Ain Shams University
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Sleeve Gastrectomy in Surgical Management of Morbid Obesity
(Effect, Advantage and Complication)

Essay
Submitted in Partial Fulfillment for Master Degree
In General Surgery

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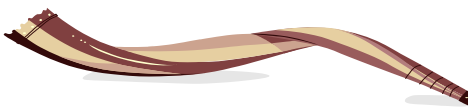

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List of Abbreviations

ACTH	Adrenocorticotrophic hormone
AIDS	Acquired Immune Deficiency Syndrome
BED	Binge eating disorder
BMI	Body Mass Index
BPD	Biliopancreatic diversion
BPD-DS	Biliopancreatic diversion with duodenal switch
CAT	Computerized axial tomography
CNS	Central nervous system
CRH	Corticotrophic releasing hormone
CT	Computerized Tomography
DVT	Deep Vein Thrombosis
DXA	Dual energy X-ray absorptiometry
ECG	Electrocardiogram
EWL	Excess weight loss
FDA	U.S. Food and Drug Administration
FFMI	Fat – Free Mass Index
FMI	Fat Mass Index
GE	Gastro-Esophageal
GERD	Gastroesophgeal reflux disease
GH	Growth Hormone
GHD	Growth Hormone Deficiency
GHS	Growth Hormone Secretagogue
GLP-1	Glucagon-like peptide 1
I.M	Intra-Muscular
I.V	Intra-venous
IGS	Implantable gastric stimulator
JIB	Iejunoileal bypass
LAGB	Laparoscopic adjustable gastric banding
LDL	Low- density lipoprotein
LRYGB	Laparoscopic Roux-en-Y gastric bypass

List of Abbreviations (Cont...)

LSG	Laparoscopic Sleeve Gastrectomy
NJT	Naso-jejunal tube
NOTES	Natural orifice transluminal endoscopic surgery
NPY	Neuropeptide Y
PCOS	Polycystic ovarian syndrome
PE	Pulmonary Embolism
POD	Post-operative day
PVN	Paraventricular nuclei
RYGB	Roux-en-Y gastric bypass
SG	Sleeve gastrectomy
SHBG	Sex Hormone Binding Globulin
TPN	Total parenteral nutrition
UGI	Upper Gastro-intestinal
VBG	Vertical banded gastroplasty
VMN	Ventromedial nuclei
WHR	Waist/hip circumference ratio
WtHR	Waist to Height Ratio

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Introduction

Obesity is originally derived from Latin word (obesus) i.e. to overeat. The modern definition is "a disease of excess body fat" **(Kral, 2001).**

The most widely accepted measure of obesity is the body mass index (BMI) which equals patient weight in kilograms divided by the square of his or her height in meters, a normal BMI ranges from 18.5-24.5 kg/m^2, overweight equals BMI between 25-29.5 kg/m^2, obesity equals BMI 30 kg/m^2 or higher **(Herron, 2004).**

Severe obesity is having a BMI greater than 35 kg/m^2, and morbid obesity is having a BMI greater than 40 kg/m^2 or a BMI greater than 35 kg/m^2 with concomitant obesity-related morbidity **(Brunicardi et al., 2001).**

The patient is considered superobese with a BMI more than 50 kg/m^2 and super-super obese with a BMI more than 60 kg/m^2 **(Ballantyne et al., 2004).**

Morbid obesity is associated with progressive, serious and debilitating co-morbidities such as type II diabetes mellitus, hypertension, hyperlipidaemia, accelerated atherosclerosis, debilitating arthritis of weight-bearing joints, hypoventilation, sleep apnea syndrome,

gastroesophageal reflux disease, infertility & urinary stress incontinence in females, certain cancers, immobility, psychological & economic problems **(Pontiroli et al., 2005).**

There are great effects of weight loss on associated weight-related co-morbidities. Several well-designed studies have shown that type II diabetes mellitus resolves in about 90% of patients, hypertension disappears in two thirds of patients, serum concentration of high density lipoprotein improves, serum cholesterol and triglycerides decrease, many cardiovascular parameters improve as well including left ventricular wall thickness and left ventricular function, concomitantly pulmonary function and musculoskeletal disability improve in concern with the weight loss. Symptomatic obstructive sleep apnea disappears with early weight loss as little as 15-20 kg **(Balsiger et al., 2000).**

Treatment possibilities of obesity include diet restriction, behavioral therapy, medical treatment, and surgery. All non surgical treatment regimens have an extremely high rate of failure and surgery is therefore today is the option for treatment of morbid obesity **(Pontiroli et al., 2005).**

However, serious complications can occur and therefore a careful selection of patients is of utmost importance. Bariatric surgery should at least be considered for all patients with a BMI of more than 40 kg/m^2 and for those with a BMI of more than 35 kg/m^2 with concomitant obesity-related conditions after failure of conventional treatment **(Bult et al., 2008).**

At the present time a number of different surgical procedures are available for treatment of severely obese patients. These procedures create weight loss by two mechanisms of action: restriction and malabsorption **(Herron, 2004).**

The sleeve gastrectomy is a restrictive intervention consisting of a vertical gastrectomy including the entire greater curvature of the stomach while leaving in place an approximately 100-ml gastric tube along the lesser curvature. This intervention was initially proposed as the first part of a duodenal switch in patients whose body mass index was greater than 60 kg/m^2. Since then, these indications have developed and this intervention now enjoys certain favor on the part of bariatric surgery teams **(Mognol & Marmuse, 2007).**

The Laparoscopic Sleeve Gastrectomy (LSG) has increased in popularity and is currently very "trendy" among laparoscopic surgeons involved in bariatric surgery. As LSG proved to be effective in achieving considerable weight loss in the short-term, it has been proposed by some as a sole bariatric procedure **(Iannelli et al., 2008).**

Management of leaks after LSG can be challenging. Early diagnosis and treatment is important in the management of a leak. However, it can be treated safely via various management options depending on the time of diagnosis and size of the leak **(Rena et al., 2014).**

Laparoscopic sleeve gastrectomy is a new and effective procedure for the surgical management of morbid obesity. Therefore, the number of patients undergoing this procedure will continue to rise. Basic understanding of common complications and available treatment options is essential for all practising general surgeons. By early diagnosis and treatment of these complications, patient morbidity and mortality might be reduced **(Sarkhosh, 2013).**

Aim of Work

To review the literature regarding recent updates in medical and surgical management of morbid obesity, with focus on sleeve gastrectomy in treatment of morbid obesity and its effect, advantages and complications.

Definition and Diagnosis

Definition:

Obesity is a term used to describe body weight that is much greater than what is healthy. If you are obese, you also have a much higher amount of body fat than is healthy or desirable **(Kaplan et al., 2007).**

Adults with a *body mass index* (BMI, calculated as weight in kilograms divided by height in meters squared) between 25 kg/m^2 and 30 kg/m^2 are considered overweight. Adults with a BMI greater than or equal to 30 kg/m^2 are considered obese. Anyone who is more than 100 pounds overweight or who has a BMI greater than or equal to 40 kg/m^2 is considered morbidly obese **(Leslie et al., 2007).**

Obesity has been associated with an increased hazard ratio for all-cause mortality, as well as significant medical and psychological co morbidity **(Berrington et al., 2010).**

Obesity is a risk factor for many diseases, including diabetes and cardiovascular disease. It results in a higher risk of hospitalization and mortality; morbidity equal to that atattributable to poverty, smoking, and problem drinking; and substantial health care expenditures. It is a growing epidemic worldwide and the second leading cause of

preventable death in developing countries **(Bardia et al., 2007).**

Indeed, obesity is not only a chronic medical condition but should be regarded as a bona fide disease state **(Mechanick et al., 2012).**

Causes, incidence, and risk factors:

Obesity is caused by a complex interaction of environmental factors, human behaviour and genetic predisposition, and it is associated with high mortality and risk of various chronic diseases. The distribution of adiposity has more influence on outcomes than the total amount of body fat; in particular, an android pattern of fat mass is associated with an increased risk of metabolism-related disorders. The location of fat (visceral or subcutaneous) also has different effects on the development and pathogenesis of metabolic and cardiovascular diseases, with increased visceral fat being associated with an adverse metabolic profile **(Livingston, 2012).**

Taking in more calories than you burn leads to being overweight and, eventually, obesity. The body stores unused calories as fat. Obesity can be the result of:

- Eating more food than your body can use.