



Tips and Tricks of Converting Laparoscopic Adjustable Gastric Banding to Roux-en-Y Gastric Bypass in one Stage

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Abstract

Background Conversion of laparoscopic adjustable gastric banding (LAGB) to other operations is commonly done for significant weight recidivism and complications.

Methods This is a consecutive series of LAGB converted to RYGB done at the Bariatric and Metabolic Institute (BMI) Abu Dhabi from 2009 to 2013 for weight recidivism. Our preferred approach is to convert LAGB to LRYGB in one stage. All patients undergo upper endoscopy (EGD) and upper gastrointestinal series and are started on clear liquids 2 h after surgery without performing UGI studies. This video outlines the steps as well as tips and tricks in converting LAGB to hand-sewn ante-colic ante-gastric RYGB in one stage.

Results We performed 40 cases of conversion of LAGB to LRYGB in one or two stages, 80 % were females, mean age was 36.7 years (range 20–53), initial mean BMI was 48 kg/m² (range 35–62), initial weight was 134.6 kg (range 80–220), and weight prior to conversion to RYGB was 131.8 kg (range 90–195). We converted LAGB to RYGB in one stage in 79.4 % (27/34); 6 patients presented to us after LAGB removal. Mean EWL% at 2 years was 60 % (18–111 %). Mortality was 0 %, conversion to open 0 %, blood transfusion 2.5 %, leak was 5 %, and 7.5 % patients developed gall stones and needed cholecystectomy. Follow-up was complete for 85 % of patients (34/40).

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Conclusions Conversion of LAGB to RYGB in one step can be performed with acceptable morbidity but provides lower weight loss than expected from primary RYGB at 2 years.

Keywords LAGB · Conversion to LRYGB · One stage

Introduction

Laparoscopic adjustable gastric banding (LAGB) is considered safer than LRYGB and LSG [1]. However, long-term studies after LAGB have shown high rates of revisional surgeries due to significant weight recidivism and LAGB-related complications [2]. Revisional surgeries to convert LAGB to LSG or RYGB carry higher morbidity than primary LSG or RYGB [3]. However, meticulous attention to operative and technical details is crucial in achieving low complications in converting LAGB to LRYGB or LSG. We describe in this video the steps and our intraoperative tips and tricks in converting LAGB to laparoscopic Roux-en-Y gastric bypass (RYGB).

Methods

This is a consecutive series of LAGB converted to RYGB done at the Bariatric and Metabolic Institute (BMI) Abu Dhabi from June 2009 to March 2013 for weight recidivism; all cases done for LAGB complications were excluded. Our preferred approach is to convert LAGB to LRYGB. Preoperatively, all patients have upper endoscopy (EGD) and upper gastrointestinal series (UGI study). UGI studies are done to evaluate the function of the esophagus since LAGB can lead to esophageal dilatation and motility problems. Similarly, EGD is done to rule out erosion since we

discovered an intraoperative erosion early in our series when we were not doing routine EGD preoperatively.

This video details our intraoperative steps as well as tips and tricks in converting LAGB to RYGB. We divide and remove the LAGB early and dissect all the scar tissue from the stomach. Next, we explore the hiatus and perform mediastinal dissection to create an intra-abdominal esophagus and perform posterior hiatal hernia repair if needed. Next, we perform an ante-colic ante-gastric hand-sewn RYGB (Roux limb 100 cm and bilio-pancreatic limb 50–75 cm). We close all potential internal hernia defects and place a drain only in revisional bariatric surgery. We plan a one-stage conversion from LAGB to RYGB unless the patient has LAGB erosion or we encounter severe adhesions or unexpected findings. Patients are started on clears liquids 2 h after surgery and we do not perform UGI studies after surgery.

Follow up

Patients are followed in the outpatient clinic by bariatric surgeons, bariatric physicians, and bariatric dietitian at 1 week, 3 weeks, then 3, 6, 9, and 12 months after surgery and annually afterwards. Postoperatively, all patients received daily multivitamins with minerals, calcium carbonate, iron, and Vitamin B12 monthly injection.

Results

We performed 40 cases of conversion of LAGB to LRYGB in one or two stages, 80 % were females, mean age was 36.7 years (range 20–53), initial mean BMI was 48 kg/m² (range 35–62), initial weight was 134.6 kg (range 80–220), and weight prior to conversion to RYGB was 131.8 kg (range 90–195). We converted LAGB to RYGB in one stage in 79.4 % (27/34); 6 patients presented after LAGB removal. Mean EWL% at 2 years was 60 % (18–111 %). Mortality was 0 %, conversion to open 0 %, blood transfusion 2.5 %, leak was 5 %, and 7.5 % patients developed gall stones and needed cholecystectomy. Follow-up was complete for 85 % of patients (34/40).

Discussion

This video details our intraoperative steps in converting LAGB to RYGB as well as several tips and tricks. Our preferred approach is to convert LAGB to RYGB because revisional bariatric surgery has a higher leak rate than primary bariatric surgery, and it is easier to treat leaks after RYGB than LSG [3]. In addition, some studies have shown that conversion of LAGB to LRYGB is superior to conversion to LSG in 2 years [4]. Our steps start by making sure that the ports are

placed based on inside anatomy [5]. Next, we start dividing and removing the LAGB then all the scar tissue underneath, fundoplication sutures, and we do not dissect below the caudate lobe to avoid injury to the inferior vena cava. We plan our transection line at 4 cm from the gastro-esophageal junction measured with the open jaws of the atraumatic grasper. To achieve this transection line, all the scar tissue is dissected to decrease the thickness of the stomach prior to gastric transection. If one does not remove the scar tissue over the stomach and fundoplication sutures then the stomach might be too thick for the staplers to hold. In addition, the scar tissue underneath the LAGB can cause postoperative dysphagia (we encountered several patients at the end of surgery during intraoperative endoscopy in whom despite removing the LAGB it was not possible to reach the gastro-jejunostomy until we released all the scar tissue underneath the LAGB). Next, we explore the hiatus systematically, perform mediastinal dissection as needed and repair any potential hiatal hernia posteriorly, and we ensure the presence of intra-abdominal esophagus. This step allows us to measure the size of the pouch accurately and avoid missing a paraesophageal hernia posteriorly which can lead to a larger pouch. Next, we perform an ante-colic ante-gastric hand-sewn RYGB (Roux limb 100 cm and bilio-pancreatic limb 50–75 cm). When creating the pouch, we measure 4 cm from the gastro-esophageal junction (GE junction) using the open jaws of the atraumatic grasper coming from the right-sided abdominal port and we preserve the vascular supply at the lesser curve and transect the stomach transversely using an Echelon 60 mm Green load. Next, we create the pouch alongside the 34 Fr levacuator tube using two Echelon 60 mm Green loads. Our gastro-jejunostomy is done in a two-layered hand-sewn fashion followed by an intraoperative endoscopy [6]. We have found intraoperative endoscopy a valuable tool to check for leak, stenosis, and bleeding in LRYGB [6]. We close all potential internal hernia defects and place a drain only in revisional bariatric surgery.

In general, we plan to convert LAGB to LRYGB in one stage unless the patient has LAGB erosion or we encounter severe adhesions or unexpected findings (one patient with erosion earlier in the series when we were not doing routine preoperative EGD, and one patient with erosion of the LAGB tubing to the splenic flexure of the colon discovered intraoperatively). Similarly, a systematic review by Dang J et al. and others have found conversion of LAGB to LSG or RYGB in one or two stages is safe and acceptable [7–9].

In the video, the patient with a fistula between the LAGB tubing and the splenic flexure of the colon is seen. In this patient, removing the LAGB early allowed us to recognize this colonic fistula and we performed the conversion to LRYGB in two stages. Another reason to perform conversion of LAGB to LRYGB in two stages is presence of LAGB erosion. As shown in the video, in cases of LAGB erosion, we do not dissect near the hiatus and we perform a

gastrostomy close to the greater curvature of the stomach and do not approach the gastroesophageal (GE) junction. This approach allows us to perform the gastrotomy to remove the LAGB in a virgin area of the stomach with less chance for a leak from the gastrostomy closure site.

Our excess weight loss at 2 years is inferior to excess weight loss expected after primary RYGB. Similarly, Delko T et al. published a matched series showing that revisional RYGB can be performed in one stage but has lower excess weight loss than primary RYGB [10].

In summary, the key critical steps to conversion of LAGB to LRYGB are proper port placement to allow work in both the infra- and supramesocolic compartments, early removal of the LAGB, dissection of all the scar tissue underneath the LAGB including the fundoplication sutures and the scar tissue underneath the LAGB, exploration of the hiatus and making sure the patient has an intra-abdominal esophagus, creating a small narrow pouch of less than 4 cm, creating a hand-sewn RYGB, closure of all mesenteric defects, and performing intraoperative endoscopy.

Conclusion

Conversion of LAGB to RYGB in one step can be performed with acceptable morbidity but provides lower weight loss than expected from primary RYGB at 2 years.

Compliance with Ethical Standards

Conflict of Interest The authors have no conflict of interest declared.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

This article does not contain any studies with human participants or animals performed by any of the authors.

For this type of study, formal consent is not required.

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