy RYGB patient is exceptionally rare in the literature. This rarity contributes to the difficulty in diagnosis and management due to a lack of standardized approaches. This case poster also discusses the idea of prophylactic cholecystectomy in bariatric patient and compares different management options for bile leak in RNYGB patient

- **Clinical Presentation:** Postoperative leaks often manifest within the first week as the patient develops symptoms of biliary peritonitis, such as diffuse abdominal pain and leukocytosis. In this case, the patient presented on postoperative day three with elevated liver enzymes but unremarkable bilirubin levels.

- **Diagnostic Modalities:** Initial investigation via CT scan may reveal fluid collections (bilomas), but confirmation often requires HIDA scintigraphy to visualize active extravasation, or ERCP for both diagnosis and therapeutic intervention.

- **The RYGB Management Challenge:** In patients with a history of Roux-en-Y Gastric Bypass (RYGB), the altered gastrointestinal anatomy—specifically the long Roux limb—renders traditional trans-oral ERCP technically unfeasible.

- **Management Goals:** Effective treatment requires a multidisciplinary approach to achieve two goals: surgical closure of the leak (suture repair) and reduction of the transpapillary pressure gradient via sphincterotomy to facilitate healing of the biliary tree.

- **Case Significance:** This case report highlights the rare management of a Strasberg Type A leak in a complex bariatric patient, providing a successful framework using early imaging and intraoperative trans-gastric ERCP.

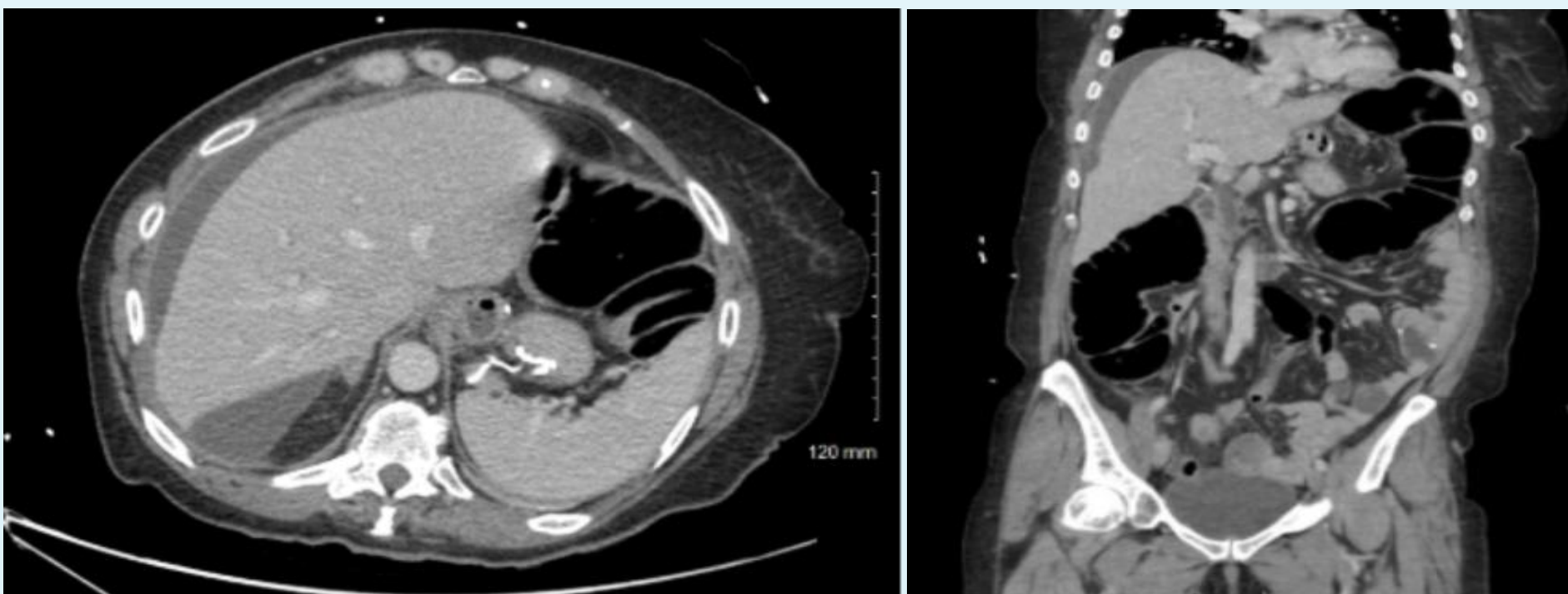


Fig. 1. CT scan of the abdomen showing subhepatic fluid.



Fig. 2. HIDA scan confirmed bile leak

CASE DESCRIPTION AND TABLE

- **Patient History:** A 65-year-old female (BMI 26.7) with a history of robotic Roux-en-Y gastric bypass (RYGB) and hiatal hernia repair presented with biliary colic.

- **Initial Management:** Preoperative ultrasound and MRCP showed a dilated common bile duct (CBD) with sludge but no stones. The patient underwent an uncomplicated elective robotic-assisted cholecystectomy.

- **Postoperative Presentation:** Three days later, she returned with right-sided chest pain and (16.9 K/μL), alkaline phosphatase (166 U/L), ALT (166 U/L), and AST (222 U/L) were elevated. Bilirubin was unremarkable

- **Diagnostic Workup:** CT imaging revealed right upper quadrant ascites (Figure 1), and a HIDA scan confirmed a bile leak originating from the gallbladder fossa extending cephalad along the liver (Figure 2).

- **Surgical Intervention:** Re-laparoscopy identified a biloma and a small Duct of Luschka leak, which was repaired using a 3-0 Vicryl suture.

- **Multidisciplinary Procedure:** A concurrent transgastric ERCP via gastrotomy was performed to ensure ductal integrity. Initial cholangiography confirmed a dilated CBD; a biliary sphincterotomy and balloon sweeps were performed to reduce biliary pressure.

- **Outcome:** Post-procedural cholangiography confirmed no further leakage. The patient was discharged on postoperative day 3 and remained asymptomatic at her two-week follow-up.

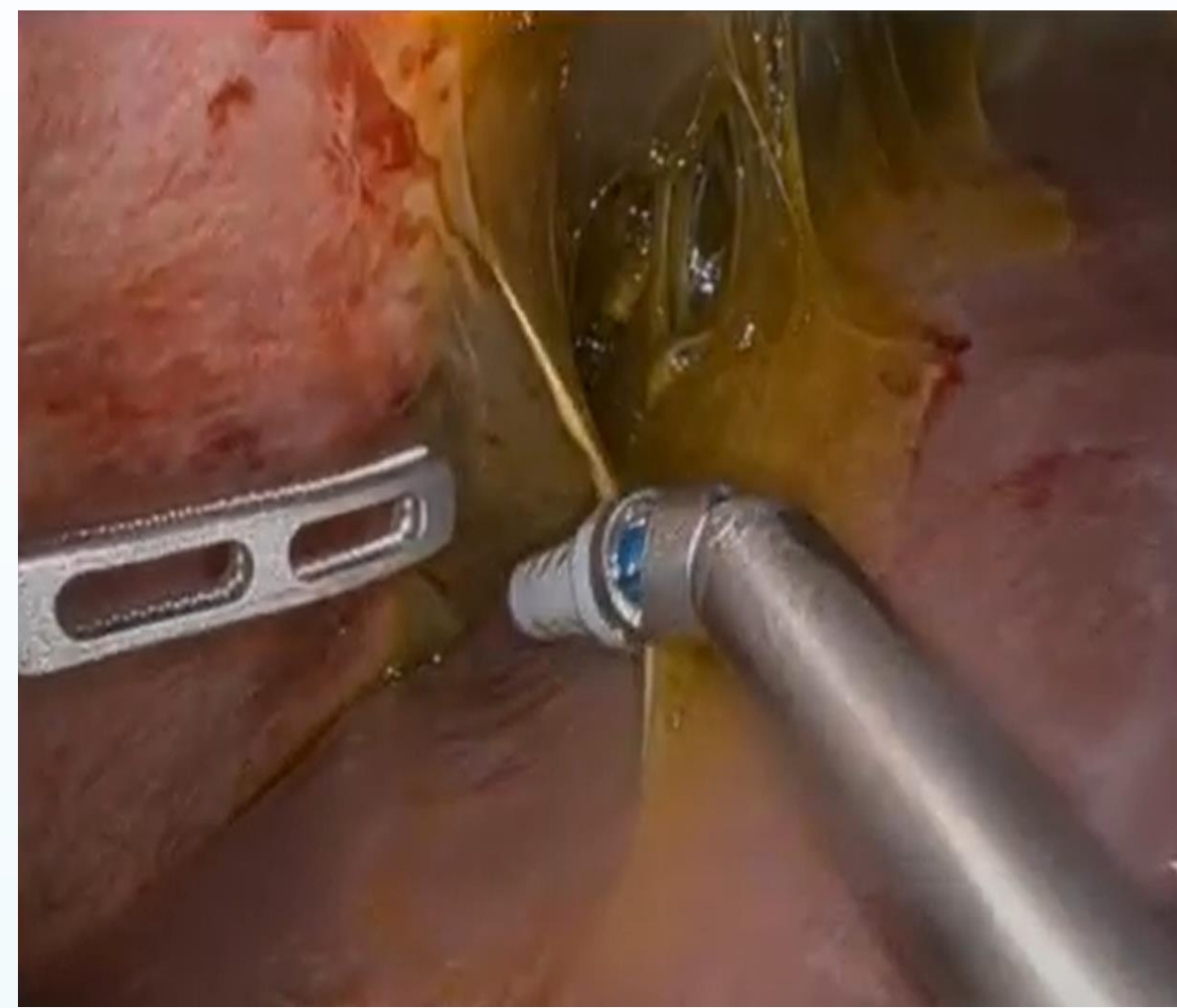


Fig. 3. Biloma and suture repaired of bile leak from Duct of Lushka

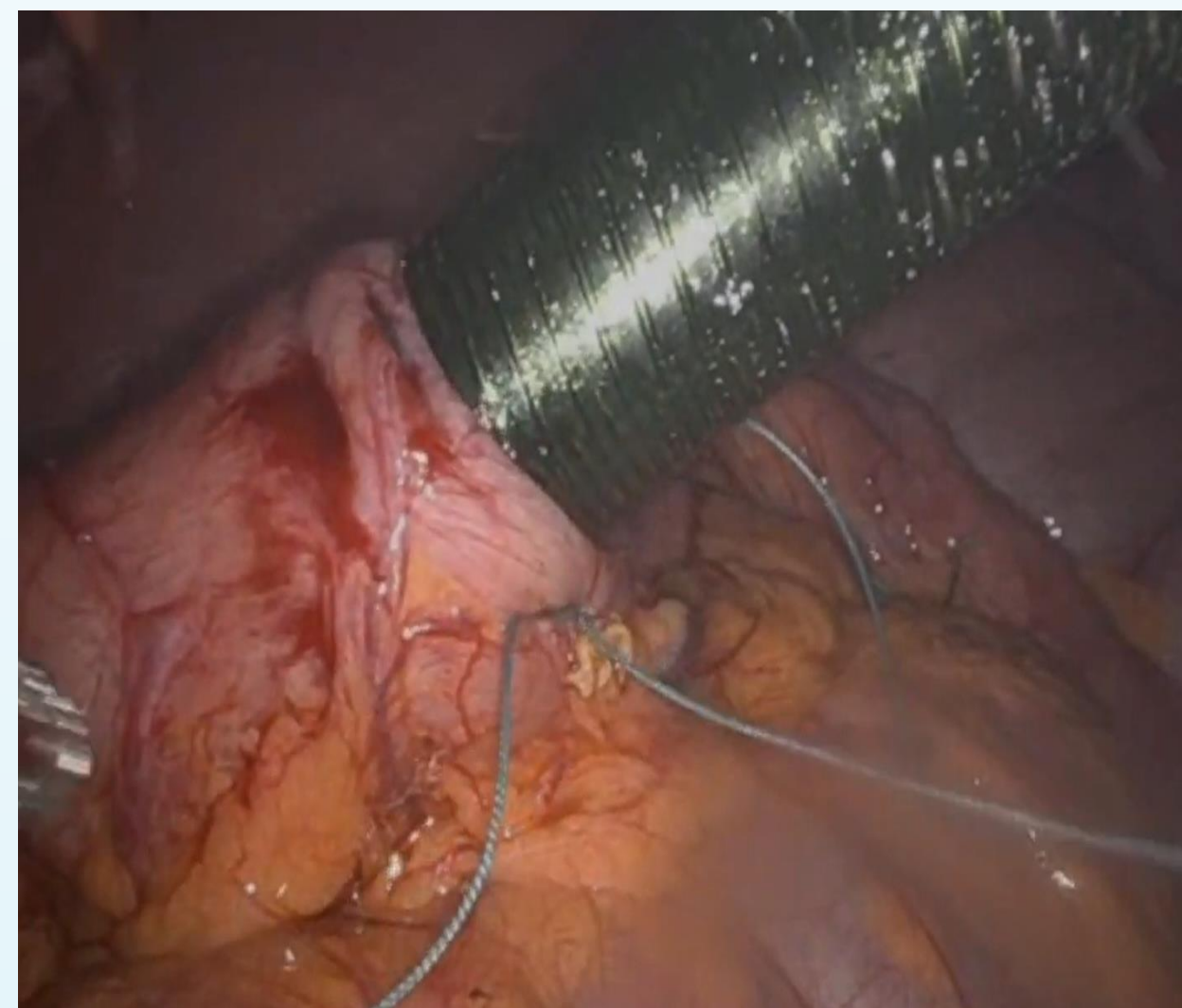
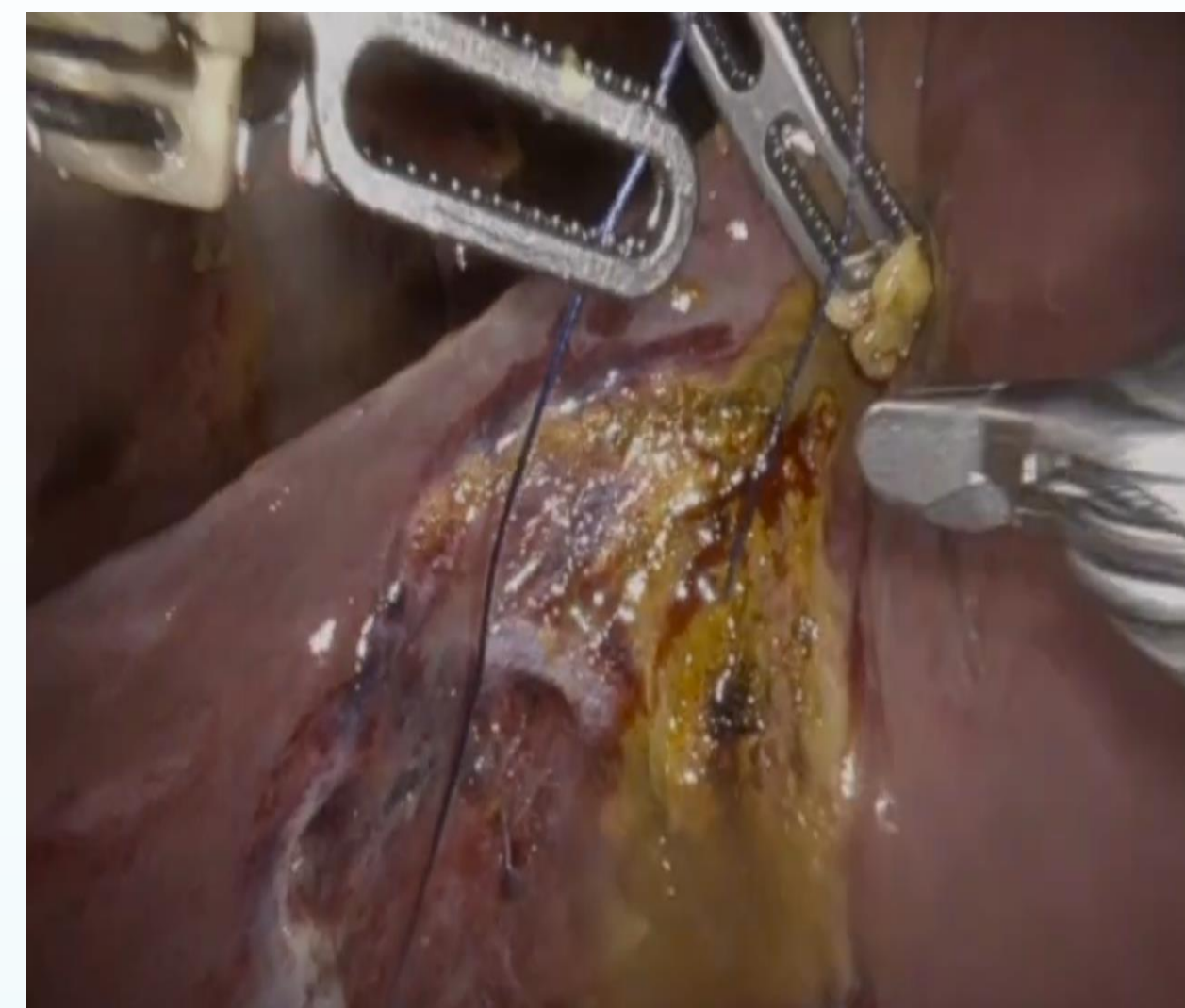
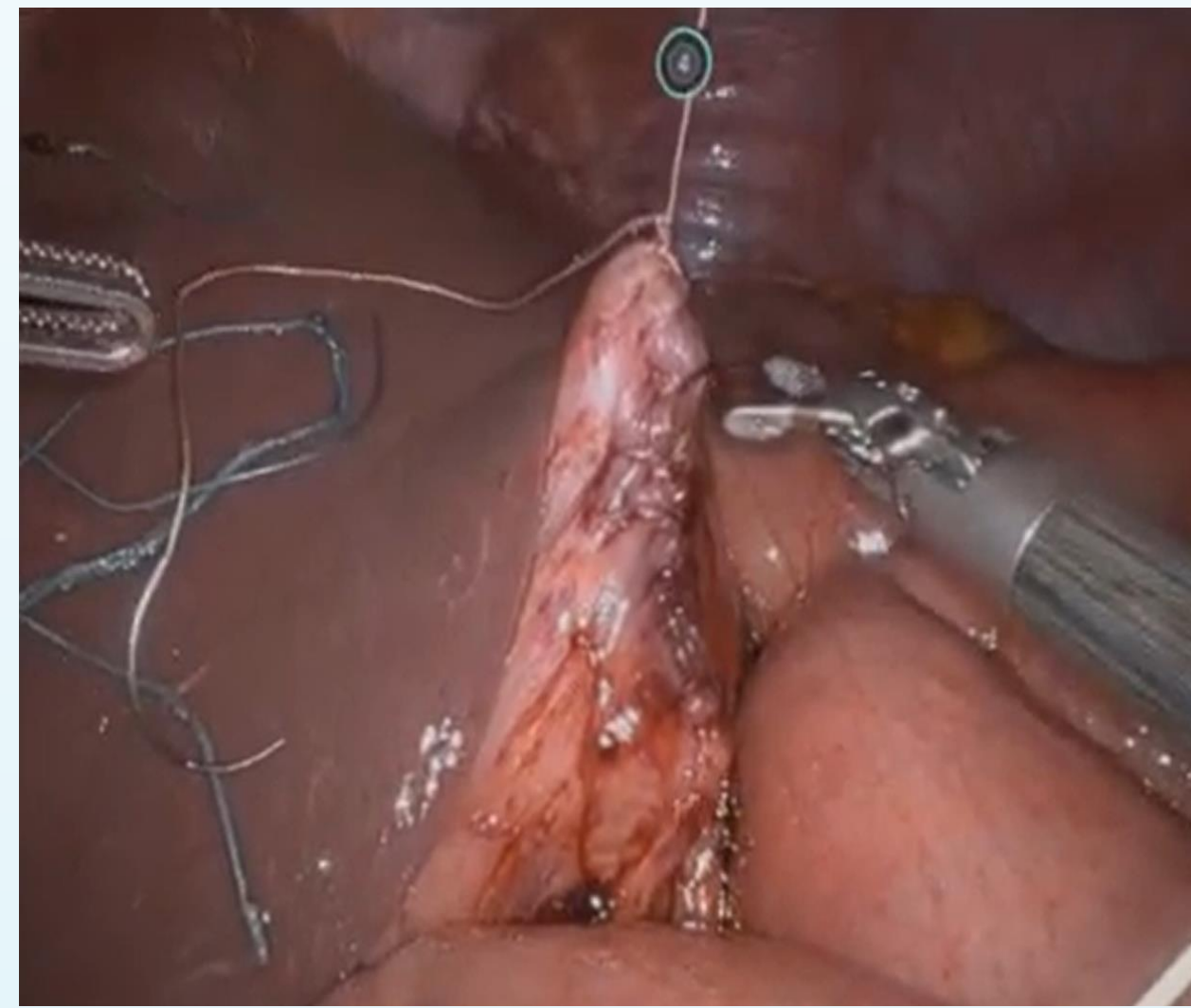


Fig. 4. Intraoperative transgastric ERCP



Modality	Clinical Indications	Technical / Clinical Success	Anatomical Considerations	Primary Risks / Limitations
Trans-oral ERCP	Standard biliary pathology	Very Low in RYGB	Biliary tree unreachable via standard scope due to long Roux limb	Technically unfeasible in most RYGB patients; extreme length of limb prevents access to the papilla
Balloon Enteroscopy ERCP (BE-ERCP)	Biliary access in altered anatomy	Technical: 71.4% Clinical: 58.7%	Navigates small bowel limbs with specialized enteroscopes	Lowest adverse events (8.4%); limited by absence of elevator and narrow scope, and availability in community hospital
Percutaneous Transhepatic Cholangiography (PTC) and Biliary Drainage (PTBD)	Dilated ducts; high-risk surgical candidates	Technical: 40–100% Clinical: 78%	Requires access to intrahepatic ducts	Significant difficulty in non-dilated ducts (as seen in Type A leaks)
Re-Laparoscopic Repair + Trans-gastric ERCP	Different type of bile leak including: Type A leaks (Luschka); biloma/sepsis	Technical: ~95.3% Clinical: ~92.9%	Direct access to excluded stomach via gastrotomy	Most invasive; relatively higher complications (17.4%-20.6%); Requires secondary operation and multidisciplinary coordination

Table to compare different management options for bile leak in RNYGB patient

DISCUSSION

Management Options for bile leak in RYGB Patients

- **Trans-oral ERCP:** Often technically unfeasible due to the extreme length of the Roux limb.
- **Balloon Enteroscopy (BE-ERCP):** A less invasive alternative but limited by lower technical (71.4%) and clinical (58.7%) success rates.
- **Percutaneous Access (PTBD):** Technically challenging in this case due to a non-dilated biliary tree and small ductal leaks.
- **Trans-gastric ERCP (LA-ERCP):** Offers high success rates (Technical: 95.3%, Clinical: 92.9%) by providing direct access to the excluded stomach.

Rationale for the Selected Approach

- **Multidisciplinary Coordination:** Re-laparoscopy allowed for abdominal washout and definitive suture repair of the liver bed.
- **Therapeutic Sphincterotomy:** Intraoperative trans-gastric ERCP reduced the transpapillary pressure gradient to facilitate healing and confirm extrahepatic ductal integrity.
- **Early Recognition:** Prompt diagnosis (typically 2–10 days post-op) is essential to minimize life-threatening complications like sepsis or peritonitis.

Prophylactic Cholecystectomy Considerations

- **Risk Factors:** Bariatric surgery and GLP-1 RA treatments significantly increase risks of cholelithiasis and cholecystitis.
- **Morbidity:** Concurrent cholecystectomy with bariatric surgery increases 30-day major complication rates (4.63% vs 3.70%) and risks of cardiac or renal failure.
- **Selective Approach:** Prophylactic removal is not recommended for patients with negative preoperative ultrasounds, as only 8.6% eventually require the procedure.

CONCLUSION

Managing post-cholecystectomy bile leaks in patients with Roux-en-Y gastric bypass is complex due to anatomical barriers and a lack of standardized treatment protocols. This case demonstrates that a successful outcome is achievable through early diagnostic imaging and a multidisciplinary approach—combining re-laparoscopy for definitive suture repair with intraoperative transgastric ERCP for pressure-relieving sphincterotomy. Accurate identification of the leak type, prompt intervention, and coordination between surgical and gastroenterology teams are a feasible option to the safe and effective management of bile leaks in this specialized population.

REFERENCE

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