

INTESTINAL KINKING AFTER "DOUBLE LOOP" ROUX-EN-Y GASTRIC BYPASS: A POSSIBLE PITFALL OF THE METHODOLOGY

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The laparoscopic "double loop" gastric bypass is a recent technique for Roux-en-Y reconstruction. It has been advocated to reduce the rate of internal hernia owing to the preservation of the mesenteric integrity. Moreover the likelihood of confusion between the biliary and alimentary limb is reduced, the jejunal loops can be handled easily and the anastomoses can be confidently performed with few manoeuvres and without the need of changing neither the patient nor the operating team position. On the other hand, in our institution we observed a case which casted some doubt on the safety of this technique. A class III obesity woman, who complained of reflux and weight regain after sleeve gastrectomy, was operated on according a "double loop" gastric bypass. One month later discharge, the patient consulted our hospital with clear signs of intestinal obstruction. During reoperation, we observed that the bilio-pancreatic loop was widely distended because of a stenosing kinking downstream, involving the common loop. The obstruction was successfully addressed with the construction of a side to side anastomosis between the bilio-pancreatic loop and the common loop below the kinking. In conclusion, the "double loop" seems to be a relatively simple approach in case of Roux-en-Y gastric bypass. Nevertheless, this methodology doesn't avoid specific complications. Owing to its description in 2006, there are only few cases to date reported in literature. With growing experience it will be possible to draw a firm conclusion regarding its safety.

KEY WORDS : Gastric bypass, Laparoscopy, Complication.

CASE REPORT

In 2011, a 45-year-old class III obesity woman (118 kg; 1,56 m; BMI 48,49) was treated with a sleeve gastrectomy. This was accomplished by a laparoscopic approach. After placement of five trocars, the gastric greater curvature was skeletonized using a radiofrequency vessel sealer and divider, namely the Ligasure™ 5 mm laparoscopic device. Starting at 6 cm from the pylorus, the skeletonization was carried out up to the angle of Hiss. A calibrating 36 Fr oro-gastric bougie was then inserted. Along its side, an EndoGIA™ was fired multiple times, starting with gold cartridges on the antrum and then shifting to the blue ones on the fundus. The suture line was checked for leaks by injection of methylene blue through a nasogastric tube. Hemostasis was carefully achieved by application of multiple clips and by spraying Tisseel™ fibrin glue along the suture line. A drain was left close to the suture line. At the two-years follow-up, a weight loss of 44 kg was recorded (74 kg BMI 30,41 EWL % 67,69). At the following visits, the patient started to complain of reflux and epigastric burning pain. An œsophagogastroscope was carried out and the endoscopic findings confirmed a gastro-esophageal reflux disease (GERD). On the biopsies of the lower œsophagus, a Barret metaplasia was diagnosed. A concurrent weight regain to 85 kg was registered (85 kg, BMI 34,93 - EWL % 50,77). All the

above mentioned things considered, we offered a laparoscopic "double loop" gastric bypass and the patient consented to it (Dec 2014). After placement of a 10 mm port for the 30° laparoscope, one 10 mm, one 12 mm and two 5 mm ports were inserted. By means of the Ligasure™ 5 mm laparoscopic device, the gastric sleeve was carefully freed of all the adhesions up to the angle of Hiss, especially along its posterior aspect. A calibrating 36 Fr oro-gastric bougie was inserted. Starting from the lesser curvature, at the level of the first gastric vessel, the gastric sleeve was sectioned using the EndoGIA Tristaple™ loaded with violet cartridges. The first section was conducted transversely, then parallel to lesser curvature. A 30 ml gastric pouch was obtained. With the patient in the same mild reverse Trendelenburg position, a 75 cm jejunal loop was measured starting from the ligament of Treitz and placed into the supramesocolic space in an antecolic fashion. At this level, a gastro-jejunostomy was carried out using an EndoGIA Tristaple™ loaded with 45 mm blue cartridges. The orifice for the insertion of the stapler was hand sewn with a double layer V-lock absorbable suture. At about 10 cm from the gastro-jejunostomy, an enterotomy was made for the next entero-enteric anastomosis. A second loop of 150 cm length was measured starting from the just completed gastro-jejunostomy. Another enterotomy was made at this level. Then, the two enterotomies were carefully aligned and through them a white cartridge EndoGIA™

was inserted and fired. The service hole was closed, as usual, by a V-lock hand made suture. The gastro-jejunosomy and the jejun-jejunosomy were tested for leaks with the injection of a methylene blue solution through a naso gastric tube. As a last step was the two anastomosis were separated to create the Roux-en-Y pattern. A white cartridge EndoGIA™ was inserted through a passage into the mesentery close to the intestinal wall and then fired. A drain was placed near the two anastomoses. The operative time was 180 min. The postoperative course was complicated by a slow return to regular bowel movements whom the postoperative ileus was deemed responsible for. Eventually the patient was able to take a regular oral diet. The reflux and its related symptoms resolved so the patient was satisfied by the the operation. One month later discharge, the patient consulted our hospital with clear signs of intestinal obstruction (82 kg, BMI 33,69). A CT scan was carried out showing distension of the bilio-pancreatic loop up to the defunctionalized antrum (Fig. 1, 2).



Fig. N° 1 A CT scan showing distension of the bilio-pancreatic loop (arrow)



Fig. N° 2 A CT scan showing distension of the defunctionalized antrum (arrow)

Despite medical treatment, the intestinal obstruction didn't resolve. So an urgent laparoscopy was performed.

The bilio-pancreatic loop appeared to be widely distended because a stenosing kinking downstream (Fig. 3a) involving the common loop.

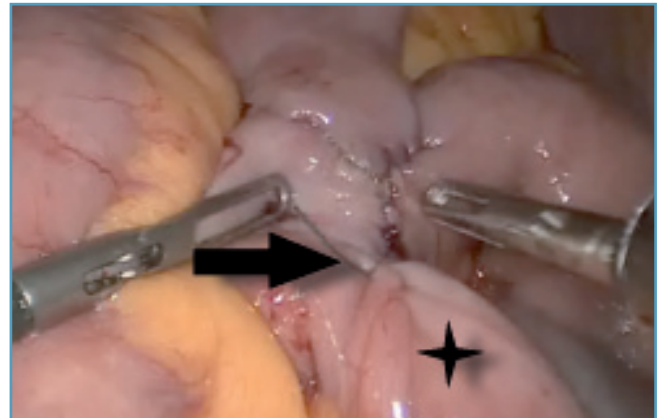


Fig. N° 3a Intraoperative image showing the point of a stenosing kinking (arrow) downstream the biliopancreatic loop (asterisk)

The kinking resolved by putting the biliopancreatic loop under traction along an imaginary line connecting with the common loop (Fig. 3b). But as the traction was released, the loop went back to the initial unfavourable position. To address this inconvenient, a side to side anastomosis between the bilio-pancreatic loop and the common loop below the kinking was carried out by means of a laparoscopic linear stapler. Two enterotomies were made, each one

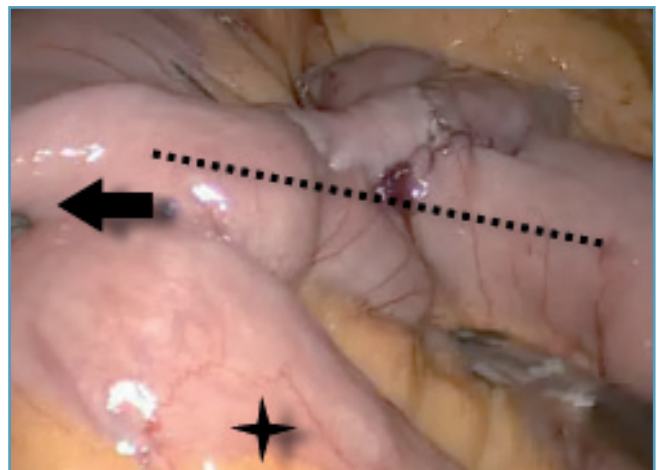


Fig. N° 3b Intraoperative image of the previous surgical field showing resolution of the kinking after traction (arrow) on the biliopancreatic loop (asterisk) along an imaginary line (dotted line) connecting the biliopancreatic loop with the common loop

on the antimesenteric side of the bilio-pancreatic loop and common loop respectively. A 60 mm EndoGIA™ loaded with a white cartridge was introduced and fired. As usual, the opening was closed with a double layer V-lock suture. The operative time was 110 min. The postoperative course was uneventful with prompt resolution of the intestinal obstruction. The patient was subsequently discharged in good general health on 9th postoperative day.

DISCUSSION

The laparoscopic double loop gastric bypass was presented by Catona e Tacchino during the 2006 IFSO Congress. According to these authors, this technique represent a simple way to perform a Roux-en-Y reconstruction after Gastric Bypass. Indeed, it's not necessary to interrupt the mesentery, thus avoiding confusion between the biliary and alimentary limb: the jejunal loops can be handled easily and the anastomoses can be confidently performed in the narrow supramesocolic space with few manoeuvres and without the need of changing neither the patient nor the operating team position. These advantages make the "double loop" the procedure of choice also in case of single incision gastric bypass where the conflict between the instruments restricts the surgical field. This adds more simplicity to the procedure with reduction of operative time. Notably, this technique gives the chance of testing the tightness of both the anastomoses by endoluminal injection of methylene blue before splitting them apart with the last white cartridge EndoGIA™. On the contrary, in case of RYGBP, only the proximal gastro-jejunostomy can be easily tested for leaks. Moreover the uninterrupted mesentery leads to a reduction of the risk of bleeding and internal hernias [3]. Parots e al [4] reported an incidence of 1-5 % of internal hernia after RYGBP despite the fewer adhesions induced by laparoscopy compared to laparotomy. Thus this author recommends to close all the mesenteric defects with running non-absorbable sutures. Despite meticulous attention paid to obliteration of mesenteric defects, Steele et al [5] reported a 2,6 % incidence of internal hernias in a cohort

of 274 patients treated with RYGBP with retrocolic retro-gastric technique. In contrast, Palmisano et al [1] reviewed 44 patients with morbid obesity submitted to laparoscopic double loop gastric bypass with no cases of internal hernia. The case observed in our institution highlights a different pattern of intestinal obstruction after double loop RYGBP: a stenosing kinking involving the common loop, causing distension of the whole bilio-pancreatic loop up to the defunctionalised antrum. We hypothesize that, paradoxically, the lack of mesenteric division was responsible for a rigid disposition of the intestine leading to this specific complication.

CONCLUSION

Double loop is a relatively simple approach in case of Roux-en-Y gastric bypass. Nevertheless, this methodology seems not to be void of specific complications. Owing to its recent description in 2006, there are only few cases to date reported in literature. With growing experience will be possible to draw a firm conclusion regarding its safety.

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SUMMARY

Roux-en-Y Gastric Bypass (RYGB) is one of the most effective surgical operations to date for the treatment of morbid obesity. Nevertheless, despite the closure of the mesenteric defects, it is associated with an high frequency of internal hernia, even in the long term. The laparoscopic "double loop" Gastric Bypass is a recent technique for Roux-en-Y reconstruction. It has been advocated to reduce the rate of internal hernia owing to the preservation of the mesenteric integrity [1, 2]. On the other hand, we have some concerns regarding the safety of this new technique. In our Institution, we routinely perform all the bariatric operations in use today, ranging from gastric banding to sleeve gastrectomy, single anastomosis bypass (also known as "mini bypass"), Roux-en-Y Gastric Bypass. At the same time, we have accrued a considerable experience in revisional surgery. We report a case of kinking of the common and bilio-pancreatic loop after "double loop" Gastric Bypass which seems to be, in a variable degree and according to our experience, inherent to this technique.

RÉSUMÉ (MOTS CLÉS : Bypass gastrique, Cœlioscopie, Complication)

Le Roux-en-Y bypass gastrique (RYGB) est l'une des interventions chirurgicales les plus efficaces à ce jour pour le traitement de l'obésité morbide. Néanmoins, malgré la fermeture de défauts de mésentériques, elle est associée à une fréquence élevée de hernie interne, même à long terme. Le bypass gastrique laparoscopique "double boucle" est une technique récente pour la reconstruction Roux-en-Y. Il a été préconisé de réduire le taux de hernie interne en raison de la préservation de l'intégrité mésentérique [1, 2]. D'autre part, nous avons des préoccupations concernant la sécurité de cette nouvelle technique. Dans notre institution, nous effectuons régulièrement presque toutes les opérations bariatriques en usage aujourd'hui, allant du cerclage gastrique à la sleeve gastrectomie, seule dérivation d'anastomose (aussi connue comme "mini bypass"), Roux-en-Y bypass gastrique. Dans le même temps, nous avons accumulé une expérience considérable dans la chirurgie révisionnelle. Nous rapportons un cas de vrillage de la boucle commune et biliopancréatique après "double boucle" Bypass gastrique qui semble être, dans une mesure variable, selon notre expérience, inhérent à cette technique.

RIASSUNTO (PAROLE CHIAVE : Bypass gastrico, Laparoscopia, Complicanze)

Il Roux-en-Y bypass gastrico (RYGB) è uno degli interventi chirurgici più efficaci fino ad oggi per il trattamento dell'obesità patologica. Tuttavia, nonostante la chiusura dei difetti mesenterici, è associato con una frequenza elevata all'ernia interna, anche a lungo termine. Il Bypass gastrico "double loop" laparoscopico è una recente tecnica per la ricostruzione Roux-en-Y. È stato proposto allo scopo di ridurre il tasso di

ernia interna grazie alla preservazione dell'integrità mesenterica [1, 2]. D'altra parte, abbiamo alcuni dubbi per quanto riguarda la sicurezza di questa nuova tecnica. Nel nostro Istituto, eseguiamo regolarmente quasi tutte le procedure chirurgiche bariatriche attualmente in uso, dal bendaggio gastrico alla sleeve gastrectomy, al bypass con singola anastomosi (noto anche come "mini bypass"), per finire con il bypass gastrico Roux-en-Y. Allo stesso tempo, abbiamo maturato una notevole esperienza nella chirurgia di revisione. Riportiamo un caso di torsione dell'ansa biliopancreatica e comune dopo Bypass gastrico "double loop" che, secondo la nostra esperienza, sembra essere, in grado variabile, insito in questa tecnica.

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