



Laparoscopic-Assisted Transgastric ERCP in Patients with Gastric Bypass: Unique as an Odd Duck

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Abstract

Laparoscopic assisted transgastric endoscopic retrograde cholangiopancreatography (LAERCP) is used for treatment in patients after gastric bypass, where transoral access to the biliary tree is not possible. We describe our technique and experience with this procedure for our patient who had undergone Roux en y gastric bypass (RYGB). Patient underwent intra-operative cholangiography which revealed common bile duct (CBD) stones. A combined laparoscopic-endoscopic approach was attempted. A small gastrotomy with a purse-string suture was performed on the anterior wall on remanant stomach. A side-viewing scope was introduced through a 15-mm trocar on the upper left quadrant and through the gastrotomy. The jejunum was occluded to prevent air passage and small bowel distension. Endoscopic sphincterotomy and stone extraction were carried out according to standard techniques. Occlusion cholangiogram confirmed CBD clearance. There was no procedure-related complication, and the patients were discharged on the second postoperative day. The patient was doing well at 1-year follow-up. Biliary obstruction can occur many years after gastric bypass with or without cholecystectomy. Our findings suggest that gastric bypass patients may be at a higher risk of symptomatic cholelithiasis with CBD stones. LAERCP is a reliable option for common bile duct clearance; our technique of LAERCP is technically simple and associated with low complication rate, making it appealing to surgeons trained in laparoscopy.

Keywords Gastric bypass · Choledocholithiasis · Transgastric-ERCP · Cholangiogram · Gastrotomy · Stone extraction

Introduction

Gastric bypass alters gastrointestinal anatomy such that transoral endoscopic retrograde cholangiopancreatography

(ERCP) is not routinely feasible. Bariatric surgery patients are predisposed to cholelithiasis, especially within the rapid weight loss period of 12–18 months postoperatively. Cholecystectomy at time of bypass is not routinely performed because ursodiol use postoperatively reduces the incidence of gallstone formation [1]. Nevertheless, patients after gastric bypass will continue to develop indications for ERCP because of choledocholithiasis.

In 2007, Ceppa et al. described a laparoscopic purse-string technique with immediate intraoperative gastrotomy closure with sutures or staples in ten patients with no surgical complications [2]. Several other techniques have been described; however, they can be technically challenging or require multistep procedures [3]. Nonsurgical alternatives with the use of interventional radiology (IR) or endoscopic techniques exist, but they tend to involve external drains and multiple procedures [4].

A retrospective review by Brockmeyer et al. studied rates of biliary symptoms after (Roux en y gastric bypass) RYGB in 1366 patients [5]. Three hundred and eighty patients had cholecystectomy before RYGB, and three of

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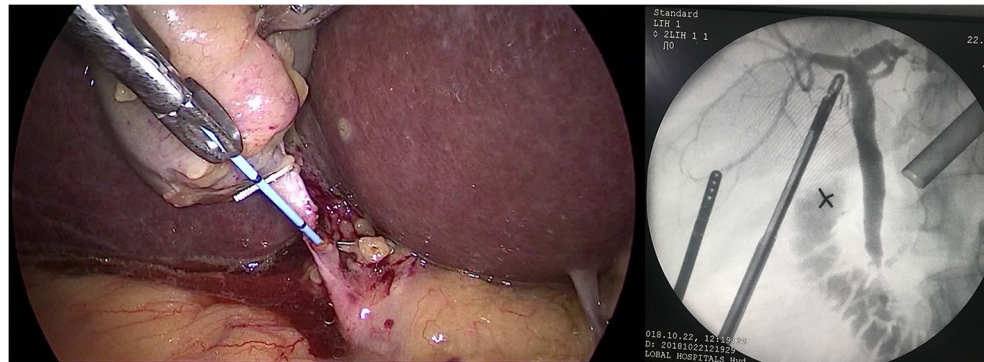
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Fig. 1 Intra-operative cholangiogram via cystic duct (left) showed distal CBD filling defects (right)



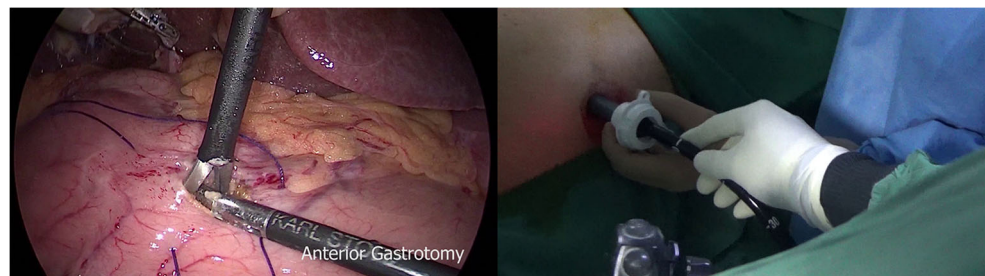
this group developed primary CBD stones (<1%). Two of the three patients were treated with LAERCP, and one required PTC clearance of the biliary system. These results indicate that primary common duct stone formation was a relatively rare event in this population.

Our aim is to report our technique and experience with a combined endoscopic surgical procedure for management of biliary obstruction in patients' post-gastric bypass.

Operative Technique

If the abdomen had not been recently accessed, we entered with a Hasson technique at the supraumbilical region. A 15-mm port was placed in the left upper quadrant for passage of the scope, and it was used if simultaneous cholecystectomy was to be done. Two additional 5-mm ports were placed as in regular cholecystectomy. In cases that included cholecystectomy, additional 5-mm ports were placed as per the standard technique. If the patient had a gallbladder present, it was dissected; a cholangiogram was performed, and it was removed via a standard technique. Intraoperative cholangiogram was performed in those patients with gastric bypass anatomy undergoing cholecystectomy for gallbladder pathology and uncertain preoperative assessment of the common duct. Cholangiograms were not performed in those patients who had previous cholecystectomy as preoperative radiographic assessment was adequate to establish choledocholithiasis and need for ERCP (Fig. 1).

Fig. 2 Gastrostomy with purse string suture (left), endoscope entering 15 mm port (right).

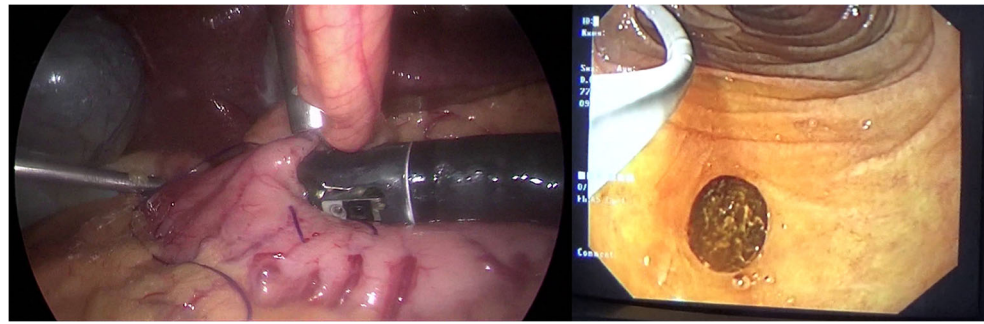


The bypassed stomach was identified, and adhesions were lysed to mobilize the greater curve up to the abdominal wall. An incision was made in the left upper quadrant to accommodate a 15 mm port. 2-0 Prolene sutures were placed through the anterior wall of the stomach as a purse string over the proposed gastrostomy site. A gastrostomy was then created with cautery (Fig. 2). The sutures were then clamped tight to hold the stomach against the abdominal wall. The 15-mm port (Fig. 2) was then redraped widely for the endoscopy team to proceed with nonsterile ERCP. Then the endoscope should be introduced through gastrostomy (Fig. 3). The jejunum was occluded to prevent air passage and small bowel distension. Once the stones are extracted and ERCP was completed, the 15-mm port was removed, and the gastrostomy was closed with the use of 2-0 PDS sutures. Oral liquids started at 8 h postoperatively. The patient was admitted for observation for 48 h and discharged.

Results

In the cases of simultaneous cholecystectomy, intraoperative cholangiograms via the cystic duct of gallbladder were performed, and all revealed filling defects (Fig. 1). ERCP with sphincterotomy and cannulation of the CBD was successful in all patients (100%). In all LAERCP procedures, cholangiogram findings were consistent with choledocholithiasis, and balloon-sweep clearance of the duct was successful.

Fig. 3 Endoscope entering gastrostomy (left), stone extracted (right)



Discussion

Our institution's experience illustrates several points not already described in the literature. We describe a technique that can be a single-stage procedure that is technically uncomplicated. We performed seven simultaneous cholecystectomy and LAERCP procedures. The average time since gastric bypass was 3 years. Interestingly, 25% of our patients presented 2 or more years after initial cholecystectomy. Our findings suggest that CBD obstruction can occur many years after both cholecystectomy and gastric bypass. This suggests that gastric bypass may predispose patients to primary CBD stone formation. More investigation into the causes and preventive measures should be considered based on these results.

Familiarity with LAERCP as a means of biliary system clearance for obstructing stones is recommended for surgeons caring for patients who have had gastric bypass, as this patient population can develop biliary obstruction from stones even after cholecystectomy. The need for LAERCP will only increase as the number of gastric bypass patients continues to grow, necessitating nonbariatric surgeons to be familiar with the procedure. The technique presented here for access is simple and effective and can be utilized by surgeons with advanced laparoscopic surgery training.

Conclusion

A subset of patients will develop CBD obstruction after gastric and require clearance alternatives to standard transoral ERCP. We choose LAERCP because it allowed for the possibility of treating patients with a single-stage procedure, avoiding drain or gastrostomy tube maintenance. The patient population that will require LAERCP is small, but it will increase as gastric bypass is employed as a treatment for the epidemic of obesity in this country. Primary common bile duct stone formation may be higher than in the general population, as 25% of our patients were 2 or more years from cholecystectomy at presentation. It is possible that gastric bypass

anatomy and physiology create a predisposition for primary common duct stones. This finding is not well described and needs further research.

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Author Contributions All authors contributed almost equally in preparing this case series starting from concept, design, literature search to manuscript preparation.

Compliance with Ethical Standards

Conflicting Interest The authors declare that they have no conflict of interest.

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