

Title:

Laparoscopic transgastric ERCP in bariatric surgery patients: our experience

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DOI: 10.17235/reed.2017.4933/2017

Link: [PubMed \(Epub ahead of print\)](#)

Please cite this article as:

Espinel Jesús, Pinedo María Eugenia, Ojeda
Vanessa, Guerra del Río María. Laparoscopic
transgastric ERCP in bariatric surgery
patients: our experience . Rev Esp Enferm
Dig 2017. doi:
10.17235/reed.2017.4933/2017.

Enero 2017 • Volumen 109 • Número 1 • Páginas 1-86

CODE: READER ISSN: 1001-0108

Revista Española de Enfermedades Digestivas
THE SPANISH JOURNAL OF GASTROENTEROLOGY

Acceso al texto completo en: www.reed.es o www.sped.es

Factor de Impacto 100 (I-I): 1.455 (2016)
SCR: 0.34 (2016)

ORGANO OFICIAL DE:
SOCIEDAD ESPAÑOLA DE PATOLOGÍA DIGESTIVA, SOCIEDAD ESPAÑOLA
DE ENDOSCOPIA DIGESTIVA Y ASOCIACIÓN ESPAÑOLA DE ECOGRAFÍA DIGESTIVA

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NC 4933

Laparoscopic transgastric ERCP in bariatric surgery patients: our experience

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Received: 8/03/2017

Accepted: 11/04/2017

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ABSTRACT

Laparoscopic Roux-en-Y gastric bypass (LRYGB) is the surgical treatment of choice for morbid obesity. Several therapeutic options to remove common bile duct (CBD) stones have been proposed in these patients. Laparoscopy-assisted transgastric ERCP (LATERCP) has a high success rate. However, the procedure is not fully standardized and some technical variations have been proposed.

We introduce two cases in which laparoscopic transgastric ERCP has been used to treat choledocholithiasis after LRYGB.

Key words: Bariatric surgery. Endoscopic retrograde cholangiopancreatography (ERCP). Gastric bypass. Laparoscopy. Choledocholithiasis.

INTRODUCTION

Obesity is an increasing healthcare problem throughout the world. For morbid obesity, laparoscopic Roux-en-Y gastric bypass (LRYGB) is the surgical treatment of choice (1).

The rapid weight loss associated with this procedure can induce cholelithiasis in up to 30% of patients. Several complications intimately related to cholelithiasis may arise, including choledocholithiasis, cholecystitis and pancreatitis. To date, concomitant cholecystectomy in obese patients undergoing LRYGB remains controversial and is probably not recommended (2). Endoscopic retrograde cholangiopancreatography (ERCP) is the accepted treatment for choledocholithiasis; however, ERCP may be challenging or technically impossible in patients with bariatric altered anatomy.

Thus, various alternative therapeutic options to reach the common bile duct (CBD) have been proposed: a) balloon enteroscopy-assisted ERCP (3); b) percutaneous transhepatic cholangiography procedure (4); c) EUS-directed transgastric ERCP (5); and d) laparoscopy-assisted transgastric ERCP (6-10).

We describe two cases in which laparoscopy-assisted transgastric ERCP (LATERCP) has been used to treat choledocholithiasis after laparoscopic bariatric surgery.

CASE REPORT 1

A 55-year-old woman underwent LRYGB combined with gallstones cholecystectomy in order to treat her morbid obesity. A year after surgery she was admitted with epigastric pain. Blood tests showed impaired liver function (total bilirubin 3.5 mg/dl, ALP 504 UI/l, GGT 912 UI/l). A magnetic resonance cholangiography (MRC) confirmed the presence of three small stones within the CBD. Laparoscopic transgastric ERCP was proposed. After a sphincterotomy, small but hard gallstones were extracted with a lot of difficulty. The patient developed mild post-ERCP pancreatitis and was discharged five days later. No further treatment was required.

CASE REPORT 2

A 51-year-old woman underwent biliopancreatic diversion to treat her morbid obesity. Seven years after surgery she presented with right upper quadrant pain. Blood tests revealed altered liver function enzymes (AST 499 UI/l, ALT 413 UI/l). A magnetic resonance cholangiography (MRC) showed the presence of ten small stones in the CBD and cholelithiasis. Laparoscopic transgastric ERCP was planned. After a sphincterotomy, a 10 mm papillary dilation with a controlled radial expansion (CRE)

balloon was performed. Subsequently, the CBD stones were extracted easily. Finally, the gastrotomy was closed and a cholecystectomy was performed. There were no complications and she was discharged three days later. No further treatment was required.

LAPAROSCOPIC TRANSGASTRIC ERCP PROCEDURE

A prophylactic broad-spectrum antibiotic was administered preoperatively. The patient was placed in the supine position and four abdominal trocars were introduced. Preliminary adhesiolysis was required in order to obtain a spacious access to the excluded distal remnant of the stomach. A small gastrotomy (15-20 mm) with a purse-string suture was performed on the anterior wall of the distal gastric pouch, 6-8 cm away from the pylorus. A disinfected (non-sterile) duodenoscope was introduced through the left quadrant 15-mm trocar into the peritoneal cavity. Then, the surgeon guided the tip of the duodenoscope through the gastrotomy towards the pylorus to reach the papilla (Fig. 1A). The purse-string suture was tightened to provide sufficient insufflation pressure in the gastric pouch and an intestinal clamp was placed near the angle of Treitz to avoid bowel air distension.

At this point, a regular ERCP can be performed and a sphincterotomy to remove the CBD stones. Then the duodenoscope is removed and the gastrotomy site closed with sutures.

However, several drawbacks in the transgastric ERCP may arise. First, the duodenoscope may be too long and thus handling may be more difficult (Fig. 1B). Owing to the lack of fixation of the endoscope, rapid involuntary oscillating movements may occur. Secondly, the maneuvers to approach the papilla do not allow the endoscope to get close enough to the papilla as with conventional ERCP (Fig. 2). All of these aspects can make this procedure more challenging.

CHANGES DONE BETWEEN THE FIRST AND SECOND CASE

Both procedures were very similar. However, in the second case the sterility of the surgical field was maintained by enclosure in a sterile bag in the trocar prior to the insertion of the duodenoscope (Fig. 1A). In addition, a 10 mm papillary balloon dilation

was performed after a sphincterotomy in this case, in order to extract CBD stones more easily (Fig. 3). If a cholelithiasis migrates to the CBD before the laparoscopic cholecystectomy is performed, this dilation will probably avoid a retained stone in CBD.

DISCUSSION

Nowadays, all procedures aimed at accessing the CBD after Roux-en-Y gastric bypass (LRYGB) offer advantages but also some difficulties. Balloon enteroscopy-assisted ERCP has a reported low success rate (~65%). The success depends on the length of the Roux (alimentary) limb. In addition, some drawbacks in this technique should be mentioned, such as the access reaching the papilla is retrograde, the adhesions may complicate the progression of the endoscope, there is a significant perforation risk (3-10%) and specific devices are lacking (3). The percutaneous transhepatic cholangiography procedure has a reported success rate of 90-95%. It has a risk of complications associated with cutaneobiliary fistula (e.g., 4% hemobilia and 2% infection). Also, their mortality is not negligible (1.6%) (4). Kedia P published a case series describing EUS-directed transgastric ERCP. For this procedure, the author used EUS to access the bypassed gastric remnant, creating a fistulous tract secured with a lumen-apposing metal stent. Then, ERCP can be performed via the metal stent in one stage by a single team in a minimally invasive way. The associated risks of the technique include stent migration/peritonitis and the possibility of weight regain if the fistulous route is not corrected (5). Laparoscopy-assisted transgastric ERCP allows an easy access to the papilla and provides success rates close to 100%. The coordination between the surgeon and the endoscopist is essential for the optimum success rate. However, the procedure is not fully standardized and some technical variations have been proposed. These include:

1. The placement of a sterile bag in the trocar prior to the insertion of the duodenoscope may preserve the sterile environment of the surgical field more effectively (10). In this setting, some authors propose the direct insertion of the 15 mm-trocar into the excluded stomach. This will allow an easy and direct passage of the duodenoscope into the gastric remnant and may reduce the peritoneal contamination

(9). On the other hand, mucosal lacerations have been described (6).

2. In our experience, papillary balloon dilation after a sphincterotomy may help to remove the CBD stones more easily. This approach could have an important significance in patients with cholelithiasis in avoiding a retained stone after the ERCP. In addition, we aim to clarify some difficulties that we encountered during the TG-ERCP. Owing to the patient position, the excess length of the duodenoscope and the route used, the papilla will be further away than conventional ERCP. In addition, poorly controlled involuntary movements of the duodenoscope may occur. In this setting, biliary cannulation and sphincterotomy can be more challenging.

In patients with bariatric surgery, the procedure of choice to reach the CBD must be based on the patient's surgical history, the hospital's resources and the experience and skills of the endoscopist. Efficiency, safety and an economic cost must also be taken into account. It is very important for the patient and the family members to know not only the success rates, benefits and risks of the chosen procedure but also the existing alternatives.

In conclusion, LATERCP is an effective, safe and reproducible procedure for the management of CBD stones in patients treated with bariatric surgery. The coordination of a skilled surgeon and endoscopist will provide high success rates.

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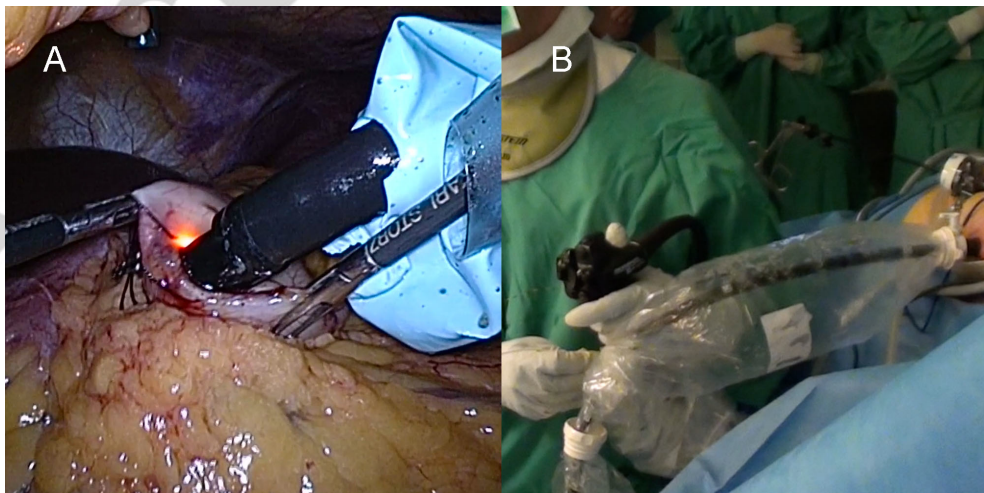


Fig. 1. A. The duodenoscope is introduced via a 15-mm trocar and is passed through the gastrotomy with laparoscopic guidance. B. Duodenoscope covered by a sterile plastic bag. Torquing and angulation maneuvers are required due to excess length of endoscope.

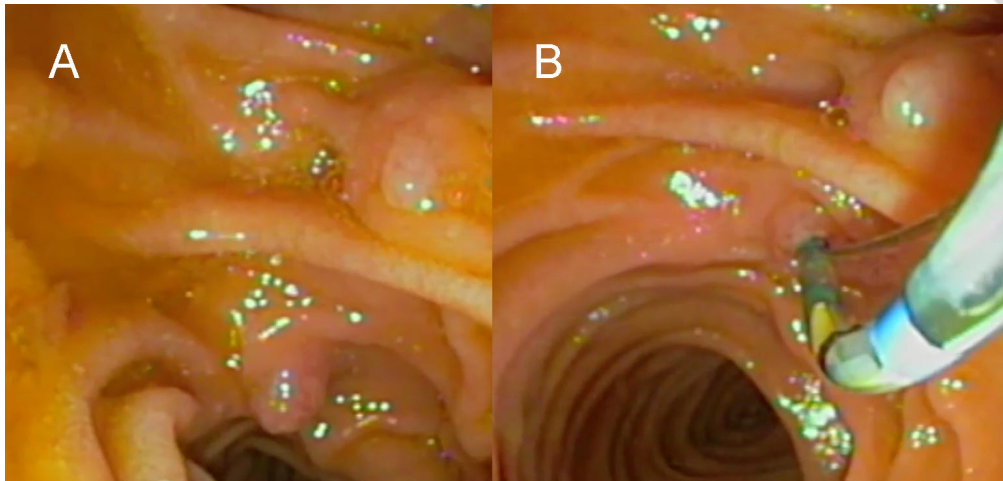


Fig. 2. A. The papilla is further away than conventional ERCP. B. Biliary cannulation and sphincterotomy can be more difficult.

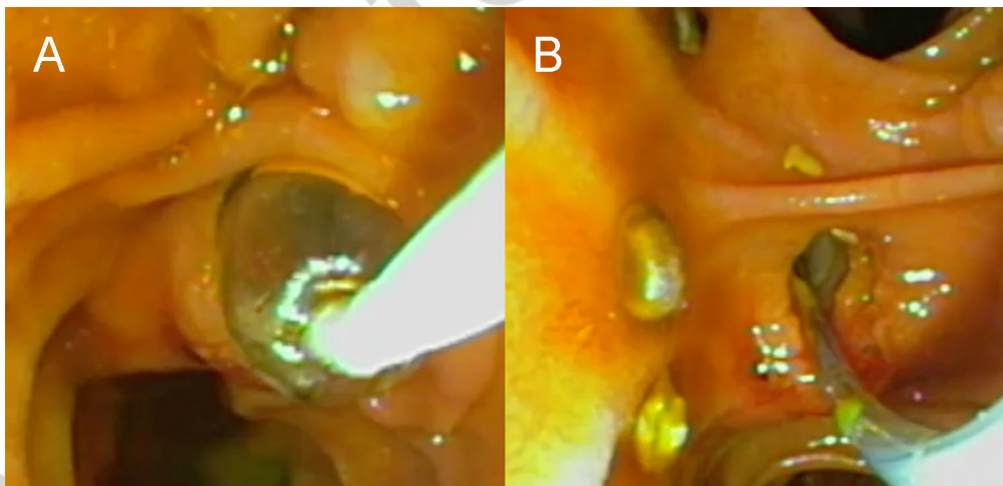


Fig. 3. A. A papillary dilation with a balloon after a sphincterotomy aided the removal of the CBD stones. B. The wide papillary hole obtained after dilation, the distal CBD and the extracted stones.

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