Longterm Outcome of Common Bariatric Surgeries

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بسم الله الرحمن الرحيم

وقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ
ورَسُولُهُ والْمُؤْمِنُونَ

صدق الله العظيم

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Ahmed Magdy Hafez

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List of Abbreviations

ASL	Anastmotic site leak
BMI	Body mass index
BPD	Bilio pancreatic diversion
BPD-DS	Bilio pancreatic diversion with duodenal switch
CSG-MGB	Compined sleeve gastrectomy with min gastric bypass
CT	Computed tomography
DVT	Deep venous thrombosis
ERCP	Endoscopic retrograde cholangio pancreaticography
EWL	Excess weight loss
GERD	Gastrooesophageal reflux disease
GGF	Gastro gastric fistula
GIT	Gastrointetinal tract
GLP 1	Glucagon like peptide 1.
HOMA	Homeostatic model assessment-insulin resistant.
HOMA-B	Homeostatic model assessment –B cell.
IVC	Inferior vena cava
LAGB	Laparoscopic adjustable gastric banding
LMGB	Laparoscopic mini gastric bypass
LRYGB	Laparoscopic reux en y gastric bypass
LSG	Laparoscopic sleeve gastrectomy
LTC	Long term complications
MGB	Mini gastric bypass
N	Number
OAGB	One anstmosis gastric bypass
PE	Pulmonary embolism
Pyy	Peptide y y.
RYGB	Reux en y gastric bypass
SG	Sleeve gastrectomy
SOS	Swedish obese study
STC	Short term complications
T2DM	Type 2 diabetes mellitus
UGH	Upeer gastrointestinal hemorrhage
VBG	Vertical band gastroplasty
WT	Weight

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Introduction

Global awareness of obesity as a disease process that results in significant morbidity and mortality is growing. In addition, obesity rates continue to increase to now pandemic levels **(Center for Disease Contro et al., 2011).**

Obesity is a leading preventable cause of death with high prevalence in adults and children and one of the most serious worldwide problems (**Buchwald et al., 2007).**

Obesity is now considered to be the second leading cause of preventable death behind cigarette smoking **(Schauer and Schirmer, 2005).**

Obesity, generally defined as a body mass index (BMI) greater than 30 kg/m2, increases the risk of all-cause death (**Wandell et al., 2009)**.

BMI is the commonly used measure of obesity, represents weight in Kilograms divided by height in meters squared (kg/m2). It is easy to identify patients who are underweight (BMI <18.5kg/m2) normal weight (BMI 18.5 to 24.9 kg/m2), overweight (BMI 25 to 29.9 kg/m2), obese (BMI ≥ 30 kg/m2), or extremely obese (BMI ≥ 40 kg/m2), BMI 60 kg/m2 are considered morbidly super-obese persons (**U.S. Preventive Services Task Force, 2003).**

Obesity is associated with a variety of diseases that together account for a very large fraction of morbidity and mortality in the Western world.1 Coronary heart disease, cerebrovascular disease and stroke, hypertension, dyslipoproteinemia, diabetes mellitus and cholelithiasis constitute a partial list of diseases common- place among the obese (**Bray et al., 1976).**

Bariatric surgical techniques can be divided into restrictive, malabsorptive or combined restrictive/ malabsorptive procedures **(Herron et al., 2011).**

Restrictive procedures include:

1) Laparoscopic Adjustable Gastric Band (LAGB).
2) Laparoscopic Sleeve Gastrectomy (LSG).
3) Vertical Banded Gastroplasty (VBG).

Malabsorptive procedures include:

1) Bilio Pancreatic Diversion (BPD).
2) Bilio Pancreatic Diversion with Duodenal Switch (BPD-DS).
3) Jeujnoileal Bypass.

Combined restrictive /malabsorptive:

1) Laparoscopic Roux-en-Y Gastric Bypass (LRYGB).
2) Laparoscopic Mini Gastric Bypass (MGB).
3) Combined Sleeve Gastrectomy and Mini Gastric Bypass (Novel technique).

Laparoscopic Roux-en-Y gastric bypass (LRYGBP):

Considered the 'gold standard' procedure, resulting in 65–80 % excess bodyweight loss, decreased appetite, and rapid weight- independent amelioration of type-2 diabetes mellitus (T2DM) **(Buchwald et al., 2009).**

LRYGBP is cost effective, but technically challenging with associated mortality albeit low ~0.09 % and micronutrient deficiencies risks, necessitating lifelong follow-up (**Gould et al., 2011).**

LRYGBP reduces stomach volume and bypasses the majority of the stomach, duodenum and proximal jejunum, with direct nutrient delivery to the distal gut **(Scott et al., 2011).**

RYGB is a safe and effective bariatric procedure with excellent long-term results regarding weight loss and resolution of obesity-related comorbidities (**Buchwald et al., 2009)**.

Mini-gastric bypass (MGB):

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. A mini gastric bypass creates 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 180 cms from the start of the intestine. Laparoscopic mini gastric bypass is a technically simple and safe procedure and has the advantages of being a single stage procedure, being easily reversible and revisable in a laparoscopic procedure and does not sacrifice portions of the stomach or implant foreign materials **(Peraglie et al., 2008)**.

The MGB has been suggested as an alternative to the Roux en-Y procedure due to the simplicity of its construction, and is becoming more and more popular because of low risk of complications and good sustained weight loss **(Lomanto et al., 2009).**

Sleeve gastrectomy:

Laparoscopic sleeve gastrectomy was first described in the 1990s by Marceau et al (**Marceau et al., 1993)** and Hess and Hess **(Hess et al., 1998)** as part of the duodenal switch operation, then introduced as a first step of a two-stage

operation for high-risk super obese patients **(Regan et al., 2003).**

Laparoscopic sleeve gastrectomy is a straightforward procedure compared with LRYGBP and BPD-DS, it does not involve any digestive anastomosis, and no mesenteric defects are created, eliminating the risk of internal herniation. The whole digestive tract remains accessible for endoscopic evaluation, and no dumping syndrome occurs (**Himpens et al., 2006).**

Sleeve gastrectomy is perceived less invasive, technically simpler and easier to perform compared with RYGB. SG could thus become the procedure of choice in treating morbid obesity provided that the long-term results of SG are comparable with RYGB regarding weight loss, the resolution of comorbidities, and improvement in the quality of life (**Regan et al., 2003).**

The promising short term results of SG have somewhat altered the paradigm for SG from a two stage procedure to a stand-alone definitive bariatric procedure**.** In light of reports of comparable weight loss and metabolic outcomes to LRYGBP, LSG is increasingly undertaken as a stand-alone procedure **(Bohdjalian et al., 2010)**.

SG also has possible long-term advantages over RYGB such as preservation of endoscopic access to the upper gastrointestinal tract, prevention of the dumping syndrome by pylorus preservation, normal intestinal absorption, and avoiding the risk of internal herniation associated with RYGB anastomosis (**Buchwald et al., 2009).**

However, its long term efficacy for weight loss and metabolic benefit remains unclear (**Chambers et al., 2013).**

Body weight loss after different types of bariatric surgery is associated with a high rate for resolution of type 2 diabetes mellitus (T2DM), with resolution more common after the predominantly malabsorptive and mixed malabsorptive-restrictive procedures than after the purely restrictive operations.

Only bariatric surgery leads to permanent weight loss and reduction in comorbidities in the majority of morbidly obese patients **(Buchwald et al., 2004).**

Despite routine supplementation of vitamins and minerals after bariatric surgery, a number of patients suffer from deficiencies in vitamin or trace elements **(Cummings et al., 2004).**

Purely restrictive operations, such as laparoscopic adjustable gastric banding (LAGB) and vertical banded gastroplasty, tend to cause fewer deficiencies than do mal absorptive procedures, such as laparoscopic Roux-Y- gastric bypass (LRYGB) (mal absorption of micronutrients) **(Cummings et al., 2004).**

Pregnancy outcome of obese women in general has been shown to be worse than that of women of normal BMI, including an increased incidence of the following complications: gestational diabetes, gestational hypertension and preeclampsia, fetal macrosomia, cesarean deliveries and anesthesia related complications **(Yogev et al., 2009).**

Pregnancy after bariatric surgery appears to be safe, providers should take extra care to properly monitor their patients for appropriate weight gain and nourishment (**Weintraub et al., 2008).**

Aim of The Work

The aim of this essay to review the outcome of common bariatric surgeries (roux en y gastric bypass, minibypass, and sleeve gastrectomy (as regard weight loss, nutritional status, and related comorbidities from 5 to 10 years.