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(CASE REPORT)

Laparoscopic cholecystectomy in a female patient with multiple comorbidities (ASA II): A case report

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Abstract

Laparoscopic cholecystectomy is the standard surgical approach for symptomatic gallbladder disease and remains among the most frequently performed operations worldwide. Common indications include symptomatic cholelithiasis, biliary dyskinesia, acute cholecystitis, gallstone-related complications, and gallbladder polyps. Compared with open cholecystectomy, the laparoscopic technique offers well-established advantages, including smaller incisions, less postoperative pain, shorter length of hospital stay, and earlier return to usual activities and work. Acute cholecystitis is a leading cause of acute abdomen and is often reported as the second most common surgical emergency after appendicitis.

We report the case of a 64-year-old woman with multiple comorbidities and known cholelithiasis diagnosed six months earlier without definitive treatment. She presented with 8 hours of severe epigastric pain radiating to the right upper quadrant (visual analogue scale [VAS] 10/10). Imaging and laboratory assessment supported a diagnosis of acute calculous cholecystitis with concomitant choledocholithiasis. The patient underwent laparoscopic cholecystectomy with intraoperative gallbladder perforation and spillage, managed with irrigation and retrieval of gallstones, followed by antibiotic therapy and favorable postoperative evolution.

Keywords: Abdominal pain; Cholelithiasis; Gallbladder; Laparoscopic cholecystectomy

1. Introduction

Laparoscopic cholecystectomy is routinely performed worldwide by general surgeons. A substantial proportion of procedures are carried out in older patients and/or in the presence of gallbladder inflammation, which can increase technical difficulty and demand advanced surgical judgment. Since its introduction in 1985 by Erich Muhe, laparoscopic cholecystectomy has largely replaced the open approach for gallbladder pathology, being feasible in more than 95% of cases. As a minimally invasive technique, it is associated with a reduced metabolic stress response, less postoperative pain, lower wound infection rates, fewer thromboembolic events, improved tolerance of oral intake, decreased adhesion formation, shorter inpatient stay, and superior cosmetic outcomes. Persistent or escalating abdominal pain unresponsive to analgesia should raise concern for intra-abdominal complications, particularly when accompanied by peritoneal irritation, abdominal guarding, or signs of peritonitis. Reported etiologies include bile leakage and hemoperitoneum.

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Cholelithiasis constitutes a global public health problem, affecting approximately 10%–15% of the population, with higher prevalence in Western countries. Around 20% of individuals develop biliary colic, and 1%–4% may experience complications such as acute cholecystitis, acute pancreatitis, choledocholithiasis, and, less commonly, gallstone ileus. Acute calculous cholecystitis is most often triggered by cystic duct obstruction, leading to gallbladder distension, impaired perfusion and lymphatic drainage, mucosal ischemia, and potential necrosis. Gallstones account for roughly 90%–95% of cases, while acalculous causes comprise a smaller fraction.

According to the Tokyo Guidelines (2013), the pathologic evolution of acute cholecystitis can be described as: (1) edematous cholecystitis (2–4 days), (2) necrotizing cholecystitis (3–5 days), (3) suppurative cholecystitis (7–10 days), and (4) chronic cholecystitis following recurrent inflammatory episodes.

Clinically, patients commonly report constant, severe pain in the right upper quadrant or epigastrium, which may radiate to the right shoulder or back and may be accompanied by fever, nausea, vomiting, and anorexia; symptoms often occur after fatty meals. Despite broad adoption and improved instrumentation, conversion to open cholecystectomy is required in approximately 2%–7% of cases to ensure patient safety.

Timely diagnosis is essential because gallbladder ischemia may progress to gangrene, empyema, or perforation. Although laboratory results are not diagnostic in all patients, leukocytosis, elevated C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), and abnormalities in bilirubin, transaminases, alkaline phosphatase, and amylase may support the diagnosis. Abdominal ultrasonography remains the imaging modality of choice, with reported sensitivity around 85% and specificity around 95%. Computed tomography can be similarly accurate, although false-positive ultrasound findings may occur in settings such as sludge, non-occlusive stones, cholesterolosis, hypoalbuminemia, or ascites.

The American Society of Anesthesiologists Physical Status (ASA-PS) classification is widely used to summarize preoperative health status. It is a simple clinical scale that correlates with perioperative risk and is readily applicable by trained healthcare personnel.

Table 1 American Society of Anesthesiologists Physical Status (ASA-PS) Classification

Class	Definition
ASA I	Healthy patient without organic, biochemical, or psychiatric disease.
ASA II	Patient with mild-to-moderate systemic disease (e.g., well-controlled hypertension or moderate asthma) without substantive functional limitation; low likelihood of major impact from surgery/anesthesia.
ASA III	Patient with severe systemic disease that limits normal activity (e.g., chronic kidney disease on dialysis or congestive heart failure class II); higher likelihood of perioperative impact.
ASA IV	Patient with severe disease that is a constant threat to life and often requires ongoing support or intensive therapy (e.g., acute myocardial infarction, respiratory failure requiring mechanical ventilation).
ASA V	Moribund patient not expected to survive 24 hours without surgery.
ASA VI	Brain-dead patient whose organs are being removed for donor purposes.

2. Case Presentation

A 64-year-old woman with a history of arterial hypertension (7 years, treated with losartan 50 mg every morning) and type 2 diabetes mellitus (7 months, treated with metformin 1000 mg every morning and 500 mg at night) presented to the General Surgery service. Additional history included known cholelithiasis diagnosed six months earlier without definitive treatment, inguinal hernia repair six months earlier, and endoscopic retrograde cholangiopancreatography (ERCP) one month earlier.

She reported three days of low-grade fever (maximum 37.5°C), self-treated with acetaminophen 500 mg every 8 hours for two days. Symptoms were associated with colicky epigastric pain radiating to the right upper quadrant (VAS 5/10), abdominal distension, repeated vomiting of gastric contents, and diarrhea; she used oral rehydration salts. She also noted bilateral lower-limb edema (pitting, soft, non-tender, cool). Approximately one hour before arrival, the abdominal pain intensified markedly, prompting emergency evaluation.

Past medical history included childhood rickets. She denied allergies.

Current medications: losartan 50 mg qAM; metformin 1000 mg qAM and 500 mg qHS. Self-medication: acetaminophen 500 mg every 8 hours for two days.

On examination, vital signs were: heart rate 70 bpm; blood pressure 140/73 mmHg; respiratory rate 19/min; temperature 37.5°C; weight 75 kg; height 150 cm; body mass index 32.1 kg/m^2 (class I obesity). She appeared in pain, mildly dehydrated, and jaundiced but was alert and oriented. Cardiopulmonary examination was unremarkable. The abdomen was globose with increased bowel sounds; it was soft but tender to superficial and deep palpation, predominantly in the right upper quadrant. Murphy sign was positive. There was pitting edema in the lower extremities.

Laboratory testing showed neutrophilia on complete blood count, elevated inflammatory markers (CRP), and cholestatic/hepatocellular abnormalities with elevated bilirubin predominantly direct and increased transaminases (Tables 2–3).

Imaging assessment included an electrocardiogram showing T-wave inversion in anteroseptal leads (V1–V5), suggesting possible underlying cardiomyopathy; echocardiography demonstrated normal biventricular systolic function (left ventricular ejection fraction ~60%) and no evidence of ischemia or endocarditis. Chest radiography was within normal limits.

Right upper quadrant ultrasonography revealed hepatic steatosis, dilated intra- and extrahepatic bile ducts, and an enlarged common bile duct measuring up to 17 mm with echogenic linear images consistent with a stent. The gallbladder was enlarged (89 × 45 × 24 mm; estimated volume 50 cc) with wall thickening (4.1 mm), scant biliary sludge, and multiple mobile subcentimeter stones (one 6 mm). Two non-mobile stones were noted at the gallbladder neck (14 mm and 12 mm). No free fluid was detected.

Final diagnosis: gallbladder calculus with acute choledocholithiasis (cholelithiasis with choledocholithiasis), ICD-10: K80.0.

Inpatient management included intravenous lactated Ringer's solution, ampicillin-sulbactam, analgesia (tramadol and ketorolac), antiemetic therapy (metoclopramide), and proton pump inhibition (omeprazole), with continuation of home antihypertensive and antidiabetic medications. Preoperative evaluation classified the patient as ASA II. Surgical management: laparoscopic cholecystectomy was performed. During extraction through the abdominal wall, gallbladder perforation occurred with spillage of bile and stones into the peritoneal cavity. The surgical field was irrigated with normal saline, the cavity was aspirated, and spilled stones were retrieved. Port sites were inspected under direct vision during trocar removal without further complications.

Postoperatively, pain was controlled with analgesics. For antimicrobial coverage, ceftriaxone plus amikacin was administered, initiated one hour before surgery and continued intravenously for 72 hours due to concern for catheter-related infection. The patient remained afebrile and experienced no procedure-related complications. She was discharged 72 hours after surgery with clinical improvement. Histopathology reported chronic cholecystitis with cholelithiasis.

Table 2 Complete Blood Count (summary)

TESTS	RESULTS 13/03/2023	RESULTS 15/03/2023	RESULTS 17/03/2023	NORMAL VALUES
Neutrophils	66.5	63.9	63.8	40–60%
Lymphocytes	23.7	25	24.1	20–40%
Hematocrit	35.6	3	36	35–45%
Hemoglobin	12.3	12.3	12.3	12–16 g/dL
Platelets	154	160	161	142–424 ×10^3/μL

Neutrophilia was observed on admission complete blood count.

Table 3 Serum Chemistry (summary)

TEST	RESULTS 13/03/2023	RESULTS 15/03/2023	RESULTS 17/03/2023	NORMAL VALUES
Glucose	129	136	130	70–100 mg/dL
AST (SGOT) *(TGO)*	41.9	–	48.6	5–40 U/L
ALT (SGPT) *(TGP)*	50.5	–	52.9	5–55 U/L

Elevated transaminases and bilirubin (predominantly direct), with increased CRP, were documented.

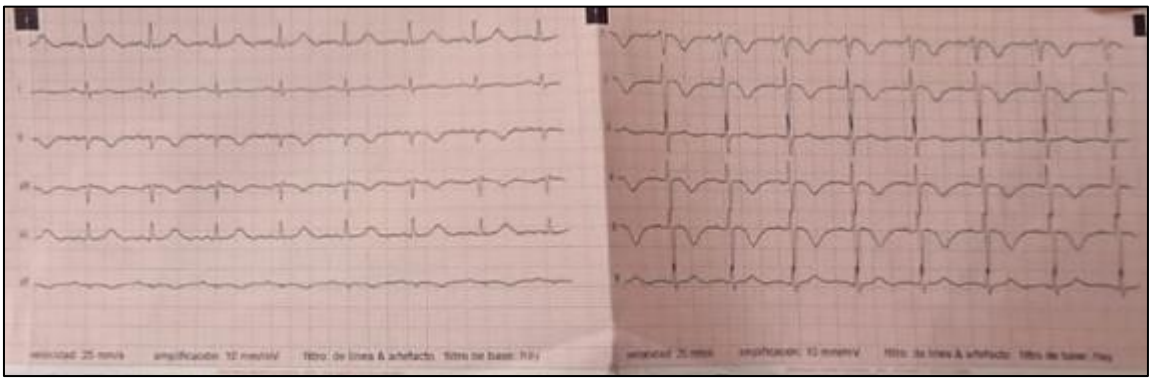

Figure 1 Electrocardiogram showing T-wave inversion in anteroseptal leads (V1–V5); echocardiography was recommended to further assess cardiac structure/function

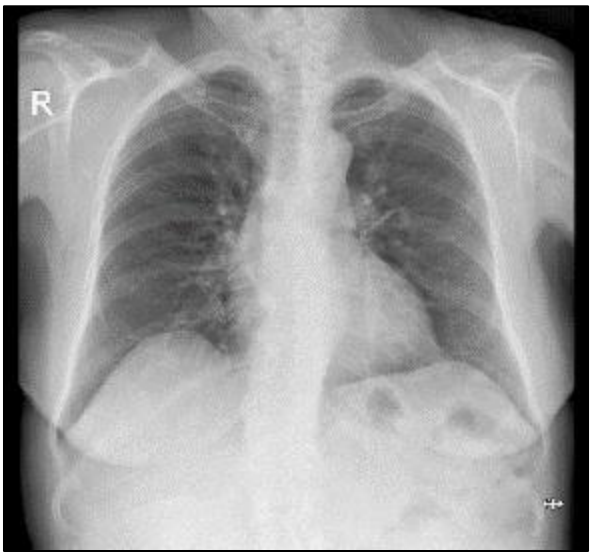

Figure 2 Chest radiograph within normal limits; no acute pulmonary process identified

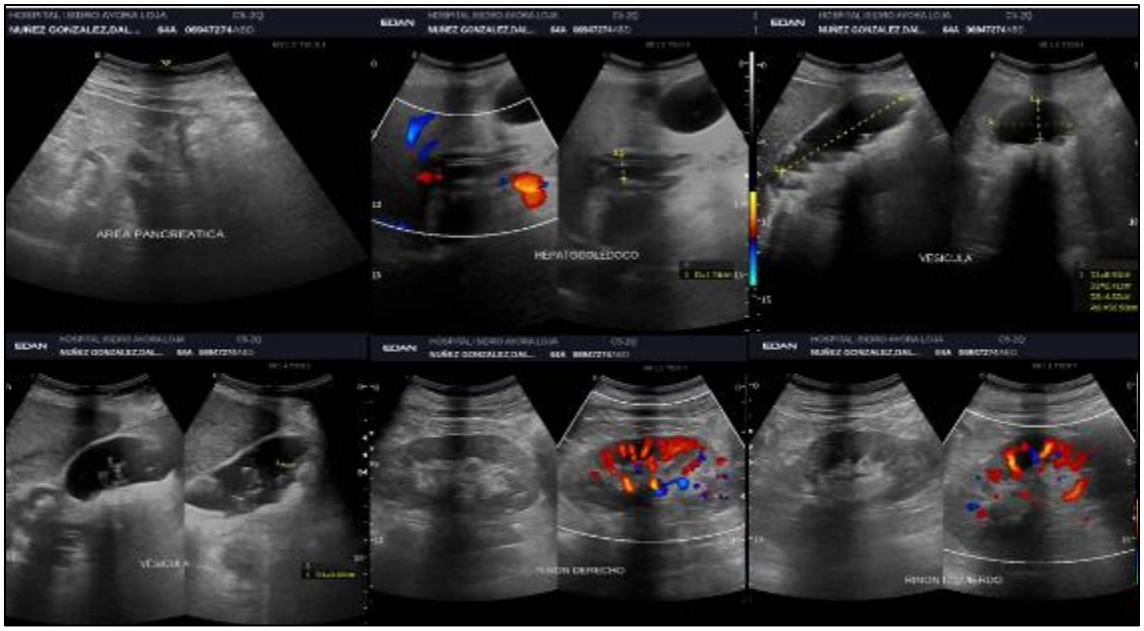

Figure 3 Right upper quadrant ultrasonography demonstrating gallbladder wall thickening, gallstones, and dilated bile ducts with evidence of biliary stent

3. Discussion

This case illustrates the diagnostic and therapeutic approach to acute calculous cholecystitis complicated by choledocholithiasis in a patient with multiple comorbidities. The patient presented with a typical symptom complex, including epigastric/right upper quadrant pain with biliary colic features, gastrointestinal symptoms, and jaundice, supported by laboratory evidence of inflammation and cholestasis.

The pathophysiology of acute calculous cholecystitis involves cystic duct obstruction by a gallstone, leading to gallbladder distension, impaired perfusion, mucosal ischemia, and potential necrosis. Early recognition is important to prevent progression to severe complications such as gangrene, empyema, or perforation. Ultrasonography remains a practical first-line modality to establish the diagnosis and assess for ductal dilatation, stones, and gallbladder wall thickening.

Preoperative risk stratification using ASA-PS supported proceeding with laparoscopic cholecystectomy in this ASA II patient, given her stable systemic disease and preserved functional status. During the procedure, gallbladder perforation with spillage of bile and stones occurred, an event that can increase postoperative infectious risk if not properly managed. The operative strategy of copious irrigation, aspiration, and removal of spilled calculi, followed by antibiotic coverage, was associated with favorable clinical evolution and uneventful recovery.

4. Conclusions

Laparoscopic cholecystectomy remains the preferred surgical approach for uncomplicated symptomatic cholelithiasis, offering a favorable safety profile, patient comfort, and reduced healthcare resource utilization.

Safe implementation relies on appropriate patient selection and perioperative assessment, including age, pharmacologic history, ASA-PS classification, the type of biliary disease, and the expected burden of postoperative symptoms such as pain, nausea, and vomiting.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

The authors declare that they requested and obtained consent from the patient's legal representatives for the use of images included in this case report.

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