Laparoscopic Management of an Intraoperatively Discovered Cholecystoduodenal Fistula After ERCP for Choledocholithiasis: A Case Report and Literature Review

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Background:

- Incidence of biliary-enteric fistulas (BEFs) is 0.15-5%
- Cholecystoduodenal fistulas (CCDF) are the most common type
- Risk factors for development include:
  - Age >60 years
  - Female
  - Larger gallstones
  - Chronic biliary disease
- Can lead to cholangitis, biliary obstruction, perforation, intra-abdominal infection, bleeding, and gallstone ileus
- Historically, most BEFs diagnosed intraoperatively leading to conversion to open surgery
- Imaging and endoscopic advancements have improved diagnosis
  - Still difficult to distinguish from other biliary pathology
- Laparoscopic approach literature lacking:
  - Most diagnosed preoperatively
  - Most still converted to open surgery

Purpose:

- Describe laparoscopic management of intraoperatively discovered CCDF after ERCP, utilizing principles and adjuncts learned from safe cholecystectomy practices

Case Presentation:

- 54-year-old male
- New onset abdominal pain with vomiting for 24 hours
- Elevated WBC of 19.2 K/uL, total bilirubin of 3.5 mg/dL, AST 214 U/L, ALT 212 U/L and Alk-Phos of 284 IU/L
- CT imaging obtained (Figure 1)
- Admitted by medical service with antibiotics for suspected cholangitis with choledocholithiasis
- Urgent EUS and ERCP performed with choledocholithiasis cleared by sphincterotomy
- Surgery consulted and taken to the operating room for laparoscopic cholecystectomy with intraoperative cholangiogram the following day

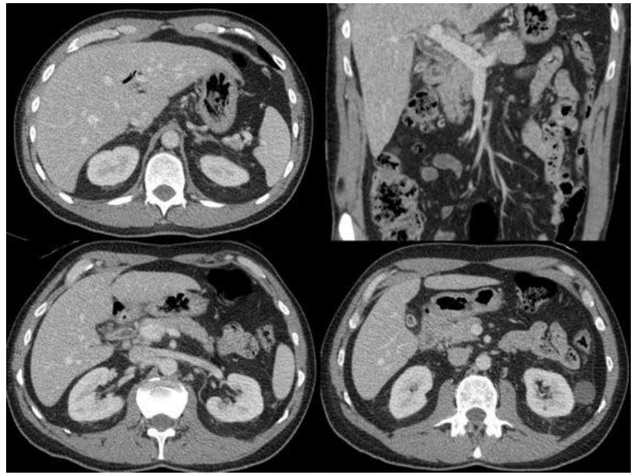


Figure 1. CT imaging obtained demonstrating dilated CBD of 9mm, pneumobilia and a severely contracted and atrophied gallbladder without other evidence of fistula tract or obstruction.

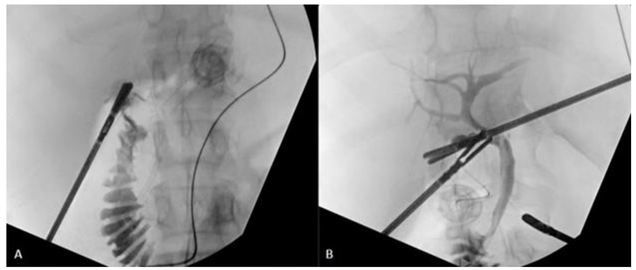


Figure 2. A) Initial intraoperative cholangiogram demonstrating free flowing passage of contrast directly into the duodenum.

B) Intraoperative cholangiogram after occlusion of the suspected fistula tract with a laparoscopic grasper, demonstrating opacification of the cystic duct, common bile duct, hepatic ducts, and emptying into the duodenum.

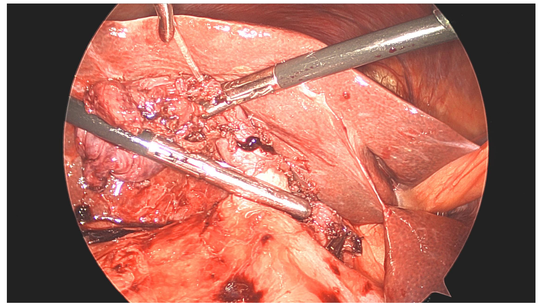


Figure 3. Intraoperative photograph demonstrating cholangiogram catheter placed in the infundibulum after dome-down dissection performed, with laparoscopic grasper occluding the suspected fistula tract to perform cholangiogram seen in Figure 2B.

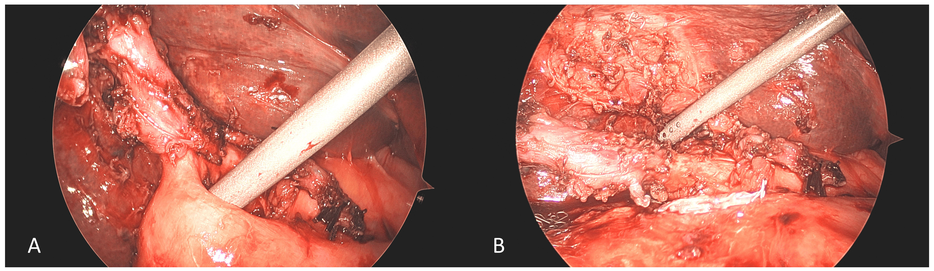


Figure 4. A) Intraoperative photograph of the mobilized and isolated cholecystoduodenal fistula.

B) Intraoperative photograph of the divided cholecystoduodenal fistula tract with a linear endoscopic stapler, with remaining cystic duct and common bile duct junction isolated.

Discussion:

- While CCDFs are relatively rare, recognition is paramount
- Difficult to diagnose preoperatively even with advanced imaging and endoscopy
- Safe cholecystectomy principles and adjuncts can be applied
  - Dome-down dissection
  - Intraoperative cholangiogram through infundibulum
  - Confirmation of biliary anatomy prior to division with linear stapler
- Reproducible technique in both the acute care and elective settings

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