Case Report
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# Cholecystocolonic fistula, a rare complication of cholelithiasis: case presentation

## Summary

**Introduction:** Cholecystocolonic fistula is usually a rare and late complication of gallstones and is the second most common cholecystoenteric fistula.

**Objective:** To present the case of a cholecystocolonic fistula, a rare complication of cholelithiasis. Presentation of the case: A 50-year-old female patient who comes to our institution for recurrent abdominal pain.

**Discussion:** Patients with FCC usually have a variable clinical presentation and are more often asymptomatic. When symptomatic, patients generally present with diarrhea, abdominal pain, jaundice, fever, nausea, vomiting, steatorrhea, and weight loss. The combination of pneumobilia, chronic diarrhea, and vitamin K malabsorption has been proposed as a pathognomonic triad for cholecystocolonic fistula.

**Conclusions:** Cholecystocolonic fistula is a rare entity, radiologists should be aware of it and should be carefully informed if it occurs together with other hepatobiliary anomalies. The clinical triad pneumobilia, chronic diarrhea, and prolonged prothrombin time is seen in less than one third. Almost three quarters of the cases are asymptomatic and are diagnosed intraoperatively. Where cholecystectomy and repair of the colon wall is the most used treatment method.

**Keywords:** cholecystocolonic fistula, cholecystoenteric fistula, pneumobilia, cholelithiasis

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## Introduction

Cholecystocolonic fistula (CCF) results from an abnormal communication between the gallbladder and the right side of the colon. FCC is usually a rare and late complication of gallstones and is the second most common cholecystoenteric fistula (CFF) after cholecystoduodenal fistula. Due to the lack of common presenting symptoms and the rare occurrence, this condition is generally difficult to diagnose preoperatively and is therefore not a commonly reported abnormality. It is discovered in approximately 0.1% of cholecystectomies.[1] Women are more commonly affected than men and it is usually frequent during the sixth or seventh decade of life. The triad of pneumobilia, chronic diarrhea, and vitamin K malabsorption has been claimed to be pathognomonic for cholecystocolonic fistula.[2] We present our experience with a woman in her fifth decade of life, intraoperative diagnosis of said cholecystocolonic fistula, which constitutes a surgical entity with a very low incidence in surgical services.

## Case presentation

White, female, 55-year-old patient with a personal history of arterial hypertension who came to our service for presenting pain in the right hypochondrium, intolerance to cholecystokinetic foods. During his study, cholelithiasis was diagnosed by presenting an abdominal ultrasound that mentioned the presence of multiple lithiasis, the largest of 2 cm, with a thick-walled gallbladder with a 5mm hepatocoledochus. With the following clinical and imaging elements, we announced the patient under the diagnosis of cholelithiasis to perform a laparoscopic cholecystectomy. During the abdominal exploration towards the hepatic bed, multiple adhesions and the presence of the colon, despite the sharp and blunt dissection maneuvers, there was significant fusion between the wall of the colon and the gallbladder, so we decided to convert the case due to the high suspicion of a cholecystocolonic fistula. Performing cholecystectomy and colorrhaphy in two planes. The patient is discharged after ten days without complications. Biopsy shows chronic lithiasic cholecystitis, with erosion, chronic inflammatory lesions of the colon wall.

## Discussion

FCC is the second FCE after cholecystoduodenal ones,[2,3] and it is an infrequent and late complication of cholelithiasis, with an incidence of 1/1000 cholecystectomies.[1] Its etiology may be related to a long-lasting inflammatory process of the gallbladder, caused by stones. FCC mainly occurs as a result of inflammation of the gallbladder due to cholecystitis. Acute cholecystitis with obstruction of the cystic duct leads to the formation of adhesions with adjacent organs, including the colon. Recurrent inflammation results in ulceration and ischemia of the gallbladder wall, leading to erosion and ultimately fistula formation. However, other associated conditions such as cancer, trauma, amoebic infections, peptic ulcer disease, and diverticulitis have also been implicated in the etiology.[4,5]

Patients with FCC usually have a variable clinical presentation and are more often asymptomatic. When symptomatic, patients generally present with diarrhea, abdominal pain, jaundice, fever, nausea, vomiting, steatorrhea, and weight loss. The combination of pneumobilia, chronic diarrhea, and vitamin K malabsorption has been proposed as a pathognomonic triad for cholecystocolonic fistula.[1] However; this classic clinical trial was not observed in our patients, which coincides with the majority of authors where less than 20% of the cases present it. FCC impairs the enterohepatic circulation, leading to a malabsorption syndrome with loss of water and electrolytes from the large intestine leading to diarrhea and weight loss. Rarely, FCC can lead to stone impaction in the rectosigmoid region and can cause large bowel obstruction, in contrast to small bowel obstruction due to gallstone ileus.[5]

Preoperative studies have rarely been able to make a definitive diagnosis of FCC. Imaging may include ultrasonography, computed tomography, magnetic resonance imaging, endoscopic retrograde cholangiopancreatography (ERCP), and barium enema, but diagnosis is often made perioperatively.[6,7] When suspected intraoperatively, the diagnosis can be confirmed with cholangiography. However, some authors have considered ERCP to be the most accurate preoperative diagnostic modality of FCC.[5] Pneumobilia has been considered to be associated with FCC, especially if the gallbladder is shrunken and in close proximity to the intestine on CT. Despite all these studies, preoperative diagnosis is only achieved in 8-17% of cases[3,8] and in general they are identified during surgery. Therefore we can say that the intraoperative diagnosis prevails in the published series where a high suspicion helps its correct diagnosis, where intraoperative cholangiography helps its better diagnosis, however in our case the fundus of the gallbladder was opened, gas leaking out through it which confirmed our suspicion.

FCC not diagnosed on preoperative imaging can pose a problem for the surgeon, who is often forced to convert elective laparoscopic cholecystectomy to a complex open procedure that may involve adhesiolysis and colonic resection. Therefore, the ideal treatment for suspected biliary-enteric fistula should be an open cholecystectomy with closure of the fistula. A very small number of reports[3,6–9] have explored laparoscopic management of FCC. Although the authors have advocated for the practicality of the laparoscopic approach, they have also raised concerns about long operating times and the need to convert it to an open procedure due to complications such as iatrogenic colonic perforation. FCCs are often associated with various other complications, such as acute cholangitis, biliary peritonitis, and biliary cirrhosis, with an overall mortality rate ranging from 10% to 15%.[1] In our patient who initially intended to perform a laparoscopic cholecystectomy, we opted to convert the surgery and thus complete the cholecystectomy and colorrhaphy as the definitive method of treatment.

Fistulas are usually discovered incidentally due to complications such as intestinal obstruction, lower gastrointestinal bleeding;[5,8] or acute cholangitis, biliary peritonitis and biliary cirrhosis.[1] Treatment in asymptomatic patients, without complications and with associated comorbidity, can be conservative, using ERCP,[10] antibiotics and fat-soluble vitamin supplements.[6,7] The indications for surgery are the presence of complications,[4] and include laparoscopic or open biliary drainage, cholecystectomy, and fistula resection (with or without segmental bowel resection and anastomosis).[5,7] Surgical treatment presents controversies such as the need or not for a colostomy or the feasibility of closing the CCF by laparoscopy. Currently, the initial approach is laparoscopic, although long operating times and a considerable number of conversions have been reported[1,3] due to haemorrhages, severe local adhesions, and technical difficulties in intestinal suture;[1,6] running the risk of causing complications such as iatrogenic perforation of the colon and fecal peritonitis.[1] At the same time, if the anatomical structure is not clear, cholecystectomy is safe and effective.[3] For all these reasons, some authors state that the treatment should be an open cholecystectomy with closure of the fistula.[1] On the other hand, if the patient has electrolyte imbalance, sepsis, or other disorders caused by intestinal obstruction, under no circumstances should the fistula be repaired or closed, due to the increased risk of additional contamination from extra dissection in the BV area,[1,2] so only enterotomy and stone extraction is recommended.[4,10]

## Conclusion

Cholecystocolonic fistula is a rare entity, radiologists should be aware of it, and it should be carefully reported if it occurs together with other hepatobiliary abnormalities. The clinical triad pneumobilia, chronic diarrhea, and prolonged prothrombin time is seen in less than one third. Almost three quarters of the cases are asymptomatic and are diagnosed intraoperatively where cholecystectomy and repair of the colon wall is the most used treatment method.

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## Conflicts of interest

The authors declare no conflicts of interest.

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