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Abstract	Adjustable gastric banding was a common restrictive bariatric operation in the 1990s and early 2000s. Being a relatively simple procedure, it led the bariatric operations into laparoscopic technique. Unfortunately, there was frequent weight loss failure or regain, and complications occurred with the band, stomach, esophagus, and tubing. Accordingly, accompanying or following band removal, frequent revision was necessary. Revision to a Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), or more lately mini-gastric bypass (MGB) has been frequent. MGB is our favored revision, with the OAGB of Carbajo used where GE reflux exists. The techniques of these revisions are discussed and shown.

Keywords (separated by “ - ”)	Mini-gastric bypass - One anastomosis gastric bypass - Revision - Gastric banding failure - Bile reflux - Weight loss

Revision of Lap-Band to MGB

22

Antoine Soprani, Sergio Carandina, Imad El Kareh, Laurent Genser, and Jean Cady

22.1 Introduction

Several surgical procedures can be considered to treat morbid obesity—each with their strengths and drawbacks. One of these techniques is gastric banding, which was largely used in the 1990s and early 2000s and showed satisfying initial results. Initially popularized by the American surgeon Lubomyr Kuzmak in 1986, the use of gastric banding grew substantially in the 1990s with the advent of laparoscopy [1]. Belgian surgeon Guy-Bernard Cadière then was the first to place a Lap-Band-type adjustable band in *perigastric* position [2]. The improvement of Forsell's technique involving the Swedish adjustable gastric band (SAGB) helped significantly to reduce the risk of band slippage by placing the band around the upper part of the stomach by the cardia (*pars flaccida* approach) [3]. However, given their relatively disappointing long-term results, adjustable gastric bands have progressively been replaced by gastric bypass and sleeve gastrectomy, now offered as primary surgery. Few studies have been published regarding the use of the min-gastric bypass (MGB) as a secondary procedure following failure or complications related to gastric bands [4, 5]. Yet, bariatric surgeons are more and more led to perform revisional surgery, considering the ever-increasing number of patients showing a gastric banding failure. The conversion of band to MGB is occupying a dominant position among the different techniques available. In this chapter, we will try to demonstrate the feasibility and effectiveness of converting a band to a MGB, and address some specific points regarding the MGB taken from our own experience.

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22.2 History of Bariatric Surgery Trends in France

22.2.1 Laparoscopic Adjustable Gastric Banding

Laparoscopic Adjustable Gastric Banding (LAGB) emerged as one of the most commonly performed bariatric procedures in the world. Between 2003 and 2008, France ranked third in numbers of bariatric procedures performed annually (n = 13,722), after the USA and Brazil [6]. This could be explained by a favorable policy context and unlimited access to bariatric surgery in France. As estimated in 2007, 87.3% of bariatric procedures performed in France were LAGB [7].

22.2.2 Sleeve Gastrectomy and Gastric Bypass

Since 2011, sleeve gastrectomy (SG) has become the most common bariatric procedure performed in France, while LAGB has progressively diminished until it became the least commonly used technique [8]. Czernichow et al. used the National Health Insurance database to evaluate the number of patients who underwent a bariatric procedure in France in 2013. A total of 41,648 bariatric procedures were recorded, 30.7% of which were gastric bypasses [8]. However, this database was unable to distinguish between Roux-en-Y gastric bypass (LRYGB) and MGB due to the lack of a specific code for this procedure. The current trend suggests that MGB represents half of the bypass procedures performed annually in France.

The number of bariatric procedures is also expected to increase as a growing number of patients will require a second or even a third procedure after weight regain or in a context of medical or surgical complications.

22.3 LAGB

22.3.1 Excess Weight Loss After LAGB: Disappointing Results

Revisional surgery after failed gastric banding is required in 20–60% of cases [9]. The most important reason for LAGB removal is weight loss failure and/or weight regain. Chevallier et al. published a prospective consecutive series in 2007 with short-term results at 2 years. The authors found that EWL was <50% at 1–2 years for the majority of the 1079 obese adults who had undergone a LAGB procedure [10]. In a meta-analysis by Buchwald et al. that included 1848 patients with LAGB (1995–2003), the EWL was 47.5% at >2 years [11]. This result was nearly identical to that of the current French SAGB study [12]. Suter et al. concluded that LAGB should no longer be considered as an operation of choice for obesity, with a 5-year failure rate of 40% (EWL < 50%) in their prospective cohort of 317 patients [13]. Better results seem to have been achieved by O'Brien et al. [14]. They described their long-term outcomes after LAGB in a single institution and showed good results with 47% EWL maintained up to 15 years. However, in this Australian prospective cohort of 3327 patients with LAGB, 46% of patients at 10 years and 76% at 15 years of follow-up underwent a surgical revision with replacement of the band.

22.3.2 High Incidence of Late Complications After LAGB

LAGB has a high incidence of complications requiring revisional surgery and/or band removal. However, the need for revision for gastric banding complications decreases as the technique evolves [14]. Band prolapse initially observed in a high incidence of cases (24%) (FDA Trial 2007) has fallen to 2–4% in more recent studies due to the pars flaccida approach [15]. Another common reason for LAGB removal is mega-esophagus and/or pouch dilatation that occur in almost 10% of cases [16, 17]. Pouch dilatation is usually associated with band slippage. The incidence of intragastric band migration is ~5% in recent literature [18–20]. Regarding functional troubles, almost one- third of patients have GERD and/or food intolerance after LAGB [18]. To these surgical complications, we must also add mechanical complications linked to the wear of the band. These complications, which occurred in 12% of patients in our experience, include band leaks and disconnection or malfunction of the band's port. Finally, Suter et al. stated that each additional year of follow-up added 3–4% of major complications leading to band removal [13]. The overall reoperation rate as a result of these complications ranges from 1.7% to as high as 66.7% in some studies [13–20].

22.4 Malabsorptive Procedures After Gastric Banding Failure: MGB or LRYGP?

22.4.1 Why Suggest Gastric Bypass?

Several revisional strategies have been suggested after gastric banding failure, but there is no consensus regarding the best surgical option [21]. Weight loss after revision of pure restrictive operations is significantly better than after revision of procedures with malabsorptive components [22]. Marin-Perez et al. compared the results of conversions of failed LAGB to either laparoscopic sleeve gastrectomy (SG) or LRYGB and found that for patients who had the band removed because of insufficient weight loss, the postoperative %EWL was superior after conversion to LRYGB [23].

22.4.2 MGB Vs. LRYGB

There are currently no studies that compare the results of MGB and LRYGB as revisional procedures after LAGB failure. Moreover, in the different series published, data regarding revisional MGB and primary procedures are confused. In a randomized controlled study comparing MGB and LRYGB at 2 years follow-up, Lee et al. concluded that MGB was comparable to LRYGB regarding EWL, co-morbidity resolution and quality of life [24]. The same authors, in a retrospective study, reported at 5 years a similar efficacy in excess weight loss (MGB 72.9 vs. RYGB 60.1%) [25]. Bruzzi et al. with MGB reported a %EBMI loss of >70% at 5 years which is consistent with the literature [26–30]. This trend of significant and sustained weight reduction was confirmed in the first meta-analysis published regarding MGB [31].

22.5 Revisional MGB (r-MGB)

22.5.1 Indications for Preoperative Evaluation

As suggested by several authors, a cut-off point of 50%EWL is considered as the threshold for success after a bariatric procedure. Revision to MGB (r-MGB) is proposed to the patients by the surgeon and multidisciplinary team after analyzing the main reason for revision. Weight loss failure after LAGB is usually explained by a progressive alimentary behavior modification with the switch to a hypercaloric liquid and semi-liquid diet ("sweet eaters"). Preoperative medical weight management (3–6 months) gives the patients an opportunity to learn the dietary and behavioral changes required for bariatric surgery. Understanding the specific nutritional demands of surgery is important, and a lack of understanding of these requirements or lack of willingness to change behavior in response to them, are considered contraindications for surgery [32]. On the contrary, reflux and other upper GI problems do not represent contraindication for r-MGB.

The band has to be completely emptied a few weeks before the surgical procedure. Upper gastrografin series are recommended to localize the band and to potentially diagnose complications such as band prolapse, pouch dilatation, mega-esophagus or hiatal hernia. As for primary MGB, upper endoscopy with systematic gastric biopsies is also required before r-MGB. In some cases, upper endoscopy allows intra-gastric migration diagnosis. Rarely, endoscopic band removal is feasible.

22.5.2 Surgery

The patient is placed in French position (supine with legs apart and arms in abduction), with the surgeon standing between his legs. The abdomen is insufflated with a Veress needle at Palmer's point to a pressure of 16 mmHg. When a one-stage procedure is performed, the port is removed at the beginning of the procedure. Some Lap-bands or latest generation SAGBs come with a case equipped with claws that facilitate parietal attachment but make them difficult to remove—sometimes causing fascia and muscular deterioration. In some cases, the band itself will be incorporated with the liver or even the spleen in the case of Forsell's initial technique, in which the clamping system is tilted towards it. The difficulty then lies in freeing the

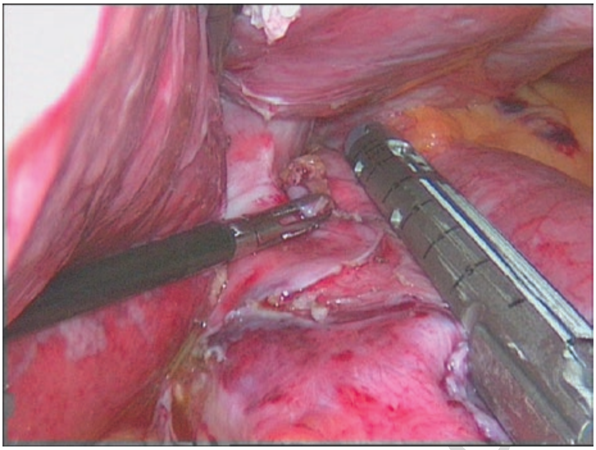

Fig. 22.1 Stapling while avoiding the band's shell and the rearranged fibrous tissue. Figures 22.1–22.8 are reproduced with the permission of Dr. Antoine Soprani

band without causing any traumatic lesion to the spleen. In most cases, however, the band is freed from adhesions with the liver and exposed by sectioning the gastro-gastric tunnel. The band is then removed. The fibrous band-shaped mark left by the band around the cardia can induce dysphagia, similar to when the band was in place, even after conversion to a MGB (in our experience, in 1.2% of cases). We think it is essential to cut this fibrous band or even to remove part of it during revisional surgery. The type of band (MidBand/LapBand/SAGB) does not predict such sort of complication. The fibrous capsule of the angle of His is then dissected in order to expose the left crus of the diaphragm.

Based on the judgment of the surgeon, a one stage or two-stage strategy is performed (i.e. proceeding directly with MGB or waiting for 3 months). During the creation of a long and narrow gastric tube, the stomach is transected with an EndoGia Tri-Staple, loaded with two "purple" and two or three "tan" cartridges, calibrated over a 36-F oro-gastric tube pressed along the lesser curvature. The last staple cartridge used can be "purple" or "black" depending on the presence of inflammatory tissue or the intention to use a buttressing material. Usually, bariatric surgeons recommend deviating the vertical gastric transection line towards the spleen to avoid inflammatory tissue and band fibrous capsule for the last staple-line (Fig. 22.1). We believe this to be a crucial point of the procedure, for two reasons:

1. Selecting the correct staple height for scar tissue does not completely eliminate the risk of leaks, but operating surgeons can take an active role in leak prevention by reducing bleeding and tissue ischemia [33]. We classified leaks after MGB based on their origin: from the gastric pouch (type 1) and from the gastrojejunal anastomosis (type 2). In MGB, the creation of a long and narrow gastric tube could increase the risk of staple disruption as seen in post-gastric sleeve leaks, especially during revisional procedures [34].
2. The deviation of the axis of the gastric tube transection towards the spleen in order to place staples in a safe area can promote the persistence of a posterior

fundus pouch, and theoretically lessen the efficacy of the r-MGB in terms of excess weight loss.

The bariatric surgeon must take these two parameters into account, in order to limit the risk of postoperative complications and create a gastric tube that is narrow enough to allow an acceptable dietary restriction following revisional surgery.

22.6 r-MGB: Weight Loss, Early and Late Postoperative Outcomes

22.6.1 EWL Results

Among bariatric procedures with malabsorptive components, revisional MGB is an effective method for patients showing inadequate weight loss after previous restrictive bariatric surgery [5]. Bruzzi et al. evaluated the outcomes of primary MGB and r-MGB performed for restrictive procedure failure (LAGB/SG/VBG) at 5 years after surgery, and did not find statistically significant differences between the two groups [35]. In the r-MGB group in particular, the mean %EBMIL was 66% at 5 years, comparing favorably with results reported in the literature for r-LRYGB [21, 36, 37].

22.6.2 A Safe Procedure (One-Step Or Two-Step Surgery)

In our 8-year (2005–2013) retrospective experience of over 2321 MGBs, overall postoperative morbidity after r-MGB (n = 875) was not different from primary MGB (p-MGB) (3.3 vs. 3.2%; p = 0.54). Complications included leaks r-MGB vs. p-MGB (16 vs. 19; p = 0.38), intra-abdominal bleeding (9 vs. 12; p = 0.65) and anastomotic stenosis. Among these patients, 700 underwent single stage removal of LAGB. Worni et al. used the Nationwide Inpatient Sample in the United States from 2005 to 2008 to compare short-term outcomes between primary RYGBP (n = 63,171) and revisional RYGBP performed concomitant with band removal (n = 3132). Patients who underwent a one-step r-RYGBP showed a higher rate of intra-operative complications (risk-adjusted OR: 2.3, $p < 0.001$) [38]. However, this study included heterogeneous centers with non-comparable bariatric surgery experience. Another study recently published used the ACS-NSQIP database for the time period between 2008 and 2014. Over these years, 64,866 patients had primary LRYGB and 1212 had one-step r-RYGBP, and no statistically significant differences were observed for the rate of postoperative mortality, sepsis and other postoperative complications between the two groups [39].

In our specialized center, one stage procedure r-MGB after gastric banding failure is safe and feasible, with acceptable complication rates comparable to primary

MGB. The average operative time was significantly longer for conversion procedures compared to p-MGB, but length of stay was comparable. As for r-LYGBP, r-MGB must be delayed in case of acute band slippage or gastric erosion [40].

22.7 Late Reoperation After r-MGB

22.7.1 High Incidence of Bile Reflux and Physiopathology

As for major late complications, in our single institution from 2005 to 2014, intractable bile reflux was significantly higher after r-MGB (n = 879) than after p-MGB (n = 1440) (2.8 vs. 0.4%; $p < 0.001$). The incidence of malnutrition requiring reversal procedures after r-MGB was comparable to p-MGB in our cohort (0.8 vs. 0.9%). According to the results of Bruzzi et al., patients in the r-MGB group had a significantly lower overall GIQLI score than patients in the p-MGB group [26]. LAGB before MGB seems to worsen the upper GI symptoms and probably promotes GE reflux disease. Facchiano et al. demonstrated that severe esophageal dyskinesia (pseudo-achalasia), although a rare complication, persists even after band removal [41]. Burton et al. explained the dyskinesia physiopathology with the increased frequency of esophageal contraction related to the level of band filling [42]. The repetitive contraction (secondary peristaltis) likely reflects some kind of esophageal reaction in an attempt to overcome the obstruction created by the LAGB. These repetitive contractions may induce esophageal shortening and lead to trans-hiatal enlargement [43–45]. This enlargement could lead to a progressive weakening of the esophageal musculature and the lower esophageal sphincter [46]. These non- specific upper symptoms appear to be reversible in most of cases [45, 46], but our findings attest that in a few cases, anatomic disruption of the esophagogastric junction promotes bile reflux after r-MGB.

22.7.2 Surgical Management of Intractable Bile Reflux: Roux-en-Y Conversion

Surgical management of intractable bile reflux after r-MGB is the Roux-en-Y conversion. In our cohort, patients were re-operated on after a mean delay of 22 months. The operative technique consisted in carrying out the second step of Lonroth LRYGB by preserving the gastrojejunal anastomosis (GJA) and the 2-m biliary limb (Figs. 22.2, 22.3, and 22.4). A 90-cm-long alimentary limb was created in order to limit the risk of malnutrition after conversion.

Some bariatric teams advocate the resection of the GJA and the restoration of the digestive tract with a linear side-to-side entero-entero-anastomosis. They perform a regular LRYGB by successively transecting the gastric pouch higher and by creating a 1.5 m long alimentary limb. The former surgical technique of conversion is a safe, easy to perform and effective procedure to cure bile reflux (Fig. 22.5). The latter has to be performed in a highly specialized institution.

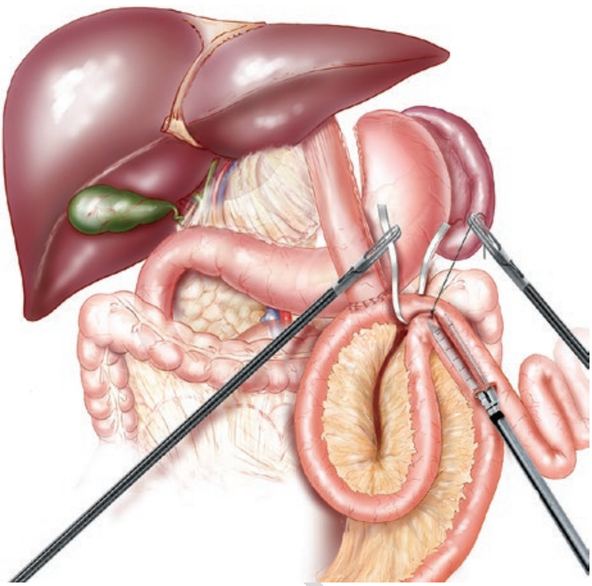

Fig. 22.2 Tying the afferent loop by the gastro-jejunal anastomosis. Creating the food loop (90 cm) from the efferent loop, then creating the foot of the Y-loop

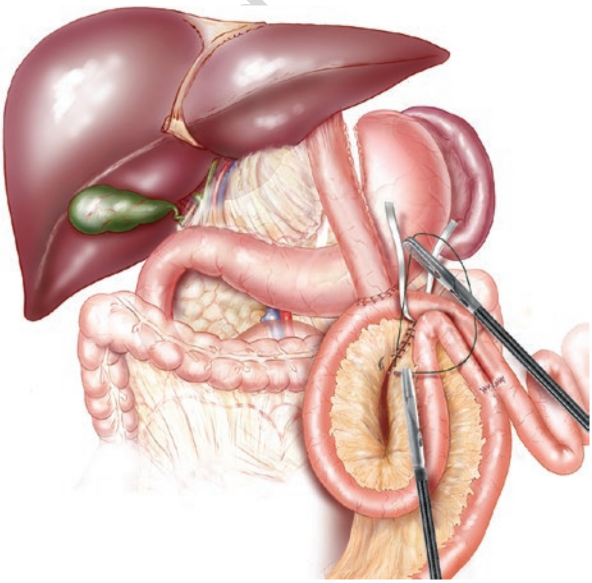

Fig. 22.3 Closing the mesenteric breach

22.8 Preventive Surgery to Avoid Bile Reflux After r-MGB

22.8.1 One Anastomosis Gastric Bypass

In 2004, Carbajo et al. described the One Anastomosis Gastric Bypass (OAGB) as a modification of the original MGB, to reduce the exposure of the gastric and esophageal mucosa to bilopancreatic secretions [47]. This procedure consists of

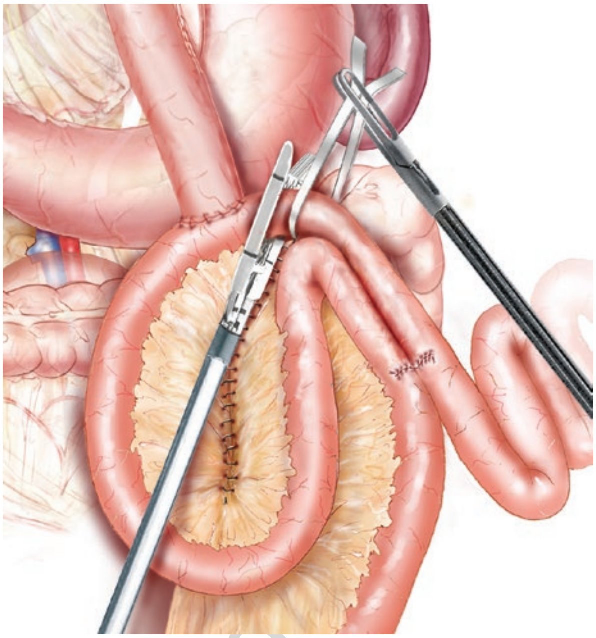

Fig. 22.4 Separating the two anastomoses

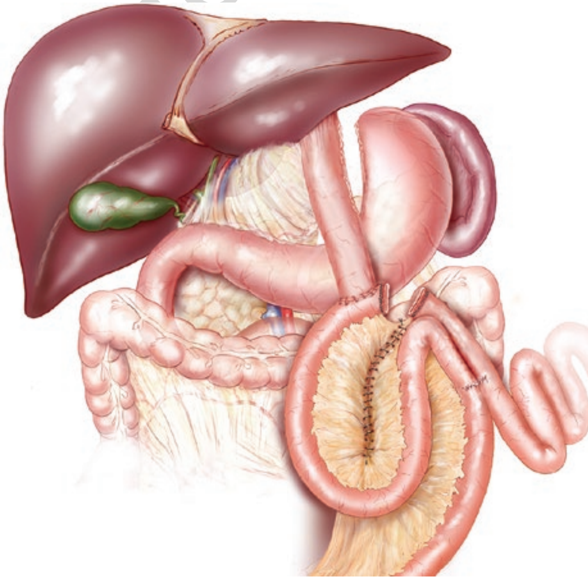

Fig. 22.5 Final aspect of the conversion from MGB to RYGB

creating a narrow latero-lateral gastro-jejunal anastomosis and fixing the jejunal loop some centimeters up to the anastomosis. In their last series [28], 27 patients had undergone revisional OAGB and no cases of bile reflux had occurred.

22.8.2 Nissen-Mini Bypass: Feasibility and Preliminary Results

High-resolution manometry (HRM) allows assessment of esophageal clearance [43], and could provide guidance for the choice between r-MGB and r-OAGB. However, this diagnostic procedure is not suggested routinely before revisional surgery. Sometimes, hiatal hernias are documented preoperatively by upper GI series and/or upper gastroscopy, challenging r-MBG indication.

We collected a series of 16 patients who underwent laparoscopic Nissen/MGB for large sliding hiatal hernia or paraesophageal hernia between 2013 and 2016. The surgery consisted of a standard MGB combined with crural repair (Figs. 22.6 and 22.7) and Nissen fundoplication using the remnant stomach as an anti reflux valve (Fig. 22.8). During this period, ten patients underwent Nissen/MGB after LAGB (seven two-stage and three one-stage procedures). None of these patients developed postoperative symptomatic bile reflux. This suggests the Nissen-MGB could be

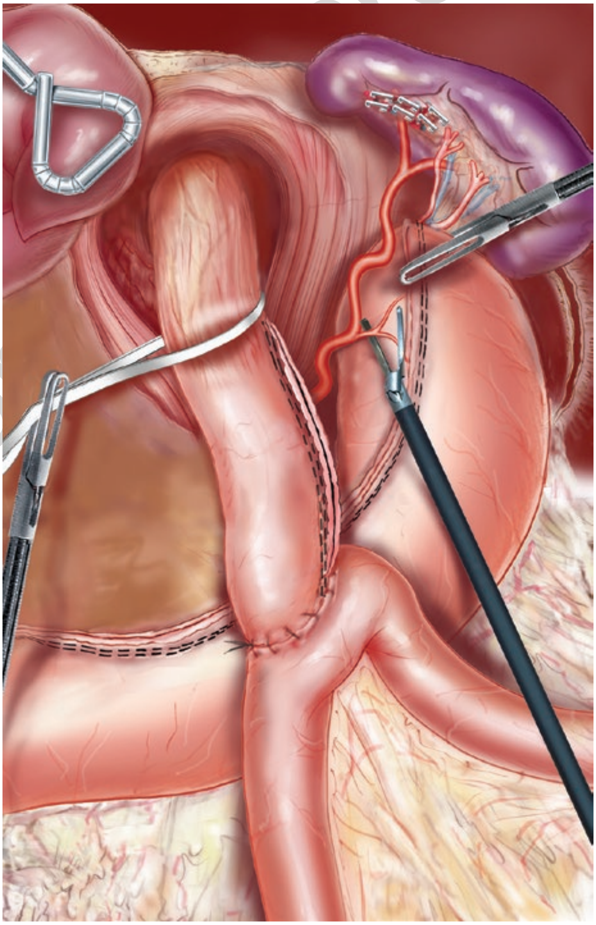

Fig. 22.6 Reduction of the hiatal hernia and resection of the hernial bag followed by the creation of a MGB. Liberation of the greater tuberosity of the excluded stomach by sectioning the remaining vessels and gastric pedicle

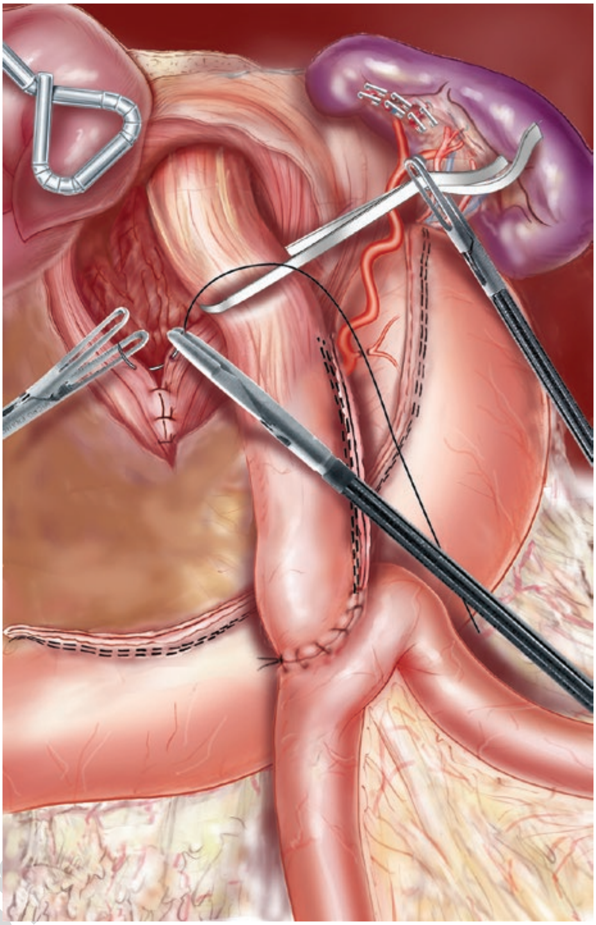

Fig. 22.7 Crural repair behind the esophagus

envisioned as an alternative to the standard MGB in order to better control bile reflux over time, in the presence of an anatomic esophagocardial disruption due to high pressure secondary to gastric banding.

Gastric banding as a way of treating morbid obesity is a procedure which is less and less carried out in France. In our experience, the risk of excess weight loss failure or weight regain is >80% at 10 years. The main reasons for this failure can be a progressive change in alimentary behavior, an intolerance to tightening leading to reflux, or complications with the band itself. To this must be added the numerous additional procedures due to the wear and tear or mechanical complications of the band. The MGB can be suggested as an alternative. This implies preparing the patient both at psychological and dietetic levels to increase the chances of success of this second bariatric surgery. In a great majority of cases, the removal of the band and the MGB procedure can be done at the same time without increasing the risk of postoperative complications, although this significantly increases surgical time. To this day, there is no contraindication to using the MGB as revisional surgery, and the

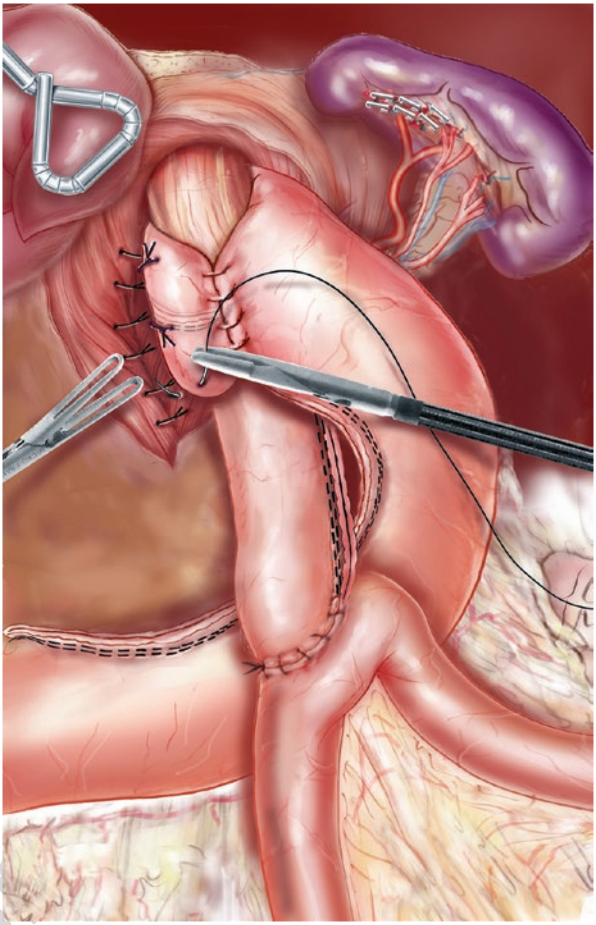

Fig. 22.8 Creation of an anti-reflux valve around the esophagus following Nissen's technique (360°)

results in terms of excess weight loss are comparable to the RYGB. The residual post-gastric band pseudo-achalasia could alter the functional outcome and the quality of life of patients with a MGB. Additional preoperative investigations which are not suggested routinely (esophageal manometry) would be necessary to identify patients at risk and decide on a better-suited procedure (OAGB or Nissen/MGB).

Conclusion

Laparoscopic gastric banding was a widely performed restrictive bariatric operation. However, weight loss failure frequently ensued, and gastric, esophageal, band, reflux, hiatal hernia, and maladaptive eating complications often occurred. This has led to revisions to SG and LRYGB, which occasionally required removal of the band as a prior separate operation, according to the surgeon's judgment. Removal of fibrous capsule was frequently indicated at the reoperation. For GE reflux, repair of hiatal hernia and Nissen fundoplication was occasionally needed. Revision to a MGB has been a relatively simple and successful method to obtain malabsorptive weight loss. With reflux, the one-anastomosis gastric bypass of Carbajo has been highly successful.

References

1. Kuzmak LI. A review of seven years' experience with silicone gastric banding. Obes Surg. 1991;1:403–8.
2. Cadière GB, Bruyns J, Himpens J, Favretti F. Laparoscopic gastroplasty for morbid obesity. Br J Surg. 1994;81:1524–9.
3. Catona A, La Manna L, Forsell P. The Swedish adjustable gastric band: laparoscopic technique and preliminary results. Obes Surg. 2000;10:15–21.
4. Rutledge R. Revision of failed gastric banding to mini-gastric bypass. Obes Surg. 2006;16:521–3.
5. Piazza L, Di Stefano C, Ferrara F, Bellia A, Vacante M, Biondi A. Revision of failed primary adjustable gastric banding to mini-gastric bypass: results in 48 consecutive patients. Updat Surg. 2015;67:433–7.
6. Buchwald H, Oien DM. Metabolic/bariatric surgery worldwide 2008. Obes Surg. 2009;19:1605–11.
7. Basdevant A, Paita M, Rodde-Dunet MH, Marty M, Noguès F, Slim K, Chevallier JM. A nationwide survey on bariatric surgery in France: two years prospective follow-up. Obes Surg. 2007;17:39–44.
8. Czernichow S, Paita M, Nocca D, Msika S, Basdevant A, Millat B, Fagot-Campagna A. Current challenges in providing bariatric surgery in France: a nationwide study. Medicine. 2016;95:e5314.
9. Carandina S, Maldonado PS, Tabbara M, Valenti A, Rivkine E, Polliand C, Barrat C. Two-step conversion surgery after failed laparoscopic adjustable gastric banding. Comparison between laparoscopic Roux-en-Y gastric bypass and laparoscopic gastric sleeve. Surg Obes Relat Dis. 2014;10:1085–91.
10. Chevallier JM, Paita M, Rodde-Dunet MH, Marty M, Nogues F, Slim K, Basdevant A. Predictive factors of outcome after gastric banding: a nationwide survey on the role of center activity and patients' behavior. Ann Surg. 2007;246:1034–9.
11. Buchwald H, Avidor Y, Braunwald E, Jensen MD, Pories W, Fahrbach K, Schoelles K. Bariatric surgery: a systematic review and meta-analysis. JAMA. 2004;292:1724–37.
12. Ribaric G, Buchwald JN, d'Orsay G, Daoud F, French Health Technology Assessment Body (Haute Autorité de Santé [HAS]) Swedish Adjustable Gastric Band (SAGB™) Study Group. 3-year real-world outcomes with the Swedish adjustable gastric band™ in France. Obes Surg. 2013;23:184–96.
13. Suter M, Calmes JM, Paroz A, Giusti V. A 10-year experience with laparoscopic gastric banding for morbid obesity: high long-term complication and failure rates. Obes Surg. 2006;16:829–35.
14. O'Brien PE, MacDonald L, Anderson M, Brennan L, Brown WA. Long-term outcomes after bariatric surgery: 15-year follow-up of adjustable gastric banding and a systematic review of the bariatric surgical literature. Ann Surg. 2013;257:87–94.
15. Chevallier JM, Zinzindohoué F, Douard R, Blanche JP, Berta JL, Altman JJ, Cugnenc PH. Complications after laparoscopic adjustable gastric banding for morbid obesity: experience with 1,000 patients over 7 years. Obes Surg. 2004;14:407–14.
16. Dargent J. Esophageal dilatation after laparoscopic adjustable gastric banding: definition and strategy. Obes Surg. 2005;15:843–8.
17. Yang CS, Lee WJ, Wang HH, Huang SP, Lin JT, Wu MS. Spectrum of endoscopic findings and therapy in patients with upper gastrointestinal symptoms after laparoscopic bariatric surgery. Obes Surg. 2006;16:1232–7.

18. Carandina S, Tabbara M, Galiay L, Polliand C, Azoulay D, Barrat C, Lazzati A. Long-term outcomes of the laparoscopic adjustable gastric banding: weight loss and removal rate. A single center experience on 301 patients with a minimum follow-up of 10 years. Obes Surg. 2017;27:889–95.
19. Chapman AE, Kiroff G, Game P, Foster B, O'Brien P, Ham J, Maddern GJ. Laparoscopic adjustable gastric banding in the treatment of obesity: a systematic literature review. Surgery. 2004;135:326–51.
20. Stroh C, Hohmann U, Schramm H, Meyer F, Manger T. Fourteen-year long-term results after gastric banding. J Obes. 2011;2011:128451.
21. Elnahas A, Graybiel K, Farrokhyar F, Gmora S, Anvari M, Hong D. Revisional surgery after failed laparoscopic adjustable gastric banding: a systematic review. Surg Endosc. 2013;27:740–5.
22. Brolin RE, Cody RP. Weight loss outcome of revisional bariatric operations varies according to the primary procedure. Ann Surg. 2008;248:227–32.
23. Marin-Perez P, Betancourt A, Lamota M, Lo Menzo E, Szomstein S, Rosenthal R. Outcomes after laparoscopic conversion of failed adjustable gastric banding to sleeve gastrectomy or Roux-en-Y gastric bypass. Br J Surg. 2014;101:254–60.
24. Lee WJ, Yu PJ, Wang W, Chen TC, Wei PL, Huang MT. Laparoscopic Roux-en-Y versus mini-gastric bypass for the treatment of morbid obesity: a prospective randomized controlled clinical trial. Ann Surg. 2005;242:20–8.
25. Lee WJ, Ser KH, Lee YC, Tsou JJ, Chen SC, Chen JC. Laparoscopic Roux-en-Y vs. mini-gastric bypass for the treatment of morbid obesity: a 10-year experience. Obes Surg. 2012;22:1827–34.
26. Bruzzi M, Rau C, Voron T, Guenzi M, Berger A, Chevallier JM. Single anastomosis or mini-gastric bypass: long-term results and quality of life after a 5-year follow-up. Surg Obes Relat Dis. 2015;11:321–6.
27. Carbajo M, García-Caballero M, Toledano M, Osorio D, García-Lanza C, Carmona JA. One-anastomosis gastric bypass by laparoscopy: results of the first 209 patients. Obes Surg. 2005;15:398–404.
28. Carbajo MA, Luque-de-León E, Jiménez JM, Ortiz-de-Solórzano J, Pérez-Miranda M, Castro-Alija MJ. Laparoscopic one-anastomosis gastric bypass: technique, results, and long-term follow-up in 1200 patients. Obes Surg. 2017;27:1153–67.
29. Noun R, Zeidan S, Riachi E, Abboud B, Chalhoub V, Yazigi A. Mini-gastric bypass for revision of failed primary restrictive procedures: a valuable option. Obes Surg. 2007;17:684–8.
30. Musella M, Susa A, Greco F, De Luca M, Manno E, Di Stefano C, Milone M, Bonfanti R, Segato G, Antonino A, Piazza L. The laparoscopic mini-gastric bypass: the Italian experience: outcomes from 974 consecutive cases in a multicenter review. Surg Endosc. 2014;28:156–63.
31. Padwal R, Klarenbach S, Wiebe N, Birch D, Karmali S, Manns B, Hazel M, Sharma AM, Tonelli M. Bariatric surgery: a systematic review and network meta-analysis of randomized trials. Obes Rev. 2011;12:602–21.
32. Mechanick JI, Youdim A, Jones DB, Timothy Garvey W, Hurley DL, Molly McMahon M, Heinberg LJ, Kushner R, Adams TD, Shikora S, Dixon JB, Brethauer S. Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient – 2013 update: cosponsored by American Association of Clinical Endocrinologists, the Obesity Society, and American Society for Metabolic & Bariatric Surgery. Surg Obes Relat Dis. 2013;9:159–91.
33. Huang R, Gagner M. A thickness calibration device Is needed to determine staple height and avoid leaks in laparoscopic sleeve gastrectomy. Obes Surg. 2015;25:2360–7.
34. Genser L, Carandina S, Tabbara M, Torcivia A, Soprani A, Siksik JM, Cady J. Presentation and surgical management of leaks after mini-gastric bypass for morbid obesity. Surg Obes Relat Dis. 2016;12:305–12.
35. Bruzzi M, Voron T, Zinzindohoue F, Berger A, Douard R, Chevallier JM. Revisional single-anastomosis gastric bypass for a failed restrictive procedure: 5-year results. Surg Obes Relat Dis. 2016;12:240–5.

36. Zingg U, McQuinn A, DiValentino D, Kinsey-Trotman S, Game P, Watson D. Revisional vs. primary Roux-en-Y gastric bypass – a case-matched analysis: less weight loss in revisions. Obes Surg. 2010;20:1627–32.
37. Thereaux J, Corigliano N, Poitou C, Oppert JM, Czernichow S, Bouillot JL. Five-year weight loss in primary gastric bypass and revisional gastric bypass for failed adjustable gastric banding: results of a case-matched study. Surg Obes Relat Dis. 2015;11:19–25.
38. Worni M, Østbye T, Shah A, Carvalho E, Schudel IM, Shin JH, Pietrobon R, Guller U. High risks for adverse outcomes after gastric bypass surgery following failed gastric banding: a population-based trend analysis of the United States. Ann Surg. 2013;257:279–86.
39. Ramly EP, Safadi BY, Aridi HD, Kantar R, Mailhac A, Alami RS. Concomitant removal of gastric band and gastric bypass: analysis of outcomes and complications from the ACS-NSQIP Database. Obes Surg. 2017;27:462–8.
40. Fournier P, Gero D, Dayer-Jankechova A, Allemann P, Demartines N, Marmuse JP, Suter M. Laparoscopic Roux-en-Y gastric bypass for failed gastric banding: outcomes in 642 patients. Surg Obes Relat Dis. 2016;12:231–9.
41. Facchiano E, Scaringi S, Sabate JM, Merrouche M, Jouet P, Coffin B, Msika S. Is esophageal dysmotility after laparoscopic adjustable gastric banding reversible? Obes Surg. 2007;17(6):832–5.
42. Burton PR, Brown WA, Laurie C, Korin A, Yap K, Richards M, Owens J, Crosthwaite G, Hebbard G, O'Brien PE. Pathophysiology of laparoscopic adjustable gastric bands: analysis and classification using high-resolution video manometry and a stress barium protocol. Obes Surg. 2010;20:19–29.
43. Cruiziat C, Roman S, Robert M, Espalieu P, Laville M, Poncet G, Gouillat C, Mion F. High resolution esophageal manometry evaluation in symptomatic patients after gastric banding for morbid obesity. Dig Liver Dis. 2011;43:116–20.
44. de Jong JR, Besselink MG, van Ramshorst B, Gooszen HG, Smout AJ. Effects of adjustable gastric banding on gastroesophageal reflux and esophageal motility: a systematic review. Obes Rev. 2010;11:297–305.
45. Robert M, Golse N, Espalieu P, Poncet G, Mion F, Roman S, Boulez J, Gouillat C. Achalasia-like disorder after laparoscopic adjustable gastric banding: a reversible side effect? Obes Surg. 2012;22:704–11.
46. Lipka S, Katz S. Reversible pseudoachalasia in a patient with laparoscopic adjustable gastric banding. Gastroenterol Hepatol. 2013;9:469–71.
47. García-Caballero M, Carbajo M. One anastomosis gastric bypass: a simple, safe and efficient surgical procedure for treating morbid obesity. Nutr Hosp. 2004;19:372–5.

Author Queries

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Queries	Details Required	Author's Response
AU1	Please check whether the author name "Imad El Kareh" is appropriate.	
AU2	Please check whether the caption of Fig. 22.1 is appropriate.	