



Travis J. Goodnight, M.D., P.A.

General and Advanced Laparoscopic Surgery

2010 Chestnut Street • Suite C

Van Buren, AR 72956

479-922-2213 • 479-922-2214 Fax

The Sleeve Gastrectomy Guide

This guide has been provided for our Sleeve Gastrectomy patients. The purpose of this guide is to provide some basic information about the Sleeve Gastrectomy and how to use it, as well as basic information about nutrition and the vitamins that our patients will require after surgery.

Please read through this guide several times prior to your surgery date. There is a lot of information contained in this guide. The more you read it, the more comfortable you will be with the information provided.

Our office is always available for questions.

Vertical Sleeve Gastrectomy (VSG)

The Vertical Sleeve Gastrectomy procedure (also called Sleeve Gastrectomy, Vertical Gastrectomy, Greater Curvature Gastrectomy, Parietal Gastrectomy, Gastric Reduction, Longitudinal Gastrectomy and even Vertical Gastroplasty) is performed by surgeons worldwide. Surgeons worldwide have adopted the procedure and have offered it to obese patients as an alternative to laparoscopic banding of the stomach and gastric bypass.

It generates weight loss by restricting the amount of food (and therefore calories) that can be eaten by removing 85% or more of the stomach without bypassing the intestines or causing any gastrointestinal malabsorption. It is a **purely restrictive** operation.



Anatomy

This procedure generates weight loss solely through gastric restriction (reduced stomach volume). The stomach is restricted by stapling and dividing it vertically and removing more than 85% of it. This part of the procedure is not reversible. The stomach that remains is shaped like a very slim banana (i.e. sleeve) and measures from 1-5 ounces (30-150cc), depending on the surgeon performing the procedure. The nerves to the stomach and the outlet valve (pylorus) remain intact with the idea of preserving the functions of the stomach while drastically reducing the volume. By comparison, in a Roux-en-Y gastric bypass, the stomach is divided, not removed, and the pylorus is excluded. The Roux-en-Y gastric bypass stomach can be reconnected (reversed) if necessary. Note that there is no intestinal bypass with this procedure, only stomach reduction. The lack of an intestinal bypass avoids potentially costly, long term complications such as marginal ulcers, vitamin deficiencies and intestinal obstructions.

Comparison to prior Gastroplasties (stomach stapling of the 70-80s)

The Vertical Gastrectomy is a significant improvement over prior gastroplasty procedures for a number of reasons:

1) Rather than creating a pouch with silastic rings or polypropylene mesh, the Sleeve Gastrectomy actually resects or removes the majority of the stomach. The portion of the stomach which is removed is responsible for secreting Ghrelin, which is a hormone that is responsible for appetite and hunger. By removing this portion of the stomach rather than leaving it in-place, the level of Ghrelin is reduced to near zero, actually causing loss of or a reduction in appetite. Currently, it is not known if Ghrelin levels increase again after one to two years. Patients do report that some hunger and cravings do slowly return. An excellent study by Dr. Himpens in Belgium (Obesity Surgery 2006) demonstrated that the cravings in a VSG patient 3 years after surgery are much less than in LapBand patients and this probably accounts for the superior weight loss.

2) The removed section of the stomach is actually the portion that “stretches” the most. The long vertical tube shaped stomach that remains is the portion least likely to expand over time and it creates significant resistance to volumes of food. Remember, resistance is greatest the smaller the diameter and the longer the channel. Not only is appetite reduced, but very small amounts of food generate early and lasting satiety (fullness).

3) Finally, by not having silastic rings or mesh wrapped around the stomach, the problems which are associated with these items are eliminated (infection, obstruction, erosion, and the need for synthetic materials). An additional discussion

based on choice of procedures is below.

Alternative to a Roux-en-Y Gastric Bypass

The Vertical Gastrectomy is a reasonable alternative to a Roux en Y Gastric Bypass for a number of reasons

1. Because there is no intestinal bypass, the risk of malabsorptive complications such as vitamin deficiency and protein deficiency is minimal.
2. There is no risk of marginal ulcer which occurs in over 2% of Roux en Y Gastric Bypass patients.
3. The pylorus is preserved so dumping syndrome does not occur or is minimal.
4. There is no intestinal obstruction since there is no intestinal bypass.
5. It is relatively easy to modify to an alternative procedure should weight loss be inadequate or weight regain occur.
6. The two year and 6 year weight loss data available to date is superior to current Banding and comparable to Gastric Bypass weight loss data.

First stage of a Duodenal Switch

In 2001, Dr. Gagner performed the VSG laparoscopically in a group of very high BMI patients to try to reduce the overall risk of weight loss surgery. This was considered the 'first stage' of the Duodenal Switch procedure. Once a patient's BMI goes above 60kg/m², it is increasingly difficult to safely perform a Roux-en-Y gastric bypass or a Duodenal Switch using the laparoscopic approach. Morbidly obese patients who undergo the laparoscopic approach do better overall in their recovery, while minimizing pain and wound complications, when compared to patients who undergo large, open incisions. In addition, the Roux-en-Y gastric bypass tends to yield inadequate weight loss for patients with a BMI greater than 55kg/m². The Duodenal Switch is very effective for high BMI patients but unfortunately it can also be quite risky and may be safer if done open in these patients. The solution was to 'stage' the procedure for the high BMI patients.

The VSG is a reasonable solution to this problem. It can usually be done laparoscopically even in patients weighing over 500 pounds. The stomach restriction that occurs allows these patients to lose more than 100 pounds. This dramatic weight loss allows significant improvement in health and resolution of associated medical problems such as diabetes and sleep apnea, and therefore effectively "downstages" a patient to a lower risk group. Once the patients BMI is lower (35-40) they can return to the operating room for the "second stage" of the procedure, which can either be the Duodenal Switch, Roux-en-Y gastric bypass or even a Lap-Band®. Current, but limited, data for this 'two stage' approach indicate adequate weight loss and fewer complications.

Vertical Gastrectomy as an only stage procedure for patients (alternative to Lap-Band® and Gastric Bypass)

The Vertical Gastrectomy has proven to be quite safe and quite effective for individuals with a BMI in all ranges.

Dr Himpens and colleagues in Brussels have published 3 year results comparing 40 Lap-Band® patients to 40 Laparoscopic VSG patients. The VSG patients had a superior excess weight loss of 57% compared to 41% for the Lap-Band® group.

Individuals who should consider this procedure include:

1. Those who are concerned about the potential long term side effects of an intestinal bypass such as intestinal obstruction, ulcers, anemia, osteoporosis, protein deficiency and vitamin deficiency.
2. Those who are considering a Lap-Band® but are concerned about a foreign body or worried about frequent adjustments or finding a band adjustment physician.
3. Those who have other medical problems that prevent them from having weight loss surgery such as anemia,

Crohn's disease, extensive prior surgery, severe asthma requiring frequent steroid use, and other complex medical conditions.

4. People who need to take anti-inflammatory medications may also want to consider the Vertical Gastrectomy. Unlike the gastric bypass where these medications are associated with a very high incidence of ulcer, the VSG does not seem to have the same issues. Also, Lap-Band [®] patients are at higher risks for complications from NSAID use.

All surgical weight loss procedures have certain risks, complications and benefits. The ultimate result from weight loss surgery is dependent on the patient's risk, how much education they receive from their surgeon, commitment to diet, and establishing an exercise routine.

Advantages/Disadvantages of Vertical Sleeve Gastrectomy

Vertical Sleeve Gastrectomy Advantages

- Reduces stomach capacity but tends to allow the stomach to function normally so most food items can be consumed, albeit in small amounts.
- Eliminates the portion of the stomach that produces the hormones that stimulates hunger (Ghrelin).
- “Dumping syndrome” is avoided or minimized because the pylorus is preserved.
- Minimizes the chance of an ulcer occurring.
- By avoiding the intestinal bypass, almost eliminates the chance of intestinal obstruction (blockage), marginal ulcers, anemia, osteoporosis, protein deficiency and vitamin deficiency.
- Very effective as a first stage procedure for high BMI patients (BMI > 55 kg/m²).
- Excellent results as a single stage procedure for low BMI patients (BMI 30-55 kg/m²).
- Appealing option for people who are concerned about the complications of intestinal bypass procedures or who have existing anemia, Crohn’s disease and numerous other conditions that make them too high risk for intestinal bypass procedures.
- Appealing option for people who are concerned about the foreign body aspect of Banding procedures.
- Can be done laparoscopically thereby providing all the advantages of minimally invasive surgery: fewer wound and lung problems, less pain, and faster recovery.

Vertical Sleeve Gastrectomy Disadvantages

- Potential for inadequate weight loss or weight regain. While this is true for all procedures, it is theoretically more possible with procedures that do not have an intestinal bypass (i.e. malabsorption).
- Higher BMI patients will most likely need to have a second stage procedure later to help lose the rest of the weight. Remember, two stages may ultimately be safer and more effective than one operation for high BMI patients. This is an active point of discussion for bariatric surgeons.
- Soft calories such as ice cream, milk shakes, etc can be absorbed and may slow weight loss.
- This procedure does involve stomach stapling and therefore leaks and other complications related to stapling may occur.
- Because the stomach is removed, it is not reversible. It can be converted to almost any other weight loss procedure.
- Considered investigational by some insurance companies.

Frequently Asked Questions

How big will my stomach be after surgery?

The size of your stomach will vary depending on the surgeon. All surgeons use a tube to guide them when stapling the stomach. Dr. Goodnight most commonly uses a 34-36 French Bougie and therefore your stomach is about 2-3 oz in size.

Is removing the stomach safe?

This type of stomach removal has been performed with the Duodenal Switch procedure since the mid 1980’s. It does involve stapling, just like in the gastric bypass and has similar risks. Interestingly, patients do not ever return asking for their stomach back.

Will I need to take vitamins?

Vitamin deficiencies are rare with this procedure because there is no intestinal bypass. However, the procedure is very restrictive so most surgeons recommend that patients take a multivitamin, calcium and possibly a B12 vitamin after surgery.

Will I regain weight?

All patients undergoing weight loss surgery are at risk for weight regain. None of the operations can prevent this. Those patients who maintain good dietary habits and exercise patterns are more likely to keep the weight off than those who do not exercise and who snack frequently.

What will my diet be like after surgery?

The diet will progress over the first year. It starts with 2-4 weeks of liquid protein drinks and water. Patients gradually progress to thicker food items and by two months are able to eat seafood, eggs, cheese and other regular foods. The diet generally recommended is low calorie, high protein (70gm per day), low fat (30 gm per day) and low carbohydrates (40 gm per day). The calorie intake increases over the first year and by 12 months many patients have achieved their goal weight and consume between 900 and 1500 calories per day. This final calorie intake depends on level of activity, age and gender (men can usually consume more calories and maintain their weight).

What are the risks of Sleeve Gastrectomy?

Of course, no surgery is without risks and the sleeve gastrectomy is no different. It is well tolerated and its complication rate for the procedure is similar to having your gallbladder removed, although it does carry a different type of risk. The biggest and fortunately most rare risk of surgery is death with the mortality rate within 30 days of a Sleeve Gastrectomy at 0.2% or less. The other major concern is that the stomach can leak at the staple lines where the outer portion of the stomach was removed. This happens about 2% of the time. Other risks include but are not limited to bleeding, infection, stricture/stenosis of the sleeve, regain of weight, failure to lose weight, stomach ulcers, disruption of the incision, blood clots in the legs or lungs, stroke, heart attack, injury to the bowel, injury to the spleen and need for reoperation.

Who is eligible to have this operation?

Currently at our facility, we are on the pathway to become a Level 2 Bariatric Center of Excellence. This dictates that we limit the surgery to those patients who have a BMI (Body Mass Index) of >35 with obesity related comorbidities (i.e. diabetes, high blood pressure, cardiovascular disease, sleep apnea) or a BMI of >40. There are limitations at our facility including age and weight. To be a candidate for bariatric surgery at our facility, a patient must be between the ages of 18-65 years old. At the current time, the current patient weight limit for an operation at our facility is 350lb or a BMI no greater than 50. Don't be discouraged if you are over 350lb or have a BMI greater than 50 and want weight loss surgery. You have the choice of other facilities in the region or we will work with you on a weight loss program to get you to 350lb (or a BMI of less than 50) to be eligible for the operation. It's absolutely worth it and will change your life forever.

THE RULES

We are going to get to the point right away. To succeed long term, you will have to make permanent eating habit and life style changes. The Sleeve Gastrectomy, your tool, will help you. In order to experience how the Sleeve Gastrectomy can help you make these necessary changes to succeed, not just short term but also long term, you will have to follow the RULES. The Sleeve is not the cure to morbid obesity – **it is a very good tool** that we have to teach you how to maintain a healthy weight.

Lifelong dietary behavior modification is necessary to ensure both an adequate nutritional status and long term weight loss success. The Sleeve will help you achieve these changes. If your body does not obtain adequate nutrition, it is left vulnerable to fatigue, depression, infection and other illnesses that can impair functioning organ systems, compromise health, and even endanger life. It is important that you do not fixate on food or calories, because this is not a diet. Good nutrition through balanced meals is the key. The Sleeve will restrict how much food you can eat, but not what you eat. The rules are important to help you take advantage of your tool.

Please read these nutritional guidelines carefully. These guidelines will help you maximize your weight loss success and maintain good health. The beauty of the Sleeve Gastrectomy is that for the first time, you will feel full and satisfied (satiated) from what you eat. Your hunger will be controlled. This is a profound experience for many, being released from a prison of hunger. The Sleeve restores the satiety mechanism between the stomach and the brain, and allows effective control of food consumption. But this does not mean that you can eat whatever and whenever you like. The most important components of your diet will be **PROTEIN, VITAMINS and WATER. We cannot overemphasize the importance of adequate protein and water intake!**

The best analogy that we have found to help explain to patients why these rules are important is the “Sink Analogy”. We compare your Sleeve Gastrectomy operation to a sink. Think of your new small stomach (sleeve) as a very small sink. Imagine pouring liquid into such a sink – if you pour the liquid too fast it will overflow, but if you pour it slower or wait for a minute the liquid will eventually drain thru the sink hole. Now imagine putting thick, dense sludge into such a sink – the sludge may never make it down the sink hole unless we add water and stir.

ALWAYS AVOID DRINKS / LIQUIDS WITH CALORIES

The reason why this is a rule is because it does not matter how small we make your sleeve (sink), liquids will always pass through fairly quickly without giving you any satiety or satisfaction from that liquid. But every calorie of that liquid will be absorbed. Your sleeve will not stay full on liquids. You can drink a lot of liquids without being full, and you will be hungry very soon after drinking liquids.

CHOOSE SOLID FOODS OVER LIQUID-SOFT FOODS

The reason why this is a rule is because the denser the food you are able to eat the more it will plug up the sink (sleeve), the longer your sleeve will stay full, the less you will eat, and the

better your hunger and cravings will be controlled. The thicker and denser the sludge the longer the sink stays full. If you were just to eat meat, the sleeve would work very well because meat is the densest food we have.

DO NOT EAT AND DRINK AT THE SAME TIME

The reason why this is a rule is because we do not want you to liquefy the food as you are eating it. Do not wash the sludge down the sink hole. We want you to stop drinking about 15 minutes before your meal – to make sure the sink is empty of water before putting food in it. Once you start eating, no drinking with your meal – do not liquefy the food you are eating. You will be able to eat more, and you will be hungry sooner if you are drinking while eating. Never put a glass of any liquid next to your meal – the habit to eat and drink at the same time is very strong. You may not realize that you are even doing it until it is too late. We also do not want you to drink for at least 60 minutes after your meal. Do not help mother nature – your sleeve can liquefy the food on its own without your help. Your sleeve will take longer on its own, thus giving you prolonged satisfaction and hunger control.

Do not eat and drink at the same time.

Always avoid drinks/liquids with calories.

To avoid snacking/grazing, eat meals that fill your sleeve.

Choose solid foods over liquid/soft foods

NUTRITION

Weight loss success after bariatric surgery does not rely on a reduced calorie diet alone. The surgery you underwent will control your hunger and will make you full and satiated from small amounts of food. You will have successful weight loss if you follow the rules, and eat healthy and nutritious meals.

You will never have to go on a diet again, but you will have to choose what you eat wisely. We hope you will come to realize that once your meal portions are reduced to 1 – 1½ cups of food per meal, your meals will have to be nutritious because you are now eating very little food and you have to make better food choices to stay healthy.

A diet that is low in carbohydrates and fats and high in quality protein is essential, along with vitamin and mineral supplementation, to lose weight successfully and stay healthy. 70% of your calories have to be protein, with a minimal intake of 60 to 75 gm of protein per day. Poor protein intake will result in muscle wasting, hair loss and poor ability to heal. When the body does not take in enough protein through diet it will look for it in muscle, and cause muscle breakdown. The body cannot make the essential amino acids to make protein; diet is the only source of these amino acids.

At least half of every meal has to be protein (20 to 30 gm), next on your plate should be a fruit or vegetable. Always eat protein first, then the other things on your plate. This way if you get full, you at least ate your minimum of protein per meal. Starches and fats have the least nutritional value to a bariatric patient.

We ask our patients to minimize shopping in the middle aisles of a grocery store. The middle aisles usually contain processed food, high in simple sugars and fat. Also avoid going to the grocery store when hungry. When hungry the tendency is to buy more indulgent types of foods.

PROTEIN

Protein will be the most important nutrient in your diet. Protein is the basic building block our bodies use to repair and replace tissue. You will need to monitor your protein intake for the remainder of your life (minimum 60 to 75gm/day). This is a normal amount of protein that every human being should be eating daily. The reason why a bariatric patient needs to be aware of his/her protein intake is because after surgery they are unable to eat 60 to 100gm of protein in one meal anymore. On average, after weight loss surgery a person can only eat 20 to 30gm of protein per meal. Without adequate protein, serious complications can arise, including neurological deficits as well as heart, liver and kidney problems long term.

You can purchase a paperback book that lists protein and carbohydrate content in foods in grams. Use it until you have developed a good feel for which foods are rich in protein as well as which foods are not. Also learn how much protein certain foods have compared to others. If you have protein with every meal, and at least half of every meal is protein (a deck of playing cards is about 3 ounces of meat or fish) you should be able to eat 30 gm of protein per meal, ensuring at least 70gm of protein per day. By making half of every meal a high quality protein you can avoid the protein counting.

Examples of foods high in protein:

Cheese, low fat 6gm/1oz
Cottage cheese, low fat 14gm/ 4oz
Yogurt 8gm/8oz
Soy milk 7gm/8oz
2%, 1% or Skim milk 8gm/ 8oz
Evaporated skim milk 19gm/8oz can
Eggs, without the yolk 8gm /serving.
Beans (chick peas, any bean) 7-9gm/1/2cup
Tuna fish 15gm/2oz
Tofu, Tofu Rella cheese–no lactose 8gm/4oz
Meat (chicken, fish, turkey) 7gm/1oz
Seafood (shrimp, lobster, scallops) 8gm/1oz
Peanut Butter 5gm/1tbsp

Because your stomach will be very small after surgery, it will be important to eat protein first, and then vegetables, breads or fruits. We highly recommend protein drinks/protein powder drinks for the first 6-8 weeks following surgery. This assures you are consuming adequate protein during this very important time of recover. After 6 to 8 weeks you may not require these protein supplements. It will depend on how quickly your diet advances.

Remember your protein intake has to be 70gm per day or more for your entire life. If you are unable to maintain that amount of protein intake from diet alone, you will have to continue to

use protein supplements until you are able to eat 70gm of protein or more per day from diet. The largest protein supplement selections can be found at GNC stores, Walgreens, at the large vitamin stores, fitness stores, and on the internet. Wal-Mart also has a limited selection.

Some Other sources of protein:

AVID Protein Bar™ 20 gm/serving

Isopure beverage 40gm/serving

Sugar Free Carnation Instant Breakfast 12gm/serving

Non-fat dry milk 11gm / ¼ cup

Atkins shake 18gm/serving

Myoplex™ 25gm/serving

Avoid – Ensure™, Boost™ they have too much sugar!

SUGARS / CARBOHYDRATES

Avoid simple carbohydrates or white sugar/starch (refined/simple sugars/corn starch), especially in liquid form! Simple sugars, particularly in the liquid form are known to cause weight gain. It will not matter how small we make your sleeve – liquids will pass thru quickly without giving you any satiety, but a lot of calories. None of the obesity surgery operations can protect you against weight gain if you continue to drink high calorie liquids. The surgeries are designed to work against solid foods (meat and potato kind of meals).

A very important part of your diet change will be eating complex sugars instead of simple, refined sugars found in candy, pastries, cake, pasta, white bread, flour, chips, pretzels, cookies, ice cream, chocolate, soda, flavored coffee drinks, juices, smoothies or when corn starch is listed as the main ingredient.

Sugar and foods high in sugar should be avoided because of high calories. Sugar is such a poor nutrition source, we recommend that patients avoid simple sugars altogether and concentrate instead on protein intake. Complex carbohydrates (complex sugars) are better tolerated, and in general should be kept to approximately 15 to 20% of your diet to avoid weight gain.

Recommended complex carbohydrates:

- Cereal
- Whole grain – breads, pasta,
- Brown rice
- Potato
- Fruits
- Vegetables
- Legumes – beans

FATS

High fat foods, just like sugar, can cause weight gain. Avoid fried foods, and high fat content foods. Fat is a great energy store but has low nutritional value. Become a label reader.

Below is a list of recommendations. Fat is allowed in your diet, but choose wisely – fat is often accompanied by high sugar content foods.

- Avoid fast foods
- Choose low fat dairy products
- Avoid deserts (high fat and high sugar)
- Choose lean meats (bacon, sausage – not lean)
- Decrease or avoid adding butter, mayonnaise or dressings to foods
- Avoid “snack foods” such as potato chips, etc.

LIQUIDS

To stay hydrated, you will need to drink clear liquids almost constantly. Everyone should drink approximately 8 (8oz) glasses of water per day (about 2 liters of fluid per day). If you are thirsty or your urine is very dark with a strong odor, you are not drinking enough. Use your thirst and your urine output as a guide to drinking liquids. Sip as much clear, sugar-free liquids as you can tolerate except for 15 minutes before a solid meal, during your meal and 60 minutes after a solid meal. Otherwise there are no restrictions on how much you can drink. You will also notice that you may not be able to drink a glass of water in a few seconds. It will likely take you a few minutes to drink a glass of water after the surgery.

Recommended clear liquids:

- Fruit juices – sugar free
- Carbonated beverages (**allow them to go flat if you have to have them**) – sugar free
- Crystal Light™ powder drinks
- Popsicles – sugar free
- Caffeine-free – coffee, tea
- Strained / broth soups
- Kool-Aid – sugar free

WATER

Please note, your liquids have to be low in sugar or sugar free. If you desire juice, choose juices that are 100% fruit juice with no added sugar. Consumption of high calorie liquids will result in poor weight loss. Limit high calorie liquids (example: juices) to 4oz/day.

Because of the protein-rich, sugar-restricted diet, the body enters a state of ketosis (breaking down fat to create sugar). When the body creates sugar in this way it also creates waste, which the kidneys eliminate. Water is very important in helping the kidneys eliminate the harmful waste and avoiding kidney problems. Again, there is no limit on how much clear liquids you can take.

Liquids/Foods to Avoid:

Here is a list of popular foods that are filled with empty calories. The products provide mainly calories with limited nutritional value (protein, fiber, minerals and vitamins). Every bite counts after surgery. Avoid foods which contain sugar. Filling up on concentrated sweets and other simple carbohydrates can prevent weight loss and good nutrition.

- Pudding
- Ice cream

- Sweetened, fruited or frozen yogurt
- Candied fruit
- Canned or frozen fruit in heavy syrup
- Fruit juice
- Sugar coated or sweetened cereal
- Sweet rolls and doughnuts
- Sports drinks
- Popsicles
- Cakes
- Pies
- Cakes and cookies
- Jellies
- Regular soft drinks/Lemonade
- High fructose corn syrup sweetened beverages
- Sugared ice tea
- Carbonated fruit drinks
- Table sugar
- Honey
- Candy and chocolate
- Sweetened gelatin desserts
- Regular chewing gum
- Molasses
- Syrups
- Sherbet/sorbet
- Jams
- Pancakes and waffles with syrup
- Soup
- Milkshakes and chocolate milk
- Alcohol, beer

SOLIDS

We have provided you with a ‘Tool’. If used properly **you will lose weight**. The ‘Tool’ is your new, small stomach that eventually will hold 8 to 12 oz. of solid food at a time. How much food you will be able to eat will depend on how solid your food choices are. (1 Tbsp. = 0.5 oz.).

The sleeve size limits the amount of solid food that can be eaten at any one time, thus reducing calorie intake per meal. The very small sleeve keeps the food in your sleeve for a long period of time, thus prolonging satiety. This is why drinking and eating at the same time is not allowed. If you drink, you will flush the food out or liquefy it, thus allowing it to exit faster. Your hunger will be satisfied longer if you do not eat and drink simultaneously.

Often patients will say “I feel food gets stuck, and if I just drink a little water... it goes down better” – that is cheating. In situations like that, eat slower, chew better and choose more tender foods. Food sticks or obstructs when you eat too quickly, your bite was too big, or you did not chew it well enough. It usually occurs when you are in a hurry, in a social setting, watching TV or you simply forgot you have the sleeve gastrectomy now and you cannot eat the way you used to.

Once again, because of the small sleeve size, certain foods are not well tolerated and can even cause a variety of unpleasant sensations. Foods such as high fibrous meats (steak) and soft, doughy foods are harder to tolerate. Crispy, tender and flaky foods are tolerated the best. Warm, fresh food is tolerated better than cold, refrigerated leftovers.

As you advance your diet to soft/puree solid food and then regular solid food, you will need to learn to eat slowly and in very small bites (a teaspoon at a time). You will also need to chew your food well, down to a paste consistency. The small stomach that you now have cannot churn or breakup food the same way the normal stomach did. Thus chewing food thoroughly is very important to avoid vomiting and feeling ill. Inadequate chewing or eating large servings can result in pain, nausea, vomiting and sleeve stretching over time.

The sleeve will force you to eat less, learn to eat slower, chew better and reduce your bite size. Baby size plates and utensils are helpful to some. Inadequate chewing, fast eating or eating large bite sizes can result in pain and discomfort, and the need to bring the morsel of food back up.

When you get hungry, eat until your sleeve is full. You can significantly reduce snacking or grazing by eating meals that fill your sleeve. Satiety will last significantly longer with more solid meals, and you will have better weight loss. Do not graze, or eat meals that last several hours. If you drink with meals, you will cause the meal to leave the stomach sooner. The longer the solid meal stays in your stomach the less hungry you will feel and the more weight loss you will experience. Simply DO NOT drink liquids with meals. The goal is to keep your sleeve distended and full for as long as possible.

FREQUENTLY ASKED QUESTIONS

FIBER AND CONSTIPATION

Decreased intake of food, fiber and fluid, along with iron supplementation can lead to constipation.

To prevent constipation:

- Drink large amounts of clear, sugar-free liquids
- Exercise, stay active
- Try baby food prunes or juice (low sugar)
- Try applesauce (low sugar), or an apple
- Try oatmeal
- Reintroduce fruits and vegetables in your diet

If constipation persists, try a daily fiber supplement. Benefiber dissolves in water (no glob). Try this first, otherwise Fibercon™ pills, Metamucil™, Citrucel™ or Milk of Magnesia are also available. Usually you will require 25 gm of fiber per day to become regular. Focus on foods high in fiber, such as fresh fruits or vegetables, legumes and high fiber cereals. Remember to chew all fiber-containing foods very well and increase fluid intake when eating fiber. Fiber that is poorly chewed can obstruct the sleeve outlet.

Once you are on a regular diet, it will be easier to obtain fiber. Focus on foods high in fiber such as fresh fruits or vegetables, legumes and high fiber cereals.

ALCOHOL

Alcohol is allowed. Just remember, alcohol is also very high in calories, and it can dehydrate the body.

SMOKING

There is no better time to quit smoking than now. If this is an addiction you are not ready to give up, smoking is allowed after 6 weeks. Smoking is known to impair healing after surgery and can increase stoma ulcer formation.

CAFFEINE

Caffeine is allowed after 6 weeks. Caffeine is a diuretic, stimulates gut motility and it increases appetite. We recommend caffeine-free and decaffeinated products, particularly if you are having trouble staying hydrated.

LABEL READING

The Nutrition Facts label on food products list the grams of protein, fat and sugar in the product per serving. When reviewing labels for sugar content, avoid foods that list sugar as one of the first three ingredients listed on the label. Words that end with an ose or ol ending are sugars. Example: sucrose, dextrose, fructose, glucose, sorbitol, mannitol. Use items with Nutrasweet™, Splenda™, or Saccharin.

When monitoring your protein intake, make sure you check the label for serving size. Avoid foods containing simple sugars as much as possible. Look for approximately 10gm of carbohydrate per serving or less. Carbohydrates should not exceed more than 15% to 20% of calorie intake.

LACTOSE INTOLERANCE

Intolerance to milk products develops when the body does not make enough of the enzyme Lactase, an enzyme that is needed to digest milk sugar (lactose). Symptoms are gas, cramps and diarrhea. If you suspect lactose intolerance, remove all milk products from your diet for 48 hours. Slowly reintroduce one milk product at a time to determine if you have tolerance to any or no milk products.

If intolerant, options include: Lactaid™ tablets or liquid Lactaid™ drops which can be added to milk, Lactaid milk, Lactaid yogurt, soy milk (fortified) and soy yogurt or cheese

HAIR LOSS

Temporary hair loss is a common side effect of obesity surgery. It is reflective of the great changes your body is undergoing. It usually takes several months (4-5) before it is noted. And it can last for 2-3 months.

Hair loss can be aggravated by a low protein and zinc diet. You must take in a minimum of 70 gm of protein per day to help minimize hair loss. Always eat protein foods first, then vegetables and fruits, etc. If your hair loss persists, you are not eating enough protein or your vitamin does not have zinc.

Do not take in more than 30mg of zinc per day. Check your vitamin for zinc content prior to adding additional zinc.

EXERCISE

In a perfect world, the surgery would eliminate the need for exercise. But the reality is your compliance with a post-operative nutritional diet and exercise regimen is mandatory for a long-term and successful outcome.

Early after surgery, we recommend walking or stationary bicycle/treadmill. A pedometer is a great way to monitor your increase in activity. An average person should walk 10,000 steps per day. The average American walks 2,000-3,000 steps per day. Walking is very easy to introduce into your day without having to plan for a block of time or a shower after a workout. As you lose weight and it is easier to exercise we want you to increase your exercise level. Choose something you like doing or do it with someone who exercises regularly.

There are three phases to weight loss after bariatric surgery:

- 1) First year – the operation does a lot of the work for you. Meaning you will lose weight almost in spite of yourself. Of course, your results will be improved if you are fully engaged in a healthier lifestyle.
- 2) Second year – a transitional year, where the operation still contributes something, but you will need to start to interact in terms of weight maintenance. Exercise is an excellent way. Following the rules with a nutritious, well balanced diet, with protein as the main focus is another.
- 3) Third year and beyond – you assume primary control in maintaining weight loss. If you rely completely on the operation and think you can eat whatever... whenever... weight regain is likely. Adherence to the rules and to the nutrition recommendations is very important. Several studies are now available which have shown that exercise performed 20 – 30 minutes a day, at least 3 times per week significantly helps maintain effective long term weight loss.

HINTS

Long Term Weight Loss Surgery Guidelines for Success

- Eat 3 meals/day
- Always eat protein foods first
- Do not eat and drink at the same time
- Do not drink 15 minutes before a meal
- Do not drink at least 60 minutes after a meal
- Average meal should last approximately 20 minutes
- Put your fork down between bites of food

- Eat slowly, reduce bite size, **chew very well**
- Avoid gulping foods or drink
- Liquid and soft foods are less filling
- Reflux – call if persistent, are you overeating?
- Stay away from sugar and fat
- A baby spoon/fork and plate can help control portion size
- Drink sugar-free beverages (non-caloric)
- Avoid using a straw
- Eat a minimum of 70gm of protein per day. Your body needs 60-70gm of protein/day to avoid muscle and hair loss
- Take your vitamins and supplements daily
- Limit juices, soda, and alcohol
- Avoid carbonated drinks
- Buy better quality meat – more tender cuts
- Eat until you are full, this will eliminate snacking. Frequent snacks slow weight loss
- Dry foods may cause discomfort. Eat moist foods – but do not eat and drink at the same time
- High fat foods and lactose intolerance can cause diarrhea
- Try new foods one at a time, if not tolerated try again in one week
- Always start with one teaspoon of a new food
- Shop on the perimeter of the grocery store
- Marinate meats with soy sauce, tenderizer, vinegar or wine to soften and moisten them
- Intermittent nausea early on? – are you overeating or drinking too fast?
- ¼ cup = 2 ounces
- Bake, broil, or grill – avoid frying
- 60% of each meal should be protein
- Become friends with the grocer’s butcher
- Read food labels carefully
- Persistent vomiting - call the office
- Drink clear liquids constantly (sugar-free)
- Hair loss peaks at 4-6 months – this is temporary!
- Crab and fish are usually well tolerated
- Well cooked dark chicken or turkey are well tolerated
- Women should use mechanical birth control for the first year after surgery
- Do not get pregnant for at least 18months until active weight loss stops
- 1 Tbsp = 3 tsp = 0.5 ounces = 14.3 grams
- 2 cups = 16 ounces = 1 pint = 475 ml

DIET BEFORE SURGERY

You will be asked to start a low sugar/carbohydrate (less than 40 grams/day), high protein 1000 kcal diet ten days before your surgery. The purpose of this diet is to deplete your liver glycogen (sugar) stores, which in turn will reduce the size of your liver and help make the operation safer. Often the liver can be too large or hard to retract out of the way to be able to perform the operation. This simple diet is able to shrink and soften the liver to make it amenable to manipulation at time of surgery and make surgery safer.

Here are examples of foods/liquids you can have during this time period. Remember to try to get in about 60 grams of protein per day while on this diet. The nutritional guidelines are as follow:

- A. Your diet for 10 days should be an “Atkin’s style” diet. Plenty of protein/meats, eggs, water, green leafy vegetables and minimal (or no) sugar and carbohydrates. Stay away from pasta, bread, chips, crackers, potatoes, fruits, sugar containing drinks, desserts.
- B. The liquids below can be taken in any amount since they do not contain sugar.
- Sugar-free beverages such as Crystal Light, Wyler’s Light, Sugar-free Kool Aid or Sugar-free Tang, diet Snapple, diet sodas, Fruit20®, Propel®, coffee or tea with sugar substitute, or water. **Drink lots of water.**
 - Broth soups (all varieties)
 - Sugar-free popsicles and sugar-free Jello

Attention Diabetics! Monitor your blood sugars more frequently and adjust your agents or Insulin accordingly. If your blood sugar is less than 80, you are free to add some carbohydrates to your diet to avoid very low blood sugar.

DIET AFTER SURGERY

The diet after Sleeve Gastrectomy surgery progresses through several stages. Regardless of the diet stage, you will always need to consume clear liquids, except 15 min before a meal and 60 min after a meal. The “Do not drink liquids with meals” rule starts when you are eating solid food.

DAY 1 THROUGH DAY 5 (HIGH PROTEIN, CLEAR LIQUID DIET)

The day after surgery you will be started on a clear liquid diet that has no carbonation, no caffeine and is sugar-free or low in sugar. Stay on the clear liquid diet for at least 5 days. After the 5th day you may advance to a full liquid diet.

The goal is 8 glasses (64 oz) of liquid/water daily – taken slowly. Clear liquids are fluids that can almost be seen through. Start with small sips. Avoid the use of a straw. There is no limit on the amount of clear liquids that you can drink. Initially, water is tolerated better than juice. If you take medications on a regular basis, they have to be crushed or taken in liquid form.

We highly recommend Isopure for those first five days. This is a clear liquid which contains 40 grams of protein for every 20oz bottle. At least one 20oz bottle per day should be consumed. It can be purchased at GNC.

Avoid all carbonated drinks and citrus juices (orange, tomato and grapefruit) during the first 4 weeks. It is best to dilute other juices by 50% with water.

Recommended clear liquids:

- Fruit juices – sugar free/low sugar/diluted
- Flat carbonated beverages – sugar-free and caffeine free
- Crystal Light™ powder drinks
- Popsicles – sugar-free
- Caffeine free – coffee, tea
- Broths
- Egg drop soup – strained, no crunchy pieces
- Kool-Aid™ – sugar-free
- **Isopure—This is an excellent clear liquid with protein and you should drink at least 20oz everyday.**
- **WATER**

DAY 5 THROUGH 2ND WEEK (FULL LIQUID)

A full liquid diet consists of sugar-free, low fat milk products, protein supplements and strained soups. Do not drink pre-mixed drinks like Ensure™, Boost™, and milkshakes, etc. (high sugar content). By sipping on these high calorie drinks/liquids throughout the day, many calories can be consumed without feeling full.

Protein will be the most important nutrient that you will concentrate on during this period. The goal will be a minimum of 70 gm of protein per day. Because solids are not allowed, you will have to obtain your protein from protein powders/protein drinks and dairy products. Dairy products are an excellent, natural source of protein and calcium if you are not lactose intolerant.

If you are intolerant of dairy products you will have to substitute with protein drinks and powders. Please refer to the protein section earlier for more details. Flavored protein powders may be mixed with clear liquids or milk, non-flavored protein powders can be mixed with your meals to increase your protein intake when needed.

To improve compliance, you can get as imaginative as you want (“blenderize”), as long as what you prepare passes thru a straw.

Recommended full liquids:

- 1% or 2%, skim milk
- Soy milk
- 1% or 2% milk drinks – no added sugar
- Protein mixes/shakes – low sugar and fat
- Protein supplements/powders – low sugar
- Cream soups– strained (no solids), low fat, low sugar
- Any clear liquid – sugar-free
- Thinned pudding/custard – sugar-free
- Strained & thinned hot cereals
- Yogurt

It is recommended that you begin drinking a protein drink regularly during this time. Total protein intake per day should be 70 gm/day. The degree of hair loss that you will experience can be directly proportional to your protein intake.

Remember to stay hydrated and drink clear liquids constantly, 8 glasses per day. If you are leaving the house, bring a water bottle with you.

WEEKS 3 THROUGH 6 (SOFT DIET)

You may now begin to eat pureed and very soft foods not requiring a lot of chewing. These include all items listed as clear and full liquids, and the items listed below. Again the focus will be on foods high in protein, low in sugar and fat. Always eat protein-rich foods first then, fruits and vegetables.

Recommended soft foods:

- Pureed meat/fish – low fat (chicken, turkey, hot dog)
- Jarred/canned baby foods – low sugar, low fat
- Smooth peanut butter
- Tuna fish in water – low fat mayonnaise/sour cream/mustard
- Pureed over-cooked vegetables / baby vegetable jars
- Blended canned/fresh fruit (pour off the syrup)
- Baby fruit jars
- Chili
- Chicken pot pie
- Mashed potatoes
- Over-boiled soups – pureed veggies/meat
- Beans (chick peas, kidney beans, lentils)
- Oatmeal, cream of wheat, grits
- Cottage cheese
- Baked white fish (no bones)
- Tuna fish / crab / lobster
- Well cooked chicken / turkey (dark meat)
- Canned fruits
- Bananas
- Eggs (protein is in the whites, not the yolk)
- Well cooked vegetables (no corn) – remove skin and seeds
- Potatoes

Though the foods are soft, you have to remember to chew any solid food to the consistency of paste before swallowing. Avoid tough meats such as steak and beef, these are usually the hardest foods to tolerate. Avoid nuts, seeds, high fiber foods – raw vegetables, fresh fruits, bran flakes. Moist foods are better tolerated than dry foods.

WEEK 6 REGULAR DIET

The “regular” food trial period begins. Finally!!! As you progress to a normal diet, you will need to carefully monitor the food choices you make. Remember eat protein first, then vegetables, pasta and fruits etc. Continue with the soft diet while slowly introducing new regular foods. Continue to cook the meats and vegetables until soft. Start with very small servings (teaspoon) and chew the food very well before swallowing. You will also need to slow down. Introduce one new food each day.

If necessary, supplement your meals with extra protein powder to ensure adequate protein intake while adjusting to regular food.

Do not eat and drink at the same time anymore. No liquids 15 minutes before a meal and no liquids at least 60 minutes after a meal.

When you decide to eat, eat until your sleeve is full. Eat filling meals, this will eliminate the need to snack by maintaining satiety longer.

Remember to stay hydrated – if you are leaving the house bring a water bottle with you.

You may also begin taking your pills whole again. Large pills the size of regular vitamins will still need to be cut into smaller pieces prior to swallowing.

Foods hardest to tolerate are red meats, bread, pasta, rice and the membrane of citrus fruits. Toasted bread is better tolerated than non-toasted.

Remember chew very well before swallowing. The slower you chew your food, especially red meat, the better it will be digested and the less chance a blockage will be created. If you do not tolerate a food the first time, try it again in a few weeks.

Crispy foods: These are allowed after 6 weeks. Crispy becomes MUSH when wet. These include saltines, toast, corn flakes, Rice Krispies cereal.

Crunchy foods: We recommend that you avoid these items altogether. If you choose to have them, wait at least until your 3rd month. Make sure you chew the food very well before swallowing. Again we recommend avoiding them; crunchy does not become MUSH, and it can get stuck in your sleeve and ulcerate or perforate. Raw vegetable fiber, even though chewed does not dissolve and can potentially obstruct. These include: corn chips, potato/tortilla chips, taco shells, nuts, seeds, carrots, celery, grain – incompletely ground.

VITAMIN GUIDE

The sleeve gastrectomy is not a malabsorptive operation so vitamin deficiencies are not as common as gastric bypass patients. That being said, we suggest a chewable or liquid form of multivitamin for the first 2 months after surgery. After 2 months you may start taking regular pills again, but if the pills are large they have to be cut into smaller pieces. Vitamin B12 and Calcium supplementation are also recommended.

FOLLOW-UP

Follow-up is a very important part to your success and health. During your follow-up visits the surgeon will meet with you to discuss your progress, catch potential problems, ensure you understand what to do, check lab work if needed, and give you an opportunity to ask questions. We strongly encourage you to continue to follow-up with your primary care doctor as well. As you lose weight your medication requirements will change, your medications will need to be adjusted, and the doctor prescribing them is the best person to help with that.

- 2 weeks after discharge
- 6 weeks after discharge
- Every 3 months over the first year

SUPPORT

The changes in your diet and lifestyle after surgery will last a lifetime. And you'll have a greater chance of long-term success if you surround yourself with people who understand and support your goals.

Things you can do:

- Help your friends and family members understand why you've chosen a surgical solution. Many people are under the impression that weight loss surgery is an experimental treatment rather than one with more than 40 years of history. Or they believe it is the "easy way out". It is not the easy way out and will require a huge lifestyle change on your part. It's important that they understand that diets don't work for you and you need their support to help you live a longer and healthier life.
- People who are obese often report that their spouses, or others close to them seem to discourage weight loss surgery. These people see your weight as part of your identity and love you regardless. Understand that this is a fear of change. Discuss your reasons for having surgery. They need to know that your health is at stake and you will be counting on them to help you during and after surgery.

The internet is a superb place to get support without leaving the comfort of your own home. Sites especially relevant to the Sleeve Gastrectomy include:

www.verticalsleevetalk.com

www.obesityhelp.com

www.thinnertimesforum.com

Remember, we want you to succeed almost as much as you want it. We are here for you each step of the way. Always feel free to call us for any questions, concerns or problems. This may be the most life altering thing you may ever do and give you a second chance in life. We want to be there to watch you succeed!

Travis Goodnight M.D.

Travis Goodnight, M.D., FACS