

Laparoscopic repair of two incidentally detected cholecysto-enteric fistula during laparoscopic cholecystectomy: a case report

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Introduction

Laparoscopic cholecystectomy has become the preferred treatment for symptomatic gallstone disease due to its quicker recovery and similar complication rates compared to open cholecystectomy.[1] Cholecysto-enteric fistula (CEF) is a rare but recognized complication, defined as a spontaneous connection between an inflamed gallbladder and nearby bowel segments.[2] The incidence of CEF among cholecystectomy patients ranges from 0.5% to 0.9%. The most common type is cholecysto-duodenal fistula (CDF) comprising 75% to 80% followed by cholecysto-colic fistula (CCF).³ This report describes a case where both cholecysto-colic and cholecysto-duodenal fistulae were incidentally discovered during laparoscopic cholecystectomy and successfully managed using laparoscopic techniques. This case represents, to the best of our knowledge, the first report of its kind in Sri Lankan literature.

Presentation of Case

A 61-year-old otherwise healthy male was admitted to the ward for an interval laparoscopic cholecystectomy. He had initially presented to the emergency department few months earlier with symptoms consistent with acute cholangitis, along with ultrasound evidence of distal common bile duct sludge, concurrent chronic cholecystitis, and had undergone urgent Endoscopic Retrograde Cholangio Pancreatography (ERCP) balloon sweeping and bile duct stenting eight weeks prior. Subsequently, he underwent ERCP and stent removal a few weeks later and was scheduled for interval cholecystectomy. During the laparoscopic cholecystectomy, a contracted Gall Bladder (GB) was observed, along with multiple dense omental adhesions to the GB fundus, attributed to chronic cholecystitis, cholangitis, and prior ERCP. These adhesions were carefully divided using a combination of blunt and sharp dissection. Following extensive adhesiolysis, it was noted

that the proximal transverse colon was inseparable from the GB fundus, and two gallstones were found embedded within the colonic wall, raising a suspicion of a CCF. A decision was made to laparoscopically disconnect GB fundus from adherent Colon with sharp dissection which revealed an epithelial lined fistula tract and two gall stones embedded and merged in to the colon wall forming part of the fistula tract on the colon side (Figure 1&2) which later confirmed by the post operative histology.

After disconnecting the fistula and excising the colonic wall containing stones, a colonic defect measuring 2-2.5 cm with vascularized edges was identified and repaired laparoscopically using intracorporeal suturing. Further mobilization of the GB revealed dense adhesions between the GB neck and duodenum. After narrowing down the dense connective tissue between GB and Duodenum authors noted the narrow tract between these organs which raised suspicion of CDF. Given its narrow and short nature, it was decided to divide this tract between laparoscopic clips (Hem-O-Lok) closer to the duodenal wall which confirmed it to be an epithelial lining fistulous tract containing biliary sludge with in the lumen confirming the presence of CDF (Figure 3).

Surprisingly, dissection of the tissue planes below this in Calot's triangle was found to be easy. The cystic artery and cystic duct were divided between clips after demonstrating the critical view of safety. After cholecystectomy, both fistula repair sites were reassessed for any leaks. Port sites were closed after inserting an abdominal drain with the plan of administering three doses of postoperative antibiotics.

The patient and family were informed about the unexpected intraoperative findings and additional procedures the following day, with anticipation of a prolonged postoperative stay and possible complications. On the second postoperative day, the patient developed two spikes of mild fever along with an elevation of inflammatory markers (CRP 40), without any abdominal symptoms or signs. The output from the abdominal drain was consistently less than 50ml of serous fluid per day throughout and was removed on the fourth postoperative day. The patient was discharged on the eighth postoperative day after ensuring safety.

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At the two-week postoperative review, the patient was noted to have recovered well and was planning to return to work in a few days.

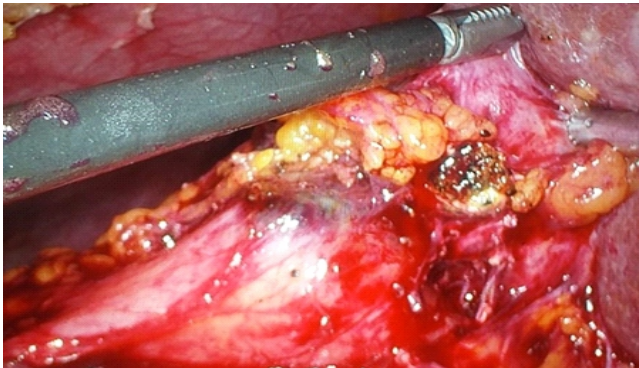


Figure 1. Cholecysto-colic fistula with an embedded gall stone within the colonic wall

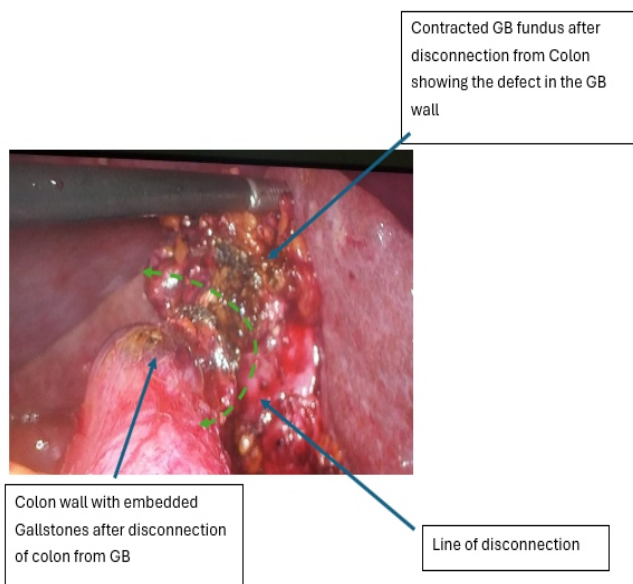


Figure 2.

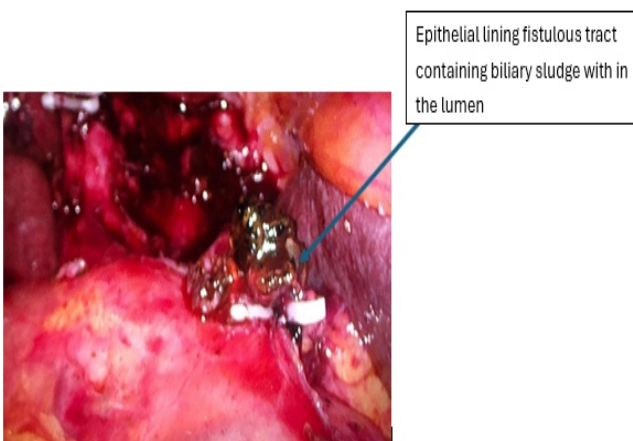


Figure 3. First part of the Duodenum with Cholecysto-duodenal fistula tract

Discussion

Cholecysto-enteric fistula (CEF) represents a rare complication of gallstones, with reported incidence rates ranging from 3-5% among patients with cholelithiasis and 0.15-4.8% among those who undergo cholecystectomy.[2] Patients with CEF often present with nonspecific symptoms, posing a challenge in preoperative differentiation from cholecystitis.[4] Some authors have noted specific characteristics in CEF patients, such as repeated episodes of cholecystitis (over a 5-year history of cholelithiasis), thickened gallbladder walls, and atrophic cholecystitis observed on ultrasound.[3]

Notably, our patient initially presented with cholangitis secondary to choledocholithiasis, a presentation not commonly reported in the literature. While a CT scan may aid in cases where diagnosis is uncertain, our patient underwent urgent ERCP to visualize the biliary tree and achieve ductal clearance to address the acute cholangitis. Although CT findings, such as an ill-defined border between the gallbladder and neighboring bowel wall, are observed in a significant proportion of patients with eventual CEF diagnosis[3], this sign lacks specificity but should prompt suspicion of CEF. Previous studies have highlighted the diagnostic utility of ERCP in identifying CEF, particularly cholecysto-duodenal fistula (CDF)[5]. However, in current practice, diagnostic ERCP is less frequently employed due to associated complications and is typically reserved for patients with concurrent jaundice or choledocholithiasis. Unfortunately, our patient's ERCP did not raise suspicion of CEF.

Despite advancements in imaging techniques, preoperative diagnosis of CEF remains challenging, achieved in only a third of patients in high-volume centers[4]. Consequently, CEF often presents as an unexpected finding during laparoscopic cholecystectomy[2,4]. Given the increasing availability of laparoscopic cholecystectomy in Sri Lanka, surgeons and trainees must be prepared to manage the challenge of intraoperative CEF detection.

Treatment for CEF involves cholecystectomy and closure of the fistula tract, feasible through laparoscopic or open surgical approaches. In recent years, laparoscopic techniques have gained prominence, offering advantages of minimal invasiveness. Various options exist for laparoscopic repair of CEF, including intracorporeal or extracorporeal sutures, endo-loop sutures, or laparoscopic staplers, selected based on surgeon experience and preference. In our case, we successfully managed two incidentally detected cholecysto-enteric fistulae laparoscopically without conversion. Resection of a cuff of colon was necessary due to impacted stones, with subsequent repair of the cholecysto-colic fistula

using laparoscopic suturing, while the cholecysto-duodenal fistula was managed with laparoscopic clips.

Conclusion

The laparoscopic approach proves to be both safe and feasible for managing cholecysto-enteric fistulae (CEF), even when multiple, provided that appropriate facilities and expertise are available accessible. Individualized decision-making based on patient characteristics, available surgical resources, and the surgeon's experience is paramount in selecting the optimal approach.

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Learning Points:

- Cholecysto-enteric fistulae, though rare, should be considered in patients with longstanding symptoms.
- CEF may present as an unexpected finding during laparoscopic cholecystectomy.
- Laparoscopic management of CEF can be safely performed in settings where expertise and facilities are available.