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Case Report

Laparoscopic Transgastric Access to the Biliary Tree after Roux-en-Y Gastric Bypass

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Gallstone disease, common after Roux-en-Y gastric bypass (RYGBP), may be complicated by biliary duct obstruction and gallstone pancreatitis. Although endoscopic retrograde cholangiopancreatography plays an important role in management of biliary duct obstruction, the altered anatomy of patients who have had a RYGBP makes this procedure technically difficult. With the increased number of patients undergoing RYGBP for morbid obesity, bariatric surgeons may benefit from an alternative laparoscopic technique for accessing the biliary tree. We describe a laparoscopic technique of accessing the biliary tree through the bypassed stomach.

Key words: Roux-en-Y gastric bypass, morbid obesity, choledocholithiasis, laparoscopy, gastrotomy, ERCP

Introduction

Laparoscopy has revolutionized the practice of bariatric surgery over the past decade. The number of bariatric operations performed in the U.S. increased at an exponential rate following the introduction of laparoscopic bariatric surgery.[1] Data from the Nationwide Inpatient Sample (Healthcare Cost and Utilization Project) reported that the number of bariatric procedures performed in the U.S. increased from 12,775 in 1998 to 70,256 in 2001, with the majority of the procedures being Roux-en-Y gastric bypass (RYGBP).[1] One of the disadvantages following the RYGBP is difficulty in endoscopic access to the biliary tract.

Rapid weight loss following gastric bypass is associated with gallstone formation which can lead to acute or chronic cholecystitis and/or choledocholithiasis.[2] For patients presenting with cholecystitis, the treatment is laparoscopic cholesystectomy.[3] However, in patients presenting with possible choledocholithiasis, evaluation of the biliary tree can be a technical dilemma. One possible method is to perform endoscopy down the Roux limb and then advance the endoscope up the biliopancreatic limb to reach the duodenum, possibly to the bypassed stomach.[4] Although feasible, this technique can be difficult because of the length and tortuosity of the Roux limb as well as anastomotic angulation of the Roux and biliopancreatic anastomosis. An alternative method is direct access via the bypassed stomach by laparoscopy. In this report, we describe our technique of laparoscopic access to the bypassed stomach for endoscopic retrograde cholangiography with sphincterotomy.

Case Report

A 42-year-old woman presented with a 2-month history of intermittent right upper quadrant and epigastric abdominal pain. The patient had had a RYGBP 3 years previously resulting in loss of 47.7 kg. Her abdominal pain was intermittent. Her past surgical history includ-

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ed laparoscopic cholecystectomy and appendectomy. Diagnostic evaluation included an upper GI endoscopic examination, which demonstrated a normal gastric pouch without evidence of marginal ulceration. A computed tomography scan did not show any evidence of bowel obstruction, but instead showed a dilated common bile duct measuring 1.3 cm in diameter (Figure 1). An abdominal ultrasound confirmed the findings of a dilated common bile duct without evidence of choledocholithiasis (Figure 2).

Preoperative liver function tests showed a total bilirubin of 2.1 mg/dL, and elevation of liver enzymes. The need for laparoscopic exploration to rule out partial internal herniation and for laparoscopic-assisted transgastric endoscopic access to the biliary tree was discussed with the patient.

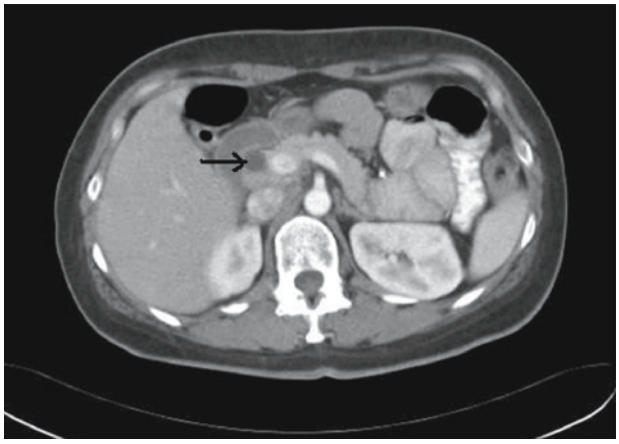

Figure 1. Computed tomography of the abdomen demonstrating a dilated common bile duct (arrow).

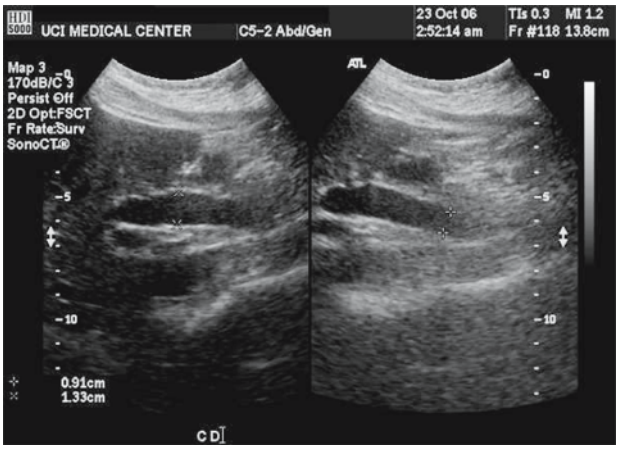

Figure 2. Right upper quadrant abdominal ultrasound examination showing a dilated common bile duct.

Surgical Technique

Three abdominal trocars were introduced with the patient lying supine. Exploratory laparoscopy was performed to look for the presence of mesenteric defects such as the Petersen, transverse mesocolon, and jejunojejunostomy defects. This patient had had a retrocolic and retrogastric Roux-en-Y construction. The entire small bowel was examined. There were no internal hernia defects, and there was no evidence of internal herniation. At this point, a 15-mm left upper quadrant abdominal trocar was introduced. A retraction suture was placed on the greater curvature of the excluded stomach, and a gastrotomy was made with the ultrasonic shear device on the greater curvature.

The endoscope was passed through the 15-mm port into the peritoneal cavity and laparoscopically positioned through the gastrotomy (Figures 3 and 4). A gastroenterologist then performed an endoscopic retrograde cholangiopancreatography (ERCP) and fluoroscopy, which demonstrated a dilated common bile duct and intrahepatic ducts (Figure 5). A sphincterotomy was performed and allowed decompression of the biliary tree and retrieval of small stone fragments. Upon completion of the ERCP, the endoscope was removed and the gastrotomy was closed with a running suture in two-layers.

After an operative time of 88 minutes, the patient was extubated in the operating room and transferred to the floor with patient-controlled analgesia for pain control. Liver function tests returned to normal on postoperative day 1, and there were no postoperative complications. At 1 month follow-up, the patient had complete resolution of her abdominal pain and discomfort.

Discussion

This report describes a useful technique of laparoscopic transgastric access of the gastric remnant for ERCP in a patient who underwent a previous RYGBP. This technique has been previously described by several investigators.[5-9] Laparoscopic transgastric access of the gastric remnant for evaluation of the bypassed stomach, duodenum, and biliary tree was reported by Ceppa and colleagues (10 patients).[5] Indications for endoscopy in their series were biliary tract pathology (n=5), gastrointestinal

Figure 3. Insertion of ERCP endoscope through a 15-mm port, placed in the left upper quadrant, in preparation for transgastric ERCP.

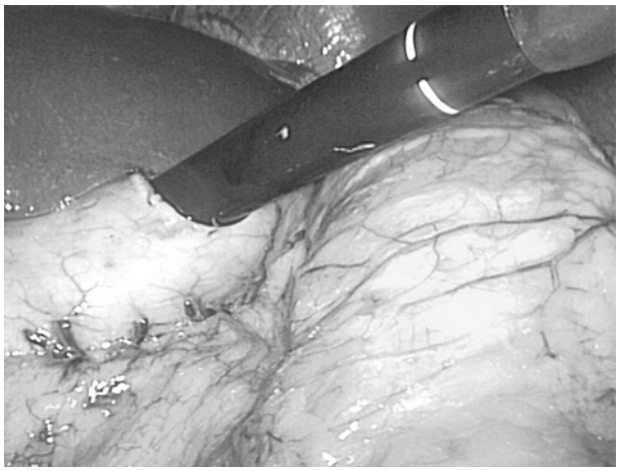

Figure 4. Laparoscopic view of the endoscope passing through a 15-mm abdominal trocar and placed into the gastric remnant for ERCP.

bleeding (n=3), and chronic abdominal pain (n=2). All laparoscopic transgastric endoscopy procedures were successful without postoperative complications.

An alternative method to access the bypassed stomach is to place a percutaneous gastrostomy tube into the gastric remnant, performed by the interventional radiologist. Then, the gastrostomy tube is removed and a pediatric endoscope is inserted through the gastrostomy tube tract for endoscopic evaluation of the bypassed stomach and duodenum.[7] Although the percutaneous technique eliminates the need for laparoscopy, we recommend that laparoscopy be performed to evaluate other causes of symptoms of chronic abdominal pain after

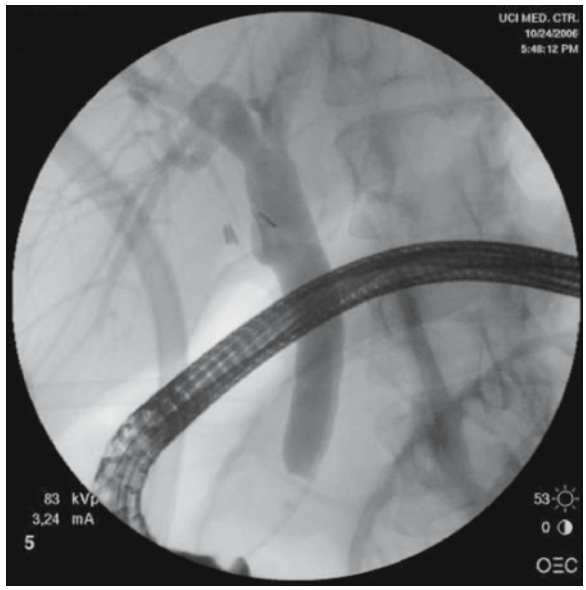

Figure 5. Endoscopic retrograde cholangiopancreatography demonstrating a dilated common bile duct and hepatic ducts without contrast flow into the duodenum.

RYGBP. These include, in addition to cholelithiasis and papillary stenosis, internal herniation, marginal ulceration, ulcer within the gastric remnant or duodenum, or other pathology of the biliary ducts. An upper endoscopy will accurately detect marginal ulceration. Abdominal ultrasound is most useful for gallstones or biliary tract disease. A laparoscopic-assisted transgastric endoscopy examines the gastric remnant and duodenum. Laparoscopic evaluation is helpful for identification of internal herniation as a cause for chronic abdominal pain after RYGBP.

In summary, access to the biliary tree after RYGBP for the treatment of morbid obesity can be challenging. A laparoscopic-assisted transgastric access of the gastric remnant with ERCP is technically feasible and is recommended for evaluation of the gastric remnant, duodenum, and biliary tree. In addition, a laparoscopic evaluation can be performed concurrently to rule out internal herniation as a cause for chronic abdominal pain after gastric bypass.

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Invited Commentary

This case report illustrates several important principles. The gastric remnant and duodenum after gastric bypass are accessible via combined laparoscopic/endoscopic techniques. Although not described in this article, the combined procedure allows the surgeon to occlude the biliopancreatic limb with a bowel clamp, preventing bowel distension common after lengthy endoscopic procedures.

Laparoscopic choledochotomy and choledochoscopy is an option well within the skill set of most surgeons performing laparoscopic gastric bypass. Choledochoduodenostomy can provide internal drainage without the risk of pancreatitis associated with endoscopic sphincterotomy.

Although our endoscopists are able to access the biliary tract in 95% of our gastric bypass patients, it is often a difficult and arduous task with a corresponding learning curve. Each center must consider the options available based on the experience and training of the surgeon and endoscopist; collaboration, as emphasized by Ngyuen and associates, is fundamental for patient safety.

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