



Case Report

Cholecystoduodenal Fistula in an Elderly Female: Conversion from Laparoscopic to Open Cholecystectomy with Fistula Repair

Article History:

Name of Author:

ISHTIAQ SHAKOOR¹, Prof. AZAM YOUSAF² WAQAR AHMAD³, DR. SANIA REHMAN⁴, SAAD MAZHAR⁵, HAJRA SANAULLAH⁶, Dr. Saqib Khan⁷

Affiliation: ¹Final Year MBBS, H.B.S. Medical & Dental College, Islamabad
Contact info. : +923357449740

²Professor of Surgery H.B.S. Medical & Dental College, Islamabad
Contact info. : +923145586000

³Final year MBBS, H.B.S. Medical & Dental College, Islamabad Contact info. : +923103492588

⁴Resident General Surgeon
H.B.S. Medical & Dental College, Islamabad
Contact info. : +3343629119

⁵Final year MBBS, H.B.S. Medical & Dental College, Islamabad
Contact info. : +923169190016

⁶Final year MBBS, H.B.S. Medical & Dental College, Islamabad
Contact info. : +9231877769799

⁷Research Officer, department of Medical Education and Research, HBS Medical and Dental College Islamabad, Pakistan

Corresponding Author:

Dr. Saqib Khan

Received: 02-12-2025

Revised: 12-12-2025

Accepted: 24-12-2025

Published: 20-02-2026

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Abstract: A 78-year-old woman who had a history of chronic cholelithiasis was admitted after experiencing vomiting and upper abdominal pain. Gallstones were visible on preoperative imaging, but there was no sign of a cholecystoduodenal fistula. Dense adhesions between the duodenum and gallbladder neck were found during laparoscopic cholecystectomy, requiring an open procedure. A cholecystoduodenal fistula was found during surgery. Following a cholecystectomy, the fistula was closed using 2-0 Vicryl sutures and an omental patch for reinforcement. The patient recovered without incident, received her discharge on the fourth postoperative day, and continued to show no symptoms throughout the follow-up period.

Keywords: Cholelithiasis, Cholecystoduodenal fistula, Cholecystectomy, Laparoscopic, Open Surgery, Omental Patch

INTRODUCTION

An uncommon consequence of gallstone disorder, cholecystoduodenal fistula usually results from chronic cholelithiasis. Cholecystoduodenal fistulas are the most prevalent kind of biliary-enteric fistula, with an incidence ranging from 0.15% to 8%¹. Impacted gallstones typically produce pressure necrosis and prolonged inflammation, which lead to these fistulas². Preoperative diagnosis of this complication is frequently challenging because it is infrequently detected by conventional imaging, including ultrasonography^{3,10}. Usually, an intraoperative diagnosis is made. Here, we discuss the challenges in identifying and managing a cholecystoduodenal fistula that accidentally was identified during the procedure of laparoscopic cholecystectomy in a 78-year-old lady.

CASE PRESENTATION

A 78-year-old female presented in the surgical OPD with complaints of mild on-and-off epigastric pain, of colicky in nature after meals for 6 months, along with bloating and dyspeptic symptoms. There is no history of nausea and vomiting, symptoms aggravate after food intake, and are relieved after some time on their own. She has no history of jaundice, and there is no fever; systemic inquiry is unremarkable, with no other signs or symptoms of intestinal obstruction. The patient was afebrile and haemodynamically stable upon physical examination by a consultant general surgeon. The abdominal examination showed mild pain, restricted to the right upper quadrant, without guarding or peritonism. Her clinical history suggested chronic gallstone disease, with a gradual worsening of symptoms leading to her admission. Her Past medical history is significant for Diabetes Mellitus (for 12 years on oral Hypoglycemics with good control), ischemic heart disease (treated with a cardiac stent in 2010), and on medications (lowplate 75mg, carvedilol 25mg, and omeprazole tablet), and a prior abdominal hysterectomy (2007).

Laboratory investigations were carried out to assess hepatic, renal, and hematological status. Liver function tests (LFTs) were within normal range, with a total bilirubin of 17 µg/dl, AST (SGOT) 25 IU/L, and ALT (SGPT) 22 IU/L. Serum creatinine levels of 0.9 mg/dl, uric acid levels of 3.5 mg/dl, and urea levels of 4.8 mg/dl were maintained in renal function tests (RFTs). The hemoglobin level was 12.5 g/dl, the white cell count was $7.5 \times 10^3/\mu\text{l}$, and the red cell count was $5.1 \times 10^3/\mu\text{l}$, all of which were within acceptable reference ranges. These results verified that she was a good candidate for surgery and ruled out serious systemic compromise.

A diagnosis of cholelithiasis with chronic cholecystitis was made and a laparoscopic cholecystectomy was planned for the patient based on an ultrasound of the abdomen that showed an enlarged and contracted gallbladder harboring multiple calculi, the largest measuring about 13 mm (figure 1), no pericholecystic fluid collection, normal liver and spleen sizes, and an incidental finding of a left renal cortical cyst measuring 8.7×7.7 mm. Lowplate 75mg tablet withdrawn 05-07 days before surgery. During surgery, the laparoscopic approach was initially attempted. However, the dissection was very challenging because of thick adhesions seen around the duodenum and gallbladder neck (Figure 2). Careful exploration revealed the presence of a cholecystoduodenal fistula, which had not been identified on preoperative imaging. Because of the high risk of iatrogenic duodenal injury in the setting of unclear anatomy, the procedure was promptly converted to open cholecystectomy through a right subcostal incision. Separation of the gallbladder from the adherent duodenum and the tiny wall of the gallbladder left over the duodenum (figure 3). A cholecystectomy was performed, with transfixation of the cystic duct and artery using 2-0 Vicryl. The fistulous tract between the gallbladder and duodenum was closed using absorbable Vicryl sutures, 2-0, and the repair was reinforced with an omental patch (Figure 4). Placement of a size 18 drain in the subhepatic area before closure of the Right subcostal margins, and meticulous hemostasis was achieved. There were no complications throughout the patient's initial postoperative period. She was closely monitored in the intensive care unit, where she received intravenous antibiotics, including Ceftriaxone 1 g every eight hours, along with analgesics and supportive care. The surgical wound remained clean, and the subhepatic drain output was minimal. She was promptly mobilized, her oral food intake was restarted slowly, and she was released in an excellent state on the fourth day of the operation. The follow-up showed her to be asymptomatic, and no further post-repair complications were reported.



Figure 1 showing Ultrasound of the abdomen revealed an enlarged and contracted gallbladder harboring multiple calculi, the largest measuring approximately 13 mm

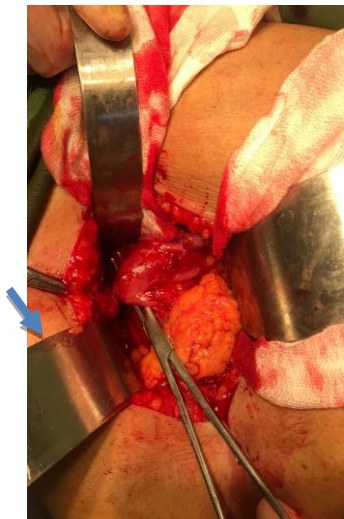


Figure 2 showing Cholecystoduodenal Fistula



Figure 3 showing Separation of Gallbladder from the adherent Duodenum



Figure 4 showing Closure of fistula opening in the Duodenum & application of Omental patch

Discussion

One major complication of cholelithiasis is a cholecystoduodenal fistula., a rare occurrence, particularly in the elderly⁹. Biliary enteric fistulas occur with a very low rate of 0.15-8% in patients with the presence of gallstone diseases¹. Chronic inflammation and the presence of gallstones cause pressure necrosis, which erodes through the gallbladder wall into the duodenum, and is usually added as the pathogenesis of the condition². The condition can remain asymptomatic initially, and the patients eventually develop a few related complications, including gallstone ileus, gastrointestinal tract bleeding, or cholangitis^{4,5}. Cholecystoduodenal fistula is not that easy to diagnose preoperative. The fistula in this case was not suspected in the preoperative imaging due to the impossibility of visualizing it on ultrasonography. The fistula, most often, cannot be detected by the conventional procedure, such as ultrasound imaging, without any clinical indicator of bile peritonitis or gastrointestinal obstruction.

It is also reported that laparoscopic treatment of cholecystoduodenal fistulas is not necessarily ineffective ^{6,7}in certain cases, especially simple anatomy, no dense adhesion ¹¹. The omental patch, where the duodenum repair would be done, is also a significant factor in the treatment of this condition. The omentum has well-documented healing properties and has a significant role in sealing defects, reducing the risk of leakage, and promoting tissue regeneration⁶. Furthermore, the decision to place a subhepatic drain helps in monitoring for any potential bile leakage and ensures early detection of complications like infection or abscess formation⁵.

Following surgery, the patient in this instance recovered without incident, which is in line with the results documented in the literature. However, some studies have pointed out that while the surgical repair is often successful, the long-term outcomes for elderly patients may be complicated by other comorbidities, such as ischemic heart disease, which can affect wound healing and overall recovery^{4,6}. When the fundus of the gallbladder with a large gallstone becomes adherent to the duodenum, a cholecystoduodenal fistula is formed between the fundus of the gallbladder and the first part of the duodenum over a period of time. The gallstone erodes through the fistula and slips into the duodenum⁸.

It passes into the ileum and gets stuck at the narrowest part of the ileum, about 2 feet from the ileocecal junction. Such a patient then presents with signs and symptoms of intestinal obstruction. Before surgery, evaluation is challenging. The person has intestinal blockage surgery, and an enterotomy is performed to remove a gallstone. And at this point, a cholecystoduodenal fistula allows the surgeon to identify the gallstone's origin.

Challenges and Surgical Considerations:

It is still difficult to treat cholecystoduodenal fistula, especially in older individuals who have other comorbidities. Duodenal damage or bile leak are among the issues that surgeons should be prepared to handle. It should be immediately changed from laparoscopic to open surgery to reduce the risk of dense adhesions and anatomical complexity, causing harm to the surrounding structures. Furthermore, the placement of drains and omental reinforcement should be considered to prevent postoperative problems, which are crucial for managing this condition⁶.

Conclusion:

A rare and difficult to diagnose consequence of chronic gallstone disease is cholecystoduodenal fistula. In older patients with chronic cholelithiasis and vague symptoms, this case report emphasizes the value of keeping a high index of suspicion. The possibility that these fistulas would remain undetectable despite imaging advancements emphasizing the importance of thorough intraoperative evaluation and prompt conversion to open surgery if complex anatomy and dense adhesions are present. Cholecystectomy combined with omental strengthening of the duodenal repair was successful in stopping bile leaks and promoting healing. This procedure shows how difficult biliary-enteric fistulas can be managed by conventional surgical techniques and promotes more study to improve the best possible treatment plans.

Lists of Abbreviations:

CT- (Computed Tomography) Scan
MRI- (Magnetic Resonance Imaging)
ALT- (Alanine transaminase)
SGOT- (Serum Glutamic Oxaloacetic Transaminase)
SGPT- (Serum Glutamic Pyruvic Transaminase)
AST- (Aspartate Aminotransferase)



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