

Re-do of Laparoscopic CBD Exploration through Cystic Duct Remnant following Laparoscopic Cholecystectomy; A Case Series

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Common bile duct (CBD) stones are detected in approximately 10-15% of patients with gallstone disease. They can be formed in the absence of gallbladder stones, or in patients who underwent cholecystectomy, as retained CBD stones. This is an uncommon but recognised complication with an incidence of 0.5-2.3%¹.

Treatment options for CBD stones include endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy and stone extraction followed by laparoscopic cholecystectomy (LC) as a two-stage procedure, laparoscopic common bile duct exploration (LCBDE) and cholecystectomy or, open cholecystectomy and bile duct exploration. These are equally effective².

LCBDE can be categorised into laparoscopic transcystic common bile duct exploration (LTCBDE) and laparoscopic choledochotomy for CBD exploration (LCCBDE).

The transcystic duct approach, using the lumen of the cystic duct, avoids the need for opening the CBD.

This approach reduces biliary morbidity, especially bile leakage and CBD stricture, hospital stay and hospital expenses³. The reported success rate of LTCBDE is about 85% as clearance of the duct.

Re-exploration of the CBD involves laparoscopically locating the cystic duct (CD) remnant, opening this via removal of clip/suture and gaining access with instrumentation to the cystic duct, and distally to the common bile duct. There is no documented evidence of re-do exploration of CBD following LC in the literature.

In this retrospective case series, we discuss the re-exploration of the bile duct post laparoscopic cholecystectomy for retained stone.

Methods

Review of four cases in 2020 in Aberdeen Royal Infirmary. Each underwent re-do laparoscopic transcystic common bile duct exploration (LTCBDE) for retained stone, following previous laparoscopic cholecystectomy.

References

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2. Ying-chao Gao, Efficacy and safety of laparoscopic bile duct exploration versus endoscopic sphincterotomy for concomitant gallstones and common bile duct stones, A meta-analysis of randomized controlled trials. Medicine (Baltimore). 2017 Sep; 96(37): e7925. (PubMed)
3. Qian Feng, Laparoscopic Transcystic Common Bile Duct Exploration: Advantages over Laparoscopic Choledochotomy, PLoS One. 2016; 11(9): e0162885. Published online 2016 Sep 26. doi: 10.1371/journal.pone.0162885 (PubMed)
4. Images 1 + 2 – accessed via Google Images 10/10/20
5. Fig. 1 – used with kind permission of patient 08/10/20



Fig. 1 MRCP showing previous Cholecystectomy and 11 mm calculus in the distal CBD.

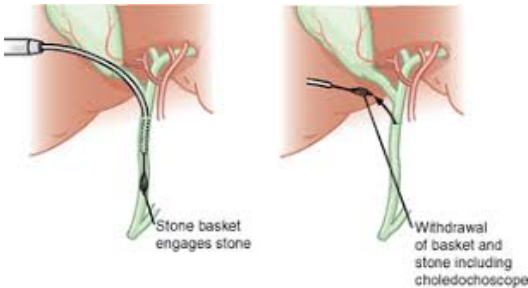


Fig. 2 - LTCBDE utilises cystic duct for exploration using choledochoscope

	Case 1 Female, aged 74	Case 2 Female, aged 72	Case 3 Female, aged 62	Case 4 Female, aged 64
Presentation	RUQ pain + jaundice.	Asymptomatic, deranged LFTs.	RUQ pain + jaundice.	Upper abdominal pain.
Diagnosis	Cholecystitis	CBD obstruction	Cholangitis	Cholangitis
Past Surgical Hx	-	LC Right hemicolectomy	LC to Open cholecystectomy. Gastric bypass. Laparotomy for small bowel stricture	ERCP pancreatitis Lap. Subtotal cholecystectomy
Initial Imaging	USS – dilated CBD & Hepatic Ducts (HD), MRCP - duodenal diverticula	MRCP - dilated CBD	MRCP – 11mm distal CBD stone	-
Reason for ERCP failure	Duodenal diverticulae	Duodenal diverticulum	Contraindicated	Inability to cannulate the CBD
Initial biliary intervention	LTCBDE 5 days previously	LC	LC	Laparoscopic subtotal cholecystectomy
Operative findings	Re-exploration via CD stump. Retained stone removed.	Dilated CD. Previous clips of CD removed and re-explored.	Dilated CD stump and CBD. CD clips removed and re-exploration via CD.	GB and CD dissected. Re-exploration of CD.
Conclusion	CBD cleared	CBD cleared	CBD cleared	CBD cleared
Readmission	No	No	No	No

Case one shows the difficulty of initial successful CBD exploration and the benefits of approaching transcystically which allowed simple endoloop closure, enabling ready access when needed on day five post LC.

This is evident in case two and three with previous cystic duct closure with haemoclips allowed ready access for re-exploration of cystic duct. This was aided in the former by distension of cystic duct from stone.

In case three this patient had previous incision over her CBD and a transcystic route allowed for adequate re-exploration avoiding further incisions of the CBD. Stone clearance was achieved in 100% of cases.

Conclusion

It is clear LTCBDE post laparoscopic cholecystectomy is a complex procedure, therefore multi-centre studies have not been carried out, nor has it been universally accepted.

To aid re-exploration, we advocate pre-operative imaging (e.g. MRCP) to show the anatomy of the biliary tree for appropriate surgical planning.

We propose LTCBDE is a feasible therapeutic intervention with minimal barriers, even in patients who have had previous biliary surgery.