

Emergency surgical management in severe cholangitis and hepatic abscess following laparoscopic Rendez-Vous cholecystectomy. A case report

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Case Report

General Surgery



Background:

This case report presents a 52-year-old female patient diagnosed with septic shock secondary to cholangitis, hepatic abscess, and peritonitis, with a history of laparoscopic rendezvous cholecystectomy secondary to choledocholithiasis. Emergency management in a second-level public hospital in Mexico is discussed. We consider it helpful for healthcare professionals to know how serious complications can become after choledocholithiasis.

Keywords: Cholangitis, Cholecystectomy, Laparoscopic surgery.

The term "choledocholithiasis" refers to the condition where stones are found in the common bile duct, frequently as a result of gallstones moving from the gallbladder. These stones develop as a result of supersaturation of cholesterol, insufficient bile salt levels or function, and decreased biliary epithelium contractility caused by different factors such as diet, hormones, and genetic predisposition. Cholangitis and pancreatitis are two major side effects of choledocholithiasis. [1]

Cholangitis can be defined as the inflammation and infection of the bile duct, first described in 1877 by Jean-Marie Charcot. It constitutes a potentially fatal clinical entity. The typical clinical presentation includes jaundice, abdominal pain, and fever, known as Charcot's triad, which can be associated with hypotension and altered mental status, referred to as Reynolds' pentad. Various microorganisms may be implicated, with the most common being *Escherichia coli*, *Klebsiella pneumoniae*, *Streptococcus faecalis*, *Enterobacter*, *Bacteroides fragilis*, and *Pseudomonas*. [2-5]

Acute cholangitis can be classified based on its severity into mild, moderate, and severe. Determining the severity of the disease is essential to administering the appropriate treatment. [6]

Antimicrobial therapy and biliary drainage are the cornerstones of treatment for cholangitis. The following antibiotics are recommended based on the

severity of cholangitis and whether it is community-acquired or associated with healthcare. [7]

Hepatic abscesses can be defined as localized collections of pus surrounded by inflammatory tissue in the hepatic parenchyma. Literature suggests that liver abscesses are associated with patients who have a history of biliary-enteric anastomosis surgeries or the placement of biliary stents, the latter often associated with papillotomy which increases the risk of bacteriobilia. [10,11]

The most common microorganisms involved in hepatic abscesses are *Escherichia coli*, *Streptococcus spp.*, *Klebsiella pneumoniae*, *Enterococcus spp.*, *Bacteroides*, and *Fusobacteria*, with up to 16% being polymicrobial. [12,13]

Case report

A 52-year-old female patient presented with a one-week history of right upper quadrant abdominal pain, nausea, vomiting, and jaundice. An abdominal ultrasound revealed multiple gallstones, a thickened gallbladder wall (7 mm), and a dilated common bile duct (10 mm), leading to a diagnosis of choledocholithiasis and chronic lithiasic cholecystitis (Tokyo II). The patient was admitted for laparoscopic cholecystectomy (rendez-vous procedure), and a Penrose drain was placed.

Five days post-surgery, bile continued to drain

“Grade III” acute cholangitis is defined as acute cholangitis that is associated with the onset of dysfunction at least in any one of the following organs/systems:

1. **Cardiovascular dysfunction:** hypotension requiring dopamine ≥ 5 $\mu\text{g}/\text{kg}$ per min, or any dose of norepinephrine
2. **Neurological dysfunction:** disturbance of consciousness
3. **Respiratory dysfunction:** $\text{PaO}_2/\text{FiO}_2$ ratio < 300
4. **Renal dysfunction:** oliguria, serum creatinine > 2.0 mg/dl
5. **Hepatic dysfunction:** PT-INR > 1.5
6. **Hematological dysfunction:** platelet count $< 100,000/\text{mm}^3$

Grade II (moderate) acute cholangitis

“Grade II” acute cholangitis is associated with any two of the following conditions:

1. **Abnormal WBC count ($> 12,000/\text{mm}^3$, $< 4,000/\text{mm}^3$)**
2. **High fever ($\geq 39^\circ\text{C}$)**
3. **Age (≥ 75 years)**
4. **Hyperbilirubinemia (total bilirubin ≥ 5 mg/dl)**
5. **Hypoalbuminemia ($< \text{STD} \times 0.7$)**

Grade I (mild) acute cholangitis

“Grade I” acute cholangitis does not meet the criteria of “Grade III (severe)” or “Grade II (moderate)” acute cholangitis at initial diagnosis

Table 1. Grade III, Severe cholangitis.

from the surgical site. A plain abdominal radiograph showed biliary stent migration, necessitating endoscopic retrograde cholangiopancreatography (ERCP) for stent repositioning and the placement of a second stent. The patient was discharged with antimicrobial therapy. Three weeks later, she returned with persistent biliary drainage and a fever, prompting hospital readmission. Diagnostic laparoscopy revealed abdominal sepsis (SOFA score 3, NEWS score 5), probable cholangitis, resolved choledocholithiasis, chronic lithiasic cholecystitis (Tokyo II), postoperative status from laparoscopic cholecystectomy, biliary stent repositioning, and peritoneal cavity lavage with Penrose drain placement.

On hospital admission, the patient was slightly disoriented (Glasgow Coma Scale score of 14), with jaundice, fever, dehydrated oral mucosa, tachycardia, and generalized abdominal pain. Surgical wounds were well-approximated, and the Penrose drain in the right hypochondrium was draining bile.

Laboratory results

- Hemoglobin (Hb): 8.2 g/dL
- Hematocrit (Hct): 25.5%
- White Blood Cells (WBC): $59.5 \times 10^9/\text{L}$
- Neutrophils: 86.8%

- Platelets: $299 \times 10^9/\text{L}$
- Glucose: 93 mg/dL
- Urea: 34.7 mg/dL
- Blood Urea Nitrogen (BUN): 16.19 mg/dL
- Creatinine: 0.8 mg/dL
- Albumin: 3.1 g/dL
- Total Cholesterol: 168 mg/dL
- Triglycerides: 383 mg/dL
- ALT: 13.4 U/L
- AST: 20.6 U/L
- LDH: 367 U/L
- Calcium: 8.9 mg/dL
- Phosphorus: 3.0 mg/dL
- Sodium: 130.3 mmol/L
- Magnesium: 1.3 mg/dL
- Potassium: 4.3 mmol/L
- Amylase: 52.8 U/L
- Lipase: 44.0 U/L
- Alkaline Phosphatase: 488 U/L
- Total Bilirubin: 1.24 mg/dL
- Direct Bilirubin: 0.87 mg/dL
- Indirect Bilirubin: 0.37 mg/dL
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An abdominopelvic CT scan showed free intra-abdominal fluid, bilateral pleural effusions, and multiple hypodense liver lesions with gas densities in the left hepatic lobe, suggestive of hepatic abscesses

Severity	Community-acquired biliary infections			Healthcare-associated biliary infections a
	Grade I	Grade II	Grade III a	
Antimicrobial agents	Cholangitis and cholecystitis	Cholangitis and cholecystitis	Cholangitis and cholecystitis	Healthcare-associated cholangitis and cholecystitis
Penicillin-based therapy	Ampicillin/sulbactam b is not recommended if >20% resistance rate.	Piperacillin/tazobactam	Piperacillin/tazobactam	Piperacillin/tazobactam
Cephalosporin-based therapy	Cefazolin c or Cefotiam c or Cefuroxime c or Ceftriaxone or Cefotaxime ± Metronidazole d Cefmetazole c Cefoxitin c Flomoxef c Cefoperazone/sulbactam	Ceftriaxone or Cefotaxime or Cefepime or Cefozopran or Ceftazidime ± Metronidazole d Cefoperazone/sulbactam	Cefepime or Ceftazidime or Cefozopran ± Metronidazole d	Cefepime or Ceftazidime or Cefozopran ± Metronidazole d
Carbapenem-based therapy	Ertapenem	Ertapenem	Imipenem/cilastatin Meropenem Doripenem Ertapenem	Imipenem/cilastatin, Meropenem, Doripenem, Ertapenem
Monobactam-based therapy	–	–	Aztreonam ± Metronidazole d	Aztreonam ± Metronidazole d
Fluoroquinolone-based therapy e	Ciprofloxacin, Levofloxacin, Pazufloxacin ± Metronidazole d Moxifloxacin	Ciprofloxacin, Levofloxacin, Pazufloxacin ± Metronidazole d Moxifloxacin	–	–

Table 2. ^a Vancomycin is recommended to cover *Enterococcus* spp. for grade III community-acquired acute cholangitis and cholecystitis, and healthcare-associated acute biliary infections. Linezolid or daptomycin is recommended if vancomycin-resistant *Enterococcus* (VRE) is known to be colonizing the patient, if previous treatment included vancomycin, and/or if the organism is common in the community

^b Ampicillin/sulbactam has little activity left against *Escherichia coli*. It is removed from the North American guidelines [8,9]

^c Local antimicrobial susceptibility patterns (antibiogram) should be considered for use

^d Anti-anaerobic therapy, including use of metronidazole, tinidazole, or clindamycin, is warranted if a biliary-enteric anastomosis is present. The carbapenems, piperacillin/tazobactam, ampicillin/sulbactam, cefmetazole, cefoxitin, flomoxef, and cefoperazone/sulbactam have sufficient anti-anaerobic activity for this situation

^e Fluoroquinolones use is recommended if the susceptibility of cultured isolates is known or for patients with β-lactam allergies. Many extended-spectrum β-lactamase (ESBL)-producing Gram-negative isolates are fluoroquinolone resistant.

measuring 110x90x110 mm. Initial management included intravenous fluids, broad-spectrum antibiotics, and monitoring for neurological deterioration, with a Glasgow Coma Scale score decreasing to 12, a heart rate of 120 beats per minute, and hypotension. Fig 1.

Therapeutic intervention

Due to the clinical and radiological findings, emergency open surgery was proposed due to the patient's septic shock. In the operating room, exploratory laparotomy, hepatic abscess drainage, infrahepatic packing, peritoneal lavage, and the placement of a Bogotá bag were performed. Surgical findings included a 1000 cc hepatic abscess in liver segments 5 and 6 containing pus, blood, cellular debris, stones, and necrotic liver tissue, with significant hepatic parenchymal destruction and generalized biliary peritonitis. An estimated intraoperative blood loss of 2500 cc was managed with the transfusion of four units of packed red blood cells and two units of fresh frozen plasma.

The patient was transferred from the operating room to the intensive care unit, where fluid resuscitation, red cell concentrate transfusion,

hydrocortisone IV administration, norepinephrine management at a dose of 0.06 mcg/kg/min, maintaining blood pressure of 70/40 mmHg, and invasive mechanical ventilation (ACVC mode, Vt 450 cc, PEEP 5, FiO₂ 100%, RR 16) were performed. Despite management, the patient experienced ventricular tachycardia progressing to asystole and did not respond to advanced cardiopulmonary resuscitation efforts, resulting in death after 10 cycles of CPR and three doses of 1 mg epinephrine.

Discussion

Given the patient's hemodynamic instability, the previous biliary procedure, and radiological findings, urgent biliary drainage was prioritized to prevent further clinical deterioration. Literature indicates that biliary surgery can lead to bacterial migration from the gastrointestinal tract, causing complications such as cholangitis and hepatic abscesses, as seen in this patient.

Up to 95% of choledocholithiasis cases are concomitant with cholelithiasis, highlighting the importance of early identification and management to prevent complications like cholangitis. [8]

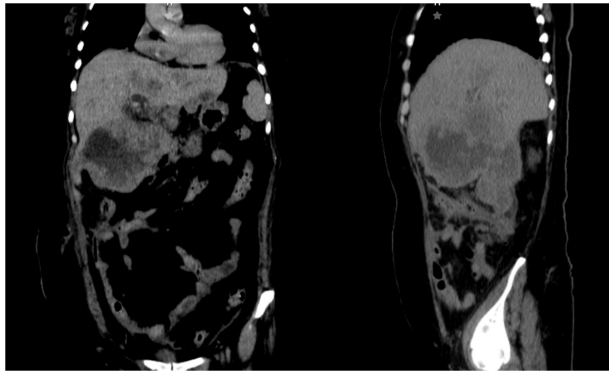


Figure 1. Hepatic abscess in abdominopelvic CT. Coronal and axial sections that with an image consistent with a liver abscess.

ERCP has a resolution rate of approximately 90% for stable patients, but carries risks including post-ERCP pancreatitis (8%), bleeding (3%), biliary perforation (0.3%), and cholangitis (0.5%). [9]

Conclusion

The occurrence of cholangitis subsequent to cholangiopancreatography is uncommon, and there is limited data or extensive literature to ascertain the post-rendezvous laparoscopic cholecystectomy epidemiology. Thus, case presentations like this can contribute to the study of such events' epidemiology.

Early diagnosis and precise identification of signs and symptoms for staging the severity of choledocholithiasis, cholangitis, and hepatic abscess are imperative to establish optimal management and attain improved patient outcomes. Given the extensive destruction of hepatic parenchyma, along with the abscess volume and intraoperative bleeding, it was determined that hepatic packing was the most viable option to foster hemostasis in this urgent surgery, followed by a subsequent second-look procedure.

Endoscopic, image-guided, or surgical biliary drainage remains the indicated management for severe cholangitis, with the choice of method depending on patient condition, individual characteristics, and available hospital infrastructure.

Conflicts of interests

All authors have declared no financial support, relationships, or other activities that could influence the submitted work.

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