



Laparoscopy Assisted Transgastric Endoscopic Retrograde Cholangiopancreatography for the Management of Choledocholithiasis in a Patient With Roux-en-Y Gastric Bypass[☆]

Colangiopancreatografía retrógrada endoscópica transgástrica con asistencia laparoscópica para el tratamiento de la cole-coledocolitiasis en paciente intervenido de *bypass* gástrico

Bariatric surgery is becoming more and more common, and Roux-en-Y gastric bypass is one of the most widely used procedures today. It is well known that patients who undergo gastric bypass to treat obesity have a higher risk for cholelithiasis and choledocholithiasis.¹ The rates of postoperative detection of gallstones can range between 22% and 71%, and cholecystectomy can be required in 7%-41% of patients who have undergone gastric bypass.² Out of these patients, a very small percentage can have associated choledocholithiasis. We could say that the development of choledocholithiasis after gastric bypass is uncommon, although possible, and endoscopic exploration of the bile duct is technically challenging in this type of patients.³

In cases which are not accessible by standard endoscopy, as in the case of gastric bypass, transgastric endoscopic

retrograde cholangiopancreatography assisted by laparoscopy could be a strategy to consider⁴ if the bile duct is not dilated or if there are no large gallstones embedded in the common bile duct, as in our case. The transcystic approach would be another valid option in these situations.

We propose a simple technique for the management of choledocholithiasis in patients who have undergone gastric bypass for morbid obesity that combines laparoscopic cholecystectomy with endoscopic retrograde cholangiopancreatography through a gastrostomy. The endoscope is inserted⁴ through a 15 mm transgastric balloon trocar for obesity to access the papilla through the gastric remnant. This enables the surgeon to carry out sphincterotomy and the extraction of common bile duct calculi. As choledochotomy is not done, nor is a drain left in the bile duct, the technique is

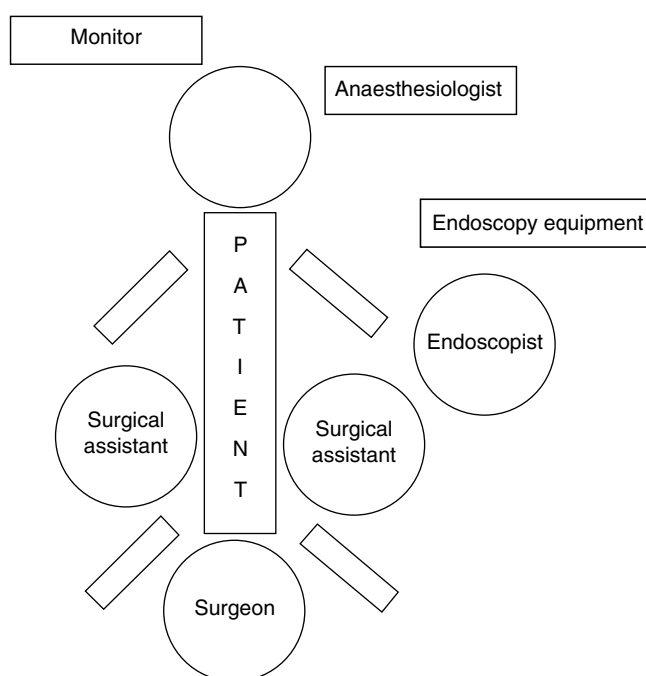


Fig. 1 – Diagram showing the placement of the surgical and endoscopic equipment and team for correct completion of the procedure.

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Fig. 2 – Intraoperative image of the 15 mm balloon trocar in the left hypochondrium inserted in the gastric remnant through the gastrotomy.

much simpler and much less aggressive. This is consequently beneficial for the patients' progress, who are able to go home 24 h later without any drain tubes.

We present the case of a 34-year-old male with a history of laparoscopic gastric bypass for morbid obesity one year earlier. Presently, he came to the emergency department due to epigastric abdominal pain that had been progressing over several days and was associated with marked mucocutaneous jaundice, choloria, acholia and nausea without vomiting. Work up showed total bilirubin 8.4 and GPT 893. Abdominal ultrasound demonstrated no dilatation of the intra or extrahepatic bile duct; the gallbladder was distended, with no wall thickening, and contained several microlithiasis. During hospitalisation, magnetic resonance cholangiopancreatography detected minimal dilatation of the intra and extrahepatic bile duct, as well as a non-dilated common bile duct measuring 7.5 mm. A "crab leg" image was seen in the distal common bile duct, which was compatible with multiple choledocholithiasis with cholelithiasis. The patient was considered for laparoscopy-assisted transgastric endoscopic retrograde cholangiopancreatography in association with cholecystectomy in the same operation (Fig. 1).

Our technique differs from others published in the literature by using a long balloon trocar that is usually utilised for morbid obesity surgery. In order to perform this surgery, the patient was positioned in supine decubitus with open legs or French position (Fig. 2). In this manner, endoscopy was done with sphincterotomy and the lithiasis and biliary sludge were removed by the balloon catheter. It is important to adjust the diameter of the endoscope with that of the trocar in order to avoid leakage of the air insufflated by the endoscopist. The procedure should be followed through the surgeon's optics. The gastrotomy was closed with intracorporeal suture and finalised with a standard laparoscopic cholecystectomy.⁵ The operative time was 165 min.

The patient presented a postoperative period without incident and was discharged after 24 h. One month after surgery, the patient was completely asymptomatic.

The main advantages provided by the use of the trocar-balloon in this type of cases are, first of all, that it is not necessary to release the gastric remnant, which in many

patients presents numerous adhesions that can increase surgical time and morbidity. Second of all, it provides a leak-proof work area for the endoscopist, who requires continuous insufflation of air for the correct completion of the sphincterotomy, while providing very good manoeuvrability with the endoscope as the stomach is not attached to the abdominal wall like in other procedures described in the literature. As for the disadvantages of this approach, and according to the series examined, these include greater mobilisation of the surgical and endoscopic team, longer execution time and higher cost.⁶

Combined endoscopic-surgical approaches provide a valid, safe, feasible and reproducible strategy for the resolution of choledocholithiasis in select patients who have previously undergone a malabsorptive procedure for morbid obesity.^{7,8} It enables surgeons to resolve the pathology by means of a combined laparoscopic approach, without the need to initially propose open surgery or a more complex laparoscopic approach of the bile duct, resulting in less morbidity and shorter hospitalisation.^{9,10}

In this technique, the interaction between the surgeon and endoscopist is essential for the procedure to be done correctly.

Conflict of Interests

There are no conflicts of interests.

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Acute Liver Failure Secondary to Bariatric Surgery: An Indication for Liver Transplantation[☆]



Insuficiencia hepática aguda secundaria a cirugía bariátrica: una indicación de trasplante hepático

Morbid obesity is a very prevalent disease in western societies. Nonalcoholic steatohepatitis is a common entity among morbidly obese individuals, which is becoming established as an emerging indication for liver transplantation with the increasing number of surgical procedures aimed at improving weight and the metabolic syndrome. In certain patients who undergo purely malabsorptive procedures, a decline in hepatic function has been identified to the extent that some cases require liver transplantation. This has raised the controversy of whether to revert the bariatric procedure, and when is the most opportune time for doing so.

Our patient is a 35-year-old male who had undergone biliopancreatic diversion (Scopinaro procedure) 12 months earlier due to morbid obesity, which resulted in a weight loss of 120% of his previous excess weight and malnutrition (body mass index 18 kg/m²). He was transferred to the ICU of our hospital because of progressive acute liver failure with clinical deterioration and MELD 40, which indicated a “code 0” liver transplantation. Orthotopic liver transplantation was carried out with an organ from a cadaveric donor, and the decision was made to revert the previous biliopancreatic diversion (Fig. 1). During the immediate postoperative period, the patient presented haemodynamic deterioration secondary to massive haemoperitoneum. Urgent exploratory laparotomy identified active bleeding at the jejunojejunal anastomosis, which was controlled. The other anastomoses were undamaged and showed no signs of leakage.

During post-op, the patient presented ascites with associated renal failure and a need for haemofiltration. On the 8th day post-op, the patient experienced acute respiratory failure secondary to septic shock, which required re-admittance to the ICU, vasoactive drugs and mechanical ventilation.

Abdominal ultrasound and CT scan ruled out surgical complications as well as an absence of alterations of the liver graft. After paracentesis, a culture of the ascitic fluid identified the presence of multi-resistant *Enterococcus faecium*, and *Candida glabrata* was detected in the bronchial suction culture. In the end, the patient died on the 18th day post-op in a situation of refractory septic shock. The pathology study of the explanted specimen demonstrated submassive hepatic necrosis with marked regenerative signs and severe macro-microvesicular steatosis.

The prevalence of obesity has increased in recent years, and nonalcoholic steatohepatitis is a condition that is increasing in frequency. Bariatric surgery plays an important role in the treatment of these patients as it results in weight loss, controls cardiovascular risk factors and improves associated metabolic syndrome.¹ Nonetheless, the effect of bariatric surgery on liver function is controversial. Malabsorptive techniques, such as the Scopinaro procedure, are responsible for the development of postoperative hepatic complications, and there have been publications of cases of acute liver failure in small series.² Geerts et al.² published a Belgian multicentre study with a series of 10 patients who developed liver failure after bariatric surgery (Scopinaro in 9 patients and intestinal bypass in one) and received liver transplants. D’Albuquerque et al.³ published the cases of 3 patients with a history of bariatric surgery (1 gastric bypass and 2 biliopancreatic diversions) who later developed liver failure and received liver transplants between 7 and 24 months afterwards.

We currently do not understand the exact cause of this condition, although several physiopathological theories have been proposed that would result in the appearance of liver

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