Laparoscopic approach for coexisting cholecystogastric and cholecystocolonic fistula: a case report

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ABSTRACT

Background: Cholecystoenteric fistula (CEF) is a rare intraoperative finding during video laparoscopic cholecystectomy. The presence of a double cholecystogastric (CGF) and cholecystocolonic fistula (CCF) is even more rare, and its management is not fully codified.

Case Presentation: We present the case of a 26-year-old woman known for cholelithiasis and a previous episode of uncomplicated acute cholecystitis and subsequent indication to elective cholecystectomy. Routine pre-operative studies did not show signs of biliary abnormalities. Intraoperative findings consisted of a coexisting CGF and CCF, which were successfully treated laparoscopically.

Conclusion: Laparoscopic approach can be safe and feasible in selected cases of double complete CEFs.

Keywords: Case report, cholecystoenteric fistula, cholecystocolonic, cholecystogastric, cholecystectomy, laparoscopy.

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Background

Cholecystoenteric fistula (CEF) is a pathological communication between the gall bladder and a segment of the gastroenteric tract. Cholecystoduodenal fistula is the most frequent type of CEF, comprising 75%-80% of all fistulas, followed by cholecystocolonic fistula (CCF) (10%), cholecystojejunal fistula, and the rarest cholecystogastric fistula (CGF) (3%) [1-3].

Most CEFs are clinically silent or have vague digestive symptoms (abdominal pain, nausea, dyspepsia, and diarrhea) although there are more rare presentations such as intermittent gastric outlet obstruction, bowel obstruction, xanthogranulomatous cholecystitis, pneumobilia, gastrointestinal bleeding, and vomiting of gallstones. They can also be part of the syndromic clinical picture (i.e., Bouveret's syndrome and Mirizzi's syndrome) or even masquerading a gastric carcinoma [4-10].

CEF is more often a late complication of gall bladder disease. For this reason, it is mainly an occasional finding usually intraoperatively diagnosed during video-laparoscopic cholecystectomy (VLC). However, the management of this uncommon yet important finding is not very well described in the literature.

Herein, we report the case of a double CGF and CCF in a young female patient, incidentally discovered during

VLC and successfully treated with a minimally invasive approach.

Case Presentation

We present the case of a 26-year-old woman with past medical history of mild microcythemia and a previous presentation to the emergency department for abdominal pain in the right upper quadrant associated with nausea and vomiting. The physical examination and laboratory findings were suggestive of uncomplicated gallstone disease. She underwent abdominal ultrasound that showed a sclerotic hydropic gall bladder with a thickened wall, multiple stones in the gall bladder, and no dilatation of common bile duct (CBD). After being discharged, we planned a laparoscopic cholecystectomy a few months later (postponed to 1 year due to the COVID-19 pandemic). To the authors' knowledge, the patient remained asymptomatic, without evidence of further episodes of biliary colic until the time of surgery.

After routine pre-operative studies (blood exams and chest X-ray), we performed a laparoscopic exploration. The pneumoperitoneum was induced by supra-umbilical incision with the open technique and we placed three other ports: in the left hypochondrium, in the epigastrium, and in the right flank.

Laparoscopic exploration revealed dense adhesions between the gall bladder, the stomach, and the colonic hepatic flexure; the colonic hepatic flexure and the stomach presented thickened walls in contact with the gallbladder. After a long-lasting adhesiolysis, we discovered the presence of a double complete CCF and CGF originating from the gall bladder (Figure 1).

Once we excluded any involvement of the CBD and the proximal duodenum, a careful dissection allowed us to safely identify the fistula tracts. A laparoscopic cholecystectomy was, therefore, performed, followed by the repair of the colonic and gastric defects with endo-gastrointestinal anastomosis (GIA) stapler (Figures 2 and 3). Intraoperative leak test with methylene blue via nasogastric tube was negative.

Postoperative course was uneventful with oral intake on the third postoperative day (POD).

The patient was discharged on the fourth POD.

Definitive histologic exam showed no neoplasia in gastric and bowel specimen, thickened gall bladder with multiple gallstones with signs of chronic cholecystitis, and evidence of the aforementioned complete fistula tracts.



Figure 1. A double complete CEF. A: Right colon; B: gall bladder; C: stomach; arrows: fistulas.



Figure 2. CGF fistula. A: Stapling the fistula; B: fistula after stapling; arrowhead: fistula; arrow: mechanical suture line.



Figure 3. Cholecysticcolonic fistula. A: Fistula after dissection; B: fistula after stapling; arrowhead: fistula; arrow: mechanical suture line.

At 1-year follow-up, the patient remains asymptomatic.

Discussion

CEF associated with gallstone disease is a rare entity: the incidence of CEF occurs in 3%-5% of patients with cholelithiasis and in 0.15%-4.8% of all patients who undergo surgeries of the biliary tract. The presence of a double fistula is anecdotal with very few cases described in the literature.

Patients with CEF are often asymptomatic or pauci-symptomatic, while severe clinical scenarios are luckily uncommon.

Most patients have a history of gallstone disease hiding the presence of CEF itself. In fact, these patients are often "labeled" with the diagnosis of gallstone disease and pending surgery further episodes of biliary colic, cholecystitis, or cholangitis can slowly lead to a subclinical adhesive syndrome, forming fistulas that are not investigated in the meantime.

Due to the advancements in computed tomography (CT) scan resolution, the application of endoscopic methods, such as endoscopic retrograde cholangiography (ERCP) or colonoscopy, and the development of high sensitivity exams, like gadoxetic acid and magnetic resonance cholangiography, preoperative diagnosis of CEF have been greatly improved [11].

A patient with choledocolithiasis usually undergoes ERCP to remove gallstones before surgery. When a coexisting CEF is present, cholangiography at the end of procedure may reveal the presence of the fistula allowing for endoscopic treatment [12-14] When CEF is preoperatively known, a non-operative management can be tempted. In case of CEF with gallstone disease or bleeding, endoscopic extraction, laser/mechanical /electrohydraulic lithotripsy [15-18] or hemostasis [19,20] can be done, with or without the placement of a stent.

Nevertheless, less than 30% of the cases treated with endoscopic methods are successful, thus making surgery necessary [21].

However, the diagnosis of CEF is usually an intraoperative finding and given the high incidence of gallstone disease and subsequent laparoscopic cholecystectomy in daily general surgery practice, this complication should be always kept in mind.

Although open cholecystectomy with the closure of the fistula is the gold standard treatment for non-obstructing biliary-enteric fistulas, the optimal treatment for CGF has not been established.

Since CEF is usually an unexpected finding with no fully codified management, it leaves us bit baffled that the young surgeons who may not have enough expertise, often leading to open conversion.

However, recent reports suggest that the laparoscopic approach may be safe and feasible [22-26] and improving laparoscopic skills led to a gradual reduction of the conversion rate during this kind of surgery, especially in high-volume centers.

To our knowledge, this is the first reported case of a double complete fistula treated by laparoscopy.

First, a thorough assessment of the hepatic hilum anatomy is imperative, as CBD and/or proximal duodenum involvement requires conversion to open surgery even in experienced hands. Intraoperative cholangiography, as well as combined laparoscopic and endoscopic approaches, may be useful for intraoperative observation of the fistula and the suture line [27].

A stapled cholecystofistulectomy may be the procedure of choice since it avoids contamination of the abdominal cavity. An omental patch can also be used to assure complete closure [28-30].

Another modality that emerged over the years was the two-stage approach: initial removal of gallstone, with cholecystectomy, and fistula repair to be done later [31]. We believe that the one-stage approach should be preferred when the anatomical situation is favorable, in order not to expose the patient to the risk of multiple interventions, often hampered by increased difficulties.

Conclusion

CEF is more common than we think, so we should know how to handle it. Double fistula is much rarer and needs careful evaluation to manage it correctly.

Complete laparoscopic management of double CEF is feasible and safe in well-equipped high-volume centers, taking advantage of the benefits of the minimally invasive approach; in this setting, endoscopy may play a role in reducing the rate of conversion to open surgery.

The choice of technique of closure and timing of surgery (one *vs.* two-stage) should be guided by the patient's clinical condition, local expertise, and the research for the best postoperative outcome.

List of Abbreviations

- CCF Cholecystocolonic fistula
- CEF Cholecystoenteric fistula
- CGF Cholecystogastric fistula
- VLC Video-laparoscopic cholecystectomy

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

What is new?

To our knowledge, this is the first described case of double complete CGF and CCF successfully treated with a complete laparoscopic approach.

Funding

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Consent for publication

Written and informed consent was taken from patient to publish this case report.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

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References

- Kuo KK, Sheen PC, Chang SC, Chen JS, Lee KT, Cham CM. Spontaneous multiple cholecystoenteric fistulas-a case report. Kaohsiung J Med Sci. 1999;15(11):674–8.
- Beksac K, Erkan A, Kaynaroglu V. Double incomplete internal biliary fistula: coexisting cholecystogastric and cholecystoduodenal fistula. Case Rep Surg. 2016;2016:5108471. https://doi.org/10.1155/2016/5108471
- Boland MR, Bass GA, Robertson I, Walsh TN. Cholecystogastric fistula: a brief report and review of the literature. J Surg Case Rep. 2013;2013. https://doi. org/10.1093/jscr/rjt028
- Arioli D, Venturini I, Masetti M, Romagnoli E, Scarcelli A, Ballesini P, et al. Intermittent gastric outlet obstruction due to a gallstone migrated through a cholecysto-gastric fistula: a new variant of "Bouveret's syndrome." World J Gastroenterol. 2008;14(1):125–8. https://doi. org/10.3748/wjg.14.125
- Fu CK, Hsieh TY, Chan DC, Lee HS, Huang TY. Xanthogranulomatous cholecystitis presenting with duodenal ulcer and cholecystoenteric fistula. Endoscopy. 2012;44(Suppl 2 UCTN):E213–4. https://doi. org/10.1055/s-0032-1309359
- Kaushik M, Madan R, Gupta PK, Gorthi J, Alla VM. Cholecysto-colonic fistula manifesting as pneumobilia and gastrointestinal bleed. West J Emerg Med. 2010;11(2):220–1.
- Thomson WL, Miranda S, Reddy A. An unusual presentation of cholecystoduodenal fistula: vomiting of gallstones. BMJ Case Rep. 2012;2012. https://doi.org/10.1136/ bcr-2012-007009.
- Kravetz RE, Gilmore AS. Cholecysto-gastric fistula masquerading as carcinoma of the stomach. Ann Surg. 1964;159(3):461–4. https://doi. org/10.1097/00000658-196403000-00023
- Osman K, Maselli D, Kendi AT, Larson M. Bouveret's syndrome and cholecystogastric fistula: a case-report and review of the literature. Clin J Gastroenterol. 2020;13(4):527–31. https://doi.org/10.1007/ s12328-020-01114-7
- Beltran MA, Csendes A, Cruces KS. The relationship of Mirizzi syndrome and cholecystoenteric fistula: validation of a modified classification. World J Surg. 2008;32(10):2237–43. https://doi.org/10.1007/ s00268-008-9660-3
- Mourri AB, Lemort M, Bensouda YM, Engelholm JL. Diagnosis of cholecysto-colonic fistula using gadoxetic acid – magnetic resonance cholangiography. J Belg Soc Radiol. 2015;99(1):50–2. https://doi.org/10.5334/ jbr-btr.849
- Bonventre G, Di Buono G, Buscemi S, Romano G, Agrusa A. Laparoscopic management of cholecystocolonic fistula: a case report and a brief literature review. Int J Surg Case Rep. 2020;68:218–20. https://doi.org/10.1016/j. ijscr.2020.02.052
- 13. Pickhardt PJ, Friedland JA, Hruza DS, Fisher AJ. Case report. CT, MR cholangiopancreatography, and endoscopy

findings in Bouveret's syndrome. AJR Am J Roentgenol. 2003;180(4):1033–5. https://doi.org/10.2214/ ajr.180.4.1801033

- Algın O, Ozmen E, Metin MR, Ersoy PE, Karaoğlanoğlu M. Bouveret syndrome: evaluation with multidetector computed tomography and contrast-enhanced magnetic resonance cholangiopancreatography. Ulus Travma Acil Cerrahi Derg. 2013;19(4):375–9. https://doi.org/10.5505/ tjtes.2013.97254
- 15. Cortegoso Valdivia P, Le Grazie M, Gaiani F, Dalla Valle R, de'Angelis GL. Bouveret syndrome in a cholecystoduodenal fistula. Clin Case Rep. 2021;9(4):2485–6. https://doi. org/10.1002/ccr3.3958
- Ferhatoğlu MF, Kartal A. Bouveret's syndrome: a case-based review, clinical presentation, diagnostics and treatment approaches. Sisli Etfal Hastan Tip Bul. 2020;54(1):1–7.
- Singh G, Merali N, Shirol S, Drymousis P, Singh S, Veeramootoo D. A case report and review of the literature of Bouveret syndrome. Ann R Coll Surg Engl. 2020;102(1):e15–9. https://doi.org/10.1308/ rcsann.2019.0161
- Sethi S, Kochar R, Kothari S, Thosani N, Banerjee S. Good vibrations: successful endoscopic electrohydraulic lithotripsy for Bouveret's syndrome. Dig Dis Sci. 2015;60(8):2264–6. https://doi.org/10.1007/ s10620-014-3424-8
- Park JM, Kang CD, Kim JH, Lee SH, Nam SJ, Park SC, et al. Cholecystoduodenal fistula presenting with upper gastrointestinal bleeding: a case report. World J Clin Cases. 2021;9(2):410–5. https://doi.org/10.12998/wjcc. v9.i2.410
- McKenzie P, Adler DG. Spontaneous cholecystogastric fistula treated endoscopically. Gastrointest Endosc. 2020;92(6):1264–5. https://doi.org/10.1016/j. gie.2020.06.043
- Bramson J, Topilow A, Matteotti R. Bouveret's syndrome: the rarest obstructing gallstone. Eur J Mol Clin Med. 2017;2(0):17. https://doi.org/10.1016/j. nhccr.2017.08.004
- 22. Angrisani L, Corcione F, Tartaglia A, Tricarico A, Rendano F, Vincenti R, et al. Cholecystoenteric fistula (CF) is

not a contraindication for laparoscopic surgery. Surg Endosc. 2001;15(9):1038–41. https://doi.org/10.1007/ s004640000317

- Chowbey PK, Bandyopadhyay SK, Sharma A, Khullar R, Soni V, Baijal M. Laparoscopic management of cholecystoenteric fistulas. J Laparoendosc Adv Surg Tech A. 2006;16(5):467–72. https://doi.org/10.1089/ lap.2006.16.467
- Wang WK, Yeh CN, Jan YY. Successful laparoscopic management for cholecystoenteric fistula. World J Gastroenterol. 2006;12(5):772–5. https://doi.org/10.3748/wjg.v12. i5.772
- Leung E, Kumar P. Bilo-enteric fistula (BEF) at laparoscopic cholecystectomy: review of ten year's experience. Surgeon. 2010;8(2):67–70. https://doi.org/10.1016/j. surge.2009.10.010
- Li XY, Zhao X, Zheng P, Kao XM, Xiang XS, Ji W. Laparoscopic management of cholecystoenteric fistula: a single-center experience. J Int Med Res. 2017;45(3):1090–7. https:// doi.org/10.1177/0300060517699038
- Fujimoto G. Laparoscopic and endoscopic cooperative surgery for cholecystogastric fistula: a case report. Int J Surg Case Rep. 2020;71:116–9. https://doi.org/10.1016/j. ijscr.2020.04.100
- Costi R, Randone B, Violi V, Scatton O, Sarli L, Soubrane O, et al. Cholecystocolonic fistula: facts and myths. A review of the 231 published cases. J Hepatobiliary Pancreat Surg. 2009;16(1):8–18. https://doi.org/10.1007/ s00534-008-0014-1
- Nayak SK, Parthasarathi R, Gupta GH, Palanivelu C. Laparoscopic approach in cholecystogastric fistula with cholecystectomy and omental patching: a case report and review. J Minim Access Surg. 2021;17(2):245–8. https:// doi.org/10.4103/jmas.JMAS_87_20
- Abbasi SU, Khan DB, Khandwala K, Raza R, Memon WA. Cholecystocolonic fistula. Cureus. 2019;11(6):e4874. https://doi.org/10.7759/cureus.4874
- Inukai K, Tsuji E, Takashima N, Yamamoto M. Laparoscopic two-stage procedure for gallstone ileus. J Minim Access Surg. 2018;27. https://doi.org/10.4103/jmas. JMAS_88_18

Summary of the case

1	Patient details	27-year-old female
2	Symptoms	Recurrent biliary fistula
3	Final diagnosis	CGF and CCF
4	Medication	None
5	Clinical procedures	Laparoscopic cholecystectomy with gastric and colonic fistulectomy
6	Clinical specialty	General Surgery