

Hybrid Laparoscopic Cholecystectomy & ERCP: Best Treatment for Choledocholithiasis but a Major Challenge in the Real World

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INTRODUCTION:

Treatment of choledocholithiasis involves clearance of the common bile duct (CBD) by endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy followed by laparoscopic cholecystectomy (LC) to prevent future recurrence. Traditionally, these procedures have been done sequentially. Although multiple studies have shown that combining an ERCP and LC into a single-stage procedure is not only safe, but also likely benefits patients by decreasing length of stay, there remain significant logistical issues in coordinating patient care amongst multiple proceduralists^{1,2}

Furthermore, the presence of choledocholithiasis in patients who have undergone a Roux-en-Y gastric bypass (RYGBP) further complicates the standard treatment algorithm. In order to access the biliary tree via endoscopic techniques, one must traverse the length of the enteric limb as well as the biliary pancreatic limb. While, advanced endoscopic techniques, such as single-balloon, double-balloon, and spiral enteroscopy, have been utilized to access the papilla, their success is variable, especially with long roux limbs (3). Therefore, multiple techniques have been developed to circumvent this anatomic limitation, such as the trans-gastric laparoscopic-assisted ERCP (TG-ERCP). Although the clinical context differs, this approach can similarly represent a single-stage LC-ERCP.

This multi-center investigation summarizes two surgeons’ experiences with single-stage LC-ERCP to treat patients with choledocholithiasis for both patients with standard anatomy and those who have undergone RYGB.

METHODS:

Data Collection

- All cases of LC & ERCP retrospectively analyzed for two surgeons from 2014-2023.
- Cases occurred at university hospital center & two rural hospital centers
- Data collected includes: patient age, sex, indication for procedure, procedure performed, and length of stay
- Chart review completed to identify postoperative complications
- Microsoft Excel for qualitative data analysis

Surgical Technique – Surgeon #1

Transgastric-ERCP: Performed for patients with choledocholithiasis and prior RYGBP

- Veress needle at Palmer’s point used to establish peritoneum
- A right-lateral 5mm port was used to survey the abdomen
- Left-upper quadrant site from Veress entry upsized to a 15mm port
- Two stay sutures placed into anterior stomach between which a gastrotomy is made
- Gastrotomy upsized to 15mm to permit placement of port which was separately draped to permit ERCP
- Following ERCP, the gastrotomy was closed with a running vicryl suture
- Laparoscopic cholecystectomy was performed at this time if patient still had gallbladder

Surgical Technique – Surgeon #2

Single-Stage ERCP: Performed for patients with choledocholithiasis (standard anatomy)

- Three-port cholecystectomy performed first
- GI team performed transoral ERCP
- Of note, one patient of Surgeon #2 had received prior RYGBP, thus a technique similar to that of Surgeon #1 was performed

RESULTS:

	Center 1	Center 2	Center 3
Setting	Academic	Rural	Rural
Time Frame	2015-2023	2014	2019-2021
Patients (n)	8	3	3
% Transgastric	100%	0%	33%
% Female	63%	66%	66%
Median Age (range)	56 (43-67) years	72 (41-84) years	77 (68-77) years
Sequence	ERCP then LC	LC then ERCP	LC then ERCP
Surgeon	#1	#2	#2
System Support	Poor	Poor	Poor
N Gastroenterologists	3	2	1

Table 1. Descriptive data for the 14 cases

In all cases, ERCP was successfully completed. One patient required conversion to a laparotomy due to extensive adhesions related to prior RYGBP prohibiting safe access to the gastric remnant

DISCUSSION:

Prior studies demonstrate benefit to patients when completing LC and ERCP under the same anesthesia event. Our small retrospective series demonstrates that it can be completed safely at both university and rural centers.

When considering TG-ERCP, our surgeon experience shows that the location of the gastrotomy is crucial as there must be sufficient distance from the gastrotomy and pylorus for the side-view endoscope to identify and pass through the pylorus. Furthermore, if planning a laparoscopic cholecystectomy following ERCP, one must clamp the afferent limb prior to endoscopy to prevent bowel dilation secondary to insufflation.

Our study is limited by its small sample size and retrospective nature.

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