

Laparoscopic Mini Gastric Bypass Surgery For Morbid Obesity

Essay

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ اَعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ
وَرَسُولُهُ وَالْمُؤْمِنُونَ

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List of Abbreviations

ASL	: Anastomotic Staple line leak
BMI	: Body mass index
BSG	: Bioabsorbableseamgaurd
CHD	: Cornoary heart disease
CMR	: Collagen matrix reinforcement
DVT	: Deep venous thrombosis
EWL	: Expected weight loss
GBP	: Gastric bypass
GGF	: Gastro gastric fistula
GIP	: Gastric inhibitory polypeptide
GJA	: Gastro jujenal anastomosis
GLP	: Glucagone like peptide
LMGB	: Laparoscopic mini gastric bypass
LMWH	: Low molecular weight heparin
LRYGB	: Laparoscopic Roux-En-Y Gastric bypass
MGB	: Mini gastric bypass
MI	: Myocardial infarction
PE	: Pulmonary embolism
PGA	: polyglycolic acid
POD	: Post operative day
PYY	: Peptide YY
SEMS	: Self expandable metallic stent
T2D	: Type 2 diabetes mellitus

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Introduction

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems(**Allison et al., 2011**).

Obesity increases the risk of many physical and mental conditions. These comorbidities are most commonly shown in metabolic syndrome, a combination of medical disorders which includes: diabetes mellitus type 2, high blood pressure, ischemic heart disease and high blood cholesterol(**Grundy, 2011**).

Bariatric surgery is currently the only modality that provides a significant, sustained weight loss for the patient who is morbidly obese, with resultant improvement in obesity-related comorbidities(**Sjostrom et al., 2012**).

Procedures can be grouped into three main categories :

- 1- Restrictive procedures
- 2- Malabsorptive procedures
- 3- Mixed procedures

(**Abell and Minocha, 2010**)

The Mini gastric bypass procedure was first developed by Dr Robert Rutledge from the USA in 1997, as a modification of the standard Billroth II procedure. Mini gastric bypass involves making of a long narrow tube of the stomach along its right border, the lesser curvature. A loop of the small gut is brought up and hooked to this tube at about 200cms from the start of the intestine(**Heneghen et al., 2011**).

The mini gastric bypass has been suggested as an alternative to the Roux-en-Y procedure due to the simplicity of the construction. The surgery is becoming more and more popular because of low risk of complications and good

sustained weight loss which reach up to 65-80 % of excess body weight is typical of most large series of gastric bypass operations(**Claire,2009**).

Essential hypertension is relieved in over 70% of patients and medication requirements are usually reduced in the remainder. In the other hand in patients who are morbidly obese, gastric bypass apparently reduces the risk levels for the development of diabetes type 2 and myocardial infarction to those of general population(**Heneghenet al., 2011**).

Anastomotic leakage,anastomotic ulcer,anastomotic stricture,nutritional deficiency, reflux biliary gastritis and dumping syndrome are the complications of mini gastric bypass(**Espinel and Pinedo, 2012**).

Aim of The Work

Is to review an important surgical procedure for treatment of morbid obesity, it's the laparoscopic mini gastric bypass. And to assess outcomes, weight loss, complications and incidence of reflux biliary gastritis and its treatment

Definition and Classification of Obesity

Obesity has been defined as excess body fat relative to lean body mass. The most widely accepted measure of obesity is the body mass index (BMI) which is calculated by dividing a patient's mass in kilograms by the square of his or her height in meters, a normal BMI is considered to range from 18.5 to 24.9 kg/m², BMI between 25.0 and 29.9 is considered overweight, BMI of 30 or greater is classified as obese; this is further subdivided into Class I, II, or III, as shown in (Table-1) (*Bray and Greenway, 2001*).

Table (1): Obesity Categories and disease risk.

Table 1 Categories of BMI and disease risk ^a relative to normal weight and waist circumference				
			Men ≤ 102 cm (≤ 40 in)	>102 cm (>40 in)
	BMI kg/m ²	Obesity Class	Women ≤ 88 cm (≤ 35 in)	>88 cm (>35 in)
Underweight	<18.5		—	—
Normal ^b	18.5–24.9		—	—
Overweight	25.0–29.9		Increased	High
Obesity	30.0–34.9	I	High	Very high
	35.0–39.9	II	Very high	Very high
Extreme obesity	≥40	III	Extremely high	Extremely high

(*Bray and Greenway, 2001*)

It may be important to consider other factors besides the BMI, such as total muscle mass and waist circumference as extremely muscular individual may have an elevated BMI without being overweight. Waist circumference has been shown to be an excellent indicator of abdominal fat mass, a circumference greater than 88 cm (35 inch) in women or 102 cm (40 inch) in men strongly correlates with an increased risk of obesity related disease (*Pouliot et al., 1999*).

Causes and Risk Factors of obesity:

Any small disparity between energy intake and energy expenditure gradually leads to weight gain. A continued excess of energy intake over energy expenditure gradually leads to obesity (*Wilding, 2006*).

The following are known causes of obesity:

1. Genetic and Familial Factors:

These factors play a role in morbid obesity. Twin, Adoption and family studies have now established that individual's risk of obesity is increased with the presence of obese relatives (*Conuzzie and Allison, 1998*).

In these studies obese parents produced highest proportion of this offspring. In this design, however it is difficult to separate genetic from environmental influences. Stronger support for the role of genetics in BMI comes from twin studies in which BMI has consistently been shown to be similar between twins, with the similarity being in monozygotic than dizygotic twins (*Sorenson, 1995*).

There are a number of genetic conditions which produce a syndrome complex associated with obesity. The best known is Proder-Willi syndrome, which is associated with deletions on chromosome 15, resulting in excessive appetite, this leads to obesity. Studies on families with obesity have implicated over 20 genes on at least 12 chromosomes emphasizing the polygenic influence on the development of obesity, those studies reveals that the contribution to weight gain in susceptible families ranges from 25%-40%, with the heritable determination of the selective intra-abdominal fat deposition being greater at 30-50%, regarding that this transmission is derived from both maternal and paternal lines (*Jung and Cuschieri, 2000*).

2.Environmental factor include

i.Social environment

In industrialized countries there is a higher prevalence of morbid obesity in those with less education and(or)low income.Despite of this there is sometimes increase in obesity due to sedentary life and low efforts because of the availability of everything and high technology equipments(***Jung and Cuschieri, 2000***).

Several lines of evidence suggest that humans have some ability to adjust energy intake to energy expenditures and vice versa,in an attempt to avoid positive or negative energy balance changes in body weight(***Diaz et al., 1992***).

ii.Physical activity

Because exercise is the only safe way to increase caloric expenditure,there has been a lot of interest in the relationship between obesity and physical exercise.Obese individual are relatively inactive.It has never been proven that reduced physical activity is a major cause of morbid obesity.But it is quite clear that when there are increases energy expenditure by physical exercise without concomitant increase in caloric intake,body weight decreases(***Menguy,1990***).

iii.Food intake

Obesity results from the quality and quantity of the diet as well as the frequency of eating.People who have more intense appetite may be more likely to develop obesity(***Grundy,1998***).

Dietary changes over the past 30 to 40 years have led to proliferation of energy-dense foods rich in fat and sugar,particularly carbonated beverages.Foods high in fat do

not produce satiety as well as foods rich in carbohydrate. This leads to overconsumption of food (**Bray, 1989**).

3. Endocrinal causes

This accounts for less than 1% of all weight gain in the population. They include hypopituitarism, hypothyroidism, hypogonadism, Cushing syndrome and hyperinsulinism (**Bray, 1989**).

4. Age and gender

Weight increases with age and this may be related to declining physical activity. On the other hand, women have a higher incidence of prevalence of excess weight than the men especially when older than 50 years. In addition, some groups have a high incidence and prevalence of obesity than other groups of human beings. Examples of these groups are Indians and Naurians (**Jung and Cuschieri, 2000**).

5. Psychological factors

Some patients seek emotional relief in eating and so obesity occurs in depressive illness (**Ramsay et al., 1986**).

Persons are known to gain large amount of weight during or after stressful situations as death of parents, severe illness or even mental depression (**Guyton, 1991**).

6. Drug induced obesity

Drugs may increase the body weight either by improving the appetite or by altering the metabolism as contraceptive pills, antidepressants, phenothiazines, steroids and antiepileptics (**Bray, 1998**).