



OBESITY AND WEIGHT LOSS SURGERY, HOW MUCH BENEFICIAL AND SAFE?

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Article Received on 01/11/2015

Article Revised on 22/11/2015

Article Accepted on 13/12/2015

ABSTRACT

Obesity is recognized as a global health crisis. Weight loss surgery offers a treatment that can reduce weight, induce remission of obesity-related diseases, and improve the quality of life. This review summarizes recent evidence related to the safety, efficacy, and metabolic outcomes of weight loss surgery for morbid obesity. The article also highlights various issues when lifestyle modifications and weight loss medications have failed to provide significant weight loss in the majority of obese people.

Review Criteria

We systematically searched number of articles, webpages, and major textbooks for writing this article. All papers identified were in English language and full manuscripts. A search for reference data for this purpose was also performed using the Google search engine. In this short review we summarize the findings given by different researchers on the subject and bring it in our support to prove weight loss surgery is best option, beneficial and safe for people with morbid obesity.

KEYWORDS: Morbid Obesity, Bariatric Surgery.

INTRODUCTION

Obesity is increasingly common problem in which excess body fat has accumulated to the extent that it may have a negative effect on health, leading to reduced life expectancy and increased health problems.^[1]

People are considered obese when their body mass index (BMI),^[2] a measurement obtained by dividing a person's weight by the square of the person's height(in meters), exceeds 30 kg/m², with the range 25-30 kg/m² defined as overweight. Obesity means having too much body fat. It is not the same as overweight, which means weighing too much. The weight can also come from muscle, bone, or body water.

BMI Values

Normal	18.5-24.9 kg/m ²
Underweight	<18.5 kg/m ²
Overweight	25.0-29.9 kg/m ²
Obesity (class 1)	30-34.9 kg/m ² >20%
Severe obesity (class 2)	35-39.9 kg/m ² >100%
Severe obesity (class 3)	40-49.9 kg/m ²
Superobesity	>50 >250%

More than 2.1 billion people—nearly 30 percent of the global population—are overweight or obese. Obesity is responsible for about 5 percent of all deaths a year

worldwide, and its global economic impact amounts to roughly \$2 trillion annually. And the problem—which is preventable—is rapidly getting worse. The worldwide prevalence of obesity has doubled between 1980 and 2014. If the prevalence of obesity continues on its current pace, then almost half of the world's adult population will be overweight or obese by 2030.

An estimated 97 million adults in the United States are overweight or obese, a condition that substantially raises their risk of morbidity from hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, and endometrial, breast, prostate, and colon cancers. Today, overweight and obesity thus pose a major public health challenge.^[3]

Rising obesity rates around the world has a profound impact on female reproductive health. Childhood obesity is associated with early onset of puberty, menstrual irregularities. Women of reproductive age with high BMIs have a higher risk of ovulatory problems and tend to respond poorly to fertility treatment. Obesity can aggravate symptoms of pelvic organ prolapse; increase the risk of endometrial polyps and symptomatic fibroids. Obesity has also been shown to be associated with poor pregnancy outcomes, including increased rates of

cesarean delivery, preeclampsia, gestational diabetes, fetal macrosomia, stillbirth, and post term pregnancy. The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Globally, there has been an increased intake of energy dense foods that are high in fat and an increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization.

Our environment actually doesn't support healthy lifestyle habits; in fact, it encourages obesity. Some reasons include: Lack of neighborhood sidewalks and safe places for recreation. Not having area parks, trails, sidewalks, and affordable gyms makes it hard for people to be physically active. People often say that they don't have time to be physically active because of long work hours and time spent commuting.

One more reason for this is that many people spend hours in front of TVs and computers doing work, schoolwork, and leisure activities. In fact, more than 2 hours a day of regular TV viewing time has been linked to overweight and obesity.

Changes in dietary and physical activity patterns, environmental and societal changes and lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing and education, all these lead to obesity.

Modern lifestyles often promote eating excessive amounts of cheap, high-calorie food and spending a lot of time sitting at desks, on sofas or in cars. People are exposed to huge food portions in restaurants, fast food places, gas stations, movie theaters, supermarkets, and even at home. Some of these meals and snacks can feed two or more people. Eating large portions means too much energy in.

People are surrounded by advertisements from food companies. Often children are the targets of advertising for high-calorie, high-fat snacks and sugary drinks. The goal of these ads is to sway people to buy these high-calorie foods that in turn lead to obesity. Once considered a problem only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries, particularly in urban settings.

Treatment options & issues of Obesity

Obesity is a global issue that needs a comprehensive, international intervention strategy. Existing evidence indicates that no single intervention is likely to have a significant overall impact. Education and personal responsibility are critical elements of any program aiming to reduce the incidence of obesity.

Dieting and physical exercise are being considered as main treatment options for obesity.^[4] Diet programs may produce weight loss over the short term,^[5] but maintaining this weight loss is frequently difficult and often requires making exercise and a low calorie diet a permanent part of an individual's lifestyle.^[6,7]

Diet modification may involve eating smaller meals, cutting down on certain types of food, and may not be always good as it may be associated with adverse side effects such as malnutrition, loss of lean muscle mass, increased risks of gout, and electrolyte imbalances. Success rates of long-term weight loss maintenance with lifestyle changes are low, ranging from 2 to 20%.^[8]

Several anti-obesity medications are currently approved by the FDA for long term use. Weight loss with these drugs is modest. Over the longer term, average weight loss on orlistat is 2.9 kg (6.4 lb), sibutramine is 4.2 kg (9.3 lb) and rimonabant is 4.7 kg (10.4 lb).

There is little information on how these drugs affect the longer-term complications or outcomes of obesity.^[9] In 2010 it was found that sibutramine increases the risk of heart attacks and strokes in people with a history of cardiovascular disease.

Patients may be successful in the first few months of a weight loss program; some 80 to 95 percent will eventually put the weight back on. They say this is because obesity has a lot to do with underlying biological issues in the body that dieting, exercise medication simply can't change.

Large and heavy people often have difficulty exercising because they get sore joints, they have very low endurance, and they feel embarrassed. When you have a lot of weight to lose, it can be hard to work out. Not only is it physically uncomfortable, but there are often emotional challenges, too particularly if you feel too out of shape to go to a gym filled with buff bodies and wall-to-wall mirrors.

When weight is gained, it becomes harder to move. The harder it is to move, the harder it is to shift the excess weight. You have all the mechanical stress of excess weight, but then you also have the metabolic problem.

So the conventional advice about exercise sometimes just isn't possible to follow. Personal trainer Steve Barrett explains: "Exercise is stressful for the body – but for those who are severely overweight, their bodies are already stressed, their blood pressure is already raised, they are already fatigued, their joints already strained." Then how can they move or shake their bodies. Sometimes people with obesity do their best to reduce weight by physical activity and diet restrictions. In some people it does not work and they continue to have increased weight. Sometimes, these efforts are successful

in the short term. However, for people who are morbidly obese, the results rarely last.

Several studies have shown that patients on diets, exercise programs, or medication are able to lose approximately 10% of their body weight but tend to regain two-thirds of it within one year, and almost all of it within five years. Another study found that less than 5% of patients in weight loss programs were able to maintain their reduced weight after five years.

When obesity reaches the point of significantly increasing the risk of one or more obesity-related health conditions or serious diseases (also known as comorbidities) that result either in significant physical disability or even death, it is termed morbid obesity.

When a person suffers from morbid obesity and this condition begins to affect their quality of life and health, it is much recommended to consider a permanent solution to this problem to preserve health and avoid all the diseases that come along with obesity.

If changing your diet, getting more physical activity and taking medication haven't helped you lose enough weight, and then permanent solution to the problem is bariatric or "metabolic" surgery. The NIH Consensus in 1991 concluded that treatment of morbid obesity is surgical, describing weight loss surgery as "the most reliable and only choice for long term maintenance of excess weight."

How good and safe is surgical option for Morbid Obesity

A growing number of studies have shown that weight loss surgery may be the most effective and longest-lasting treatment for obesity. Research has also found the surgery can reverse diabetes, a chronic disease that goes hand-in-hand with obesity.

It has been shown that physiological as well as hormonal changes take place following surgical intervention in morbid obesity. There is reduction in weight promoting hormones like Ghrelin (produced from the fundus and body of the stomach) and increase in weight reducing Incretins (intestinal hormones namely PYY, GLP1, Amylin, secretin etc) following sleeve gastrectomy, gastric bypass and other malabsorptive procedures. In comparison weight promoting hormones increase and weight reducing hormones show a decrease following weight loss after diet and exercise. This might be the reason as to why surgical intervention has a long lasting effect and perhaps the only modality at present that is effective in a majority of patients.

The STAMPEDE (Surgical Therapy and Medications Potentially Eradicate Diabetes Efficiently) study, published in the *New England Journal of Medicine*, is the largest randomized trial to date examining the effectiveness of treatments available for obese and

diabetic patients. Overall, it found more than 90 percent of patients who received surgical treatment for severe obesity were able to lose 25 percent of their body weight. Progress in surgical technique and anesthesiological management has substantially improved the safety of performing operations on the severely obese in the last 20 years. One study found a weight loss of between 14% and 25% (depending on the type of procedure performed) at 10 years, and a 29% reduction in all cause mortality when compared to standard weight loss measures.^[10]

A marked decrease in the risk of diabetes mellitus, cardiovascular disease and cancer has also been found after bariatric surgery.^[10] Long-term total mortality after gastric bypass surgery was significantly reduced, particularly deaths from diabetes, heart disease, and cancer.^[11]

Metabolic/bariatric surgery has been shown to be the most effective and long lasting treatment for morbid obesity and many related conditions and results in significant weight loss. In the United States, about 200,000 adults have metabolic/bariatric surgery each year. The Agency for Healthcare Research and Quality (AHRQ) reported significant improvements in the safety of metabolic/bariatric surgery due in large part to improved laparoscopic techniques. The risk of death is about 0.1 percent and the overall likelihood of major complications is about 4 percent.^[12]

Bariatric surgery has been shown to be the most effective and durable treatment for morbid obesity.^[12] Surgery results in significant weight loss and helps prevent, improve or resolve more than 40 obesity-related diseases or conditions including type 2 diabetes, heart disease, obstructive sleep apnea and certain cancers^{[13],[14],[15]} Individuals with morbid obesity or BMI=30 have a 50-100% increased risk of premature death compared to individuals of healthy weight. Studies show surgery reduces a person's risk of premature death by 30-40%.^{[16],[17]} Clinical studies have demonstrated significant improvements in safety of patients that undergo weight loss surgery, showing that the risk of death is 0.1%,^[18] and the overall likelihood of major complications is about 4%.^[19]

Agency for Healthcare Research and Quality (AHRQ) and recent clinical studies report significant improvements in metabolic and bariatric surgery safety.^[20] Primary reasons for improved safety include the increased use of laparoscopy, advancements in surgical techniques,^[21] Laparoscopic bariatric operations increased from 20.1% in 2003 to 90.2% in 2008.^[22]

Overall mortality rate after weight loss surgery is about 0.1%^[23]-less than gallbladder (0.7%)^[24] and hip replacement (0.93%)surgery^[25]- and overall likelihood of major complications is about 4.3%.^[26]

Clinical evidence shows risks of morbid obesity outweigh risks of metabolic and bariatric surgery.^{[27],[28]} Individuals with morbid obesity or BMI=30 have a 50-100% increased risk of premature death compared to individuals of healthy weight.^[29] Studies show metabolic and bariatric surgery increases lifespan.^{[30],[31]} Gastric bypass patients may improve life expectancy by 89%. Patients may reduce risk of premature death by 30-40%. Studies show patients typically lose the most weight one to two years after surgery, and maintain substantial weight loss with improvements in obesity-related conditions.^[32] Patients may lose as much as 60% of excess weight six months after surgery, and 77% of excess weight as early as 12 months after surgery.^[33] On average, five years after surgery, patients maintain 50% of their excess weight loss.^[34]

Weight loss surgery helps to improve or resolve more than 40 obesity-related diseases and conditions, including type 2 diabetes, heart disease, certain cancers, sleep apnea, GERD, high blood pressure, high cholesterol, sleep apnea and joint problems.^{[35],[36],[37]} Weight loss surgery shows 60% reduction in mortality from cancer, with the largest reductions seen in breast and colon cancers^[38]. 56% reduction in mortality from coronary artery disease. 92% reduction in mortality from type 2 diabetes and 40% overall reduction in mortality in gastric bypass patients.^[39]

CONCLUSION

Weight loss surgery should be considered in all patients meeting the NIH criteria. Weight loss surgery in patients who have failed diet and exercise programs is the most effective and only method which results in significant weight loss and is a safe low-risk option with significant benefits. Long-term follow-up is mandatory to support a safe outcome.

More than 90% of morbidly obese patients who also have associated medical problems such as diabetes or high blood pressure no longer require medication or treatment to control their diseases after weight loss surgery. With an experienced surgeon and the appropriate operation, patients who undergo weight loss surgery lose an average of 60-80% of their excess weight thus working better than any other option available to help morbidly obese people.

CONFLICT OF INTEREST: NONE REGARDING THE PUBLICATION OF THIS PAPER.

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