Outcomes and Complications of Sleeve Gastrectomy

Essay

Submitted For Fulfillment of Master Degree
In General Surgery

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2015

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List of Abbreviations

Abbr.	Full term
BMI	: Body Mass Index
CCK	: Cholecystokinin
CHD	: Coronary Heart Disease
ECL	: Enterochromaffin-like
GERD	: Gastro esophageal reflux disease
GI	: Gastrointestinal
LSG	: Laparoscopic sleeve gastrectomy
PO	: Posterior omental arteries
RO	: Omental branches
SG	: Surgical step
VR	: Vasa recta
WHR	: Waist hip circumference ratio
%EWL	: Excess weight loss

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Acknowledgement

First and above all, thanks and praise to **Allah**, *the* ***M****ost* ***K****ind and the* ***M****ost* ***M****erciful.*

I would like to express my deepest gratitude and sincerest thanks to **Prof. Dr Hesham Maged Abd Al Aal** *Professor of General Surgery, Ain Shams University for giving me the privilege to work under his supervision.*

Many thanks to **Prof. Dr. Mohamed El Serafy,** *Professor of General Surgery ,Faculty of Medicine, Ain Shams for his support , encouragement and valuable advices throughout this work.*

Words are not enough to express my great thanks and deep appreciation to **Dr. Tarek Mahmoud El Gindy,** *lecturer of general surgery, October 6 University for his effort, comments, ideas, constructive criticism and support throughout this Essay.*

A very special thank to **Prof. Dr Ahmed Fahmy Omar,** *Head of Department of General Surgery and All my family and my colleagues for their support and encouragement throughout this work.*

I last but not least, I'm very grateful to my Parents, My Family for their support which was received in many ways.

Sherif El-Garhy

Introduction

Obesity now represents a public global health problem. The World Health Organization estimates the number of obese people in the World (Body Mass Index (BMI) over 30 kg/m²), to be over 500 million people ***(WHO, 2012).***

Obesity is usually defined as weight more than 20 % above ideal. Body mass index (BMI) is commonly used to express degrees of obesity and is calculated as weight in kgs divided by height in meters squared (Wt in kg/ (Ht in m) ^{2}). Normal values are 20 to 25kg/m^{2}. A body mass index of 25 to 30 represents pre-obesity, 30 to 35 is mild or class I obesity, 35 to 40 is moderate or class II obesity, and greater than 40 is class III or morbid obesity. A separate category of extreme or superobesity with a body mass index greater than 50 is sometimes recognized ***(Grace, 2002).***

Severe obesity increases the mortality rate, especially from cardiovascular disease. Other cardiovascular problems include hypertension, thrombophlebitis, and venous stasis ulcers. Obstructive sleep apnoea and obesity hypoventilation syndrome are severe complications of obesity. Arthritis in weight-bearing joints. Obesity is a major and treatable cause of type II diabetes mellitus. Hyperlipidaemia is common in the obese and contributes to the risk of vascular disease. Abnormal liver function and cholelithiasis are common

complications of obesity. Increased intra-abdominal pressure contributes to reflux oesophagitis, stress incontinence, and benign intracranial hypertension. Depression may contribute to abnormal eating and obesity, but often results from obesity ***(Grace, 2002).***

Sleeve Gastrectomy It was initially described by Hess and Hess ***(Marceau.et al.1998),*** in 1988, as the first restrictive part of a surgical malabsorptive procedure called "duodenal switch". The isolated form of the SG was described for the first time in 1993***(Johnson et al., 2003).*** Bariatric surgery was performed in 2 separated operating times. The purpose of this first surgical step (SG) was to reach a consistent initial weight loss able to reduce the technical difficulties, and thus the perioperative morbidity ***(Holover, 2006) (Rosenthal et al., 2008)***. The second step (mal absorptive step) was performed within six months. Because of the encouraging initial results, the SG, considered technically easier and relatively faster than other mal absorptive bariatric procedures, was then used as an independent technique, showing a low rate of complications, a comparable excess weight loss, and a significant decrease of comorbidities ***(Hamoui et al., 2006).***

The effect of SG on Weight loss is partly based on a gastric restrictive mechanism tubulisation which reduces the

size of the new stomach. The SG has also a hormonal effect. By removing the gastric fundus, the secretion of ghrelin, a hormone that stimulates appetite secreted by fundic parietal cells, is almost stopped, causing loss of appetite. A recent large series of about 1000 SG reported an excess weight loss of 86.6% at 1 year, 84.2% at 2 years and 84.5% at 3 years from the intervention ***(Boza et al., 2012).***

The disappearance of type II diabetes occurs in 60-96 % of patients operated by SG ***(Van Rutte, 2012)***. Other co-morbidities, such as hypertension, dyslipidemia, arthritis and sleep apnea, are clearly improved after SG, which gives with satisfactory results. It was also demonstrated that the SG significantly reduced the risk of developing coronary heart disease from the first 6 months postoperatively, and allows a significant risk reduction by up to 80% within 12 months after intervention ***(Pimenta et al., 2013)*** concluded that quality of life has improved with 92.5 % of patients after an average 19.1 months. After a 1 year follow-up ***(Zhang et al., 2013).***

There are several inherent risks associated with LSG. These risks include staple line disruption and subsequent leak, bleeding requiring reoperation or transfusion; and postoperative strictures requiring endoscopic or surgical intervention. In a systematic review of SG, Brethauer et al. identified studies with detailed complication data. In these

studies, there were leaks (2.2%), bleeding episodes (1.2%), and postoperative strictures (0.6%). Nonetheless, LSG is still considered a low morbidity procedure, with a mortality rate < 1% ***(Sakran, 2012).***

In a recent study the prevalence of vitamin B12, vitamin D, folate, iron and zinc deficiency were reported after LSG. In general, these investigators found folate deficiency was slightly more common after LSG than Roux-en-Y gastric bypass ***(Chiu S,et al,2011).*** A retrospective study performed on patients who underwent LSG and found 47% of their patients to have persistent GERD symptom more than 30 days ***(Carterett al, 2011).*** Stricturet could present either acutely after surgery due to tissue edema or more commonly in a delayed fashion. Although kinking of the stomach following LSG has been reported ***(Uglioni et al. 2009).***

LSG has emerged as an effective stand-alone procedure in the thriving world of bariatric surgery. Laparoscopic sleeve gastrectomy (LSG) is a relatively new and effective procedure for weight loss. Owing to an increase in the number of bariatric surgical procedures, general surgeons should have an understanding of the complications associated with LSG and an approach for dealing with them.

Aim of the Work

This study is conducted to assess the effect of Sleeve Gastrectomy as a bariatric procedure considering the percentage of excess weight loss, obesity co morbidities. Complications and patient's satisfaction.

Chapter One
Stomach Anatomy

The stomach is a pouch connecting the abdominal esophagus and the first part of the duodenum. "termination of a tube, the esophagus, and the beginning of a pouch, the stomach ***(Gray, 2008).***

Embriololgy of the stomach:

The primordia of the esophagus, stomach, and proximal duodenum are formed by the elongation of the embryonic foregut. During the 4th or 5th week of embryonic life, dilatation starts at the area of the future stomach at the level of C3-C5. At the end of the 7th week, the stomach may be found at T5-T10, not by descent, but by the cephalad growth of other embryonic entities. Growth of the trunk causes the stomach to locate between T10 and L3, its normal final positionm ***(McKinley, 2012).***

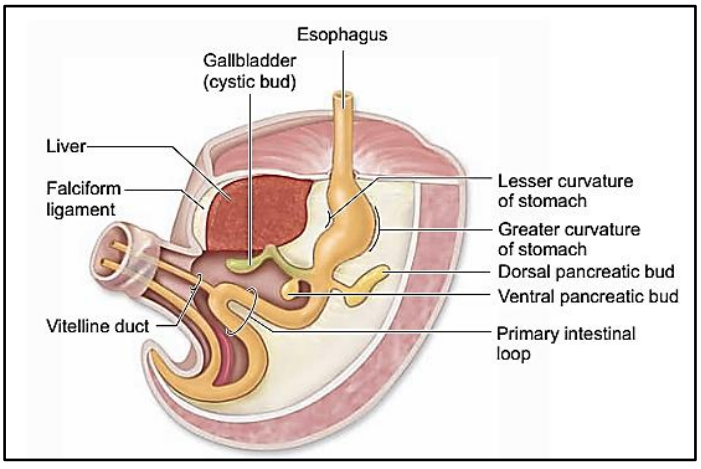

Figure (1): Week 5: Greater and lesser curvatures of stomach form

Perhaps 90 degrees clockwise rotation takes place around the longitudinal axis, pulling the dorsal mesogatrium to the left. The formation of the omental bursa may be appreciated at this point. Because of this rotation the topographic anatomy of the vagal trunks changes: the left trunk innervates the anterior gastric wall and the right innervates the posterior gastric wall. This may be remembered by the mnemonic LARP: Left trunk, anterior gastric wall; Right trunk, Posterior gastric wall ***(McKinley, 2012).***

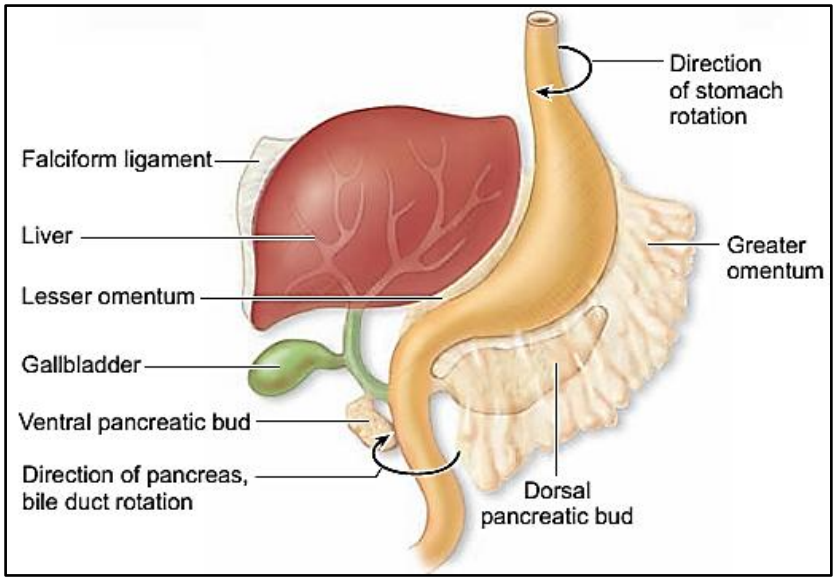

Figure (2): Weeks 6-7: Rotation of stomach, pancreatic buds

The anteroposterior axis rotation changes the position of the gastric cardia and fundus, as well as the position of the pylorus and gastro-duodenal junction. Therefore, the dorsal midline becomes the greater curvature and the ventral