New trends in Sleeve Gastrectomy as Management for Morbid Obesity

Essay

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List of Contents

List of Abbreviations

ABMI	Adjusted Body Mass Index
AGB	Adjustable Gastric Banding
AGRP	Agouti-related Protein
ASGB	Adjustable Silicon Gastric Banding
ATPIII	Adult Treatment Panel III
BBB	Blood Brain Barrier
BMI	Body Mass Index
BPD-DS	Bilio-Pancreatic Diversion with Duodenal Switch
CCK	Cholecystokinin
CHD	Coronary Heart Disease
CO_2	Carbon Dioxide
CRH	Corticotropin-releasing hormone
CRP	C reactive protein
CSF	Cerebral Spinal Fluid
CT	Computed Tomography
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
DJB-SG	Duodeno–Jejunal Bypass with Sleeve Gastrectomy
DS	Dudenal Switch
ED	Emergency Department
EWL	Excess Weight Loss
FPG	Fasting Plasma Glucose
GABA	Gamma AminoButyric Acid
GEJ	GastroEsophageal Junction
GH	Growth Hormone
GIWLS	Gastro Intestinal Weight Loss Surgery

GLP1	Glucagons-like Peptide 1
HDL	High Density-Lipoprotein
HDL-C	High Density Lipoprotein Cholesterol
HOMA	Homeostasis Model Assessment
IASO	International Association for the Study of Obesity
IGS	Implantable Gastric Stimulator
IOTF	International Obesity Task Force
LAGB	Laparoscopic Adjustable Gastric Banding
LASGB	Laparoscopic Adjustable Silicone Gastric Banding
LDL	Low Density Lipoprotein
LDL-C	Low Density Lipoprotein Cholesterol
LOS	Length of Stay
LSG	Laparoscopic Sleeve Gastrectomy
LVBG	Laparoscopic Vertical Banded Gastroplasty
MCH	Melanocortin Hormone
MDCT	Multidetector–Row Computed Tomography
MetS	Metabolic Syndrome
MH	Metabolic Health
MHO	Metabolically Healthy Obese
MM	Magenstrasse and Mill Procedure
MONICA	Multinational Monitoring of Trends and Determinants in Cardiovascular Disease
MRI	Magnetic Resonance Imaging
MSH	Melanocyte Stimulating Hormone
NAFLD	Nonalcoholic Fatty Liver Disease
NCEP	National Cholesterol Education Program
NGT	Naso-Gastric Tube
NOTES	Natural Orifice Transluminal Endoscopic Surgery
NPY	Neuropeptide Y
OA	Osteoarthritis

OB	Human Obesity Gene
OT	Operative Time
PAI-1	Plasminogen Activator Inhibitor 1
POD	Postoperative Day
POMC	Proopiomelanocortin
PVN	Paraventricular Nuclei
RYGB	Roux-en-Y gastric Bypass
SADJB-SG	Laparoscopic Single-Anastomosis Duodenal–Jejunal Bypass with Sleeve Gastrectomy
SBP	Systolic Blood Pressure
SEMS	Self-expandable Metallic Stents
SFT	Skin Fold Thickness
SG	Sleeve Gastrectomy
SILS	Single-Incision Laparoscopic Sleeve Gastrectomy
SISG	Single-Incision Sleeve Gastrectomy
SPSG	Singl-Port Sleeve Gastrectomy
TAG	Triglyceride
Total-C	Total cholesterol
TSH	Thyroid Stimulating Hormone
T2DM	Type 2 Diabetes Mellitus
VBG	Vertical Banded Gastroplasty
VLDL	Very Low Density Lipoprotein
VMN	Ventromedial Nuclei
WC	Waist Circumference
WHO	World Health Organization
WHR	Waist to Hip Ratio

List of Figures

List of Figures (Cont.)

List of Tables

Introduction

Obesity is a serious health condition affecting 20 to 25% of children and adolescents ***(Brien et al., 2010).***

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 problem ***(Haslam et al., 2005).***

According to BMI, obesity is defined as 30 Kg/m^2 over desirable weight and morbid obesity is defined as BMI over 40 Kg/m^2. More recently, another category, super obesity has been defined as BMI greater than 50 $Kg\backslash m^2$ over desirable weight ***(Bray, 2003).***

WHO estimates that a billion people worldwide are overweight (BMI greater than 25), and 300 million people are obese (BMI greater than 30) ***(Lenz & Diamond, 2008).***

Obesity is a multi-factorial disease, it develops from integration of genetic **(Rankinen et al 2006)**, environmental, social, behavioral, physiological, metabolic, neuro-endocrinal, and psychological factors, the exact etiology is unknown, it is associated with many health hazards, such as type 2 diabetes mellitus, cardiovascular diseases, hypertension, stroke, osteoarthritis, sleep apnea, and nonalcoholic fatty liver disease ***(John, 2006).***

The current management for obesity consists of dietary therapy, pharmacologic therapy and surgical intervention. The current review,

focusing on two drugs Sibutramine and Orlistat, offers a panoramic view of the various trials and studies conducted till date ***(Maya, 2008).***

In recent years there has been renewed interest in the surgical treatment of morbid obesity in concomitance with the epidemic of obesity, and application of the laparoscopic techniques to the field of bariatric surgery as well. Bariatric surgery proved effective in providing weight loss of large magnitude, correction of comorbidities and excellent short-term and long-term outcomes ***(Sugerman and Kral, 2005).***

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)***

Aim of Work

The aim of this work is to through some lights on the new trends on sleeve gastrectomy for management of morbid obesity..

Definition and Etiology of Obesity

Overweight and obesity are the fifth leading risk for global deaths. At least 2.8 million adults die each year as a result of being overweight or obese. In addition, 44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity ***(Stevens et al., 2012).***

The global pandemic of obesity with its associated co-morbidity has progress steadily and inexorably since the late 1970s and foreseeably the most serious and costly health issue for this century. The magnitude of rise has varied with region, country, and with gender; however, stabilization of the obesity prevalence is rare, and of great concern, the rise has accelerated globally over the last decade. The global age standardized prevalence of obesity [body mass index (BMI) ≥ 30 kg/m2] nearly doubled from 6.4 % in 1980 to 12.0 % in 2008. Half of this rise occurred in the 20 years between 1980 and 2000 and half occurred in the 8 years between 2000 and 2008 ***(Stevens et al., 2012).***

The prevalence of obesity is increasing worldwide, with the condition predicted to affect more than one billion people by 2030 ***(Kelly et al., 2008).***

➢ *Definition of obesity*

Being obese or overweight is defined on the basis of body mass index (BMI) as recommended by the World Health Organization (WHO). WHO defines those with a BMI between 25.0 and 29.9 kg/m2 as overweight and those with a BMI above 30.0 kg/m2 as obese ***(Nguyen et al., 2010)*** (**Table 1.1).**

Table 1.1: obesity classification by American Society for Bariatric surgery.

(Ayloo et al., 2011)

BMI value (kg/m^2)	Category
18.5-24.9	Normal
25.0-26.9	Overweight
27.0-29.9	Mild obesity
30.0-34.9	Moderate obesity- class I
35.0-39.9	Sever obesity- class II
40.0-49.9	Extreme (morbid) obesity – class III
50.0-59.9	Super obesity
60.0 +	Super – super obesity

BMI changes with age in children and therefore absolute cutoffs are not appropriate for them. Instead, childhood overweight and obesity are defined as BMI ≥ 85th and 95th percentile respectively as per age and gender-specific BMI references ***(Rome, 2011).***

Morbid obesity is defined as severe obesity that threatens one's health and can shorten life span. Obesity can be treated medically and surgically. Medical treatment for obesity is difficult, because the amount of weight lost is small and patients tend to regain most of the weight. Operations designed to result in significant and long-lasting weight loss in patients who are severely obese are called bariatric surgery, The term bariatric surgery is derived from the Greek words **baros** (weight) and **iatreia** (medical treatment). Body mass index (BMI) describes relative weight for height and correlates significantly with an individual's total body fat. BMI is based on height and weight and applies to adults of both sexes. BMI is calculated as follows: BMI equals weight in kg/height in m2 ***(Ayloo et al., 2011).***