Cholecystocolonic fistula as a complication of chronic calculous cholecystitis. A case report

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Case Report

General Surgery

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Background: Introduction: Cholecystocolonic fistula (CCF) is a rare and late complication of chronic calculous cholecystitis, representing the second most frequent type of cholecystoenteric fistula after cholecystoduodenal. It accounts for approximately 8–25% of cases and has a reported mortality rate of 10–15%. Clinical presentation is often nonspecific, including symptoms such as abdominal pain, chronic diarrhea, pneumobilia, and vitamin K deficiency. Due to its subtle manifestations, diagnosis is frequently made intraoperatively. Management varies depending on intraoperative findings, patient comorbidities, and surgical expertise.

Case Presentation: We report the case of a patient who presented with abdominal pain and nausea. Initial imaging studies, including ultrasound and computed tomography, suggested a hydatid cyst along with signs of chronic calculous cholecystitis, without evidence of acute inflammation. The patient showed no clinical improvement with anti-parasitic and symptomatic treatment and continued to experience persistent abdominal pain, nausea, and vomiting. As a result, emergency surgical intervention was performed.

Surgical Findings and Outcome: The procedure began with a laparoscopic cholecystectomy; however, due to intraoperative findings of a Parkland grade V gallbladder, conversion to open surgery was required. A cholecystocolonic fistula was identified intraoperatively. A segmental colectomy was performed, followed by primary colo-colonic anastomosis in a single surgical session. The patient had an uneventful postoperative recovery.

Conclusion: Although uncommon, CCF should be considered in elderly patients with long-standing cholelithiasis and persistent gastrointestinal symptoms. Early recognition and appropriate surgical planning are essential to ensure favorable outcomes and reduce postoperative complications.

Keywords: Cholecystitis.

Cholecystocolonic fistula is a late complication of gallstone disease and represents the second most common type of cholecystoenteric fistula after cholecystoduodenal fistula, accounting for 8–25% of all cholecystoenteric fistulas (1). It occurs more frequently between the sixth and seventh decades of life and carries a mortality rate of 10–15% (8).

These fistulas result from chronic inflammatory processes affecting the gallbladder. Associated risk factors include cholelithiasis, prior abdominal surgeries (gastric, duodenal, cholecystostomies), trauma, iatrogenic injuries, and advanced biliary neoplasms (13). There are also case reports of cholecystoenteric fistulas secondary to chronic inflammatory conditions such as diverticular disease (5) and Crohn's disease due to transmural inflammation (16).

The clinical presentation is usually nonspecific. Common symptoms include diarrhea—secondary to the laxative effect of bile acids in the colon—which is a rare cause of chronic diarrhea (6), right upper quadrant pain, and cholangitis. In rare instances (0.1%), it may be associated with hepatic abscess, presenting with nausea, vomiting, and fever (7), as well as obstructive jaundice (11). The classic clinical triad—pneumobilia, chronic diarrhea, and vitamin K malabsorption—is considered pathognomonic, although it is infrequently observed (14). In severe cases, it may cause lower gastrointestinal bleeding or sepsis (9). Preoperative diagnosis is uncommon and is achieved in only 7.9% of cases (2).

Diagnostic methods that support evaluation include abdominal ultrasound, which may show indirect signs such as pneumobilia, abscesses with hypo- or anechoic areas and hypoechoic capsules containing echogenic debris (8); computed tomography; endoscopic retrograde cholangiopancreatography (ERCP); colonoscopy—particularly useful when chronic diarrhea is the main

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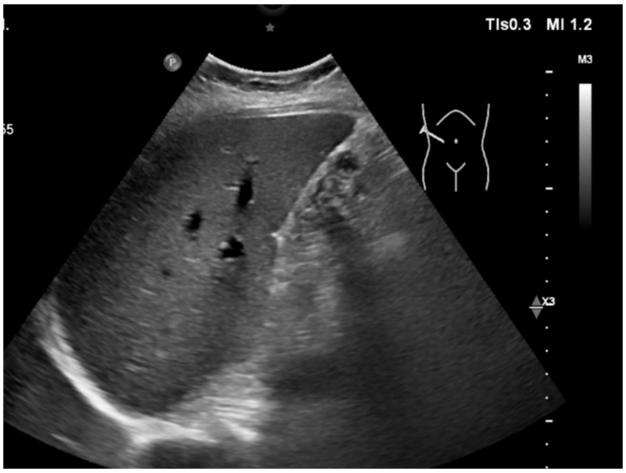

Figure 1. Abdominal ultrasound. Hepatic and biliary area showing an echogenic structure in the fundus of the gallbladder that casts an acoustic shadow.

symptom and previous imaging is inconclusive (14); and endoscopic ultrasound.

Among the described complications of cholecystocolonic fistula, cholangitis stands out, especially when residual stones in the common bile duct are not ruled out after surgery (14).

Case report

A 51-year-old female patient with no significant medical history presented to the emergency department. She reported onset of symptoms a few hours prior, characterized by colicky abdominal pain predominantly in the right flank radiating to the mesogastrium, with an intensity of 8/10. The pain was accompanied by nausea without vomiting, abdominal distension, chills, myalgia, and normal bowel movements. No urinary symptoms were reported.

Physical examination: Blood pressure 126/82 mmHg, heart rate 95 bpm, respiratory rate 20 breaths per minute, temperature 36.6°C. No characteristic facial features, normal skin coloration, and integument. Cardiopulmonary examination was unremarkable. Abdomen was soft, depressible, with normal bowel sounds; Murphy's sign was negative; no signs of peritoneal irritation. Pancreatic and ureteral points were negative. Appendicular points were deferred due to prior appendectomy. Percussion was tympanic. Extremities were intact without abnormalities.

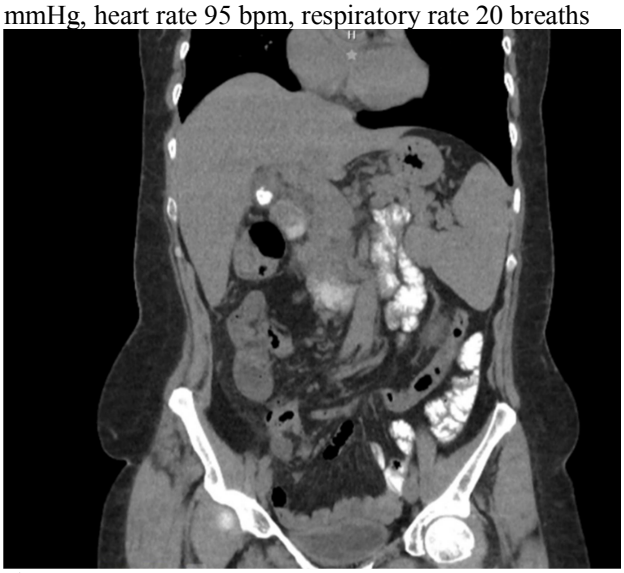

Figure 2. CT scan, coronal view. Abdomen and pelvis section showing findings suggestive of a probable hepatic cyst.

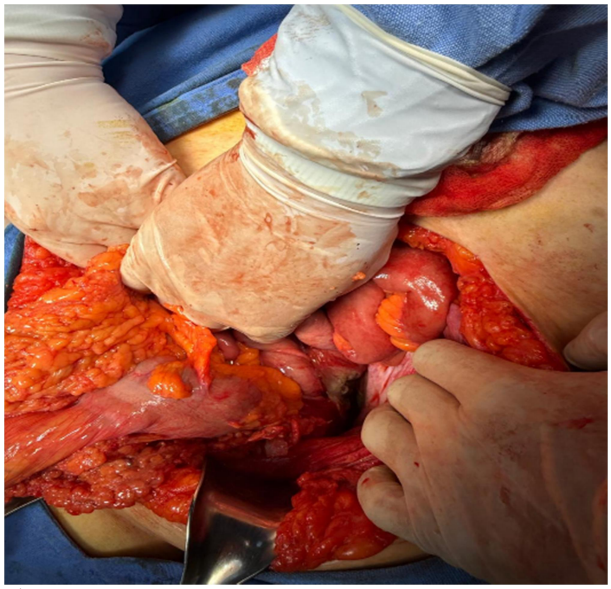

Figure 3. Intraoperative view showing inadequate visualization of the gallbladder.

Laboratory and imaging studies on admission: Leukocytes: 5.8 x10^3/µl, Erythrocytes: 3.48 x10^6/µl, Hemoglobin: 9.7 g/dL, Hematocrit: 30.2%, Neutrophils: 71.9%, Platelets: 211,000/µL, PT: 13.7 seconds, aPTT: 34.6 seconds, INR: 1.25, Albumin: 2.7 g/dL, Amylase: 18 U/L, Total bilirubin: 0.51 mg/dL, Direct bilirubin: 0.15 mg/dL, Indirect bilirubin: 0.36

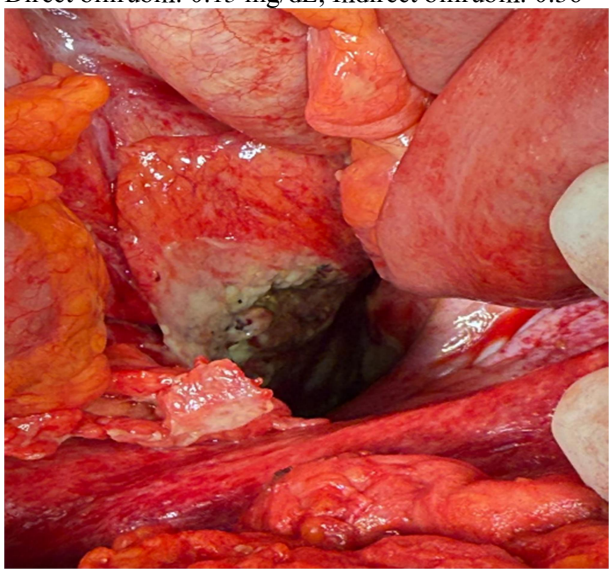

Figure 4. Intraoperative view showing ischemia of the colonic wall and visualization of cholecystocolonic fistula.

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mg/dL, Glucose: 74 mg/dL, Lipase: 13.3 U/L, Magnesium: 1.72 mg/dL,Urea: 20.69 mg/dL. **Ultrasound:** Gallbladder was not fully visualized due to an echogenic structure measuring 3.4 cm in diameter in the fundus, casting a posterior acoustic shadow. The common bile duct (CBD) was not dilated (3 mm diameter). **Abdominal CT:** Liver size preserved, with a round hypodense nodule with annular calcifications in segment VI of the right lobe, measuring 25 x 29 mm with attenuation approximately 133 HU. Adjacent to it, an air bubble of 47 HU. The CBD was dilated throughout its course, measuring 10 mm, without evidence of stones. The gallbladder contained stones measuring 6 mm and 13 mm, with an attenuation up to 309 HU; the wall was thin, with no perivascular fluid. The colon contained residual material; fat stranding was identified near the hepatic flexure, with a small amount of free fluid (1 HU attenuation). A hepatic cyst was reported, consistent with a hydatid cyst.

The patient was admitted to the general surgery ward. Due to imaging findings suggestive of a hydatid cyst, medical treatment with albendazole was initiated. A cholecystectomy was planned after completion of antihelminthic therapy for chronic calculous cholecystitis without signs of acute exacerbation. The patient continued to have abdominal pain despite analgesics and persistent nausea without vomiting.

Surgical treatment was decided: a laparoscopic cholecystectomy was scheduled. During the procedure, a Parkland grade V gallbladder was observed, prompting conversion to open surgery. A colonic-hepatic inflammatory mass was found, with no clear gallbladder visualization, significant fibrosis in segment V, and a cholecystocolonic fistula involving nearly 100% fusion of the gallbladder fundus and body. A 2.5 cm stone was extracted. A probable cystic duct orifice was observed. Resection of the affected mesocolon segment and colo-colic anastomosis were performed.

During postoperative monitoring, the patient was stable, afebrile, and fasting, with nausea but no vomiting. Bilious drainage was observed, leading to a magnetic resonance cholangiopancreatography (MRCP) due to suspected cystic duct dehiscence. MRCP revealed cholelithiasis with bile leakage into the abdominal cavity through a defect in the gallbladder wall, likely at the stone extraction site, and dehiscence of the cholecystorrhaphy. The patient was evaluated by the endoscopy service for possible endoscopic retrograde cholangiopancreatography (ERCP), but the risk was deemed to outweigh the benefit.

During follow-up, the patient tolerated oral intake, maintained good general condition, and had no indication for urgent surgery. She was discharged home with plans for surgical reintervention for residual stones in approximately 5-6 months.

Discussion

The cholecystocolonic fistula is the second most frequent type of bilioenteric fistula, and the pathophysiological process underlying its development is secondary to chronic inflammation. This, combined with cystic duct obstruction, facilitates adhesion of the gallbladder to adjacent organs, increased intravesicular pressure, which leads to ulceration and ischemia of the gallbladder wall, ultimately causing erosion and communication with a neighboring anatomical structure (2). In our case, the patient was a woman with a long clinical course from the onset of symptoms to the surgical procedure, implying a prolonged inflammatory process that triggered the aforementioned complication.

The resulting symptoms tend to be nonspecific and may include fever, cholangitis, biliary ileus, steatorrhea, and malabsorption (3). Cases of intestinal obstruction from stones larger than 2.5 cm, bleeding, or hepatic abscess have also been reported (4). However, our patient never presented these symptoms; the only persistent symptom during hospitalization was abdominal pain, which further complicated the diagnosis.

Regarding diagnosis, indirect signs such as pneumobilia may be seen on radiographs, and ultrasound can reveal contact between the gallbladder wall and the colonic wall; however, these findings are nonspecific. In our patient's case, imaging studies did not report contact between the gallbladder and colonic walls to suggest this pathology. The ultrasound reported a gallbladder without signs of acute inflammation and no colonic alterations indicating complications. Conversely, the CT scan showed findings compatible with a hydatid cyst, which further delayed the surgical procedure and prolonged the inflammatory process in the gallbladder. Ultimately, the diagnosis was made intraoperatively. Multiple case reviews report that diagnosis is typically made during surgery, but this pathology should be suspected in patients with persistent symptoms, elderly adults, and those with a long history of cholelithiasis (10).

Treatment options include laparoscopic or open biliary drainage, cholecystectomy, and fistula resection (resection of the affected intestinal segment followed by anastomosis). It has been described that treatment can be performed in a single stage with stone extraction, cholecystectomy, and primary fistula closure, or in two stages—first stone extraction and cholecystectomy, then fistula repair in a second surgery (8). In our case, a partial cholecystectomy plus colonic resection and colo-colic anastomosis was performed following the intraoperative finding of a

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cholecystocolonic fistula, with an adequate clinical course postoperatively. However, treatment depends on the patient's clinical presentation, comorbidities, and the surgeon's skill, with surgical repair of the fistula being the standard to prevent complications (12).

In selected cases, minimally invasive treatment by laparoscopy has been described (resection of the gallbladder and fistula plus intestinal restoration), offering advantages such as reduced surgical trauma, postoperative pain, and shorter hospital stays; however, the approach also depends on intraoperative findings (15).

Conclusion

Cholecystocolonic fistulas as a complication of cholecystitis are very rare. There are few cases reported in the literature, and due to the nonspecific nature of their symptoms, diagnosis before surgery is challenging. Regarding management, the literature mentions cholecystectomy combined with resection as a therapeutic option. In our patient's case, the results after this surgical intervention were favorable, allowing discharge without abdominal pain and follow-up through outpatient consultation. Reports of this complication are scarce, so more case reports on surgical management options for this complication are expected.

Conflicts of interests

The authors have no conflicts of interests.

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