Complication of Laparoscopic Sleeve Gastrectomy

Essay

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in General Surgery

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Abstract

Introduction: Obesity is considered a major health and socio economic problem. Overweight, obesity and morbid obesity are terms often used to describe individuals with and increased body fat. The most common definition of morbid obesity is a body mass index (BMI) of 40 Kg /m^2 or more. More than 250 millions individuals are obese. The aetiology of this condition is multi factors including; familial and genetic predisposition, drug induced obesity, endocrinal causes, childhood over nutrition, intake of food in large quantities and many times in the day, psychological factors, environmental factors, special habits like alcohol consumption and smoking and personal factors like; age, gender, ethinity and parity.

Laparoscopic sleeve gastrectomy has been gaining considerable popularity since its introduction as a stand-alone operation for the treatment of obesity.

Aims: To outline the complication of laparoscopic sleeve gastrectomy and to outline how to manage this complication.

To provide structured evidence based approach to the investigation and management of complication of laparoscopic sleeve gastrectomy.

Summary: Obesity is simply defined as "excessive amount of body fat" and should be considered a chronic disease, as it has definite mortality and morbidity.

The lack of direct methods has led to development of various models and indirect methods for estimation of fat and fat-free mass, all of which are imperfect and require a number of assumptions.

Keyword: Laparoscopic Sleeve Gastrectomy, Obesity, Body Mass Index

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Contents

List of Abbreviations

ABG	:	Arterial blood gas
AGB	:	Adjustable gastric banding
ASMBS	:	American Society of Metabolic and Bariatric Surgery
BIPAP	:	Bi-level positive airway pressure
BMI	:	Body Mass Index
BPD	:	Biliopancreatic Diversion
CPAP	:	Continuous positive airway pressure
CSF	:	Cerebrospinal fluid
DG	:	Distal gastrectomy.
DN	:	Diabetic nephropathy
DS	:	Duodenal switch
DVT	:	Deep venous thrombosis
EWL	:	Excess weight loss
FFA	:	Free fatty acids
GERD	:	Gastroesophageal reflux disease
GHD	:	Growth hormone deficiency
GIA	:	Gastrointestinal anastomosis
GIP	:	Glucose dependent insulinotropic polypeptide
GLP-1	:	Glucagon-Like Peptide 1
HDL	:	High Density Lipoprotein
HOMA	:	Homestatic Model Assessment
IAP	:	Intra-abdominal pressure
IL-6	:	Interleukin-6
LAGB	:	Laparoscopic adjustable gastric banding
LDL	:	Low Density Lipoprotein

LH	:	Luteinizing hormone
LSG	:	Laparoscopic sleeve gastrectomy
MO	:	Morbid obesity
MS	:	Metabolic Syndrome
NAFLD	:	Non alcoholic fatty liver disease
NASH	:	Non-alcoholic steatohepatitis
MDA	:	Malondialdehyde
NES	:	Non-epileptic seizures
NIDDM	:	Non-Insulin Dependent Diabetes Mellitus
OA	:	Osteoarthritis
OHS	:	Obesity Hypoventilation Syndrome
OSA	:	Obstructive sleep apnea syndrome
PAI-1	:	Plasminogen Activator Inhibitor-1
PCOS	:	Polycystic ovarian syndrome
PE	:	Pulmonary embolism.
PEEP	:	Positive end-expiratory pressure
PMOC	:	Proopiomelanocortin
RMR	:	Resting metabolic rate
RYGBP	:	Roux en Y gastric bypass
SG	:	Sleeve Gastrectomy
TNF-α	:	Tumor Necrosis Factor-α
TGs	:	Triglycerides
VBG	:	Vertical banded gastroplasty
VLCDs	:	very low caloric diets
WLS	:	Weight loss surgery

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Introduction and Aim of the Work

Obesity is considered a major health and socio economic problem. Overweight, obesity and morbid obesity are terms often used to describe individuals with and increased body fat. The most common definition of morbid obesity is a body mass index (BMI) of 40 Kg /m^2 or more. More than 250 millions individuals are obese. The aetiology of this condition is multi factors including; familial and genetic predisposition, drug induced obesity, endocrinal causes, childhood over nutrition, intake of food in large quantities and many times in the day, psychological factors, environmental factors, special habits like alcohol consumption and smoking and personal factors like; age, gender, ethinity and parity **(Must et al., 1999).**

Clear understanding of the pathophysiology of morbid obesity is essential for management and prevention of this disaster. There are several factors concerning the occurrence of obesity, the first one in this mechanism is the genetic control also central nervous system control, afferent signals, pattern of feeding, socioeconomic factors, exercise and pattern of distribution of excess adipose tissue. The goal of weight-loss therapy is to improve health by modifying obesity-related diseases and the risk for future obesity-related medical complications.

The key to therapy is to generate a negative energy balance by having the patient eat fewer calories than are expended so that endogenous fat stores will be consumed for fuel **(Halaans et al., 1995; Nasuland et al., 1998).**

Surgical treatment seems to be more effective in the management of morbid obesity with acceptable rate of complications. The surgical modalities used in the bariatric surgery initially used in treating other conditions, and these modalities was found to cause weight loss post- operatively as a side effect **(Sugerman et al., 1992; Mason, 1992; Nasuland et al., 1997).**

It is obvious from the number of procedures practiced that the ideal operation for morbid obesity has not been developed. This is because these producers are accompanied by significant morbidly and mortality that varies between 1 and 5 %. Laparoscopic bariatric surgery take place in the last few years strongly, due to the greatly diminished post-operative complications. It is indicated in severe obesity especially if it is associated with the severe comorbidities **(Consensus, 1991).**

Laparoscopic sleeve gastrectomy has been gaining considerable popularity since its introduction as a stand-alone operation for the treatment of obesity **(Baltasar et al., 2005).**

Patients undergoing bariatric surgery are considered to be at high risk for surgical complications regardless of whether their surgery is open or laparoscopic. These postoperative complications are enteric leaks, intestinal obstruction from internal herniation, intra-abdominal bleeding, gastrointestinal bleeding, Stricture formation, deep vein thrombosis (DVT), marginal ulcers, gall bladder stones, incisional hernia, rhabdomyolysis and compartment syndrome **(Deitel, 1998; Hernandez-Estefania et al., 2000).**

Nutritional deficiency after bariatric surgery is common. All of the procedures induce malnutrition by a reduction in volume as well as a change in the type of food. Since most vitamins and minerals are absorbed in the upper small intestines, namely the duodenum and jejunum, it should not be surprising that some patients may develop malabsorptive syndromes **(Mistiaen et al., 2000; Jacobo and Andrus, 2002).**

These deficiencies are protein deficiency, carbohydrate deficiency, Fatty Acid Deficiency, vitamin B12 deficiency, folate deficiency, vitamin B1 deficiency, vitamin A deficiency, Iron deficiency, calcium deficiency and Zinc deficiency. Most of this complication must be treated by hospitalization or ICU admission if indicated **(Mistiaen et al., 2000; Jacobo and Andrus, 2001).**

Aim of the Work

To outline the complication of laparoscopic sleeve gastrectomy and to outline how to manage this complication.

To provide structured evidence based approach to the investigation and management of complication of laparoscopic sleeve gastrectomy.

Background on Obesity

DEFINITION OF OBESITY

Overweight, defined as a body mass index (BMI) of 25 kg\m^2 and more, and obesity, defined as a BMI of 30 kg\m^2 and more, associated with an increased risk of several morbid conditions such as hypertension, non-insulin-dependent diabetes mellitus (NIDDM) and cardiovascular diseases **(WHO, 1998).**

Obesity can be defined as a disease in which excess fat has accumulated, such that health may be adversely affected and mortality is increased **(Koplemam, 2000).**

Obesity is an excess of body fat, a condition of excess fat storage. Generally, any who is 20% over the normal weight for his or her age, sex, build and height is considered obese. The figures for ideal body weight were determined by the 1983 Height and Weight Standards of the Metropolitan Life Insurance Company. The modern definition of obesity is based on body mass index (BMI), a calculation that compares your weight (measured kilograms) with your height (measured in meters, then sqaurd). It was developed through collaboration between the National Institutes of health's National Heart, Lung and Blood Institutes and the North American Association for the study of obesity **(NIH, 2000).**

Obesity is defined as the accumulation of excess body fat that leads to pathology. Severity is based on the degree of excess body fat, which is commonly assessed using body mass index [BMI = Weight (Kg) / height $(m)^2$], which correlates body weight with height. Patients are classified as overweight, obese, or severely obese (sometimes referred to as morbidly obese).Obesity also defined as body weight that exceeds ideal weight by 20%, with ideal body weight determined by population studies. Morbidly obese individuals are generally 100%over ideal body weight. In (1991), the National Institutes of Health defined morbid obesity as a BMI of 35 kg/m^2 or greater without comorbidity, superobesity is a term sometimes used to define individuals who have a body weight exceeding ideal weight by 225% or more, or a BMI of 50 kg/m2 or greater **(Schauer, 2005).**

Morbid obesity refers to more severe cases of obesity, i.e those individuals located at the extreme of distribution of BMI or body fat content. A BMI greater or equal to 40 kg/m2,which represents an excess of weight of at least 100 pounds for men and 80 pound for women, is a common cut-off point used to categorize an individual as morbidly obese **(National Institutes of Health, 1998)**.

Morbid obesity was also defined by amount of total body fat, although this value is not easily obtained. Normally 20 to 25 percent of body weight is fat. If 40 percent or more of body is fat, morbid obesity is diagnosed **(NIH, 2000).**