

Section 2

Overview of Obesity, Weight Loss, and Bariatric Surgery

- What is Weight Loss?
- How does surgery help with weight loss?
- Short term versus long term weight loss?
- Conditions Improved with Weight Loss

Overview of Obesity, Weight Loss, and Bariatric Surgery

Obesity in the United States

In the United States today, the epidemic of obesity is a major health concern. Experts estimate that over 300,000 deaths are attributed to obesity and obesity-related complications each year and that over 9.1% of the National healthcare expenditures in the United States are directly related to obesity and physical inactivity (2002 data).

Body Mass Index (BMI) is a uniform means of determining an individual's weight classification and measuring obesity. BMI is calculated by dividing a person's weight (in kilograms) by the square of their height (in meters) (kilograms/meters squared). According to the weight classification system, in the United States 66% of the adult population is overweight and 34% of the population is obese (2005-2006 data).

% of U.S. population	Term	BMI
66 percent	Overweight	BMI 25 or higher
34 percent	Obese	BMI 30 or higher
5 percent	Morbidly obese	BMI 40 or higher

The reasons for obesity are very complex and not yet fully understood. Although diet and lifestyle choices contribute to obesity, there are some individuals with similar habits who are not morbidly obese, and there are some morbidly obese people who manage to change their lifestyle but lose very little weight. Thus, genetics and heredity, differences in metabolism, and the increased availability of high calorie foods all play a role in the development of obesity.

Being overweight or obese does NOT guarantee that someone will develop serious health problems. Some people can be obese and relatively healthy. But compared to a person of normal weight, the CHANCE of developing a medical problem is higher. Some of these medical conditions include: diabetes mellitus, hypertension, coronary heart disease, stroke, congestive heart failure, restrictive lung disease, sleep apnea, degenerative arthritis, infertility, increased risk for cancer of the breast and uterus, psychological problems, and gastroesophageal reflux disease.

In 1991, the National Institutes of Health (NIH) assembled a group of healthcare experts to make recommendations on treatment options for obesity. These treatments ranged from dieting, to behavioral modification, to drug therapy, to surgery. Surgery could be recommended for morbidly obese people who failed to maintain the weight loss from other types of treatment. Sustainable weight loss (losing the weight and keeping it off) is the goal of any treatment. This is what results in the elimination of medical co-morbidity and improved health.

Patients may be considered for surgery when they meet the established National criteria, understand the possible complications, and agree to comply with the post-operative regimen of dietary and physical lifestyle changes.

What is Weight Loss?

Unused energy from food is stored in fat

Like all mammals, humans eat food to obtain energy. Energy is needed to live, breathe, work, walk, sleep, talk, think, heat our bodies, and do every thing we do during our ordinary day. The digestive system breaks food down for delivery into the blood stream, and for eventual energy use by the cells of the body.

Energy can be measured in calories. The average recommended American diet should provide 2000 calories per day. Most Americans consume far more than this. If all the energy from food is not used by the body, the extra energy is stored for future use in the form of fat.

Fat is like a savings account for calories (energy). In the future, if you cannot eat enough, you can obtain the needed calories from fat. However, if you continue to eat more calories than you use, you will continue to build fat.

Someone trying to lose weight is really trying to lose the weight related to the extra fat they don't need. The **ONLY** way to lose fat is to burn more calories than you take in. You must “earn” fewer calories (eat much less) and “spend” much more (exercise and be active). That is the only way one can hope to reduce one's “savings account” (fat).

Every pound of fat contains about 3,500 calories.

If you eat 2,500 calories a day but only use 2,000 calories, you will store 500 calories each day. At the end of 7 days you will **GAIN** 1 extra pound of fat.

If you eat 1,500 calories a day and use 2,000 calories, you will burn 500 calories from fat each day. At the end of 7 days, you will **LOSE** 1 pound of fat.

Calories from food	greater than	calories used with activity=	WEIGHT GAIN
Calories from food	less than	calories uses with activity =	WEIGHT LOSS

How does surgery help with weight loss?

Losing 10 to 20% of ones total weight by dieting and exercise is a tremendous achievement, and is often enough to improve associated health problems. A 300 pound person who can lose 30 pounds should feel happy about their success. Unfortunately, this weight loss may not enough to completely eliminate the associated health problems. In addition, a 10% loss in weight may not be obvious enough for friends, family, and doctors to notice. Many cravings only increase with weight loss, making it extremely hard to keep the weight off for a long time. Most people “rebound”, gaining more weight than they lost. This can be very discouraging, making it even harder to stick to a diet and exercise program in the future. Despite their best efforts, many

people who are sincere about losing weight find themselves constantly trying to lose weight and then gaining it back.

Surgery helps one to eat less, therefore making weight loss more likely.

Surgery can work by either limiting the capacity of food in the stomach (restrictive effect), by shortening the amount of bowel that can absorb food (malabsorption effect), or by a combination of both restriction and malabsorption. The operation may also work by affecting the balance of several hormones related to eating, hunger, and taste. The operations seem to curb the feelings of hunger that seem to sabotage many other types of weight loss programs.

Researchers and drug companies are just beginning to understand the hormones that control obesity, but are probably many years away from developing a medicine that could treat it.

What is short term versus long term weight loss?

Because of the mechanisms described above, most people some weight after weight loss surgery. Thus, most people are successful with short term weight loss. Unfortunately, the appetite suppression and restrictive effect may be pronounced in the first few years, but eventually diminishes over time.

This is enough time for motivated patients to break the cycle of obesity and keep the weight off for the remainder of their lives. These people realize that by continued portion control, healthy food choices, and an active lifestyle they can keep their weight down. These people are able to maintain long term weight loss for 10 to 30 years, and enjoy all the health and social benefits of being a lower weight.

However, there are MANY people who regain much or all of their weight within several years. They often do not count calories, do not practice portion control, snack frequently, or take too many liquid calories. They are not active and able to burn off the extra calories they consume. By only eating only 100 extra calories a day, it is possible to gain 1 pound each month. If not corrected, this leads to 12 extra pounds in one year, 60 extra pounds in 5 years, and 120 extra pounds within 10 years.

Surgery is only a tool that allows patients to break the cycle of obesity.

It must be combined with healthy food choices and exercise.

Successful surgery, diet, and exercise shifts obesity from a disease that a person must battle to a choice that a person can control.

Weight Loss After Surgery

After an operation such as the roux en y gastric bypass or gastric sleeve, the vast majority of patients lose 50 to 80% of their excess weight in the first 12 months. With the lap band, the weight loss may take 3 to 4 years, and seems to be more variable.

After the first 2 years, there can be a regain in weight if changes in eating habits and exercise have not been implemented. With the roux-en-y gastric bypass, most patients keep 50% to 70% of their excess weight off after 10 years.

This means a person who is 300 pounds and has an ideal body weight of 150 pounds can expect to be between 180 to 225 pounds at the end of ten years.

Conditions Improved with Weight Loss

Many medical conditions seem to improve with significant weight loss. However complete improvement or “cure” cannot be predicted, because many of the conditions are also related to genetics and aging. In other words, there are many people of normal weight and size who may still develop these conditions.

Diabetes (Adult onset)

Over 50% of patients are able to reduce their diabetic medications with substantial weight loss. Diabetes seems to improve most dramatically with the roux-en-y gastric bypass. Although much of the improvement is related to the loss in weight, a significant portion of the improvement may be related to the operation itself and the way it reroutes the stomach and intestines. After a roux en y gastric bypass, 95% of younger patients (and 80% of all patients) are able to eliminate medications (oral and insulin) for diabetes.

For the sleeve gastrectomy and the lap band, the improvement in diabetes is proportional to the amount of weight lost. Thus, for those patients who lose weight, there can be a 50 to 70% improvement in the need for diabetic medications.

Acid Reflux

Acid reflux and heartburn often improve with a change in diet and lower abdominal pressure with weight loss. It is important to realize that some operations such as the lap band and gastric sleeve may worsen heartburn, while others such as the roux en y gastric bypass reduce heartburn by bypassing the acid producing portion of the stomach.

Hypertension

About 70% of patients will have significant improvement in blood pressure. (Only about 30% can eliminate all medications for blood pressure)

Sleep apnea

About 70% to 80% of patients will have minimal symptoms of apnea after surgery. About 50% will eliminate the need for a CPAP machine.

Cardiopulmonary Failure

Improvements in cardiac function and heart muscle function have been studied, and often seem to improve.

Elevated Cholesterol

Lowering of previously high cholesterol and lipid levels are common, possibly resulting in a decreased risk of heart attack and cardiovascular disease.

Pseudo Tumor Cerebri

Headaches and visual changes seem to improve in many.

Infertility

Infertility seems to improve in many women with polycystic ovary disease or irregular periods.

Degenerative arthritis

Young patients who do not require NSAIDs for pain control usually report significant improvement in joint stress and pain. However, patients who already have documented arthritis (inflammation and degeneration of the joints) may continue to progress with arthritis. In addition, patients who depend on NSAIDs for pain control may experience more pain after gastric bypass since NSAIDs are no longer allowed after the operation.

Asthma

Most patients have mild to significant improvement, due to less restriction of the lungs (ability to take deeper breaths).

Restrictive lung disease

Decreased lung function can result from a combination of several factors. Lung function can be impaired by obstructive disease (COPD, asthma), destruction of lung tissue (emphysema, pulmonary fibrosis), and restriction (lung scarring, obesity). Obesity may limit one's ability to take a deep breath and expand the lungs. The extra weight also places more demand on the lungs and heart to supply oxygen. If this is a major reason for poor lung function, then weight loss can result in significant improvement. However, pulmonary function tests are required prior to the operation to help sort this out.

Stress incontinence

Incontinence is a complex problem that can be related to increased abdominal pressure and abnormal anatomy. Mild cases of incontinence or increased frequency related to increased abdominal pressure may improve with significant weight loss.

Hernias

Hernias (holes or tears in the abdominal wall allowing the bowels to bulge through) always require surgical correction. Sometimes these can be corrected at the same time as weight loss surgery. Once the hernia is fixed, the repair is probably more durable due to the lower weight and lower abdominal pressure.

Psychological Conditions

Psychological conditions can be very complex. Depression may seem to improve for a short time with rapid weight loss, but usually persists in the long term. Some patients may face increased stress as their self perception and relationships change. Others will no longer be able to use food as a source of comfort during times of depression.

Medications for depression and other psychological conditions can still be taken immediately after the operation. Occasionally dosages may have to be adjusted as weight is lost.

Unknown

Recent research has suggested that obesity may increase the risk of the conditions below. However, not enough research has been done to determine whether significant weight loss can reverse or reduce the risk of these conditions.

- Cancer risk (uterine and breast cancer)
- Deep venous thrombosis
- Pulmonary Emboli
- Heart Attack
- Stroke
- Immune Suppression