

You – the patient – play a critical role in the long-term success of surgery. You will need to:

- Commit to improving your health.
- Discuss your health history with your surgeon.
- Discuss any questions or concerns you have. Learn all you can about the surgery before making a decision.
- Follow all instructions on preparing for surgery.
- Commit to following all instructions described in the Bariatric Surgery Guide on nutrition, activity, and other care after surgery. Both the bariatric team and you must commit to honesty, responsibility and cooperation.

Morbid Obesity and the medical impact

A clear definition of morbid obesity is very important, because this definition is used to guide physicians in selection of therapy for people who are overweight. Basically, one is morbidly obese when he or she is so heavy that the fat tissue load creates (or will create) other medical problems.

Morbid obesity is a chronic condition that is very difficult to treat. Surgery to promote weight loss by restricting food intake or interrupting digestive processes is an option for morbidly obese people. Roughly, individuals are usually morbidly obese if their weight is more than 100 pounds in excess of the Ideal Body Weight (IBW). However, a more exact (and more widely accepted) way to define morbid obesity is to use the Body Mass Index (BMI).

The BMI is calculated as follows:

BMI=weight (kg)/height (m²)

The medical importance of morbid obesity is that people who are very obese have higher rates of medical problems, translating into greater need for weight loss and the rationale for more extreme measures (such as bariatric surgery) to control the weight. The medical complications of obesity may occur in moderately obese people but the frequency of these associated problems (such as heart disease, high blood pressure, diabetes, premature death, etc.) increases dramatically as weight increases.

Medical conditions that are commonly caused or exacerbated by obesity are outlined by organ systems:

- **Pulmonary** – Obstructive sleep apnea, obesity hypoventilation syndrome, asthma/reactive airway disease
- **Cardiac** – High blood pressure, heart failure caused by pulmonary hypertension, higher risk of coronary artery disease (atherosclerosis)
- **Gastrointestinal, Abdominal** – Gallbladder disease, GERD (recurrent heartburn), recurrent ventral hernias, hiatal hernias, fatty liver (Non-alcoholic steatohepatitis and/or cirrhosis)
- **Endocrine** – Diabetes, hirsutism, hyperlipidemia, hypercholesterolemia
- **Genito-urinary, Reproductive** – frequent urinary tract infections (UTI's), stress urinary incontinence, menstrual irregularity or infertility (females), erectile dysfunction (males)
- **Musculoskeletal** – degeneration of knees and hips, disc herniation, chronic non-surgical low back pain
- **Skin** – multiple disorders, most related to diabetes and yeast infections between skin folds

- **Central Nervous System** – Pseudotumor cerebri
- **Cancer risk** – breast, uterine, prostate, renal, colon, pancreatic, gastric, gallbladder and endometrium.

A BMI above 40 indicates that a person is morbidly obese and therefore a candidate for bariatric surgery. Bariatric surgery may also be an option for people with a BMI between 35 and 40 who suffer from life-threatening cardiopulmonary problems or diabetes. However, as in other treatments for obesity, successful results depend mainly on motivation and behavior.

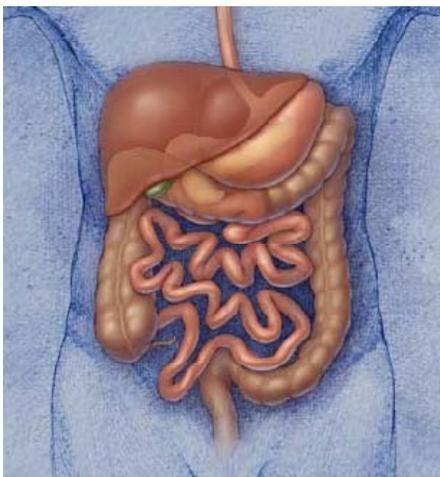
For nearly all people with morbid obesity, bariatric surgery is the standard of care. When other medically supervised methods have failed, bariatric surgery offers the best option of long-term weight control for those who are morbidly obese.

Setting realistic expectations

The goal of surgery is to help lose over half of your excess weight. This can reduce or prevent health problems. It's not cosmetic surgery. Keep in mind that:

- Other medically managed weight loss methods must be tried first and documented. Surgery is only an option if other methods have not been successful.
- Surgery is meant to be permanent. You will need to make lifestyle changes for the rest of your life.
- You must commit to making good food choices and being more active after surgery. Otherwise, you will not maximize your weight loss.
- You will not reach a healthy weight right away. Most of the weight is lost steadily over the first 12 – 18 months after surgery.
- The surgery is a tool, which will help you lose weight. The three pillars to being successful involve diligence with exercise, healthy food choices, and attending regular support groups. Your chances of losing more weight will dramatically increase if you adhere to these tenets.

The normal digestive process



Normally, as food moves along the digestive tract, appropriate digestive juices and enzymes arrive at the right place at the right time to digest and absorb calories and nutrients. After chewing and swallowing the food, it moves down the esophagus to the stomach, where a strong acid continues the digestive process. The stomach can hold about three pints of food at one time. When the stomach contents move through the pylorus to the duodenum, the first segment of the intestine, bile and pancreatic juice speed up digestion. Most of the calcium and iron in the foods we eat is absorbed in the duodenum. The jejunum and ileum, the remaining two segments of the nearly 20 feet of small intestine, complete the absorption of almost all calories and nutrients. The food particles that cannot be digested in the small intestine are stored in the large intestine until eliminated.

Promotion of weight loss with bariatric surgery

Surgeons use techniques that produce weight loss primarily by limiting how much the stomach can hold. These restrictive procedures are often combined with modified gastric-bypass procedures that somewhat limit calorie and nutrient absorption.

Two ways surgical procedures promote weight loss:

1. **Restriction** – This is done by physically limiting the amount of food intake. Gastric banding, gastric bypass, and vertical sleeve gastrectomy are surgeries that limit the amount of food the stomach can hold by closing off or removing parts of the stomach.

→ Note: The majority of patients report feeling full and satisfied after a small amount of food, and not feeling excessively hungry most of the time. If much more than a quarter cup of food is eaten at once, the patient will feel uncomfortable and may vomit.

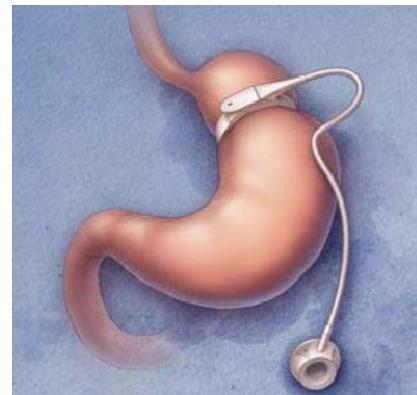
2. **Malabsorption** – This works by altering how food is digested and absorbed. In the gastric bypass procedure, a surgeon makes a direct connection from the stomach to a lower segment of the small intestine, bypassing the duodenum, and some of the jejunum.

→ Note: Vitamin and mineral supplements and a high protein intake will be required for life to prevent the problem of nutritional deficiencies. Although results of the operations using these procedures are more predictable and manageable, side effects persist for some patients.

Restrictive procedures (Adjustable Gastric Band and Vertical Sleeve Gastrectomy)

Restrictive gastric procedures restrict the size of the stomach. There are several types of restrictive procedures. The older **Vertical Banded Gastroplasty (VBG)** and **Silastic Ring Gastroplasties** use a staple line to restrict the size of the stomach. Both were found to have very poor long-term success and are no longer performed. At the UT Center for Bariatric and Metabolic Surgery we perform 2 types of restrictive procedures. The **Laparoscopic Adjustable Gastric Band also known as the LAP-BAND®** and the **Laparoscopic Vertical Sleeve Gastrectomy**.

- **LAP-BAND®** – The LAP-BAND® System utilizes an adjustable band that restricts the opening to the remainder of the stomach. In this method, a band is placed at the top of the stomach, creating an approximately 1-ounce pouch. The opening to the rest of the digestive tract is adjusted through a port underneath the skin and connected to the device. The concept here is to create anatomy that provides a sensation of satiety after a very small meal. Weight loss for restrictive procedures is often less than that of the malabsorptive procedures and the Roux-en-Y gastric-bypass. The expectation is that with this procedure you will need to be seen every 4-6 weeks for the first year to achieve adequate restriction. Estimated excess weight loss at 2 years is about 40-50%. The adjustable gastric band is reversible.



- **Laparoscopic Vertical Sleeve Gastrectomy** – The vertical sleeve gastrectomy is a stapling procedure in which approximately 80% of the stomach is removed. This results in a pouch that is approximately 3-4 ounces in volume. Working along the same principles as the other restrictive procedures, limiting the amount of food intake leads to an earlier feeling of satiety. Additionally the portion of the stomach that is removed holds the majority of the cells in the body that produce a hormone known as Ghrelin that is associated with hunger. This procedure leads to an estimated excess weight loss of 65-70% at 1 year. This procedure is completely irreversible.



Combination procedures

The **Roux-en-Y Gastric-bypass** can be regarded as a restrictive and malabsorptive due to the small size of the pouch remaining and the bypassing of food around the duodenum and the initial part of the jejunum. However, because gastric bypass causes food to skip the duodenum, where most iron and calcium are absorbed, risks for nutritional deficiencies are higher. Anemia may result from malabsorption of vitamin B12 and iron in menstruating women, and decreased absorption of calcium may bring on osteoporosis and metabolic bone disease. Patients are required to take life-long nutritional supplements that usually prevent these deficiencies. Gastric-bypass may cause dumping syndrome, whereby stomach contents move too rapidly through the small intestine. Symptoms include nausea, weakness, sweating, faintness, and, occasionally, diarrhea after eating, as well as the inability to eat sweets without becoming so weak and sweaty that the patient must lie down until the symptoms pass. This procedure leads to an estimated excess weight loss of 70-75% at 1 year. This procedure is considered irreversible, but in rare cases can be reversed for life threatening medical need.



Malabsorptive procedures

(UT Center for Bariatric and Metabolic Surgery does not perform these procedures)

Biliopancreatic Diversion and Duodenal Switch (DS) – The DS is more effective in achieving excellent weight loss in the extremely obese, but brings with it a higher rate of true malnutrition (malnutrition is very rare for those who undergo Gastric Bypass). In the DS, a sleeve resection of the stomach is performed by removing about 2/3 of the stomach, maintaining continuity of the gastric lesser curve. The small intestines are arranged so that the section where the food mixes with the digestive juices is fairly short. No small intestine is defunctionalized and consistently, liver problems are much less frequent and the procedure essentially eliminates stomal ulcer and dumping syndrome.

BARIATRIC SURGERY PATIENT GUIDE

UT Center for Bariatric and Metabolic Surgery

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**Bariatric Surgery – An overview of procedures – All procedures are performed laparoscopically
(Shaded procedures are not performed at UT Center for Bariatric and Metabolic Surgery)**

	Procedure	Pros	Cons
Restrictive	Adjustable Gastric Band (LAP-BAND®)	<ul style="list-style-type: none"> No protein-calorie-malabsorption No vitamin or mineral deficiencies due to malabsorption No restriction of NSAID use 	<ul style="list-style-type: none"> Less effective with sweet eaters Requires frequent visits for optimal adjustments Risk of reduced esophageal function Risk of band erosion, band slippage, and Silastic reaction ~30% of patients will require a reoperation
	Vertical Sleeve Gastrectomy	<ul style="list-style-type: none"> No protein-calorie-malabsorption No vitamin or mineral deficiencies due to malabsorption Lower risk of major complications than Gastric Bypass No restriction of NSAID use 	<ul style="list-style-type: none"> Less effective with sweet eaters Risk of staple line bleed or leak Irreversible
	<i>Vertical banded gastroplasty (VBG)</i> <i>Silastic ring gastroplasty</i>	<ul style="list-style-type: none"> No protein-calorie-malabsorption No vitamin or mineral deficiencies due to malabsorption 	<ul style="list-style-type: none"> Less weight loss maintenance More late failures due to dilation or fistula formation Significant dietary compliance required Risk of reduced esophageal function Risk of band erosion, band slippage, and Silastic reaction
Combination	Roux-en-Y gastric bypass	<ul style="list-style-type: none"> Gold Standard for weight loss operations High rate of diabetes remission Durable weight loss 	<ul style="list-style-type: none"> Higher risk of vitamin deficiencies than restrictive procedures Risk of anastomotic leak Cannot use NSAIDs
Malabsorptive	<i>Jejuno-ileal bypass</i> <i>Biliopancreatic diversion and duodenal switch</i>	<p><i>Greater sustained weight loss with less dietary compliance</i></p>	<p><i>Increased risk of malnutrition and vitamin deficiency</i></p> <p><i>Constant follow-up to monitor increased risk</i></p> <p><i>Intermittent diarrhea and/or foul smelling stool</i></p>

Expected weight loss after Bariatric Surgery

Any of the procedures can successfully start patients on the road to recovery from morbid obesity, but **surgery alone will not ensure long-term success. Surgery is a tool**, something to help patients do the work. In order to get down to a healthy weight, patients must adjust their eating habits and exercise patterns.

Most patients lose nearly half of their excess weight in the first year and continue to lose weight after this point. **There is no amount of weight loss that is guaranteed.** Weight control is the personal responsibility of the patient.

Successful habits include eating 4 – 6 small, well-balanced meals, and a maximum of one snack a day. Carbonated, caffeinated or sugary beverages, and alcohol, should be avoided. Patients tend to gain weight back if they start eating larger portions, graze, consume high fat or “junk” foods, or drink high calorie beverages.

A program of regular exercise is very important for promoting and maintaining weight loss. Studies have shown that patients who exercise 45 minutes at least three times per week lose an average of 18% more excess weight than patients who do not exercise regularly.

There are several long-term habits that successful patients can adopt and the first post-operative year is a critical time that must be dedicated to changing old behavior and forming new, lifelong habits. The success of weight loss surgery is most commonly defined by the total weight loss during the initial weight loss phase. However, foremost in the minds of patients undergoing surgery for morbid obesity are the questions:

- **“Will this be a long-term permanent solution?”**
- **“What can I do to insure my lifelong success?”**

In other words, how can I maintain at least 74% of my initial excess weight loss after a successful weight loss operation?

Patients should take personal responsibility for staying in control. Patients have a general feeling that maintaining their weight is indeed their own responsibility and that surgery is a tool they used to reach and maintain a healthy weight.

Lack of exercise, poorly balanced meals, constant grazing and snacking, and drinking carbonated beverages are the basic causes of not maintaining weight loss. Regular attendance of support groups and workshops greatly increases patients’ compliance with the recommendations for optimal weight loss and maintenance.

Diet

After gastric bypass, the patients must carefully follow the recommendations outlined in the Bariatric Surgery Guide for the rest of their life in order to maximize their weight loss success. You will need to take a protein supplement to ensure proper post-operative nutrition. It is essential that you take **daily multivitamins and mineral supplementations for the rest of your life** in order to achieve optimal post-

operative nutrition. Post-operative diets are separated into stages 1, 2, 3 and 4. Here is an overview of the expected postoperative diet:

Stage 1 – A clear liquid, sugar free diet, started one to two days after surgery. It essentially provides hydration during the initial post-operative period.

Stage 2 – A full liquid, sugar free diet providing all the essential requirements for the first two postoperative weeks. Patients go home from the hospital on the stage 2 diet.

Stage 3 – A pureed diet. The surgeon instructs the patient when to advance to this diet. (For LAP-BAND® this will typically be at week 3, for Vertical Sleeve Gastrectomy and Gastric Bypass this will be at week 3 through 4). Introducing semi-solid food or solid diet too early after surgery may lead to obstruction and vomiting. With the LAP-BAND® vomiting may lead to band slippage or with the gastric bypass or sleeve gastrectomy it may also unduly stress your anastomosis or staple line leading to a leak.

Stage 4 – A healthy regular diet consisting of frequent (4-6) small meals per day, ensuring 60-80g of protein per day. This is the diet that all patients will ultimately achieve.

Nutritional expectations

After Bariatric Surgery you will need to make changes to your eating patterns. The diet after surgery progresses from a liquid diet to a pureed diet and then a modified regular diet. The diet progression is designed to allow your body to heal. Initially, it will help you meet your protein and liquid requirements, and later, to assist you in meeting your nutritional needs. It is imperative that you follow the diet's progression and adhere to this regimen to maximize healing and minimize the risk for unnecessary complications.

The size of your stomach pouch is about one ounce or one to two tablespoons for the LAP-BAND® and Gastric Bypass and about 3 ounces or 6 tablespoons for the Sleeve Gastrectomy.

At first, your capacity will be somewhat limited, so be patient. You may find that two to three teaspoons of food fill you up. This is expected. You may also find that you are able to eat more of one type of food than another. That is okay, too.

One of the changes that patients often comment about is the concept of “wasting food”. After surgery your eyes and head still work the same way as they did before. However, because of the new stomach pouch, you will be satisfied with much less. It is critical that you listen to your body's signals of fullness and not to your eyes that see food left on your plate.

You may also be surprised at how the surgery changes your wants and desires for certain foods. Foods you may have previously loved you may now find you are less interested in.

It is common to see some variation from program to program related to nutrition. Just as there are many food options, there are many options and preferences post-operatively. However, most programs agree that the primary source of nutrition should be protein. 70 to 75 % of all calories consumed should be protein based (eggs, fish, meat, etc). Carbohydrates (bread, potatoes, etc.) should make up only 10 to 20 %, and fats (butter, cheese, etc.) only 5 to 15 % of the calories that you eat. A diet consisting of 800 –

1000 calories and **60 - 80 grams of protein** should be the goal. Protein drinks can be helpful to fulfill your protein requirements. There are many to choose from. Look for protein drinks that are low calorie and low sugar and that have a good taste.

Avoid foods which contain sugar. Not only will they slow down your weight loss, but they can make you sick! Sugar may cause “dumping syndrome” in patients who have had the gastric bypass procedure. Dumping, in short, is when sugars go directly from your stomach pouch into the small intestine causing heart palpitations, nausea, abdominal pain, and diarrhea. Symptoms may vary among patients. Dumping lasts about 30 minutes to an hour.

To maintain a healthy weight and to prevent weight gain, you must develop and keep healthy eating habits. You will need to be aware of the volume of food that you can tolerate at one time and make healthy food choices to **ensure maximum nutrition in minimum volume**. A remarkable effect of Bariatric surgery is the progressive change in attitudes towards eating. Patients begin to eat to live – they no longer live to eat. As well, exercise must be part of your daily routine.

General recommendations

1. Do not drink liquids with meals. Drink fluids before the meal. Then wait one hour after meals before resuming fluids to prevent pouch stretching and vomiting
2. Eat 4-6 tiny, protein-focused meals per day at regular times, sitting at a table. Eat slowly, savoring your food. Do not eat when feeling rushed or stressed as this may cause gastric upset.
3. Stop eating when feeling full or if feeling any discomfort.
4. Always cut food into small pieces and chew food very well to prevent blockage. If food should stick, try a teaspoon of Adolf’s Meat Tenderizer in a glass of warm water, sipped slowly.
5. Concentrate on eating protein rich foods such as fish and seafood, cheese, eggs, and poultry. At mealtime, eat protein foods first before any other food.
6. Do not snack between meals.
7. Avoid very sweet food, candy, chocolate, and high-sugar beverages to prevent the unpleasant effects of dumping syndrome.
8. Sip liquids slowly, drinking at least ½ cup every hour between meals to total 10 eight ounce cups per day to avoid dehydration.
9. Minimize alcohol intake as it is high in calories, may cause an ulcer, and the effects may be felt much more quickly.
10. Take a multivitamin supplement with iron, B12 vitamin and calcium every day.

Foods that may be difficult to tolerate

- Bread products
- Cow milk products
- Pasta products
- Fatty foods and fried foods
- Candy, chocolate, any sugary foods and beverages
- Carbonated beverages
- Bran cereal and other bran products
- Corn, whole beans, and peas
- Dried fruits and skins of fresh fruit, coconut