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VIDEOS

Laparoscopic transgastric access to the common bile duct after Roux-en-Y gastric bypass

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Abstract
Introduction Rapid weight loss after Roux-en-Y gastric bypass (RYGBP) often is associated with gallstones formation, which can lead to cholecystitis and/or choledocholithiasis. Difficult access to the biliary tract is one of the disadvantages after RYGBP. We report a useful technique of laparoscopic transgastric access to the gastric remnant for an endoscopic retrograde cholangiopancreatography (ERCP).
Case report A 40-year-old woman with a BMI of 48 kg/m^2, was submitted to a laparoscopic RYGBP in December 2003. At that time the abdominal ultrasound was negative for gallbladder lithiasis. In April 2007, she was admitted for upper right side abdominal pain, vomiting episodes, fever, and jaundice; the BMI at the time was 24 kg/m^2. Hepatic ultrasound showed lithiasis of the common bile duct with intra- and extrahepatic bile duct dilation, as well as gallbladder lithiasis. The patient was taken to the operating room for laparoscopic evaluation. A pursestring suture was performed on the greater curvature of the gastric remnant. After the opening of the stomach, an 18-mm trocar was inserted into the lumen and the endoscope was directly passed through the port into the duodenum. An ERCP was performed under fluoroscopic guidance, and as a result of sphincterotomy the stone was retrieved. After removing the endoscope, the gastrotomy was closed by tying the pursestring. Cholecystectomy was performed as well.
Results The procedure lasted 98 min. Liver function tests returned normal on postoperative day 2, and the patient was discharged on postoperative day 4. After 9 months, the patient was well and asymptomatic.
Conclusions Patients previously submitted to RYGBP and presenting choledocholithiasis can benefit from an ERCP through the gastric remnant.

Keywords Laparoscopy · Gastric bypass · Transgastric · Choledocholithiasis · ERCP · Double-balloon

Rapid weight loss is associated with gallstone formation, which can lead to acute or chronic cholecystitis and/or choledocholithiasis, reported as symptomatic in 7.8–30% of patients who underwent bariatric surgery [1–4]. Moreover weight loss of more than 25% of original weight is associated with symptomatic gallstones formation [4].

Difficult access to the biliary tract is one of the disadvantages of some bariatric procedures, such as Roux-en-Y gastric bypass (RYGBP) and biliopancreatic diversion (BPD) with or without duodenal switch (DS). Management of stones in the biliary tract after these procedures is difficult to perform through the standard transoral endoscopy because of difficulties in reaching the papilla of Vater following the anatomical route. Therefore, different strategies of investigation must be considered, based on the experience and training of most surgeons, endoscopists, and their collaboration [5].

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One of the techniques to reach the papilla of Vater endoscopically is to create a surgical access through the excluded stomach by gastrotomy, for patients submitted to RYGBP [6–8], and through the jejunum by jejunostomy, for patients submitted to BPD or DS [9].

A useful technique of laparoscopic access to the remnant stomach for an endoscopic retrograde cholangiopancreatography (ERCP) has been shown with this video.

Case report

A 40-year-old woman with a BMI of 48 kg/m^2, was submitted to a laparoscopic antecolic antegastric RYGBP in December 2003. At that time the abdominal ultrasound was negative for gallbladder lithiasis. In April 2007, she was admitted to the Emergency Department for an upper right side abdominal pain, vomiting episodes, fever, and jaundice; the BMI at the time was 24 kg/m^2. Biochemical examinations showed increased leucocytosis, altered liver function tests with a total bilirubin of 4.1 mg/dl and direct bilirubin of 3.3 mg/dl. Hepatic ultrasound showed lithiasis of the common bile duct with intra- and extrahepatic bile duct dilation, as well as gallbladder lithiasis. The patient was taken to the operating room for laparoscopic evaluation.

Operative procedure

Four trocars were placed in the abdomen: one 11-mm umbilical, 5-mm right upper quadrant, 5-mm left upper quadrant, 5-mm under the xiphoid process. Adhesiolysis between the alimentary limb and the gastric remnant was realized by the coagulating hook. Classic retrograde cholecystectomy was performed and the cystic duct was sectioned between clips. A pursestring stitch of PDS 1 was performed at the level of the gastric antrum on the gastric remnant, and the latter was opened by the coagulating hook. The 5-mm trocar on the left upper quadrant was replaced by an 18-mm trocar (Ethicon Endosurgery, Inc.). The pursestring stitch on the stomach was tightened around the 18-mm trocar. Under laparoscopic view, a 10-mm gastroscope was inserted, through the 18-mm trocar, into the antrum on the gastric remnant and pushed distally until reaching the papilla of Vater. Sphincterotomy enabled the ERCP to be performed under fluoroscopic guidance, with the extraction of the stones from the common bile duct into the duodenum. Finally the gastroscope was retrieved from the stomach into the 18-mm trocar. Gastrotomy was closed by tying the pursestring stitch by intracorporeal knotting technique. The gallbladder was retrieved from the abdomen through the 18-mm trocar, and the aponeurosis was closed in layers.

Results

The procedure lasted 98 min. Blood loss was insignificant. The postoperative course was uneventful and the liver tests returned to normal on postoperative day 2, and the patient was discharged home on postoperative day 4. After 9 months, the patient was well and asymptomatic.

Discussion

For patients who undergo a bariatric procedure while presenting at the same time with a cholelithiasis, laparoscopic cholecystectomy with choledochotomy and choledochoscopy or transcystic exploration, is suggested especially when the patient is not super-obese ($50 < \text{BMI} < 60$ kg/m^2) or super super-obese (BMI > 60 kg/m^2).

For patients who already underwent a bariatric procedure, such as RYGBP, the excluded stomach can be evaluated by using a new endoscopic approach, such as the double-balloon enteroscope [10–12]. This new technique permits the excluded stomach to be reached through the gastrojejunostomy and the alimentary limb exploration, but sometimes it is difficult because it depends on the length of the alimentary and biliopancreatic limbs, and the endoscopist's training. In our case we did not choose this approach because the patient presented at the same time a cholelithiasis; hence, a laparoscopic cholecystectomy should have been proposed. Because of laparoscopy, the access to the common bile duct through the gastric remnant becomes eligible and it contributes to a reduced risk of choledochus stricture after choledochoscopy [13]. A trick used during the laparoscopic transgastric approach is the use of 18 or 15-mm trocar inserted into the stomach. This trocar allows for a sterile access for the introduction of the scope into the abdominal cavity. Moreover realization of a pursestring around the gastric openings avoids the problem of air leakage when the trocar is inserted.

The described technique also is useful if the patient was already treated by cholecystectomy, where adhesions do not permit immediate access to the common bile duct. Another indication is the patient without dilated common bile duct, where the choledochal exploration could be difficult.

A variant of the technique is the placement of a marker for gastrotomy on the gastric antrum at the time of RYGBP [14]. During follow-up, this marker can easily be identified radiographically, hence under local anesthesia the gastroscope could be introduced into the stomach when needed, and any endoscopic maneuvers can be realized [15, 16].

Finally another described approach of the common bile duct is the percutaneous transhepatic technique, which allows the stones to be extracted and balloon sphincteroplasty to be performed [17]. We did not consider this option

because the intrahepatic bile ducts were not dilated enough and because this procedure demands an expert staff.

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