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Hepaticojejunostomy for the management of sump syndrome arising from choledochoduodenostomy in a patient who underwent bariatric Roux-en-Y gastric bypass: A case report



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ABSTRACT

INTRODUCTION: Rapid weight loss following bariatric surgery is associated with high incidence of gallstones and complications that may need bilioenteric diversion. This presents a specific challenge in the management of this group of patients.

CASE PRESENTATION: A 37 years old female underwent a Roux-en-Y gastric bypass (RYGB) in 2008 for morbid obesity. In 2009 she presented with obstructive jaundice and was diagnosed with choledocholithiasis successfully managed by open cholecystectomy and choledochoduodenostomy. In the following years, she developed recurrent attacks of fever, chills, jaundice, and right upper quadrant pain and her weight loss was not satisfactory. Imaging of the liver showed multiple cholangitic abscesses. Reflux at the choledochoduodenostomy site was suggestive of sump syndrome as a cause of her recurrent cholangitis and a definitive surgical treatment was indicated. Intraoperative findings confirmed sump at the choledochoduodenostomy site and also revealed the presence of a large superficial accessory duct arising from segment four of the liver with separate drainage into the duodenum distal to the choledochoduodenostomy site. A formal hepaticojejunostomy was done after ductoplasty. The Roux limb was created by transecting the jejunum 40 cm distal to the foot anastomosis of the RYGB. The gastric limb was lengthened as part of this procedure which afforded the patient the additional benefit of weight loss.

CONCLUSION: Choledochoduodenostomy should be avoided in patients with RYGB due to the risk of sump syndrome which requires conversion to a formal hepaticojejunostomy.

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1. Introduction

Rapid weight loss following bariatric surgery is associated with significant risk of gallstones, with a reported incidence varying from 6.7% to 52.8% [1,2]. Complications of cholelithiasis can prompt the need for bilioenteric diversion as a definitive surgical management, which proves challenging in this patient population since the physiology of the previous Roux-en-Y gastric bypass (RYGB) must ideally be preserved.

2. Case presentation

We hereby report the case of a double Roux-en-Y procedure done for sump syndrome, which developed secondary to RYGB for morbid obesity.

A 35 year-old female with a past medical history notable only for morbid obesity who underwent a Roux-en-Y gastric bypass operation in 2008 (Fig. 1a). One year later her weight loss was not satisfactory, and she developed obstructive jaundice which was managed in a general surgery department by open cholecystectomy, exploration of the common bile duct and creation of a side-to-side choledochoduodenostomy (Fig. 1b).

She was referred to our specialized hepatobiliary and pancreatic surgery center after she continued to experience recurrent attacks of fever, chills, jaundice, and right upper quadrant pain. The attacks were associated with leukocytosis, hyperbilirubinemia, and elevated liver enzymes. Ultrasonography of the liver showed multiple hypo-echoic lesions, confirmed by magnetic resonance imagining to be cholangitic abscesses (Fig. 1c). Initially, her symptoms resolved with broad-spectrum antibiotics and image-guided drainage. Neither magnetic resonance cholangiopancreatography (MRCP) nor HIDA scan showed any sign of biliary obstruction. The clinical and radiographic pictures were highly suggestive of a sump syndrome secondary to her previous choledochoduodenostomy and definitive surgical management was necessary.

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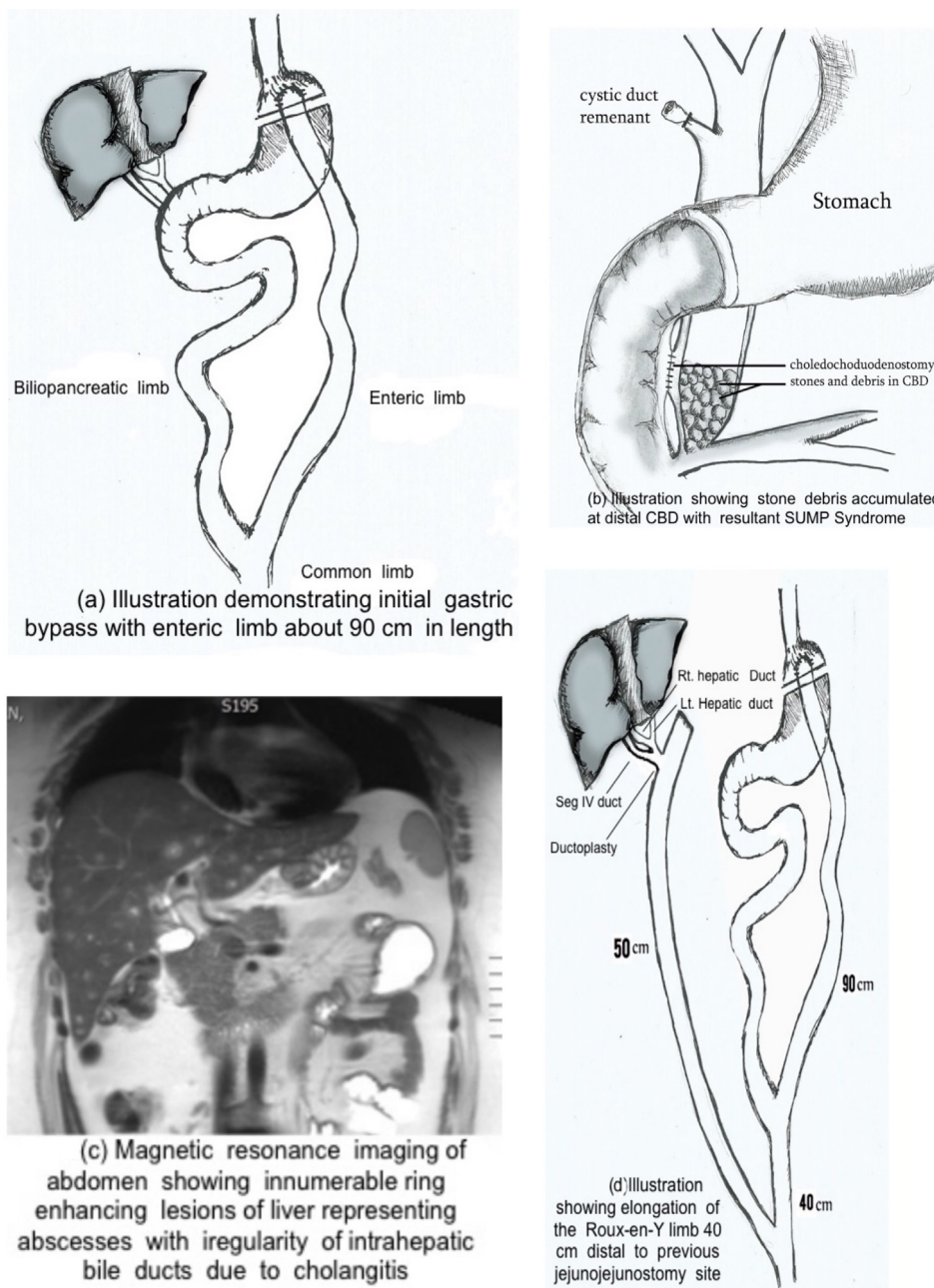


Fig. 1. Preoperative findings and final treatment. (a) Gastric bypass; (b) sump syndrome; (c) magnetic resonance of the liver showing cholangitic abscesses; (d) hepaticojejunostomy.

2.1. Operative management

The previous right subcostal incision was used for exploratory laparotomy. Dense adhesions were encountered at the porta hepatis. The previous choledochoduodenostomy was identified and taken down (Fig. 2a), and the common bile duct “cul-de-sac” was cleared of numerous stones and significant debris. The gastrojejunostomy limb measured approximately 90 cm.

We encountered an accessory bile duct arising anterior and more superficially, draining segment IV of liver that had not been identified by preoperative imaging (Fig. 2b). It drained directly into the 2nd part of the duodenum, distal to the common bile duct.

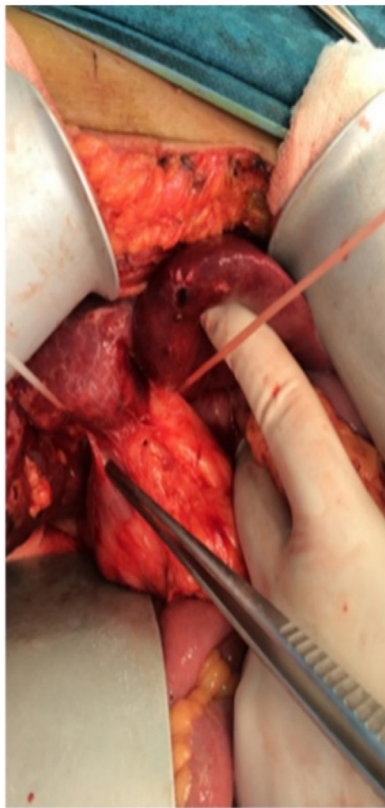
The common bile duct and its prior anastomosis to the 1st part of the duodenum was identified after careful adhesiolysis. This anastomosis was taken down and the duodenal defect was oversewn.

At this point we performed a ductoplasty of the segment IV duct with the main common hepatic duct.

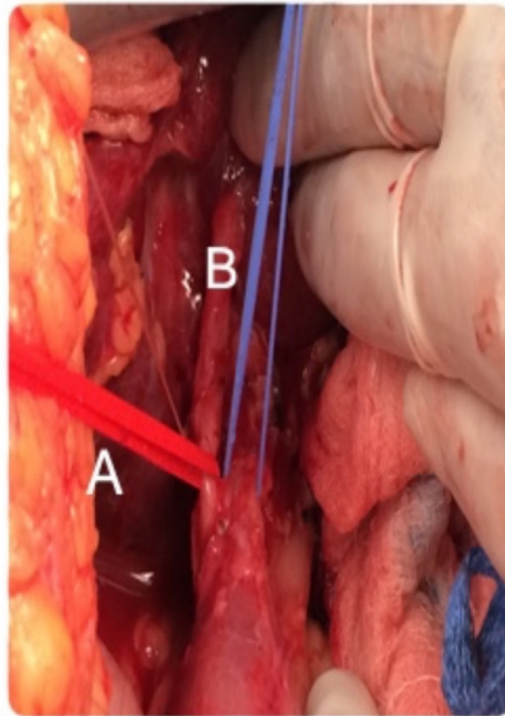
To create the new Roux limb, we identified the foot anastomosis of the previous gastrojejunostomy limb from her RYGB and divided the jejunum with GIA stapler 40 cm distal to that point. The new retrocolic Roux limb was 50 cm long and easily reached the liver hilum for construction of an end-to-side hepaticojejunostomy.

The jejunojejunostomy (new foot anastomosis) was performed approximately 40 cm distal to the previous foot anastomosis of the Roux limb (Fig. 2d), which increased length of her prior gastric limb from 90 cm to 130 cm. The length of the small bowel distal to the new foot anastomosis was approximately 400 cm.

The patient tolerated the procedure well. Her body mass index decreased from 42.8 on admission to 37.6 after four months of follow up, with no further episodes of cholangitis.



(a) Intraoperative image showing intact choledochoduodenostomy



(b) Intraoperative image showing A accessory hepatic duct , B Common bile duct



(c) Intraoperative image showing foot anastomosis of Roux-en-Y gastric bypass



(d) Intraoperative image showing post ductoplasty hepatojejunostomy

Fig. 2. Intraoperative findings. (a) Initial choledochoduodenostomy; (b) accessory hepatic duct; (c) foot anastomosis of the Roux-en-Y Gastric Bypass; (d) hepaticojejunostomy started.

3. Discussion

The incidence of obesity is increasing worldwide, especially in developing countries, and bariatric surgery has emerged as an often utilized solution to the problem [4]. Rapid weight loss, as is expected with bariatric surgery, is a known risk factor for gallstone formation [3] and associated complications, which can require intervention [4,5].

Our patient developed choledocholithiasis with recurrent attacks of cholangitis after undergoing RYGB. The surgeon at the primary facility opted for open cholecystectomy, with CBD exploration and choledochoduodenostomy to prevent further bile duct obstruction and avoid interference with the Roux-en-Y loop gastric bypass. The use of choledochoduodenostomy versus hepaticojejunostomy for recurrent CBD stones has been studied. Yaqub et al. reported the case of a successful hepaticoduodenostomy (anastomosis between common hepatic duct above the cystic duct junction and the duodenum) following CBD injury in a patient with a history of RYGB [6]. Nonetheless, publications as early as the 1960s have suggested that for benign diseases choledochoduodenostomy should be considered only if there is no other alternative [7], and a 1975 study published by Stefanini et al. reported that over 20% of choledochoduodenostomies ultimately required conversion to formal hepaticojejunostomy [8]. More recently there are published cases of robotic assisted laparoscopic conversion [9]. The reported prevalence of sump syndrome after hepaticoduodenostomy is about 10% [10–13]. This complication is traditionally managed endoscopically with balloon dilatation of the strictured anastomosis [14] but, in a patient with altered GI anatomy due to RYGB, endoscopic approaches are not feasible.

Other minimal invasive approaches have a success rate between 30–60%, and are not available in every facility [15–17]. A percutaneous or laparoscopic-assisted transgastric approach has been reported in the literature, which has a high success rate for cannulation of the CBD with low overall complications [18] however this procedure requires equipment and expertise that are not available in all centers.

A separate issue that arose in the case of our patient was the Roux limb length and its contribution to weight loss after RYGB. While there are conflicting studies in the existing literature, a review published in 2011 suggests that the limb length should be around 150 cm, and that longer Roux limbs carry the risk of inadequate weight loss [19]. Roux limb revision, when required, is typically accomplished by a laparoscopic approach [20].

Our case demonstrates two interesting developments in a patient with history of RYGB: sump syndrome following choledochoduodenostomy performed for cholangitis post-RYGB, and unsatisfactory weight loss secondary to inadequate Roux-limb length. End-to-side hepaticojejunostomy is considered the definitive treatment for sump syndrome [21]. In our patient, we performed ductoplasty for reconstruction of an unrecognized accessory segment IV bile duct and hepaticojejunostomy, combined with Roux-limb revision.

4. Conclusion

With the increasing of obesity, and management by bariatric surgery increasing, the associated high rate of symptomatic gallstones in this population is well known. This requires that the general surgeon to be familiar with the various approaches towards the management of these complications, including techniques for bilioenteric diversions. Choledochoduodenostomy should be avoided even if it does not disrupt the integrity of previous anastomosis of the RYGB. One must also maintain an index of suspicion for the known complication of sump syndrome which can be corrected

by hepaticojejunostomy in the novel manner described here, which alleviated the biliary symptoms without altering the anatomy of the gastric bypass operation.

Conflicts of interest

There is no conflict of interest to declare.

Source of funding

None.

Ethical approval

N/A.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author's contribution

Mohammed S. Alqahtani designed the new surgical technique, carried out the operation, contributed to the patient clinical management and designed and reviewed the manuscript.

Shadi A. Alshammary carried out the operation and wrote the manuscript.

Enas M. Alqahtani carried out the operation.

Shoukat A. Bojal carried out the operation and contributed to the patient clinical management.

Amal Alaidh contributed to the patient clinical management.

Gelu Osian designed, wrote and reviewed the manuscript.

Guarantor

Mohammed S. Alqahtani.

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