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REVIEW ARTICLE

INSTANT REMEDY OR TOTAL SALVATION? MERITS AND DEMERITS OF BARIATRIC SURGERY

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ABSTRACT: Bariatric surgery as it is called now is not a new thing. First bariatric surgery was performed in 1954. Later the surgical remedy for bariatric surgery remained dormant till the popularity of laparoscopic surgery. Past decade has seen a tremendous increase in the number of bariatric or metabolic surgical procedures. This trend may continue because of the epidemic of obesity throughout globe and its rising prevalence among children. Advocates of bariatric surgery consider it the most effective and only treatment for morbid obesity and its co morbidities. To simplify; two types of procedures are performed. 1. Restrictive- where the intake of calories are prevented by restricting food intake. 2. The other one is malabsorptive- where food rich in calories is prevented to get absorbed. Operations based on these principles are-Laparoscopic adjustable gastric band and Vertical sleeve resection of stomach; for restrictive surgery and Laparoscopic biliopancreatic diversion with or without duodenal switch; for malabsorptive procedures. Both types have their own merits and demerits, many of which are almost unacceptable. To counter each other's' demerits certain combinations of both types are evolved like Roux-en-Y gastric bypass; it combines both restrictive and malabsorptive components. Each operation has its own merits and demerits. Important points for the patient and surgeon alike in the decision to proceed with bariatric operation include – the technical aspects of operation, post-operative complications including long term nutritional problems, Magnitude of initial and later steady weight loss over the period and correction of obesity related comorbidities. Here, the merits and demerits of present day laparoscopic bariatric surgical procedures are reviewed and related controversial aspects related to them are discussed. Right patient selection; right selection of operative procedure for an individual patient and more importantly right selection of surgeon seems criteria to measure success after such surgery.
KEYWORDS: Bariatric, Morbid Obesity, Malabsorption, Metabolic, Nutrition.

INTRODUCTION: Obesity is assuming an epidemic in developed countries and is becoming an increasing concern in under-developed countries. Till recently underdeveloped countries were fighting with problem of under nutrition. Obesity is one of the major health problems because of the serious health outcomes, premature mortality risk, and additional social, psychological and economic factors. Today, bariatric surgery is the only available remedy for morbid obesity that steadily achieves and maintains substantial weight loss, lessens the incidence and severity of obesity-related comorbidities and improves quality of life and expectancy of life.[1] Since first surgery half a century back which did not went down well with surgeons and patients alike, and almost abandoned in late 70s. But the popularity of laparoscopic surgery revived it due to the constant demand by patients. Newer forms are developed focussing mainly on restrictive and malabsorptive procedures. The most common operation performed today is Roux-en-Y gastric bypass and adjustable gastric band surgery. Both procedures have reversal potential if the need arises. Other operations of permanent nature

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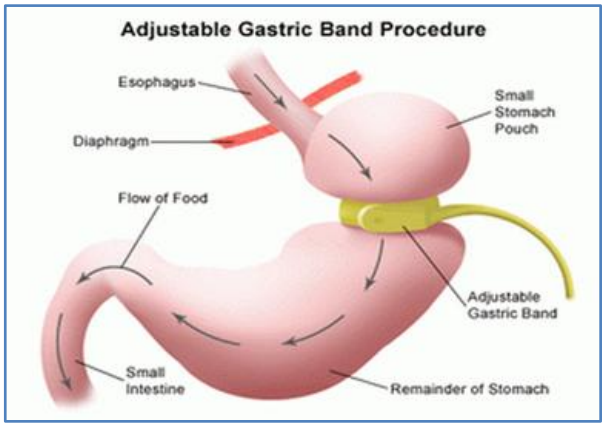
include vertical gastric sleeve resection and biliopancreatic diversion with or without duodenal switch. Later are usually reserved for the super-obese patients. Although the apparent mechanism of weight loss seem directly related to restriction or malabsorption of food; the real mechanism is a complex one involving hormonal, inflammatory, CNS and intestinal micro- organisms.[2-4] Bariatric procedures were performed rarely until the introduction of laparoscopic minimal access surgery in mid 1990s.[5-7] Laparoscopic approach due to its inherent advantages like small incisions, postoperative less pain, early return to work, low incidence of wound infection and shortened catabolic stage postoperatively. Due to growing epidemic of obesity world over certain guidelines regarding patient selection and increasing use of laparoscopy; future is set to see the growing number of surgeries performed for the purpose. The figure has already escalated from about 13000 in 1998 to about 220, 000 in 2008.Today, little data of prospective studies are available for comparison. Confusion about the various parameters for standardization of the treatment still persist, Hopefully in near future all doubts will be cleared for a smooth sailing for future generation of surgeons opting Bariatric surgery as profession.

METHODS: Various present day methods used for the purpose of weight reduction surgery includes:

1. Laparoscopic adjustable gastric band:- this is the least invasive surgery with minimum complications as far as the surgical part is concerned. This is the most commonly performed operation. Adjustment of the device is accomplished by inflating a subcutaneous port with saline. The operation is reversible laparoscopically in case the need be in contrast to other operations which are permanent. There is low risk of mortality and long term metabolic and nutritional complications are rare. But, the procedure is marred by high failure rates and a need for re intervention. Re intervention is needed for band related complications like; band erosion, leakage, slippage, oesophageal dilatation and infection; another reason for re intervention is failure to serve the purpose i.e. failure to lose weight. Only about 54% patients retain their band in position after 10 yrs.[8-11]



2. Laparoscopic vertical sleave gastrectomy: It was first introduced in super obese patients as an initial procedure of the biliopancreatic diversion with duodenal switch.[12] It was observed that many patients lost significant volume of weight and did not require second procedure of biliopancreatic diversion. Encouraged by this and disappointed by the gastric banding many surgeons have switched over to this method and now perform it as stand-alone procedure for weight loss. As quite a good number of such operations are performed but still long-term data

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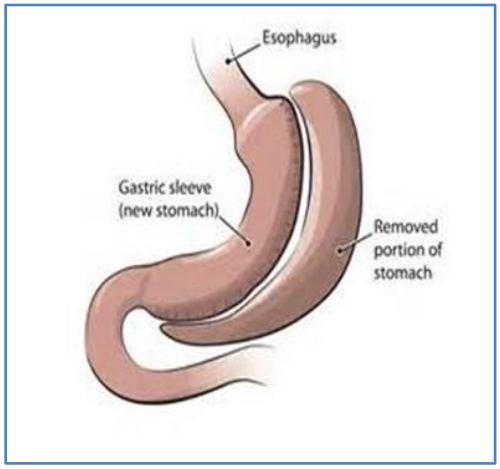
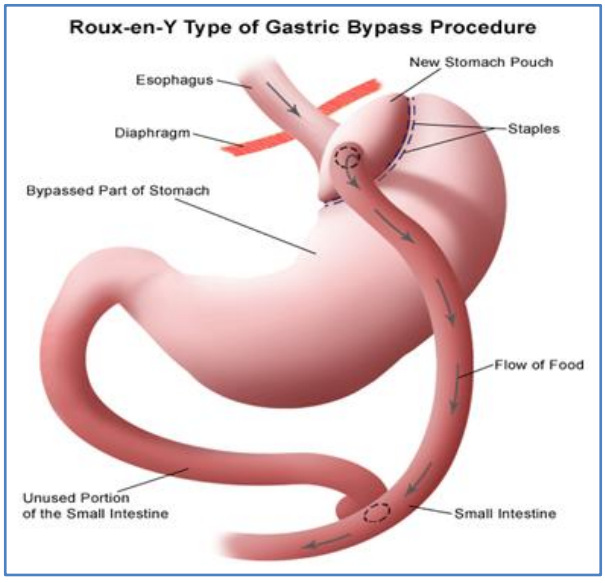
are not available. Whatever data are available they show perioperative and long term complications same as that of Roux-en-Y procedure and more than the gastric banding. Weight loss and improvement in comorbidities are less than Roux-en-Y but definitely better then adjustable gastric banding.[13,14]



3. Laparoscopic Roux-en-Y gastric bypass: This operation is a combination of restrictive and malabsorptive methods; now a days considered the gold standard for weight reduction. This operation is most commonly performed world over. The advantage is threefold; a restriction in food intake, selective mal absorption and dumping syndrome which prevents the patient from consuming triggering foods such as simple sugars, Long-term data are available in some studies upto 20 yrs.[15] 50% initial excess weight is lost by about 85% of cases and an average of 65% is reported in most cases. A mortality rate of 0.1% and serious post-operative complications are reported in recent studies. Long-term problems of fat mal absorption, protein-calorie malnutrition and micronutrient deficiencies are usually tackled by supplementation. Reoperations for failures and complications are rarely needed. Despite all these advantages the demeritorious part is the requirement of advanced laparoscopic surgical skills with a learning curve of 100 cases; the method carries a long-term failure rate of 10-15%.



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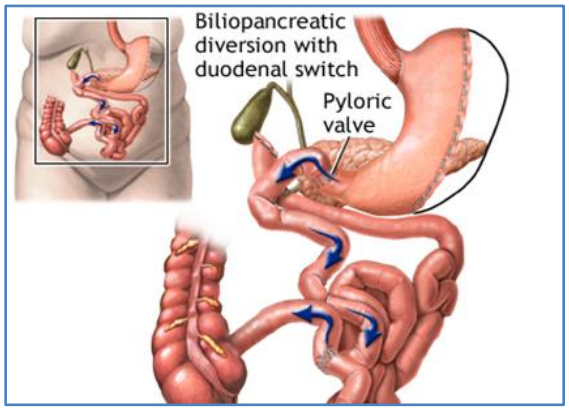
4. Laparoscopic biliopancreatic diversion with duodenal switch:-First performed in 1998 as open operation,[16] this procedure stands for its malabsorptive outcome. Moreover, concomitant sleeve resection of stomach adds restrictive element to the operation. This procedure is difficult to master and perform especially when tried laparoscopically. It is known for high rate of perioperative complications and mortality. The advantage of this procedure over Roux-en-Y is marginal as far as long-term weight reduction and obesity related medical problems are concerned.[17] In addition severe nutritional deficiencies including protein-calorie malnutrition, steatorrhoea and micronutrient deficiencies make this operation less preferred by surgeons and patients alike.[18]



DISCUSSION: Despite the fact that behavioural changes i.e. control of diet, regular exercise and modifying life-style along with efforts with pharmaceutical products, failed to reduce the weight and bariatric surgery apparently offers solution still patients with morbid obesity are reluctant to opt for it why? In addition to the merits of bariatric surgery there are certain demerits which are equally important for consideration. Firstly, for the vast number of patients potential beneficiaries of this surgery there is a paucity of well-trained surgeons to tackle the load. Another factor is patient-related problems which may exclude them from being candidates for such procedures unless modified. For instance patients with eating disorders will continue with this habit leading to surgical failure initially or later weight gain. Depression or other similar psychological problems can also result in poor outcome.[19,20]

Most suitable candidates for such surgery are those who have active lifestyle changes regarding both improved eating patterns and physical activity.[1] Surgeons have concerns about the unknown long-term effects of such surgery as more and more young patients with longer life expectancy are opting for such operations. The problem of persistent and well documented surgical consequences such as symptomatic cholelithiasis, band-related complications, anastomotic stricture and leaks, and bowel obstruction need additional surgical corrections. Another gastrointestinal problems like; bleeding, small bowel bacterial overgrowth and a variety of upper and lower GI symptoms are another discouraging factors. Nutritional problems such as fat malabsorption, protein-calorie malnutrition and micronutrient deficiencies are additional long-term problems.[21,22] These nutritional and metabolic disturbances need life-long monitoring and replacement therapies as and when required.[23,24]

Now, the positive aspect for those patients with multiple comorbidities consequently poor quality of life with eventual shortened life expectancy; the demerits of bariatric surgery mentioned

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above are surpassed by its merits. No other method of weight reduction less invasive than bariatric surgery exist which can benefit the patient in as many ways over the long term to a motivated patient; of course depends upon the surgical method applied. As far as economical part is concerned barring initial costs it is very much favourable if everything goes well (uncomplicated).[25]

EQUIVOCAL POINTS: As the surge in this type of surgical treatment is recent, though the idea was as old as the mid of last century. Certain criteria for standardization of this type of surgery need to be calibrated on following aspects:

1. Patient selection;- Presently guidelines for patient selection include individuals with body mass index (BMI) >40kg/m^2 or 35kg/m^2 if obesity related comorbidities exist, and who have failed other means of weight loss, psychological stable and are able to regulate diet, exercise and behavioural changes necessary to maintain long success of surgery. The reduction in post-operative morbidity and mortality, experience of surgeons, steady improvement in weight loss and improvement in obesity related metabolic comorbidities; have enhanced the acceptance of bariatric surgery as treatment choice for weight loss.[26,27] There is recent international approval of adjustable gastric banding in diabetics for as low BMI as 30kg/m^2.[28] Metabolic surgery another term used for bariatric surgery when such procedures are exclusively used to correct metabolic disturbances like type 2 diabetes.[29,30] Type 2 diabetes often gets resolved in early part of post0perative period independent of weight reduction. This is probably due to yet to be understood role of enteroinsular axis leading to enhanced beta-cell sensitivity and reducing the peripheral insulin resistance.[30.31] Many studies proved that bariatric surgery along with medical treatment is a better option than medical treatment alone. This has led to lowering of criteria for bariatric surgery in type 2 diabetes mellitus.[32,33] Weight loss failure after 6-12 months of attempted medically supervised effort. Because no data available for non-surgical treatment for morbid obesity the need for inclusion of this criterion is not clear. Except severe mental problems no data are available for the comparatively minor psychological derangements; though it is suggested that addressing emotional and other behavioural problems may help patient in adjusting, complying and understanding in post-operative lifestyle changes. Supportive data are lacking. Extreme obesity in adolescents is getting very common with similar hazards as in adults. How to approach with surgical option in adolescents? The only recommended procedure in today's context is restrictive and that too of temporary variety i.e. adjustable gastric banding. Factors unique to adolescent population are-nutrition requirements, linear growth, future pregnancies, different psychology and of course informed consent.[34,35] Some earlier studies are showing promising results in younger groups; this may lead to relaxation of criteria for this group.
2. Procedure option; Depends on two factors surgeon's experience and patient- related factors i.e. weight, comorbidities, reliance and compliance with lifestyle modifications and follow-up. Decision is often made with surgeon's abilities and biases and patient's preference and acceptance of involved risks. Large retrospective studies favour biliopancreatic diversion though least preferred. Roux-en-Y, vertical sleeve resection and adjustable gastric banding all done laparoscopically are preferred methods globally. Adjustable gastric band carries least postoperative risks while the biliopancreatic diversion is not only difficult to perform but carries a substantially high risk. Preferred method world over is Roux-en-Y gastric bypass with

moderate risks and reversible potential. Biliopancreatic diversion is often reserved for super obese patients (BMI >50kg/m2). Laparoscopic adjustable band is particularly suitable for adolescents.

3. Technical skill: Bariatric surgery is not just ordinary operation of removing or adding something. It is a complex procedure and needs total commitment on the part of surgeon and facility. Quality medical and surgical care is needed. Since the implementation of guidelines for bariatric surgery the mortality rate has dropped from 0.8 to 0.1%.[36] A high volume including at least 125 cases per institution is the criterion for certification of the institution.
4. Defining successful outcome: The main concern for the patient and often for the surgeon is reduction in weight. However, it is more complex than just measuring the weight. Method for initial excess weight is rarely defined and the best method for initial excess weight determination remains controversial. Various methods like ideal body weight calculations (Hamwi method), Back calculation from a healthy BMI (25kg/m2), or Metropolitan Life tables for initial weight (A range of acceptable weights). Some studies simply measured the absolute body weight reduction or % of BMI reduction as the indicator of weight loss. Direct body composition was rarely determined. The reporting of data related to improvement or resolution of comorbidities is also marred by poorly.
5. Defined success and reporting.[37] Same is true for the reporting of quality of life and patient satisfaction.[38,39]

CONCLUSION: Morbid obesity was a mole few decades before has now attained the size of a mountain; thanks to globalization and food industry. Not only developed countries the underdeveloped countries are also affected to a significant extent. Advanced technology changed the lifestyle of people world over from healthy food and dynamism to calorie-rich fast food and sedentary life. Now quick fix to this problem is offered in the form of bariatric surgery. Though the method is around for more than a half century, it gained popularity only after laparoscopic version of the procedures. Newer advances in anaesthetic practices are another factor responsible for its popularity. At present bariatric surgery is the only most effective and sustainable method of treating morbid obesity. But, it's not a cure for obesity. Neither can it help in tackling an epidemic of obesity because of the vast difference in the ratio of volume of the problem (patients) and the fixing personnel (surgeons). Lasting solution can only be provided by education and public awareness, along with a strict control over the dietary contents offered by the food industry globally.

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