Laparoscopic Gastric Plication in Management of Morbid Obesity

Essay

Submitted for partial fulfillment of
the M.Sc. degree in General Surgery by

Michael Soliman Nessim Megaly

Supervisors:

Dr.Mohammed Mostafa Marzouk
Professor of General Surgery
Ain Shams University

Dr.Mohammed Mohammed Matar
Lecturer of General Surgery
Ain Shams University

Faculty of Medicine
Ain Shams University
٢٠١٢

كشكشة المعدة عن طريق المنظار الجراحي في علاج السمنة المفرطة

رسالة

مقدمة من

الطبيب/ مايكل سليمان نسيم مجلي

بكالوريوس الطب والجراحة , جامعة عين شمس
للحصول علي درجة الماجستير في الجراحة العامة

تحت إشراف

أ.د. محمد مصطفي مرزوق
أستاذ الجراحة العامة بكلية الطب , جامعة عين شمس

د. محمد محمد مطر
مدرس الجراحة العامة , بجامعة عين شمس

كلية الطب
جامعة عين شمس
٢٠١٢

List of Abbreviations

AGB	Adjustable gastric banding
AgRP	agouti-related peptide
AMA	American medical association
ARC	Arcuate nucleus (of hypothalamus)
ATP	Adenosine triphosphates
BMI	body mass index
BPD/DS	Biliopancreatic diversion/duodenal switch
CCK	Cholecystokinin
DVT	Deep venous thrombosis
EWS	Excess weight loss
GLP-١	Glucagon-like peptide ١
GRP	Gastrin-releasing-peptide
LGCP	Laparoscopic greater curvature placation
LMWH	low molecular weight heparin
NPY	Neuropeptide Y
POMC	pro-opiomelanocortin
PYY	Peptide YY
RYBG	Reux-en-Y gastric bypass
THC	Tetrahydrocannabinol
TWL	Total weight loss
VBG	Vertical banded gastroplasty
VSG	Vertical sleeve gastrectomy

List of Tables

List of Figures

List of Figures

Contents

Acknowledgment

Praise to **ALLAH**, *the merciful and the compassionate for all the countless gifts have been offered. Of these gifts, those persons who gave me the precious hands, so I have been able to fulfill this work.*

I am greatly honored to express my thanks and deepest gratitude to ***Prof. Dr. Mohammed Mostafa Marzouk,*** *Professor of General Surgery, faculty of medicine, Ain-Shams University, for giving me the honor of working under his supervision and for his continuous encouragement with kind guidance throughout the whole work.*

I'm very grateful to ***Dr. Mohammed Mohammed Matar,*** *lecturer General Surgery, faculty of medicine-Ain-Shams University, who had been kind enough to spare no effort or time to advance willing; I am indebted to him for close supervision, valuable instructions, great support and encouragement and gentleness through out this work. I find no words that could express my gratitude to him.*

Finally I would like to dedicate this work to all staff members of Urology department, to my great family, and to my wife, my daughter Nada, and my son Omar for their valuable suggestions and fruitful cooperation.

Michael Soliman Nessim Megaly

Introduction

Obesity

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 problems. Body mass index (BMI), a measurement which compares weight and height, defines people as overweight (pre-obese) if their BMI is between ٢٥ and ٣٠ kg/m٢, and obese when it is greater than ٣٠ kg/m٢. [١]

The Greeks were the first to recognize obesity as a medical disorder. Hippocrates wrote that "Corpulence is not only a disease itself, but the harbinger of others" [١]. The Indian surgeon Sushruta (٦th century BCE) related obesity to diabetes and heart disorders.He recommended physical work to help cure it and its side effects. For most of human history mankind struggled with food scarcity. Obesity has thus historically been viewed as a sign of wealth and prosperity. It was common among high officials in Europe in the Middle Ages and the Renaissance as well as in Ancient East Asian civilizations.

Obesity increases the likelihood of various diseases, particularly heart disease, type ٢ diabetes, breathing difficulties during sleep, certain types of cancer, and osteoarthritis. Obesity is most commonly caused by a

combination of excessive food energy intake, lack of physical activity, and genetic susceptibility, although a few cases are caused primarily by genes, endocrine disorders, medications or psychiatric illness. Evidence to support the view that some obese people eat little yet gain weight due to a slow metabolism is limited; on average obese people have a greater energy expenditure than their thin counterparts due to the energy required to maintain an increased body mass. (١)

Obesity is one of the leading preventable causes of death worldwide. Large-scale American and European studies have found that mortality risk is lowest at a BMI of ٢٠–٢٥ kg/m٢ in non-smokers and at ٢٤–٢٧ kg/m٢ in current smokers, with risk increasing along with changes in either direction. A BMI above ٣٢ has been associated with a doubled mortality rate among women over a ١٦-year period. In the United States obesity is estimated to cause an excess ١١١،٩٠٩ to ٣٦٥,٠٠٠ deaths per year, while ١ million (٧،٧٪) of deaths in the European Union are attributed to excess weight. On average, obesity reduces life expectancy by six to seven years: a BMI of ٣٠–٣٥ reduces life expectancy by two to four years. While obesity (BMI > ٤٠) also known as (Morbid Obesity) reduces life expectancy by ١٠ years. (٢)

Medical (nonsurgical) weight loss therapies include combinations of diet, exercise, behavioral therapies, and medications. In ١٩٩٨, an NIH (National Institutes of Health) expert panel, upon critical review of the literature, concluded that these modalities, either alone or in combination, can induce modest weight loss that confers health benefits to the patients. However, the weight loss induced by these therapies is often short lived. Furthermore, medical management must continue indefinitely to be effective, or weight regain is common. Such medical therapies have not been shown to be effective in maintaining long-term weight loss in a morbidly obese patient population. Thus, most physicians realize that surgery remains the best option for many morbidly obese patients. Because severe obesity is associated with increased risk for premature death, the ١٩٩١ NIH consensus panel set out guidelines for surgical therapies in patients with extreme obesity (BMI _٤٠ kg/m٢ or ٣٥–٤٠ kg/m٢ with co morbidities).To clear, morbidly obese people may be eligible for bariatric surgery. Bariatric surgery for morbid obesity is considered an intervention of last resort for patients who have attempted first-line forms of medical management, such as diet, increased physical activity, behavioral modification, and drugs. [٣]

Bariatric Surgeries

Men and women with morbid obesity may be eligible for surgical intervention. There are numerous different surgical procedures, with several different variations. The procedures can be divided into ٢ general types: malabsorptive (bypassing parts of the gastrointestinal tract to limit the absorption of food) and restrictive (decreasing the size of the stomach in order for the patient to feel satiated with a smaller amount food). All can be performed either as open surgery or laparoscopically. (٤)

Malabsorptive interventions include:

١-Biliopancreatic diversion which involves removing a large part of the stomach to control oral intake, followed by reconstructing the small intestine to divert the bile and pancreatic juices so they meet the ingested food closer to the middle or the end of the small intestine. (٤)

٢- Roux-en-Y gastric bypass (RYGB) which combines restriction and malabsorption techniques and creates a small gastric pouch and an intestinal bypass. (٤)

While **restrictive interventions** include:

١. Vertical banded gastroplasty (VBG), which involves dividing the stomach into ٢ parts. The aim is to cause the patient to feel satiated from a limited intake of food,

owing to the reduced capacity of the small upper section of the stomach and the slow emptying through a small gap into the rest of the digestive system. (٤)

٢. Adjustable gastric banding (ABG) that limits food intake by placing a constricting ring completely around the stomach below the junction of the stomach and esophagus. Early bands were nonadjustable, but bands now have an inflatable balloon in their lining to allow the size of the hole to be adjusted to regulate food intake. (٤)

٣. Vertical sleeve gastrectomy (VSG) that gained popularity, and has become widely accepted as a primary bariatric operation. It includes creating a staple line along the stomach. (٥)

٤. Laparoscopic gastric plication.

Laparoscopic Gastric Plication

The gastric plication operations evaluated in the present study are intended to mimic some of the effects of sleeve gastrectomy (gastric restriction) without the same degree of risk. The initial procedure concept of plicating the anterior stomach was intriguing, because it did not require division of the short gastric vessels or mobilization of the greater curvature and could potentially reduce the risk to the patient.

The GCP (Greater curvature plication) procedure does require division of the short gastric vessels, but it does not require stapling or resection and therefore might have some advantages compared with sleeve gastrectomy. [٥]

LGCP is notably similar to a VSG in that it generates a gastric tube by means of eliminating the greater curvature but does so without gastric resection. It is likely that LGCP greatly reduces the possibility for gastric leaks. [٦]

Throughout our Research, we will be discussing the new operation of laparoscopic gastric plication in comparison to other bariatric surgeries, explaining the exact technique of the operation, Clarifying the advantages and disadvantages, and explaining the exact indication for performing that certain operation.

Aim of the work

To search the advantages of the new technique (laparoscopic gastric plication) in management of morbid obesity over other previous techniques as adjustable gastric banding (AGB) and vertical sleeve gastrectomy (VSG).