

**Case report****Cholecysto-Colonic Fistula**

Charlie Chen

Loyola Stritch School of Medicine, Chicago

---

**Abstract**

The patient is a 77-year-old woman who presented with a 4-day history of diarrhea and right-sided abdominal pain. Diagnosis by history and physical examination was difficult due to nonspecific signs and symptoms. Laparoscopic surgery revealed a rare cholecysto-colonic fistula as an unusual complication of cholelithiasis.

**Introduction**

Enterobiliary fistula is an unusual complication associated with cholelithiasis. They also occur secondary to abdominal trauma, Crohn's disease, peptic ulcer disease, and malignancies of biliary tract, bowel, and head of pancreas<sup>1-2</sup>. The estimated incidence of biliary fistula is reported to be 0.1 to 0.5% in autopsy series and 1.2 to 5.0% in large series of cholecystectomies<sup>3</sup>. Of those, 75% are cholecysto-duodenal, and only 10-20% are cholecysto-colonic fistulae<sup>4</sup>. Thus, cholecysto-colonic fistula is a rare phenomenon related to biliary disease.

The majority of patients with cholecysto-colonic fistulae are females and elderly<sup>5</sup>. Diarrhea is the most common presenting symptom, but presentation can be highly variable and unspecific. Diagnosis pre-operatively is difficult and requires a high

level of suspicion. Diagnosis is typically achieved during surgery<sup>5-6</sup>.

**Case Report**

A 77-year-old obese woman was admitted to the hospital after a 4-day history of diarrhea. She described the diarrhea as green, non-bloody, and non-fatty. She reported right-sided abdominal pain that is characterized as dull, intermittent, and worse on movement. Associated symptoms included decreased appetite, nausea, and vomiting. Patient also noted a 20-pound weight loss over the last month. She had a similar episode one month ago which resolved spontaneously. Patient denied jaundice, fever, trauma, or change in urine color. Past medical history included hypertension and type 2 diabetes mellitus.

The patient appeared nourished, obese, and in mild distress. Physical examination revealed right upper and lower quadrant tenderness upon palpation. No masses were palpable and bowel sounds were mildly increased. All remaining findings on physical exam were negative. Laboratory tests revealed elevated AST 181, ALT 117, and alkaline phosphatase 577. CT scan revealed an 8 x 7 cm mass at the hepatic flexure and ascending colon with extension into liver.

To evaluate the situation further, a laparoscopic exploratory surgery was performed. The operation revealed a fistula between the gallbladder and hepatic flexure of the colon along with multiple adhesions. A fistula takedown and cholecystectomy was then performed. Post-operatively, patient was symptom free with no further episodes of diarrhea or pain. Alkaline phosphatase levels gradually normalized over the next 2 days. Dissection of the gallbladder revealed 5 small stones (4mm); the tissue was negative for malignancy.

### Discussion

Spontaneous enterobiliary fistula is a complication typically associated with gallstones (90% of cases)<sup>7</sup>. They have also been reported with abdominal trauma, Crohn's disease, and malignancies of the biliary tract, bowel, and head of pancreas<sup>1-2</sup>. The formation of enterobiliary fistula usually follows stone obstruction of cystic duct. Subsequently, recurring episodes of untreated cholecystitis produces adhesions between gallbladder and intestines<sup>8</sup>. Perforation of the adhesion results in a fistula tract. Due to its physical proximity, the duodenum is the most common site of intestines involved. Fistula between the hepatic flexure of colon and gallbladder is a much rarer event, comprising only 10 to 20% of all enteric fistulas<sup>2,9</sup>.

Cholecysto-colonic fistulae often presents with diarrhea, abdominal pain, nausea, weight loss, and dyspeptic symptoms. The fistula can alter the normal bile acid circulation, resulting in malabsorption. When loss of bile acid becomes greater than compensatory increase in bile synthesis, solubilization of dietary fat becomes compromised, leading to steatorrhea. Bile

acids can also stimulate mucosa directly to secrete water and electrolytes<sup>3</sup>. Cholecysto-duodenal fistula can present as small bowel obstruction by the gallstone (gallstone ileus). Obstruction is rare in the large bowel, usually requiring a pre-existing narrowing of the colon<sup>10-11</sup>. Cases have been reported with stone impaction at the recto-sigmoid diverticula, causing large bowel obstruction<sup>6</sup>.

Diagnosis of cholecysto-colonic fistula pre-operatively is difficult due to the unspecific and variable nature of symptoms. Early pre-operative identification could reduce morbidity and mortality. Diagnosis can be made by barium enema, endoscopic retrograde cholangiopancreatography (ERCP), CT scan, and ultrasound. However, most cases are identified intra-operatively during laparoscopic surgery, similar to our patient.

Standard treatment of cholecysto-colonic fistula is open cholecystectomy and closure of fistula<sup>12</sup>. As a result of increasing surgical expertise, laparoscopic surgery can now be used in fistula treatment, with decrease pain and hospital stay for the patients. Results have shown no significant difference in intra-operative and post-operative complications with the proper surgical technique<sup>13-14</sup>. Although surgery is treatment of choice, endoscopic sphincterotomy and common bile duct stone extraction have been shown to cause spontaneous healing of fistulas. Such procedure is reserved for treatment of patients who are unable to undergo surgery<sup>12,15</sup>. Elderly patients are poor candidates for surgery, because mortality associated with operation can range from 10 to 20%, compared to less than 1% for uncomplicated gallbladder disease<sup>16-17</sup>.

### Conclusion

Cholecysto-colonic fistula is a rare complication of gallstones. The most common presentation is diarrhea, but symptoms can be nonspecific and variable. Surgical closure of fistula is the treatment of choice.

### Corresponding author

Charlie Chen  
 Medical Student  
 Stritch School of Medicine  
 Loyola University of Chicago

**Email** - <chchen@lumc.edu>

### References

1. Chandar VP, Hookman P. Choledocholonic fistula through a cystic duct remnant: a case report. *Am J Gastroenterol* 1980; 74:179-81.
2. LeBlank KA, Barr LH, Rush BM. Spontaneous biliary enteric fistulas. *South Med J* 1983; 76:1248-52.
3. Elsas LJ, Gilat T. Cholecystocolonic fistula with malabsorption. *Ann Intern Med* 1965; 63:481-6.
4. Hernandez C, Heuman D, Vlahcevid ZR. Pathophysiology of disease associated with deficiency of bile acids. *Principles and Practice of Gastroenterology and Hepatology*. New York. Elsevier Science Publishing 1988; 384-95.
5. Hession PR, Rawlinson J, Hall JR, Keating JP, Guyer PB. The clinical and radiological features of cholecystocolonic fistulae. *Br J Radiol* 1997; 69(825):804-9.
6. Swinnen L, Sainte T. Colonic gallstone ileus. *J Belge Radiol* 1995; 77(6):272-4.
7. Noskin EA, Strauss AA, Strauss SF. Spontaneous internal biliary fistula: a review of literature and report of two cases. *Ann Surg* 1949; 130:270.
8. Stull JR, Thomford NR. Biliary intestinal fistula. *Am J Surg* 1970; 120:27-31.
9. Fujitani K, Hasuike Y, Tsujinaka T et al. New technique of laparoscopic-assisted excision of a cholecystocolonic fistula: report of a case. *Surg Today* 2001; 31(8):740-2.
10. Perez M, Perez DD, Calvo SM et al. Acute obstruction of the colon secondary to biliary lithiasis. *Rev Esp Enferm Dig* 1996; 88(11):805-8.
11. Foster DR. Colonic gallstone ileus. *Australas Rad* 1997; 41:76-7.
12. Ali AA, Gompertz H. Cholecysto-colonic fistula: a rare case. *Libyan J Med* 2007; AOP:070324.
13. Carlei F, Lezoche E, Lomanto D et al. Cholecystoenteric fistula (CF) is not a contraindication for laparoscopic surgery. *Surg Endosco* 2001; 15:1038-41.
14. Nuzzo G, Giuliani F, Tebala GD, Vellone M. Laparoscopic management of cholecystocolonic fistula. *Endoscopy* 1997; 29:226.
15. Goldberg RI, Phillips RS, Barkin SJ. Spontaneous cholecystocolonic fistula treated by endoscopic sphincterotomy. *Gastrointest Endosc* 1988; 34:55-6.
16. Peustow CB. Spontaneous internal biliary fistula. *Ann Surg* 1942; 115:1043-54.
17. Glenn F, Reed C, Grafe WR. Biliary enteric fistula. *Surg Gynecol Obstet* 1981; 153:527-31.