The Effect of Laparoscopic Mini – Gastric Bypass on Metabolic Syndrome

Essay

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List of Abbreviations

Abb.	Full term
AACE	*American association of clinical endocrinologists.*
ADA	*American diabetes association.*
AHA/NHLBI	*American Heart Association/National Heart, Lung and Blood Institute.*
ASCVD	*Atherosclerosis cardiovascular disease.*
ASMBS	*American society for metabolic and bariatric surgery.*
ATP	*Adult treatment panel.*
AUC	*Area under the curve.*
BIB	*Bariatric intragastric balloon.*
BMI	*Body mass index.*
BPD	*Biliopancreatic diversion.*
BPDDS	*Biliopancreatic diversion with duodenal switch.*
CHD	*Coronary heart disease.*
CRP	*C-reactive protein.*
CVD	*Cardiovascular disease.*
DJD	*Degenerative joint disease.*
DM	*Diabetes mellitus.*
EGIR	*European group for study of insulin resistance.*
FDA	*Food and drug administration.*
GBP	*Gastric bypass.*
GE	*Gastroesophageal.*
GERD	*Gastroesophageal reflux disease.*
GIQLI	*Gastrointestinal quality of life index.*
GJ	*Gastrojejunostomy.*
HDL	*High density lipoprotein.*
HOMA	*Homeostasis model assessment.*
IDF	*International diabetes foundation.*
IFG	*Impaired fasting glucose.*
IGT	*Impaired glucose tolerance.*
IL	*Interleukin.*
JI	*Jejuno-ileal.*

List of Abbreviations cont…

Abb.	Full term
LASGB	*Laparoscopic adjustable silicone gastric banding.*
LCD	*Low calorie diet.*
LDL	*Low density lipoprotein.*
LMGP	*Laparoscopic mini-gastric bypass.*
LRYGBP	*Laparoscopic roux-en-y gastric bypass.*
MGB	*Mini-gastric bypass.*
NAFLD	*Non-alcoholic fatty liver disease.*
NCD	*Normal calorie diet.*
NCEP	*National cholesterol education program.*
NIH	*National institute of health.*
PAI	*Plasminogen activator inhibitor.*
RGB	*Roux-en-y gastric bypass.*
SG	*Sleeve gastrectomy.*
T2DM	*Type 2 diabetes mellitus.*
TAFI	*Thrombin- activatable fibrinolysis inhibitor.*
TG	*Triglycerides.*
TGRLPs	*Triglycerides rich lipoproteins.*
TNF	*Tumour necrosis factor.*
VBG	*Vertical banded gastroplasty.*
VLDL	*Very low density lipoprotein.*
WC	*Waist circumference.*
WHO	*World health organization*

Abstract

Bariatric surgery is a tool to help morbidly obese individuals lose most, if not all, of their excess weight. During the Roux-en-Y gastric bypass procedure, the size of the stomach is significantly reduced, limiting the volume of food a patient can consume, and the digestive tract is altered, decreasing the amount of calories and nutrients the body absorbs. When coupled with critical lifestyle changes, gastric bypass surgery can result in extreme weight loss within the first year after surgery.

A mini gastric bypass is a less invasive alternative to standard gastric bypass; but produces similar results. This procedure is performed laparoscopically, meaning the surgeon works through several small incisions and uses a tiny camera (called a laparoscope) and a television screen to guide special instruments through the incisions.

Keyword: Triglycerides rich lipoproteins- Tumour necrosis factor- Vertical banded gastroplasty- Very low density lipoprotein- Waist circumference- World health organization.

INTRODUCTION

Metabolic syndrome is a clustering of at least three of five of the following medical conditions: abdominal (central) obesity, elevated blood pressure, elevated fasting plasma glucose, high serum triglycerides, and low high-density lipoprotein (HDL) levels. The syndrome is thought to be caused by an underlying disorder of energy utilization and storage. The cause of the syndrome is an area of on-going medical research ***(Grundy et al., 2004).***

The main sign of metabolic syndrome is central obesity (also known as visceral, male-pattern or apple-shaped adiposity), overweight with adipose tissue accumulation particularly around the waist and trunk.

Other signs of metabolic syndrome include high blood pressure, decreased fasting serum HDL cholesterol, elevated fasting serum triglyceride level (VLDL triglyceride), impaired fasting glucose, insulin resistance, or prediabetes. Associated conditions include hyperuricemia, fatty liver (especially in concurrent obesity) progressing to nonalcoholic fatty liver disease, polycystic ovarian syndrome (in women), erectile dysfunction (in men), and acanthosis nigricans ***(Ford et al., 2002).***

Metabolic syndrome is associated with the risk of developing cardiovascular disease and diabetes. Bariatric surgery

is considered an effective option for the management of patients with metabolic syndrome ***(American Gastroenterological Association, 2002).***

Bariatric surgery (weight loss surgery) includes a variety of procedures performed on people who have obesity. Weight loss is achieved by reducing the size of the stomach with a gastric band or through removal of a portion of the stomach (sleeve gastrectomy or biliopancreatic diversion with duodenal switch) or by resecting and re-routing the small intestine to a small stomach pouch (gastric bypass surgery) ***(Adami et al., 2001)***.

Bariatric surgery is a tool to help morbidly obese individuals lose most, if not all, of their excess weight. During the Roux-en-Y gastric bypass procedure, the size of the stomach is significantly reduced, limiting the volume of food a patient can consume, and the digestive tract is altered, decreasing the amount of calories and nutrients the body absorbs. When coupled with critical lifestyle changes, gastric bypass surgery can result in extreme weight loss within the first year after surgery ***(Ford et al., 2002).***

A mini gastric bypass is a less invasive alternative to standard gastric bypass; but produces similar results. This procedure is performed laparoscopically, meaning the surgeon works through several small incisions and uses a tiny camera (called a laparoscope) and a television screen to guide special instruments through the incisions ***(Wittgrove, 2000)***

The most important benefit of gastric bypass is the decreased risk of co-morbidities, or conditions that are caused by morbid obesity. Once a patient undergoes a gastric bypass procedure and loses excess weight, he or she may experience relief from symptoms associated with obesity-related health conditions, such as diabetes, sleep apnea, arthritic pain, high blood pressure, and edema ***(Carson et al., 1994).***

The procedure itself is performed in less time than traditional gastric bypass surgery, typically taking no more than an hour. Since the surgeon does not conduct mini gastric bypass surgery through one large incision, there is a lower risk of post-surgery complications. Patients are typically released from the hospital after 24 hours and have a shorter recovery period than patients who undergo traditional gastric bypass surgery ***(Ballantyne et al., 2006).***

AIM OF THE WORK

Is to review the effect of laparoscopic mini-gastric bypass procedure on metabolic syndrome in cases of morbid obesity.

And to asses outcomes, weight loss, complications and incidence of recurrence after laparoscopic mini gastric bypass in relation to the metabolic syndrome.

PATHOPHYSIOLOGY OF METABOLIC SYNDROME

Definition of metabolic syndrome and Diagnostic criteria

The diagnosis of metabolic syndrome identifies a patient at increased risk for atherosclerosis cardiovascular disease (ASCVD) and / or type 2 DM. In an effort to introduce the syndrome into clinical practice, the American Heart Association/National Heart, Lung and Blood Institute (AHA\ NHLBI) has attempted to formulate simple diagnostic criteria and to avoid the emphasis of the development of the syndrome on a single cause. It should be noted that some individuals or ethnic groups (for example, Asians) will develop characteristics of insulin resistance and metabolic syndrome with only moderate increases in waist circumference (that is, beginning at 37 inch or 94 cm in men or 32 inch or 80 cm in women). Regardless of ethnicity or sex, once an individual exhibits 3 of the 5 following AHA\NHLBI diagnostic criteria, they are considered to have metabolic syndrome ***(Grundy et al., 2005)***.

- Increased waist circumference (more than 102 cm in men and more than 88 cm in women; more than 90 cm in Asian men and more than 80 cm in Asian women), indicating central obesity.
- Elevated triglycerides (more than 150 mg /dL).

- Decreased HDL cholesterol (Less than 40 mg/dL for men, less than 50 mg/dL for women).
- Blood pressure more than 130/85 mm Hg or active treatment for hypertension.
- Fasting plasma glucose level more than 100 mg /dL or active treatment for hyperglycemia.

More recently, several terms have been proposed to describe this clustering:

- Metabolic syndrome ***(Bjorntorp, 1992)***
- Syndrome X ***(Reaven, 1993)***
- The "deadly quartet" ***(Kaplan, 1989)***
- Insulin resistance syndrome ***(DeFronzo&Ferrannini, 1991; and Stern, 1994)***
- Hypertriglyceridemic waist ***(Lemieux et al., 2000).***

The term metabolic syndrome is most commonly used in the cardiovascular field. Although the metabolic syndrome is often referred to as a discrete entity, it is important to recognize, as noted earlier, that it is a syndrome and to a defined uniform entity. No single pathogenesis has been elucidated, nor may one exist. Thus, the syndrome could range from a cluster of unrelated risk factors to a constellation of risk factors linked through a common underlying mechanism. From a clinical standpoint, presence of the metabolic syndrome