
SURGICAL WEIGHT LOSS Information

*UT Medicine Center for
Medical and Surgical Weight Loss*

W.H. SCHWESINGER M.D.

KENNETH R. SIRINEK, M.D.

S.P. BOWERS M.D.

PETER P. LOPEZ, M.D.

NILESH PATEL, M.D.

KENT VAN SICKLE, M.D.

YOUR ROLE

You 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. (given to you by your surgeon before surgery)

Both the bariatric team and you must commit to honesty, responsibility and cooperation.

CLINICALLY SEVERE OBESITY AND 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 clinically severe obese (morbidly obese) when he or she is so heavy that the fat tissue load creates (or will create) other medical problems.

Clinically severe 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 clinically severe 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:

$$\text{BMI} = \text{weight (kg)} / \text{height (m}^2\text{)}$$

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. For example, very obese men between the

ages of 25 and 35 have 12-fold greater risk of dying prematurely compared to their normal weight counterparts.

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, fatty liver
- **Endocrine** – Diabetes, hirsutism, hyperlipidemia, hypercholesterolemia
- **Genito-urinary, Reproductive** – frequent urinary tract infections (UTI's), stress urinary incontinence, menstrual irregularity or infertility
- **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
- **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 clinically severe 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 with clinically severe obesity. One of the most popular and successful surgical approaches is the Roux-en-Y gastric-bypass.

Gastric-bypass surgery is a time-tested operation. It has been endorsed by a 1991 consensus panel convened by the National Institute of Health (NIH), as the only effective means of inducing significant long-term weight loss for the vast majority of patients with clinically severe obesity.

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 year and a half after surgery.
- The surgery is a tool, which will help you lose weight. However, by being diligent with exercise and attending support groups and workshops, your chances of losing more weight will dramatically increase. 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. By decreasing food intake (restriction). Gastric banding, gastric bypass, and vertical-banded gastroplasty are surgeries that limit the amount of food the stomach can hold by closing off or removing parts of the stomach. These operations also delay emptying of the stomach (gastric pouch)

→ 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. By causing food to be poorly digested and absorbed (malabsorption). 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.

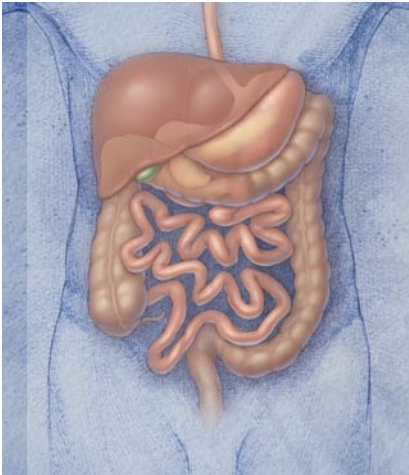
EXPLORE THE BENEFITS AND RISKS GASTRIC-BYPASS SURGERY

BENEFITS	RISKS
<ul style="list-style-type: none"> • Most patients lose weight rapidly and continue to do so until 18-24 months after the procedure • Significant sustained weight loss • Although many patients regain some of their weight after 24 months, few regain it all • Bariatric surgery improves or eliminates most obesity related conditions such as high blood pressure, high cholesterol, sleep apnea, and diabetes • Blood sugar levels for most patients with adult onset diabetes (type II) improve almost immediately and become completely normal within a year of surgery • Less osteoarthritis pain and improved mobility • Improved mood and self-esteem 	<ul style="list-style-type: none"> • 10-20% of patient who have open bariatric surgery require follow-up operations to correct complications (abdominal hernias are the most common) • Other possible post-surgical complications include infection, bleeding and death • More than 1/3 of gastric-bypass patients develop gallstones, which could lead to a laparoscopic procedure known as cholecystectomy to remove the gallbladder. • During rapid or substantial weight loss a person's risk of developing gallstones is increased. Gallstones can be prevented with supplemental bile salts taken for the first six months after surgery. • Nearly 30% of patients who have bariatric surgery develop nutritional deficiencies such as anemia, osteoporosis, and metabolic bone disease. These deficiencies can be avoided if lifelong vitamin and mineral intake are maintained • Dumping syndrome – caused by stomach contents moving too rapidly through the small intestine

→ Note: It is important to know that this surgery **cannot be completely reversed**. The decision to have this procedure must be made in consultation

with your surgeon, and a very careful consideration of the potential benefits and risks, and the lifelong consequences.

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 the 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.

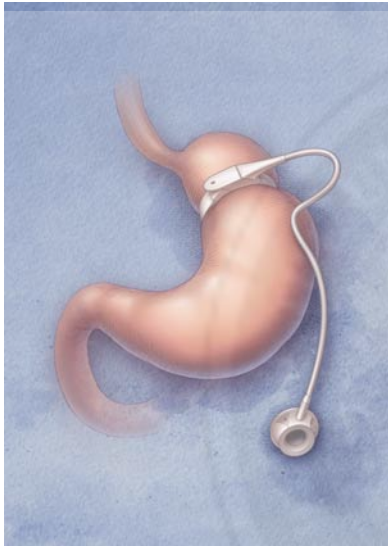
MALABSORPTIVE PROCEDURES (NOT DONE BY THE UNIVERSITY GROUP)



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.

RESTRICTIVE PROCEDURES



Restrictive gastric procedures restrict the size of the stomach. There are several types of restrictive procedures. **Vertical banded** and **Silastic Ring Gastroplasties** use a staple line to restrict the size of the stomach. The LAP-BAND® System utilizes an adjustable band that restricts the opening to the remainder of the stomach. The LAP-BAND® is a promising new technology that is new to the USA (approved by the FDA in June 2001). This procedure recalls the principle of doing the smallest (least invasive) procedure possible to achieve the desired result. In this method, a band is placed at the top of the stomach, creating a pouch. The opening to the rest of the digestive tract is adjustable through an epidermal port. The concept

here is to create anatomy that provides a sensation of satiety after a very small meal. Weight loss for restrictive procedures is much less than that of the malabsorptive procedures and the Roux-en-Y gastric-bypass. It can also be accompanied by a considerable amount of vomiting.

COMBINATION PROCEDURES (PRIMARY PROCEDURE DONE)



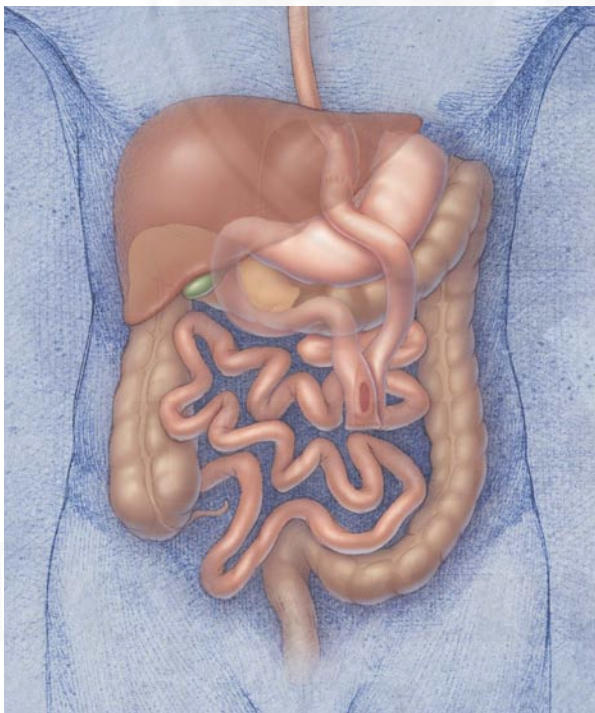
The **Roux-en-Y Gastric-bypass** can be regarded as a restrictive procedure; however, there is some malabsorption due to bypassing food around the duodenum and the initial part of the jejunum. The risk for pouch stretching, breakdown of the staple lines, and leakage of stomach contents into the abdomen are about the same for Gastric-bypass as for vertical banded gastroplasty. 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.

ROUX-EN-Y GASTRIC BYPASS

Description of the procedure (surgical technique may vary)

1. **EXPLORATION OF THE ABDOMEN** – after the abdomen is entered (with an open incision or laparoscopically using a viewing telescope and small 5 to 15mm trocars, or tubes, through which surgical instruments are passed into the abdomen), the surgeon makes a quick check to be sure that no



obvious anatomic abnormalities are present. Particular attention is given to the gallbladder and the uterus/ovaries. In open cases, the gallbladder is felt to determine if it contains gallstones, and if so, the gallbladder is removed later in operation. In laparoscopic cases, an ultrasound is done before surgery to tell if gallstones are present. A cholecystectomy may be planned if the ultrasound shows gallstones.

2. **CREATION OF THE ROUX**

LIMB – This part of the procedure is done by dividing the small intestine 15 to 40 cm downstream from the ligament of Treitz (where the jejunum begins). The length of the Roux limb is measured, which is the segment that will attach to the stomach pouch later in the operation. The “standard” length of the Roux limb is 75 cm. Sometimes, a longer Roux limb is measured in heavier patients.

3. **DIVISION OF THE STOMACH** – the stomach is cut, using a device that simultaneously divides the tissue and places staples to seal the tissue on

each side of the cut. The aim is to create a tiny stomach pouch that is 15 to 20 ml in size, in other words creating a cuff of stomach on the bottom end of the esophagus.

4. **FORMATION OF THE GASTROJEJUNAL ANASTOMOSIS (ATTACHMENT OF STOMACH "GASTRO" TO THE SMALL INTESTINAL ROUX LIMB"JEJUNAL")** – this maneuver is the key part of the entire operation; it must be accomplished with the highest possible level of security. This "hookup" must have excellent blood supply and must not have any tension remaining on it at the completion of the operation. A stapling device is used to create this connection
5. **OTHER PROCEDURES, OR DRAINS** – cholecystectomy, tubal ligation, and placement of gastrostomy (stomach tube) or liver biopsy are done at the end of the operation as necessary and discussed with the patient. The surgeon usually places a plastic drainage tube near the gastro-jejunal anastomosis, to serve as a "sentinel" for a leak in this area and potentially to aid in therapy if a leak occurs.
6. **CLOSING OF TROCHAR SITES AND SKIN** – Whether a larger incision for open Gastric-bypass or several small incisions for the laparoscopic Gastric-bypass have been made, the muscle defects are often closed by suture that is absorbable (stitches do not need to be cut out later). The skin incisions are then closed with suture, steri-strips[®] or staples, depending on the surgeon's preference.

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BARIATRIC SURGERY – AN OVERVIEW OF PROCEDURES

	PROCEDURE	PROS	CONS
MALABSORPTIVE	<ul style="list-style-type: none"> • Jejuno-ileal bypass • Biliopancreatic Diversion and Duodenal Switch 	<p>Greater sustained weight loss with less dietary compliance</p>	<ul style="list-style-type: none"> • Increased risk of malnutrition and vitamin deficiency • Constant follow-up to monitor increased risk • Intermittent diarrhea and/or foul smelling stool
RESTRICTIVE	<ul style="list-style-type: none"> • Vertical Banded Gastroplasty (VBG) • Silastic Ring Gastroplasty • Adjustable Band Gastroplasty (LAP-BAND®) 	<ul style="list-style-type: none"> • Relatively easy operation • No protein-calorie mal-absorption • No vitamin or mineral deficiencies due to mal-absorption 	<ul style="list-style-type: none"> • Less weight loss maintenance • More late failures due to dilation • Less effective with sweet eaters • Significant dietary compliance required • Risk of ↓ esophageal function • Risk of band erosion, band slippage and silastic reaction
COMBINATION	Roux-en-Y Gastric-Bypass	<ul style="list-style-type: none"> • Sustained weight loss with limited dietary compliance • Can be performed via laparoscope 	<ul style="list-style-type: none"> • Limited B-Vitamin absorption • Gradual weight gain over 15 years

EXPECTED WEIGHT LOSS AFTER GASTRIC-BYPASS

The Gastric Bypass procedure can successfully start patients on the road to recovery from clinically severe 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 near 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 Gastric-bypass patient.

Successful habits include eating three 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.

Over 50% of patients achieve good to excellent weight loss results following gastric-bypass surgery. Expected weight loss is 55-75% of the excess weight. More weight has been shown to be lost by patient who participated in an extensive after-care program. However, this success depends entirely on following a very restricted diet for the rest of their lives, and making major lifestyle changes. Gastric Bypass is a helpful tool.

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 gastric bypass?

Patients should take personal responsibility for staying in control. Patients have a general feeling that maintaining their weight was indeed their own responsibility and that surgery was 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 I, II and III. Here is an overview of the expected post-operative diet:

Stage I

A clear liquid diet, started two or three days after surgery. It essentially provides hydration during the initial post-operative period.

Stage II

A full liquid diet providing all the essential requirements for the first post-operative month. Patients go home from the hospital on the stage II diet.

Stage III

A modified solid diet. The surgeon instructs the patient when to advance to this diet. Introducing semi-solid food or solid diet too early after surgery may lead to obstruction and vomiting. It may also unduly stress your anastomosis.

NUTRITIONAL EXPECTATIONS

After Gastric Bypass you will need to make changes to your eating patterns. The diet after surgery progresses from a liquid diet to a pureed diet to a soft 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.** 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. Over time, your food pouch will stretch. By six months after surgery, it may stretch to eight ounces or one cup. Long term, the size of your pouch is likely to be eight to twelve ounces or 1 to 1 ½ cups. This will limit the amount of food you can eat at one time.

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 600 to 800 calories and **75 grams of protein** should be the goal for the first 6 months. 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 three 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 8 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, 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

UT MEDICINE CENTER FOR MEDICAL & SURGICAL WEIGHT LOSS

4647 MEDICAL DR. SUITE M
SAN ANTONIO, TEXAS 78229

CLINIC: (210) 592-0230

FAX: (210) 592-0518

UTHSCSA
Department of
SURGERY