Ain shams University
Faculty of Medicine

Complications of Laparoscopic sleeve Gastrectomy

Essay
Submitted for partial fulfillment of the Master Degree in General Surgery

By
Haytham Salah El din El khaldy
M.B.B.CH
Faculty of medicine
Ain shams University

Under Supervision of

Prof. Tarek Mohamed Fareed El Bahar
Professor of General Surgery
Faculty of Medicine-Ain Shams University

Prof. Mohamed Mahmoud Abou Zeid
Assistant Professor of General Surgery
Faculty of Medicine-Ain Shams University

Dr. Medhat Mohamed Helmy
Lecturer of General Surgery
Faculty of Medicine-Ain Shams University

Faculty of Medicine
Ain Shams University
2016

جامعة عين شمس
كلية الطب

مضاعفات تكميم المعدة بالمنظار

رسالة مقدمة من

الطبيب/ هيثم صلاح الدين الخالدى

بكالوريوس الطب والجراحة

جامعة عين شمس

تحت اشراف

أ.د/ طارق محمد فريد البحار
أستاذالجراحة العامة
كلية الطب- جامعة عين شمس

أ.د/محمد محمود أبوزيد
أستاذ مساعد الجراحة العامة
كلية الطب- جامعة عين شمس

د/ مدحت محمد طلمى
مدرس الجراحة العامة
كلية الطب - جامعة عين شمس

كلية الطب
جامعة عين شمس
٢٠١٦

Acknowledgments

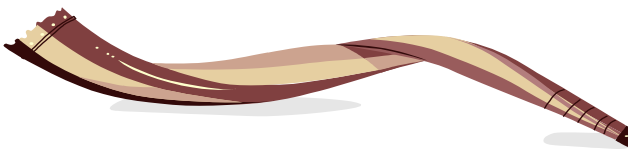
I am extremely thankful to **Allah** who gave me the ability and power to finish this work.

It is a great honor to express my sincere appreciation to **Prof. Dr. Tarek Mohamed Fareed El Bahar**, Professor of General Surgery , Faculty of Medicine , Ain Shams University for his kind supervision, continuous encouragement and persistent support, his valuable advice helped me to complete this work.

I am very grateful to **Prof. Mohamed Mahmoud Abou Zeid**, Assistant Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his outstanding help in all its stages and for his constant encouragement and supervision.

I am very thankful to **Dr. Medhat Mohamed Helmy**, Lecturer of General Surgery, Faculty of Medicine, Ain Shams University, for his great concern, kind supervision and continuous help.

All thanks to all stuff members of General Surgery, Faculty of Medicine, All my thanks to my family, friends and colleagues who gave me support and guidance.



Dedication

I dedicate this work to my family & to my precious wife for all the support they offered during all steps of post -graduate studies

بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

List of abbreviations

AGB	**Adjustable Gastric Banding**
BMI	**Body-Mass Index**
BPD-DS	**Bilio-Pancreatic Diversion and Duodenal Switch**
CCK	**Cholecystokinin**
CT	**Computed Tomography**
DVT	**Deep Venous Thrombosis**
EWL	**Excess Weight Loss**
FDA	**Food and Drug Administration**
GER	**Gastro Esophageal Reflux**
GERD	**Gastro Esophageal Reflux Disease**
GI	**Gastrointestinal**
ICERs	**Incremental Cost-Effectiveness Ratios**
IV	**Intravenous**
LAGB	**Laparoscopic Adjustable Gastric Banding**
LRYGBP	**Laparoscopic Roux-en-Y Gastric Bypass**
LSG	**Laparoscopic Sleeve Gastrectomy**
OTSC	**Over the Scope Clips**
POD	**Postoperative Day**
PPI	**Proton Pump Inhibitor**
PSG	**Primary Sleeve Gastrectomy**
PVT	**Portal Venous Thrombosis**
PYY	**Peptide YY**

QALY	**Quality-Adjusted Life Expectancy**
Re-SG	**Re-Sleeve Gastrectomy**
SADJB-SG	**Single-Anastomosis Duodenojejunal Bypass with Sleeve Gastrectomy**
SEMS	**Self-Expanding Metallic Stents**
SEPS	**Self-Expanding Polyester Stents**
SG	**Sleeve Gastrectomy**
SILS	**Single-Incision Laparoscopic Surgery**
SITU	**Single-Incision Trans-umbilical**
T2DM	**Type 2 Diabetes**
TIPS	**Trans-Jugular Intrahepatic Portosystemic Shunt**
TPE	**Therapeutic Patient Education**
TPN	**Total Parenteral Nutrition**
VBG	**Vertical Banded Gastroplasty**
VBLOC	**Vagal Blocking for Obesity Control**
VTE	**Venous Thrombo-Embolism**
WE	**Wernicke's Syndrome**

List of Content

List OF Figures

Introduction

Introduction

Obesity was recognized in 2013 by the American Medical Association as a complex, chronic disease requiring medical attention. Defining obesity as a disease is a very public process, largely driven by expectation of costs and benefits. Although the public has been slow to embrace this definition, evidence is emerging for broader awareness of influencing factors beyond personal choice. This decision seems to be working with other factors to bring more access to care, less blame for people with the condition, and more favorable conditions for research to identify effective strategies for prevention and clinical care to decrease the impact. ***(Kyle et al., 2016)***

Worldwide, obesity is increasing in prevalence, currently, the proportion of adults with a body-mass index (BMI) of 25 kg/m^2 or greater is 36.9% in men and 38.0% in women. ***(Schauer et al., 2012)***

More than 50% of the obese individuals in the world are located in ten countries (listed in order of number of obese individuals): United States, China, India, Russia, Brazil, Mexico, Egypt, Germany, Pakistan and Indonesia. Although age-standardized rates were decreased in developing than in developed countries overall, 62% of the world's obese individuals live in developing countries. ***(Elrazek et al., 2014)***

Results of surgery ensured greater improvement in weight loss outcomes and weight associated co morbidities compared with non-surgical interventions, regardless of the type of procedures used. When compared with each other, certain procedures resulted in greater weight loss and improvements in co morbidities than others. ***(Colquitt et al., 2014)***

Morbid obesity is associated with high morbidity and mortality rates. Bariatric surgery offers morbidly obese individuals substantial and sustainable weight loss and decrease in obesity-related comorbidities if other conservative treatments failed. A variety of operative procedures for morbid obesity were popularised over the past three decades, and they are continuously evolving. These procedures are classified into three main categories according to their main mechanism of action: restrictive (e.g. laparoscopic adjustable gastric banding [LAGB], vertical banded gastroplasty); malabsorptive (e.g. biliopancreatic diversion and duodenal switch [BPD-DS]); and a combination of both (e.g. laparoscopic Roux-en-Y gastric bypass [LRYGBP]). ***(Lee et al ., 2011)***

Sleeve gastrectomy (SG) first used in 1988 as a variation of biliopancreatic diversion (BPD) with duodenal switch. In contrast to the BPD described by ***Scopinaro et al.,(1996)*** in which a horizontal gastrectomy was performed, the pylorus and duodenum were preserved in SG, giving a decrease in dumping symptoms and marginal ulcers. Also, gastrectomy was more restrictive, permitting a

decline in the malabsorptive component and nutritional secondary effects. ***(Benaiges et al., 2015)***

Laparoscopic sleeve gastrectomy (LSG), also known as longitudinal or vertical gastrectomy, is an effective surgical option for morbid obesity management. It was first introduced in 1990 as an alternative to distal gastrectomy with the duodenal switch procedure to decrease the complications rate. ***(Frezza, 2007)***

Sleeve gastrectomy was performed for the first time laparoscopically by Ren and colleagues in 1999**.** ***(Ren et al., 2000),*** At this time, LSG was considered a first-stage operation in high-risk patients before biliopancreatic diversion or Roux-en-Y gastric bypass. ***(Reganet al., 2003)***

A multipurpose strategy was recommended by ***Baltasar et al., (2005)*** by applying SG as a single procedure in mildly-obese patients or after gastric banding was failed, and as a 2-step procedure for high-risk patients, who were either extremely obese or had serious comorbidities. In recent years, some technical modifications, such as a progressive decrease in gastric remnant size, were made to prevent weight gain in the long term**.** ***(Rosenthal et al., 2012),*** or the use of natural transluminal orifice endoscopic surgery ***(Ramos et al ., 2008)*** and single incision laparoscopic surgery. ***(Saber et al., 2008).***

Laparoscopic sleeve gastrectomy was found to be effective as a single procedure for the treatment of morbid obesity. ***(Moon Han et al., 2005)***

The physiological and anatomical reasoning supporting the efficacy of LSG is due to the reduction of total gastric capacity, illustrating a restrictive effect **.**Also, there is an orexigenic/anorexigenic hormonal modification which is evident due to the removal of fundal ghrelin-producing cells. ***(Dakwar et al., 2013)***

There is positive impact of LSG on diabetic status of non-morbidly obese patients. The possible mechanisms include the post-prandial GLP-1 level rise induced by accelerated gastric emptying, result in an increase in insulin secretion. LSG also cause decreased ghrelin and leptin levels which may have a role in improving glucose homeostasis after surgery. ***(Vigneshwaran et al., 2016)***

Laparoscopic sleeve gastrectomy (LSG) had gained popularity as a primary bariatric procedure due to its comparative simplicity ***(Gagner et al., 2009)***. It involved creating a "sleeve" of the stomach by resecting the majority of the greater curvature of the stomach, leaving a vertical tube of 60-80mL in capacity. ***(Karmali et al., 2010)***