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Management of Leakage after Sleeve Gastrectomy

Essay

Submitted for partial fulfillment of Master Degree in **General Surgery**

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بسم الله الرحمن الرحيم

قالُواسُبْحَانَكَ لا
عِلمَ لَنَا إلّا ما
عَلّمْتَنَا إنَّكَ أنتَ
الْعَلِيمُ الْحَكيم

صدق الله العظيم

سورة البقرة آية (٣٢)

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List of Abbreviations

Abb.	Full word
AGB	Adjustable gastric banding
ASA	American Society of Anesthesiology
BPD	Biliopancreatic Diversion
BAI	Body adiposity index
BF	Body fat
BMI	Body mass index
CVD	Cardiovascular disease
CDC	Centers for Disease Control and Prevention
CAT	Computed axial tomography
CT	Computed tomography
CI	Confidence interval
CHD	Coronary heart disease
CRP	C-reactive protein
DXA	Dual energy X-ray absorptiometry
DS	Duodenal switch
EBWL	Estimated body wight loss
EWL	Excess weight loss
%EWL	Excess weight loss percentage
FRC	Functional residual capacity
GE	Gastroesophageal
GERD	Gastro-esophageal reflux disease
GLP-١	Glucagon-link peptide-١
IOL	Induction of labour
IMT	Intensive medical therapy

List of Abbreviations **(Cont...)**

Abb.	Full word

IHTG	Intrahepatic triglyceride
OAK	Knee osteoarthritis
LSG	Laparoscopic sleeve Gastrectomy
LAGB	Laparscopic Adjustable gastric banding
MRI	Magnetic resonance imaging
NIH	National Institutes of Health
NAFLD	Nonalcoholic fatty liver disease
PVN	Para ventricular nucleus
POD	Post-operative day
PCPs	Primary care phisycians
PCa	Prostatic cancer
RCT	Randomized controlled trial
RYGB	Rouxen Y gastric bypass
sPTH	Serum parathyroid hormone
SILS	Single-Incision Transumbilical Laparoscopic Sleeve Gastrectomy
SG	Sleeve Gastrectomy
TEWL	Transepidermal water loss
T۲DM	Type ۲ diabetes mellitus
UGI	Upper gastrointestinal
UFF	Urinary free cortisol
VMN	Ventromedial nucleus
VBG	Vertical banded gastroplasty
۲۵D	Vtamin D
WHO	World Health Organization

INTRODUCTION

Obesity is originally derived from Latin word (obesus) i.e. to overeat. The modern definition is "a disease of excess body fat" ***(Kral, ٢٠٠١).***

The most widely accepted measure of obesity is the body mass index (BMI) which equals patient weight in kilograms divided by the square of his or her height in meters, a normal BMI ranges from ١٨.٥-٢٤.٥ kg/m^{٢}, overweight equals BMI between ٢٥-٢٩.٥ kg/m^{٢}, obesity equals BMI ٣٠ kg/m^{٢} or higher ***(Herron, ٢٠٠٤).***

Severe obesity is having a BMI greater than ٣٥ kg/m^{٢}, and morbid obesity is having a BMI greater than ٤٠ kg/m^{٢} or a BMI greater than ٣٥ kg/m^{٢} with concomitant obesity-related morbidity ***(Brunicardi et al., ٢٠٠١).***

The patient is considered superobese with a BMI more than ٥٠ kg/m^{٢} and super-super obese with a BMI more than ٦٠ kg/m^{٢} ***(Ballantyne et al., ٢٠٠٤).***

Morbid obesity is associated with progressive, serious and debilitating co-morbidities such as type II diabetes mellitus, hypertension, hyperlipidaemia, accelerated atherosclerosis, debilitating arthritis of weight-bearing joints, hypoventilation, sleep apnea syndrome, gastroesophageal reflux disease, infertility & urinary stress incontinence in females, certain cancers, immobility, psychological & economic problems ***(Pontiroli et al., ٢٠٠٥).***

Treatment possibilities of obesity include diet restriction, behavioral therapy, medical treatment, and surgery. All non surgical treatment regimens have an extremely high rate of failure and surgery is therefore today is the option for treatment of morbid obesity ***(Pontiroli et al., ٢٠٠٥).***

However, serious complications can occur and therefore a careful selection of patients is of utmost importance. Bariatric surgery should at least be considered for all patients with a BMI of more than ٤٠ kg/m^{٢} and for those with a BMI of more than ٣٥ kg/m^{٢} with concomitant obesity-related conditions after failure of conventional treatment ***(Bult et al., ٢٠٠٨).***

At the present time a number of 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, ٢٠٠٤).***

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 ١٠٠-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 ٦٠ kg/m^{٢}. Since then, this intervention now enjoys certain favor on the part of bariatric surgery teams ***(Mognol and Marmuse, ٢٠٠٧).***

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. Early postoperative complications following LSG that need to be identified urgently include bleeding, staple line leak and development of an abscess. Delayed complications include strictures, nutritional deficiencies and gastresophageal reflux disease ***(Sarkhosh et al., ٢٠١٣).***

Sleeve gastrectomy has become an important surgical option for the treatment of the ever growing morbidly obese population. The risk of leak is low at ٢.٤% ***(Aurora et al., ٢٠١٢).***

Leak from the staple line is the most serious and life-threatening complication after Laparoscopic sleeve gastrectomy (LSG) ***(Taha et al., ٢٠١٣).***

Classification of the leaks based on three parameters: time of appearance after surgery, magnitude or clinical severity, and location of the leaks. Thus, early leaks were classified as those that appeared ١ to ٤ days after surgery; intermediate leaks those that appeared ٥ to ٩ days after surgery, and late leaks those that appeared١٠ or more days after surgery ***(Csendes et al., ٢٠١٠).***

Furthermore, type I or subclinical are those that appear as a localized leak, without spillage or dissemination, with few clinical manifestations and easy to treat medically. Type II

leaks are those with dissemination or diffusion into the abdominal or pleural cavity, by way of an irregular pathway, with the appearance of contrast medium (methylene blue, radiological contrast) or food through any of the abdominal drain, with severe clinical consequences ***(Csendes et al., ٢٠١٠).***

Management of leaks after LSG can be challenging. Early diagnosis and treatment is important in the management of a leak. However, it can be treated safely via various management options depending on the time of diagnosis and size of the leak ***(Rena et al., ٢٠١٤).***

AIM OF THE WORK

To review the recent trends in the management of leakage after sleeve gastrectomy.