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Management of Leakage after Sleeve Gastrectomy

Essay

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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 weight loss
EWL	Excess weight loss
%EWL	Excess weight loss percentage
FRC	Functional residual capacity
GE	Gastroesophageal
GERD	Gastro-esophageal reflux disease
GLP-	Glucagon-like peptide-
IOL	Induction of labour
IMT	Intensive medical therapy

List of Abbreviations (Cont...)

Abb.	Full word
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IHTG	Intrahepatic triglyceride
OAK	Knee osteoarthritis
LSG	Laparoscopic sleeve Gastrectomy
LAGB	Laparoscopic 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 physicians
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
T DM	Type diabetes mellitus
UGI	Upper gastrointestinal
UFF	Urinary free cortisol
VMN	Ventromedial nucleus
VBG	Vertical banded gastroplasty
D	Vitamin 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, 2001*).

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 18.5-24.9 kg/m², overweight equals BMI between 25-29.9 kg/m², obesity equals BMI 30 kg/m² or higher (*Herron, 2004*).

Severe obesity is having a BMI greater than 30 kg/m², and morbid obesity is having a BMI greater than 40 kg/m² or a BMI greater than 30 kg/m² with concomitant obesity-related morbidity (*Brunnicardi et al., 2001*).

The patient is considered superobese with a BMI more than 50 kg/m² and super-super obese with a BMI more than 60 kg/m² (*Ballantyne et al., 2004*).

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., 2005*).

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.*, 2005).

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 40 kg/m² and for those with a BMI of more than 35 kg/m² with concomitant obesity-related conditions after failure of conventional treatment (*Bult et al.*, 2008).

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*, 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 40 kg/m². Since then, this intervention now enjoys certain favor on the part of bariatric surgery teams (*Mognol and Marmuse*, 2007).

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 gastroesophageal reflux disease (*Sarkhosh et al.*, 2013).

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 2.4% (*Aurora et al.*, 2012).

Leak from the staple line is the most serious and life-threatening complication after Laparoscopic sleeve gastrectomy (LSG) (*Taha et al.*, 2013).

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 1 to 4 days after surgery; intermediate leaks those that appeared 5 to 9 days after surgery, and late leaks those that appeared 10 or more days after surgery (*Csendes et al.*, 2010).

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.*, ۲۰۱۰).

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.*, ۲۰۱۴).

AIM OF THE WORK

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