Biliary-enteric fistula: a rare complication of suprarenal abscess due to perforated gallbladder

Niti Bidja PA-S, Joshua Freund DMSc, PA-C
Quinnipiac University Physician Assistant Program

Background

- A 2016 to 2020 retrospective cohort study found a 2.7% incidence of gallbladder perforations prior to surgery. Risk factors include male gender, diabetes, hypertension, and hyperlipidemia. The most common site of perforation was the fundus (42.8%). The median length of hospital stay was 8.5 days, compared to 4 days for patients diagnosed with acute cholecystitis without gallbladder perforations.

- Objective findings include tachycardia and elevated white blood cell (WBC) count, total and direct bilirubin, and gamma-glutamyl transferase (GGT) compared to non-perforated gallbladders undergoing cholecystectomy.

- Niemeier in 1934 was the first to describe and categorize gallbladder perforations. Type 1 perforations are acute and spread into the peritoneal cavity. Type 2 perforations, the most common type, are subacute and develop a surrounding abscess walled off by peritoneal adhesions. Type 3 perforations develop chronically and eventually lead to a fistulous connection between the gallbladder and other viscera, such as the bowel.

- Interestingly, there was no difference in mortality amongst the different types.

- As expected, in 86.2% of patients, perforations were associated with cholecystitis.

- An extremely rare complication of gallbladder perforations is a biliary-choledochole cyst fistula. Compared to gallbladder perforations, there is a lower incidence and lack of consensus around the management of biliary-choledochole cyst fistulas, making this a fascinating topic for further study.

Brief History

- 62-year-old Caucasian male presents with two weeks of persistent generalized abdominal pain and decreased appetite with associated nausea/vomiting/diarhea (N/V/D), chills, and weakness. Also reports chest pain, shortness of breath, and dizziness. Accompanying him, his sister states that his skin and eyes have changed color.

- Reports taking 1,000 milligrams acetaminophen every 4-6 hours x2 weeks without relief.

- Past Medical History: Gastroesophageal reflux disease, obstructive sleep apnea, hypothyroidism, hypertension, degenerative disc disease

- Health maintenance: Last colonoscopy January 2021 with polypectomy (pathology report unavailable).

- Social History: Drinks 10 to 12 beers daily; Smokes 10 to 12 cigarettes daily.

Pertinent Diagnostic Findings

- WBC 23.7 k/uL (H)
- Absolute Neutrophils 20.2 k/uL (H)
- Lactic Acid 2.3 mmol/L (H)
- Prothrombin time 19.9 seconds (H)
- INR 1.7 (H)
- Albumin 3.0 g/dL (L)
- Total bilirubin 2.2 mg/dL (H)
- Direct bilirubin 1.1 mg/dL (H)
- Alk. phos 251 u/L (H)
- AST 101 u/L (H)
- ALT 166 u/L (H)
- Lipase 8 u/L (L)

Case Description

Assessment and Plan

- RUQ Peritoneal Drain into Subphrenic Abscess
  - Left in place, feculent foul-smelling drainage throughout the hospital stay
  - Contrast demonstrated fistula between right subphrenic cavity and gallbladder lumen/cystic duct

- Right Pleural Chest Tube and Intrapleural thrombolyis
  - Left in place, bilious drainage throughout the hospital stay

Confusion secondary to alcohol intoxication
- CIWA protocol, thiamine, and folic acid

- Cultures grew Enterococcus, E. coli, Klebsiella, Bacteroides, alpha Strep, Candida.
- Piperacillin/tazobactam and fluconazole initiated.
- Second right pleural chest tube inserted.

- Video-assisted thoracoscopic surgery (VATS) with decortication of the right lung.
- Procedure revealed a diaphragmatic defect.

- Video-assisted thoracoscopic surgery (VATS) with decortication of the right lung.
- Procedure revealed a diaphragmatic defect.

- Received low-dose vasopressors and fluids. Exubriated.
- Acute on chronic anemia treated with packed red blood cells.
- Endoscopic retrograde cholangiopancreatography (ERCP)
- Sphincterotomy with balloon sweep and metal stents placed.

- All drains removed. Tolerated regular diet.
- Moderate left pleural effusion requiring thoracentesis.

Objective Findings

- Blood pressure: 94/48 mmHg
- Heart rate: 112 beats per minute
- Temperature: 98.1 degrees Fahrenheit
- Respiratory rate: 18 breaths per minute
- Pulse oximetry: 96% on room air
- Body mass index: 28.98 kg/m²
  - Patient was ill-appearing but not in acute distress. Leukocytosis.

- Scleral icterus, generalized jaundice, and pale skin present. No ecchymoses or rashes.
- Mucous membranes were dry.
  - No signs of respiratory distress. Expiratory wheezing and diminished breath sounds bilaterally.

- Normal rate and regular rhythm. No murmurs, rubs, gallops.
- Abdomen soft and distented. Normoactive bowel sounds. Tympanic to percussion. Generalized abdominal tenderness that intensified in the epigastric and right upper quadrant (RUQ) regions.

- No guarding or rebound. No CVA tenderness bilaterally. Negative psoas, negative obturator.
- Tremors of the hands bilaterally with movement.

- No peripheral edema. No peripheral ataxia, astasia, or ataxia.
- Remains of the exam unremarkable.

Outcome

- Upon discharge, patient had an elevated white count (14.3), low hemoglobin (7.7), and low hematocrit (24.8).
- The patient was discharged to skilled nursing facility with four-week course of amoxicillin-clavulinate 875-125 mg twice daily and fluconazole 400mg once daily.
- He had multiple follow-up visits with thoracic surgery, general surgery, infectious disease, and gastroenterology. Awaiting cholecystectomy followed by biliary stent removal in 2-3 months.

Discussion

- This case report demonstrates a type 2 Niemeier perforation complicating right biliary fistula.
- CT was an appropriate diagnostic modality. Confirmed and suspected perforations are more often found on CT rather than abdominal ultrasound in those with acute gallbladder perforations.
- Additionally, case reports of biliary-enteric fistulas show that complete blood count, comprehensive metabolic panel, CT, and ERCP were appropriate at making the diagnosis.
- The management was consistent with Figure 1, an algorithm for type 2 perforations proposed by a systematic review.
- There is not a standard treatment for biliary-enteric fistulas. However, the patient in this case study was treated successfully with non-surgical drainage procedures, which is consistent with the following studies.
- A February 2021 study discusses two cases of biliary-enteric fistulas. The first was an 80-year-old male with a history of diabetes, alcohol use, and hepatocellular carcinoma. He was treated surgically with drainage procedures and survived. The second patient was a 68-year-old female with a history of cholecystectomy. Hypertension, and chronic obstructive pulmonary disease. In addition to drainage, she was treated surgically with bronchial occlusion and percutaneous tracheostomy placement in ventilation but eventually died.
- In the future, the treatment of biliary-enteric fistulas may include material to block fistulous drainage into the lungs, as described in a November 2023 case report. A bronchial fistula found in a 63-year-old male with a history of metastatic colon cancer was treated with the Amplatzer Vascular Plug inserted into the bronchus. There was successful control of biliary leakage into the lung.

Image 2: Magnetic Resonance Imaging (MRI) Abdomen with and without IV Contrast
- Choledocholithiasis
- Gas in the gallbladder with fistulous connection to the patient’s right subphrenic/soft tissue collection.
- Left pleural effusion & atelectasis. Site right pleural effusion.

Conclusion

- Clinicians should suspect gallbladder perforations in ill-apparent patients presenting with epigastric/RUQ abdominal pain, fever, N/V/D, and jaundice.
- Chronic bile fistulae are a rare complication of gallbladder perforations.
- In the few cases reported, treatment always includes drainage procedures.
- Despite the successful outcome of this case report, future research is necessary to reduce complications and hospital stays in patients with gallbladder perforations.

References