



Laparoscopic Sleeve Gastrectomy versus Laparoscopic Mini Gastric Bypass Surgery for Treatment of Morbid Obesity Regarding Pattern of Postoperative Weight Loss

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ABSTRACT

Background: In people with morbid obesity and comorbidities, surgical treatment for obesity (bariatric surgery) is the only therapeutic approach linked with clinically substantial and reasonably persistent weight reduction. **Aim and objectives:** Indications, complications, postoperative weight reduction, and postoperative quality of life were compared and contrasted between laparoscopic sleeve gastrectomy and laparoscopic mini gastric bypass, two significant surgical methods for treatment of morbid obesity. **Conclusion:** Both the LSG and the LRYGB have been shown to have comparable short- and medium-term outcomes in terms of the resolution of diabetes and the loss of excess weight. Even though there are not many published data, long-term studies at 5 years and beyond suggest that EBWL is more than 50 %.

Keywords: Laparoscopic Sleeve Gastrectomy; Laparoscopic Mini Gastric Bypass Surgery; Morbid Obesity; Weight Loss.

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Laparoscopic sleeve gastrectomy and laparoscopic mini gastric bypass, two important surgical procedures for the treatment of morbid obesity, are compared and contrasted in terms of indications, complications, postoperative weight reduction, and postoperative quality of life.

Surgical Management of Morbid Obesity

In people with morbid obesity and comorbidities, surgical treatment for obesity (bariatric surgery) is the only therapeutic approach linked with clinically substantial and reasonably persistent weight reduction. Bariatric surgery has been shown to significantly reduce the health risks associated with extreme obesity if it is done by a skilled surgeon on a carefully chosen patient population and backed by a strong multidisciplinary care team (3).

Patients who have obesity-related comorbid diseases with a body mass index

Introduction

Excessive fat storage, as seen in cases of obesity, has been linked to a variety of poor health outcomes, including a shortened lifespan and an rise in the number of people suffering from chronic illnesses (1).

The community as a whole benefits monetarily and health-wise from efforts to combat obesity. Obesity may be treated in a number of methods, some of which are more complicated than others. Surgery nowadays has proven beneficial in helping patients lose weight and live longer (2).

Only bariatric surgery can guarantee long-term success in reducing excess weight. Bariatric surgery has been shown to significantly reduce the health risks associated with extreme obesity if it is done by a skilled surgeon on a carefully chosen patient population and backed by a strong multidisciplinary care team (3).

between the doctor and patient when considering surgical choices (4). There are many different types of bariatric surgery, but they may be broken down into three broad categories: those that are mostly restrictive, those that are primarily malabsorptive, and those that are primarily mixed (5).

(BMI) of Forty kg/m² or higher or higher than that, including hypertension, impaired glucose tolerance, diabetes mellitus, hyperlipidemia, and obstructive sleep apnea, should be evaluated for surgical intervention. Reoperation, gallbladder disease, and malabsorption are only some of the long-term repercussions that should be discussed

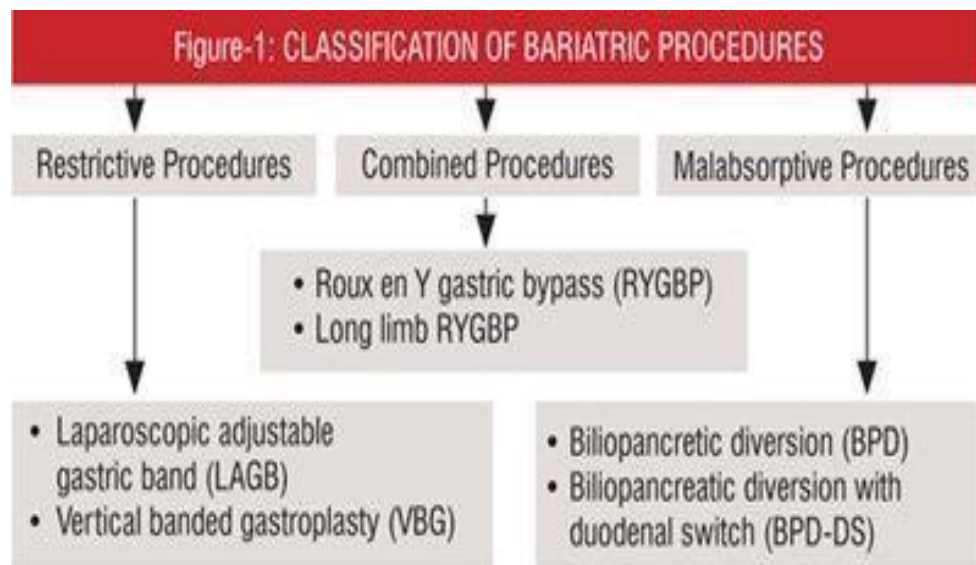


Fig. (1): Procedures based on restriction and malabsorption (6).

option when obesity is coupled with type 2 diabetes (8).

In hereditary diseases like Prader-Willi, bariatric surgery should be undertaken only after thorough deliberation among an experienced medical, paediatric, and surgical team (9).

The GB offers the greatest weight management in teenage patients, but it demands attention to the follow-up, which is not always assured in such individuals. When compared to the GB technique, which carries the risk of malabsorptive complications, the SG surgery seems to be a safe and effective choice for treating teenage obesity, with weight reduction variations and resolution of co-morbidities on par (10).

More research is required to determine which characteristics, such as level of physical activity and the presence or

It would be great for patients to be able to consume a broad range of meals while yet being able to manage their volume and/or absorption after a bariatric treatment that is both safe and simple to conduct. It will be patient-acceptable, need little to no upkeep, and be simple to reverse if required (7).

In these years, bariatric surgery became an integral part of the therapy for diabetes. In reality, medical therapy methods focusing mainly on glucose management have extremely little efficacy in managing amounts of glucose in the blood of morbidly obese people. In order to keep type 2 diabetes under control for good, bariatric surgery has been shown successful. Though some research suggests that even purely restrictive operations may be successful, gastric bypass appears to be the best

Three years after surgery, patients who had LSG lost more weight and had better control of their appetite than those who had LRYGB (8).

Because LSG decreases ghrelin levels, lower hunger and increased fullness are two of its key mechanisms for weight reduction, with the reduced stomach size (16).

The LSG has a number of benefits, including being easier to do technically, taking less time in the operating room, keeping the intestines working normally, and keeping the pylorus intact (17).

For individuals who are morbidly obese, it may be used as a first step or as a final solution. When the intraoperative environment is unstable or the patient is at high risk, LSG is the preferred procedure (18).

Patients should be counselled on the fact that LSG may have varying impact on reflux symptoms as well as the probability of developing de novo reflux in the future. They need to know what to expect from surgery and be willing to accept the risks involved, just as with any other medical operation. Long-term nutritional, lifestyle, and behavioural changes need the patient to be intrinsically motivated to maintain them (18).

It is important to do extra tests on morbidly obese people in order to detect any underlying medical conditions. Surgeons, dietitians, anesthesiologists, psychologists, cardiologists, pulmonologists, endocrinologists, gastroenterologists, orthopedists, and many more experts are needed to study these individuals thoroughly (19).

All patients get an abdominal ultrasound before surgery, primarily to evaluate liver function and rule out the presence of any intra-abdominal disease. The liver is soft and enlarged in morbidly obese people, and they are at increased risk for

absence of mental health issues, are predictive of prognosis following bariatric surgery. Predictive variables of success will be identified, allowing for the development of therapies tailored to individual patients' need. As with younger obese patients, senior people who are overweight must undergo a thorough multidisciplinary review prior to any consideration of bariatric surgery (11)

The risks of problems after a sleeve gastrectomy (SG) are modest, and the long-term nutritional inadequacies are minimal. In 1988, SG was conceived and done as a component of a hybrid malabsorption operation called biliopancreatic diversion (BPD) with duodenal switch (DS) due to the high prevalence of marginal ulcers at the gastro-ileum anastomosis in the original Scopinaro BPD procedure (12).

Laparoscopic Ren et al. established BPD-DS feasibility in the year 2000. Two-stage laparoscopic BPD-DS, with laparoscopic SG (LSG) initially and BPD-DS after an average 11-month gap, was advocated due to the high risk of complications and death in their early experience (13).

In addition, recent experimental animal studies have shown that SG promotes changes in bacteria in the gut, which play a significant role in the development of the substance's metabolic effects. (14).

LSG was officially recognised as a bariatric surgery by the American Society for Metabolic and Bariatric Surgery (ASMBS) in a position statement released in 2010. In 2011, according to a survey by the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO), LSG overtook gastric bypass (GBP) as the most common bariatric operation, with a 27.8 percent success rate compared to 46.6 percent for GBP. This represented a fivefold increase compared to data from a similar questionnaire in 2008. (15).

treatment continuity. The importance of maintaining a healthy diet and getting regular exercise should be emphasised at every appointment. An successful weight reduction programme should include regular support group sessions (18).

Complications: Mortality rates after surgery vary from 0.1% to 0.5%, and morbidity rates from 0% to 12%. The most crucial step toward a successful resolution of problems is a prompt diagnosis. There are typically complex treatment requirements that need the use of bariatric facilities staffed with by trained medical professionals. Only in a few few circumstances is surgical intervention necessary (21).

Staple line leaks and GERD are the two most contentious problems (GERD). Critical vascularization of the gastroesophageal junction, intraluminal pressure, and abdominal pressure are three important aspects to consider in their pathogenesis (22).

Leak

A leak at the staple line is the most terrifying potential consequence of bariatric surgery. Depending on how soon or how long after surgery symptoms first appear, leak may be labelled as either early or late. A leak that is detected in the first three postoperative days is considered to be an early leak. If a leak is discovered a week after surgery, it is considered a late leak.

Although staple line buttressing was shown to greatly decrease bleeding in all published investigations, it showed mixed results in preventing gastric leak. Buttressing the staple line with absorbable polymer membrane considerably decreased the leak rate in LSG compared to over stitching, bovine pericardium strips, or no reinforcement in a recent evaluation of 88 articles reporting on 8,920 patients (20).

developing non-alcoholic steatohepatitis. All patients have a venous doppler examination of both lower extremities to eliminate the possibility of a deep vein thrombosis being present (18).

They need to have a nutritionist engaged in their care from the beginning. The nutritionist assisted in educating the patients on the need of adjusting their diets and lifestyles after surgery (18).

Patients diagnosed with severe OSA who have not received treatment in the past often begin using continuous positive airway pressure (CPAP) while sleeping at least 5–7 days prior to surgery. Prior to surgery, many patients are encouraged to decrease the size of their liver by decreasing weight, and a calorie-restricted diet is suggested for the two weeks leading up to the operation (18).

Post-operation: In a high dependency facility, patients spend the night under constant observation. For the prevention of deep vein thrombosis, medical professionals often recommend early ambulation of patients, the use of a sequential pneumatic compression device, and the injection of heparin under the skin. Most patients are able to walk again within four to six hours following surgery. As a means of avoiding atelectasis, deep breathing exercises and incentive spirometry are recommended. After the first day, patients may have clear drinks like water and juice (20).

Follow Up: Patients are contacted at certain intervals to do follow-up. After surgery, patients often return for their initial checkup 7 days later. In the second half of the first year, patients will return for follow-up appointments every three months. The first year should be followed up on every six months, the second every two years, and the third every year after that. It has already been shown that nutritional monitoring is a crucial part of

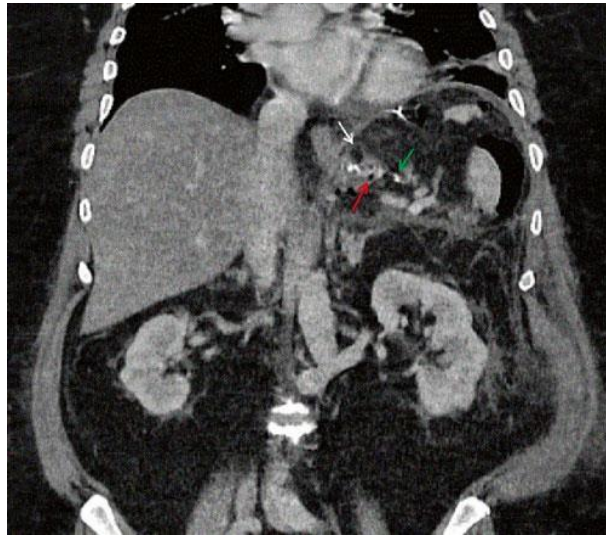


Fig. (2): Intense contrast-enhanced CT scan reveals acute leaking after laparoscopic stoma repair. You can see the lumen of the sleeve (shown by the white arrow), the trace of contrast material that can be seen outside the lumen (shown by the green arrow), as well as the air foci that can be seen close to the construction of the sleeve (indicated by the red arrow) (23).

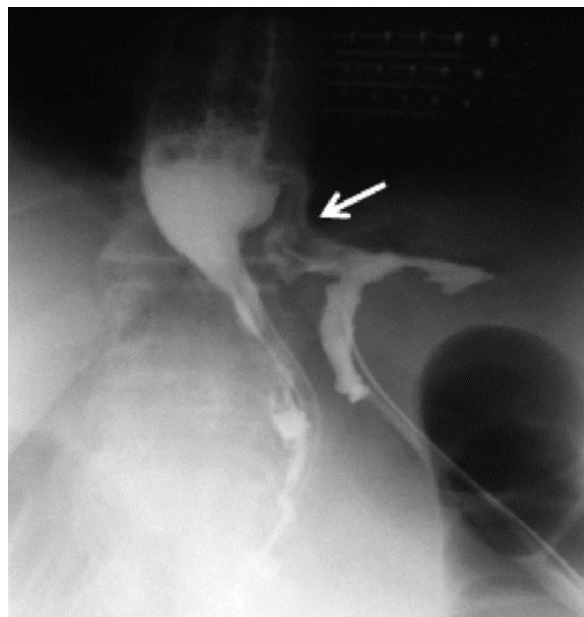


Fig (3): Upper gastrointestinal (GI) swallows with gastrografin are able to identify leakage after laparoscopic surgery for the stoma (arrow).

However, there is ongoing controversy about the clinical and pathophysiological connection between SG and GERD. Some studies show a reduction in GERD symptoms after surgery, while others report an increase (24).

line, an omental vascular, a spleen lesion, a liver laceration, or a trochar site. Rarely, intraluminal bleeding might occur as a consequence of a haemorrhage from the staple line. Extraluminal bleeding often causes tachycardia, a sudden drop in blood pressure, an increase in the outflow

Hemorrhage

One to six percent of patients undergoing LSG have bleeding complications. The blood loss may occur either outside or inside of the blood vessel. Extraluminal bleeding may occur due to a number of different sources, including the staple

As a diagnostic and therapeutic tool, endoscopy is indispensable. Endoscopic dilations, which are repeated in certain cases, are the initial line of treatment. Endoscopic stent placement is a viable option that should be explored. Reoperation of the patient is an option if symptoms associated with nutritional deficiencies persist (26).

The procedure of switching to Roux-en-Y gastric bypass is clinically sound. In addition, stricturoplasty, in which the stenotic tract is surgically cut open using a laparoscope, has been advocated (Vilallonga et al., 2013).

of sanguineous drains, and a reduction in hematocrit.

Nutritional Deficiency

When compared to LRYGBP, the incidence of nutritional deficits is lower in patients who have undergone LSG. During the course of follow-up care, nutritional monitoring is an essential need in order to facilitate the early detection and treatment of malnutrition. After receiving LSG, patients often have deficiencies in thiamine, vitamin D3, vitamin B12, zinc, and folic acid. Patients who have had a sleeve gastrectomy should be provided with nutritional supplements on a consistent basis after the procedure (Gehrer et al., 2010).



Fig (4): Gastric tubular dysfunction characterised by narrowing of the tubule in the middle third (22).

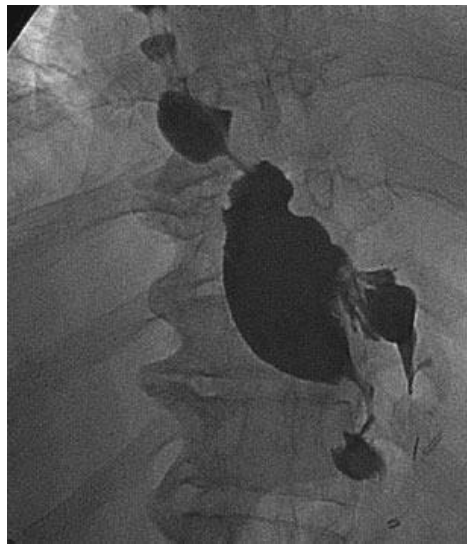


Fig. (5): Upper GI contrast X-ray after sleeve gastrectomy reveals organic stenosis and gastric leak. Prestenosis Segment Dilation (22).

Table 3: Excess weight decreased as a Compared to laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic adjustable gastric banding (LAGB), the weight reduction obtained one year after LSG was 13% lower; nevertheless, it was 77% greater than that achieved with gastric banding (30).

Research comparing LSG with LRYGB found that LSG patients had less problems and After a year, the weight loss is equal. Studies that compare the risks and benefits of LSG and LRYGB conclude that the former is the safer option for patients. In addition, after 2 years, the weight loss is similar (31).

In terms of weight reduction after one year, the Laparoscopic Sleeve Gastrectomy (LSG) is in the middle of the band and the bypass, according to the first data from the American College of Surgeons Bariatric Surgery Center Network. Body mass index (BMI) drops by an average of 11.87 kg/m² after LSG in patients. LRYGB has a BMI decrease of 15.34 kg/m², but LAGB's is just 7.05 kg/m². A meta-analysis of 24 studies encompassing 1749 patients indicates a mean percentage of 60.7% for EBWL with

LSG Outcomes

Aspects of Technique That Influence the Outcome

Laparoscopic sleeve gastrectomy is a state-of-the-art surgical treatment. Completeness of fundus resection, Variations in pylorus to larger curvature resection distance, antrum to optimal bougie size, and detection and treatment of hiatus hernia will all make standardisation of the surgery challenging (28).

Pattern of Postoperative Weight Loss Short-Term Weight Loss

There is a lack of data about how much weight is lost and how long it lasts following laparoscopic sleeve gastrectomy (LSG). After 1–2 years after LSG, the excess body weight reduction (EBWL) is between 47% and 76%, according to a systematic review and many retrospective investigations. Variation in outcomes is mostly attributable to variations in surgical technique. Several clinical studies have shown the efficacy of laparoscopic sleeve gastrectomy (LSG) for weight loss, with some claiming surgery is even more effective than gastric bypass or gastric banding (29). proportion of body weight up to 4 years after LSG (28)

Although there is a retrospective research demonstrating outstanding outcomes, Short-term weight loss with an LSG is less than that from an LRYGB, but both procedures are effective (37).

Sixty-eight percent of 74 super-obese patients who did not have a second treatment after LSG achieved EBWL six to eight years later, and seventy-seven percent had an improvement or remission of their diabetes, according to a prospective database study. The patient and surgeon have the choice of pursuing further therapy after a successful Laparoscopic Sleeve Gastrectomy (LSG), including a duodenal switch, a re-sleeve, or a Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) (38).

Patients who were provided LSG alone had a re-operation risk between 0.7% and 25%, according to a study of the literature. Of those who have LSG as a first surgery, 9.6–28.5% undergo a secondary procedure. The length and thoroughness of follow-up are key factors in determining this rate (39).

The MGB technique is brisk, straightforward, and risk-free. It's reversible and edible, just in case. Short-term and long-term studies using MGB have showed excellent weight loss, satisfactory resolution of co-morbidities, and high levels of patient satisfaction (40). Technical demands, internal hernias, gastrojejunal strictures, delayed weight return, and difficulty reversing and revising the RYGB all contribute to make it less than optimal (41).

More than 43 instances of gastric and esophageal cancer have been documented following various bariatric procedures; however, after MGB, no occurrences of gastric channel or esophageal carcinoma have been reported (42).

a range of 3 to 36 months of follow-up after LSG (32).

Both laparoscopic larger curve plication and single anastomosis gastric bypass are becoming more common options for patients. A study conducted in India found that At one year, the percentage of patients who were EBWL following LSG was 63% compared to 69% after single anastomosis gastric bypass (mini gastric bypass, Omega loop bypass). Compared to patients who had a single anastomosis gastric bypass, those who underwent a laparoscopic sleeve gastrectomy were more likely to develop GERD (21.1%) following surgery (2.8 percent). (33).

Long-Term Weight Loss: After 5 years, studies that track patients after surgery are considered long-term. As patient follow-up times increase, we may need to revise this definition. The 5-year follow-up rate was 90% in a research where the surgeon used a gastroscope as a bougie to build a thin sleeve and began transection 3 cm from the pylorus (34).

Another retrospective research found that by year five, 40% of patients had achieved more than 50% EBWL, and 10% of patients had had a second surgery. At five years, another research found that 57% of patients had achieved EBWL (35).

Weight reduction of more than 50% at five years and beyond has been observed by several research (28).

Percent EBWL was 62.3%, 53.8%, 43%, and 54.8% after 5, 6, 7, and 8 or more years after LSG, respectively, In a recent meta-analysis of 16 studies, researchers found that including a total of 492 individuals. These long-term findings provide credence to the idea that LSG is an effective bariatric treatment for producing the kind of weight reduction that meets the Reinhold criterion for success (36).

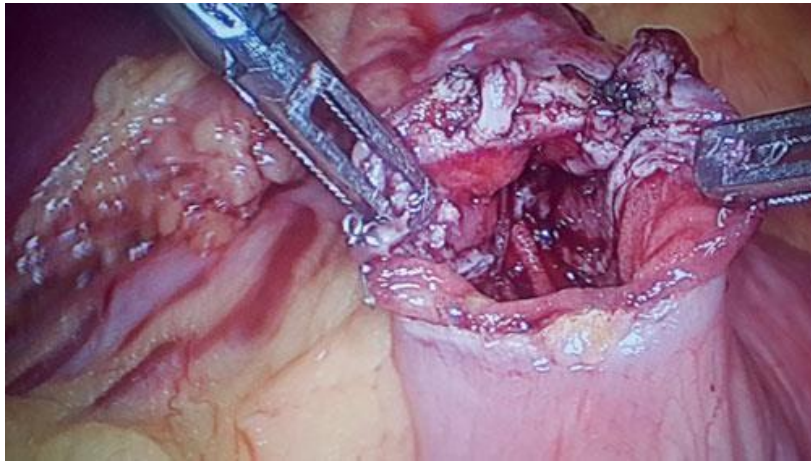


Fig. (6): The gastro-interior jejunostomy's and exterior are examined for signs of bleeding and the integrity of the anastomosis. In order to prepare the efferent limb for closure of the defect, the bougie is introduced into the anastomosis very slowly and gently (43).

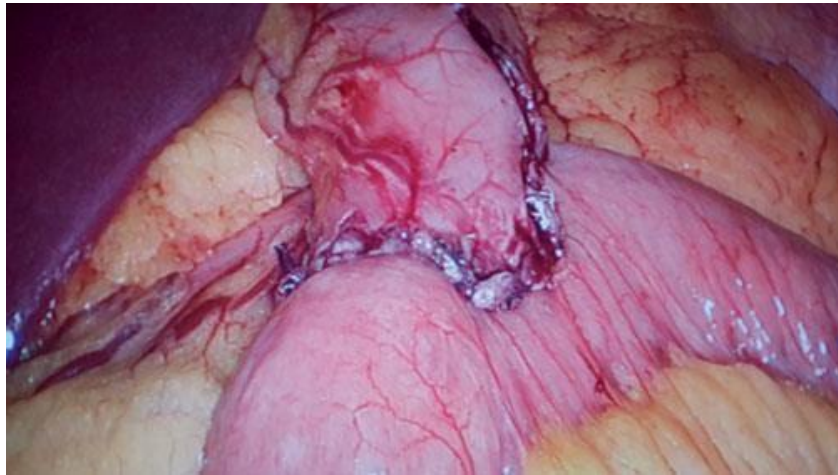


Fig. (7): The completed mini-gastric bypass (43).

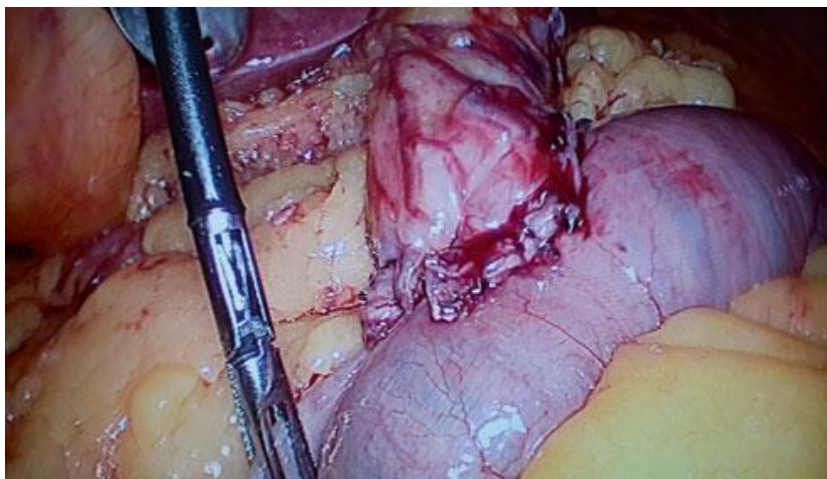


Fig. (8): The inflated loop provides a different perspective on the finished MGB. It is important to remember that the MGB table does not typically have suction or watering equipment on it, and that clips are not employed. In modern procedures, sutures are no longer necessary (43).

Postoperative Period and Follow-Up: Within 1-2 hours following surgery, patients are able to walk without assistance. After the patient has been awake for a few hours, they may

begin drinking clear liquids by mouth. It typically takes between one and two days before a patient is ready to go home after being admitted. Data on patients' duration of stay, late complications (those lasting more than 30 days), improvement in co-morbidities, weight gain, and need for revision are also kept (44).



Fig. (51): A surgical day 1 upper GI series was normal. The side-to-side gastro-jejunosotomy site shows no signs of contrast leaking or luminal constriction (arrows).

among vegans and vegetarians. Vitamin B 12 may be given sublingually or intravenously to these individuals. Iron deficiency anaemia is frequent in young women who are menstruation. Iron infusions, iron pills, and oral iron porphyrin are all viable options for treating this condition (46).

Marginal Ulcer: The risk of developing marginal ulcers is 1–6%, which is on par with that after RYGB. Smoking cessation is the standard treatment for acid-peptic ulcers; however, Kular and Manchanda found a very low rate of ulcers in the Indian state of Punjab, which they attributed to the region's abundant fresh vegetables and low smoking rates (33).

Malnutrition—Hypoproteinemia: MGB is an effective surgical procedure for losing weight. This effect on the patient's diet is helpful for people who are morbidly obese, but it may have unintended

Complications and Management: When compared to other surgeries, MGB has a relatively low risk of complications. Early intraoperative and postoperative problems during bariatric surgery are possible and should be treated in the same manner as those resulting from other types of bariatric or general surgical operations (45).

Early Postoperative Complications: If a leak is discovered during the first 48 hours, it may usually be repaired with sutures. If a leak is discovered after 48 hours, we advise against trying to fix it and instead conducting a gastrogastrostomy to recreate the preoperative architecture (33).

Late Postoperative Complications: Some deficiencies might manifest as late consequences. As with other types of bariatric surgery, vitamin B 12 insufficiency is rather frequent, especially

dietary fat content. Around 5% of people had severe diarrhoea.

Bile Reflux: Just 2% of patients report experiencing bilious vomiting more often than once every 2-3 months. In MGB, bile reflux might be caused by an ulcer or an atypical short-length gastric pouch. An essential solution for these individuals is the use of probiotic foods like yoghurt and the avoidance of stimulating foods like high-fat or high-volume meals.

Cholelithiasis

LMGB Outcomes

Postoperative Weight loss

Reports of 12-month mean excess weight loss (EWL) range from 55 to 91%. A total of 91% of EWL were still alive after 2 years in the research by Kular's team. Less than 5% of patients gained back more than 10 kg after 5 years of weight loss maintenance. Over a 6-year follow-up period, the average EWL remained at 85%. At 1 year, Noun et al. found that the average EWL was 69.9 percent, and this percentage held true at 5 years (68.6 percent). Seventy-two point nine percent EWL was reported by Lee et al. According to Carbajo et al., the average EWL was 75% after 1 year, and 80% or higher after 18 months. EWL was found to be 65% at 1 year and 80% at 2 years, respectively, by Piazza et al (43).

Weight Regain in Mini-Gastric Bypass:

Since we are dealing with humans, each of whom has their own unique set of eating habits and genetic makeup, no bariatric treatment can be guaranteed to work perfectly. MGB offers the flexibility to be shaped in a variety of ways. If the dietary changes do not work, the duration of the bypass may be simply modified (43).

Postoperative Weight Loss after LSG and LMGB:

Several prospective randomised controlled (PRC) trials suggest that LSG is as successful as, if not more so than, an

consequences for those who are not. In such circumstances, excessive weight loss or nutritional deficits may result from a reduced calorie and nutrient intake.

Internal Hernia: Due to its broad awareness, all surgeons are aware of the possibility of internal hernia in RYGB patients. But there were no reports of internal hernias at the October 2013 Paris World Consensus of MGB experts. Together, these professionals have completed more than 16,000 MGBs. But the signs of a bowel obstruction should be recognised by the patient and the surgeon (47).

Dumping Syndrome: Anyone may get dumping syndrome if they consume a big, sudden amount of sweets or a bolus of high-osmolar meals. Patients with an MGB gastrojejunostomy are more prone to have a severe reaction to boluses of food or quick consumption of sweet meals.

Dumping syndrome associated with MGB is easily managed by dietary changes and has never needed surgical intervention (43).

Steatorrhea and Flatulence

The MGB technique significantly inhibits fat absorption and is hence a potent fat malabsorptive therapy.

In other words, steatorrhea is a direct indicator of the impaired absorption of fat after MGB and occurs when a fatty food diet is followed. To control this, just reduce your fat intake and increase your fibre intake (33).

Diarrhea: The reported frequency of bowel movements rises in all MGB patients compared to the frequency of bowel movements before surgery. Dr. Rutledge discovered that in his group of patients, bowel movements rose from a preoperative mean of 0.5 per day to roughly two per day after surgery, with a significant fluctuation depending on

osteoarthritis are just few of the many conditions for which an obese person is at increased risk due to their weight.

Excessive dietary consumption, a lack of physical activity, and a predisposition to becoming overweight or obese are the three main contributors to obesity. Medications and endocrine variables both have a role in causing obesity.

Subcutaneously and intraabdominally are the most common locations for adipose tissue storage. Women are more inclined to store fat in their extremities, whereas men are more likely to store it in their midsections. When obesity sets in, fat cells become larger and more numerous. Adiponectin levels decrease and cytokine levels rise when fat cells expand. In addition to contributing to the proinflammatory state associated with obesity, these alterations have negative consequences on glucose and lipid metabolism.

Therapeutic weight reduction aims to reduce obesity-related health problems and their associated risks for better patient outcomes.

Surgical options for morbid obesity range from open procedures like gastric by-pass, intestinal bypass, and gastroplasty (which is further subdivided into vertical banded gastroplasty, horizontal gastroplasty, gastric banding, and gastric wrap) to laparoscopic procedures like laparoscopic vertical banded gastroplasty and gastric banding.

The therapeutic goal is to cause a negative energy balance, whereby the patient consumes less calories than they burn, resulting in the use of their body's own stored fat for energy. Of the total weight lost on a diet, 75% to 85% is fat and 15% to 25% is lean body mass.

The success rate of laparoscopic minigastric bypass (MGB) in helping

intense medical and diet regimen or gastric banding, and is on par with RYGBP in generating excess weight reduction, hence it has a significant impact on EW (EWL). Since LSG has only just become commonplace in clinical practise, the vast majority of research focus on short- and medium-term outcomes, reporting mean EWLs between 49% and 81%. In 2008, Lacy and colleagues found that SG was equally effective as gastric bypass on EW 12 months following surgery (48).

Weight loss, body mass index, and waist-to-hip ratio improvements were larger following gastric bypass and SG than after rigorous medical care, according to a PCR study conducted by Schauer et al. in 2014. Our team's 2014 PC cohort research found that body mass index (BMI) decreased from 41.3 kg/m² before surgery to 28.3 kg/m² 18 months after SG, with extensive medical treatment having no discernible impact (49).

Fasting GHR was shown to be significantly decreased after SG, while postprandial PYY levels were found to be significantly higher compared to fasting levels in the experimental trials conducted by Karamanakos et al (50).

Summary

Obesity is a medical disorder characterised by excessive accumulation of body fat, which may have detrimental effects on health, including a shortened lifespan and an increase in the prevalence of various health issues. When a person's body mass index (BMI; calculated by dividing their weight by the square of their height) is thirty or above, they are termed obese. A BMI between twenty-five and thirty indicates overweight status.

Heart disease, metabolic syndrome, blood lipid abnormalities, type 2 diabetes, obstructive sleep apnea, cancer, and

outcomes in terms of the resolution of diabetes and the loss of excess weight. Even though there are not many published data, long-term studies at 5 years and beyond suggest that EBWL is more than 50 percent.

Conflict of interest: no conflicts of interest.

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people lose weight makes it one of the most popular weight reduction surgeries.

Although patients having bariatric surgery are at a higher risk for problems following any surgical treatment, laparoscopic methods have a lower complication rate.

Internal hernia, gastrointestinal haemorrhage, Stricture development, deep vein thrombosis (DVT), marginal ulcers, gall bladder stones, and incisional hernia are all examples of such problems.

Protein deficit, carbohydrate deficiency, fatty acid shortage, vitamin B12 deficiency, folate deficiency, vitamin B1 deficiency, vitamin A deficiency, Iron inadequacy, calcium deficiency, and zinc deficiency are all examples of nutritional deficiencies.

Decreases of 30–40% in deaths attributable to diabetes, and decreases of 40–50% in fatalities attributable to obesity-related malignancies.

Consequences of obesity extend well beyond the realm of health and include, for example, social stigmas and financial costs to businesses. All segments of society, from private citizens to large organisations and governments, are impacted.

Physical, metabolic, endocrine, and cellular processes all play a role in this correlation. Obviously, preventing obesity is the best option, but bariatric surgery is presently the only therapy that can guarantee sustained weight reduction, making it a crucial factor in reducing the danger of developing cancer as a result of obesity.

Conclusion

Differences in findings across studies are partially attributable to the fact that LSG surgical procedures are not performed in a standardised manner. Both the LSG and the LRYGB have been shown to have comparable short- and medium-term

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