Case Report

Cholecystocolonic fistula: A rare complication of calculous cholecystitis with pre-operative diagnosis and surgical management

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ABSTRACT

Cholecystocolonic fistula (CCF) is a rare complication of chronic gallstone disease, often diagnosed intraoperatively due to non-specific clinical features and limited radiological sensitivity. We report the case of a 76-year-old female with dyspepsia, low-grade fever, and vomiting, in whom contrast-enhanced computed tomography demonstrated a fistulous tract between the gallbladder and hepatic flexure. Laparotomy with cholecystectomy and segmental colectomy was performed, and histopathology confirmed the diagnosis. The postoperative course was uneventful. This case underscores the diagnostic challenges of CCF, the need for high clinical suspicion, and the importance of timely surgical intervention to prevent complications such as perforation and sepsis.

Key words: Biliary disease, Cholecystectomy, Cholecystocolonic fistula, Cholecystoenteric fistula, Gallstone disease

Cholecystocolonic fistula (CCF) is an uncommon complication of chronic gallstone–induced cholecystitis, seen in roughly 0.1% of cases [1]. It is the second most frequently encountered cholecystoenteric fistula after the cholecystoduodenal type. Since more than 90% of CCFs are diagnosed during surgery, an unrecognized fistula may cause colonic perforation, fecal peritonitis, and sepsis [2].

This case is reported to highlight the diagnostic challenges of CCF, a rare complication of chronic gallstone disease. It emphasizes the importance of preoperative suspicion and tailored surgical management to prevent serious morbidity.

CASE PRESENTATION

A 76-year-old female reported a 1-month history of dyspepsia, recurrent low-grade fever, and occasional vomiting. On clinical examination, the patient was hemodynamically stable, and bilateral pedal edema was noted. The abdomen was unremarkable. Laboratory investigations were within normal limits, except for an elevated leukocytosis. Abdominal ultrasound revealed an inflammatory mass in the right hypochondrium. Contrast-enhanced computed tomography (CECT) of the abdomen showed a fistulous tract between the hepatic flexure and the inferior gallbladder body, measuring approximately 20 mm in diameter and 2.7 cm in length, along with air within the gallbladder, common bile duct, and intrahepatic biliary radicles (Figs. 1 and 2).

Upper GI endoscopy was normal; colonoscopy could not reveal a fistulous tract. Diagnostic laparoscopy revealed dense omental adhesions encasing the fistulous tract and adjacent colon. The patient was subsequently proceeded with right subcostal laparotomy, cholecystectomy, and segmental colectomy with end-to-end anastomosis.

Histopathology demonstrated chronic cholecystitis with colonic wall fibrosis and a fistulous tract. The post-operative period was normal in course.

DISCUSSION

Cholecystoenteric fistulas most commonly result from long-standing calculous cholecystitis. It was first described by Courvoisier in 1890. Glenn *et al*. postulated that cystic duct obstruction leads to inflammation-induced

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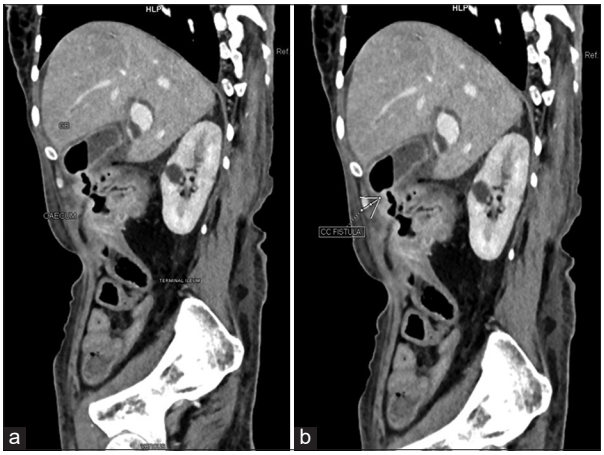

Figure 1: (a and b) Sagittal section of contrast-enhanced CT scan showing a fistulous tract (white arrow) between the gallbladder body and hepatic flexure of the colon.

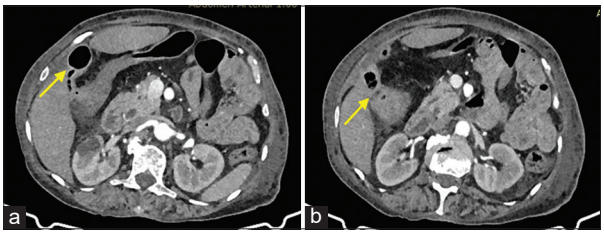

Figure 2: (a and b) Axial section of contrast-enhanced CT scan demonstrating the cholecystocolonic fistula (yellow arrows) with adjacent ileal wall thickening.

adhesions with adjacent organs, ultimately causing fistula formation [1,2]. While the cholecystoduodenal subtype predominates (70–77%), CCF accounts for 6–15% of cases [3,4]. It disproportionately affects women during the sixth to seventh decades of life [1].

Chronic gallbladder inflammation induces ulceration and ischemia, facilitating erosion into the colon; alternative etiologies include malignancy, trauma, amebiasis, peptic ulcer disease, and diverticulitis [4]. Clinical presentation is often non-specific: diarrhea, abdominal pain, fever, jaundice, steatorrhea, weight loss, and pneumobilia are described. Savvidou *et al*. described the pathognomonic triad of pneumobilia, chronic diarrhea, and Vitamin K malabsorption for CCF [3]. It disrupts the enterohepatic circulation, resulting in malabsorption and subsequent loss of fluids and electrolytes [5,6]. Acute presentation occurs in approximately 1–4% of these patients, manifesting as biliary ileus, significant lower gastrointestinal bleeding, or hepatic abscess formation [7].

The key differentials of CCF include other biliary-enteric fistulas (especially cholecystoduodenal), penetrating peptic ulcer, malignancy (gallbladder or colon), Crohn's disease, complicated diverticulosis, iatrogenic causes, and rare infections such as amoebiasis or actinomycosis [2,4-6].

Preoperative diagnosis occurs in approximately 8% of cases [8]. Imaging modalities, including ultrasound, CECT, Magnetic resonance imaging (MRI), Endoscopic Retrograde Cholangiopancreatography (ERCP), and barium studies, can suggest a fistula [9,10]. MRI has a limited role in the evaluation of CCF. Although MR cholangiopancreatography can delineate masses and detect gallstones, it is typically unable to identify the fistulous tract, as intraluminal colonic air produces signal voids that obscure visualization [11]. Intraoperative cholangiography can confirm the diagnosis when suspected.

Asymptomatic patients with comorbidities may be managed conservatively [2]. Supportive care includes fat-soluble vitamin supplementation, antibiotics, and ERCP if indicated [12]. Standard management includes cholecystectomy and fistula resection, with or without bile duct exploration [2]. In cases of extensive inflammation, segmental colon resection may be necessary [13]. Laparoscopic approaches are feasible, but conversion to open surgery is advised in unclear anatomy or insufficient expertise [14]. Costi *et al*. performed a comprehensive review of 231 cases of CCF, highlighting the complexity of managing emergency presentations, such as obstruction, hemorrhage, or multiple fistulas [4]. While a one-stage procedure remains the standard for hemorrhagic complications, various surgical strategies, including enterolithotomy or segmental resection, are used to relieve colonic obstruction. Full gastrointestinal exploration is essential to identify concurrent stones or perforations. With respect to temporary diversion, while colostomy is frequently reported, its necessity should be individualized based on intraoperative findings and patient condition. Endoscopic stone extraction may be feasible in selective cases, potentially avoiding surgery. Complex fistulas may require unconventional interventions due to distorted anatomy and chronic inflammation, sometimes necessitating extensive gastrointestinal resections.

Mortality associated with CCF ranges from 10 to 15%, and complications such as biliary cirrhosis, cholangitis, and biliary peritonitis underscore the importance of early detection and appropriate surgical planning [4].

CONCLUSION

CCF represents an uncommon yet clinically significant sequela of chronic cholecystitis, often masked by non-specific gastrointestinal symptoms. While imaging may suggest its presence, definitive diagnosis frequently occurs intraoperatively. Optimal management entails cholecystectomy with fistula excision, with segmental colectomy required in extensive colonic involvement. Early recognition and surgical planning are crucial to mitigate morbidity and mortality associated with complications such as perforation, hemorrhage, and biliary peritonitis. This case highlights the importance of integrating clinical, radiological, and intraoperative findings to ensure favorable outcomes, emphasizing the need for vigilance when evaluating atypical presentations of gallstone-related disease.

ETHICS APPROVAL

This is a case report. The Institutional Ethics Committee (IEC) has confirmed that no ethical approval is required.

CONSENT TO PARTICIPATE

Written informed consent was obtained from the patient and bystanders.

CONSENT TO PUBLISH

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

AUTHORS' CONTRIBUTION

Literature search, interpretation and writing of the report were performed by Padma Priya. The patient was under the care of Chandralathan T.A., Rajmohan. S, and P. Ravisankar. The first draft of the manuscript was written by Padma Priya. Udaya Kumar, P. Ravisankar, and Chandralathan T.A. revised it critically for intellectual content writing. All authors read and approved the final manuscript.

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