OBESITY AND WEIGHT LOSS SURGERY, A SHORT OVERVIEW

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November 5, 2020

WHAT IS OBESITY?

Obesity is a disease, caused by both genetic and environmental factors, in which the accumulation of excess fat and alterations in body function are extremely detrimental to health. Life expectancy may be lowered by as much as 20 years. Many life-threatening (cause death) and life-limiting (cause pain and suffering) conditions are associated with obesity.

OBESITY CATEGORIES

The Body Mass Index or BMI is the most common method for categorizing how obese someone is. It is in units of Kg/m^2. The formula is:

705 X Weight (pounds),
then divide by Height (inches),
then divide by Height (inches).

The categories are as follows:

	BMI in kg/m^2
Underweight	<20
Normal	20-25
Overweight	25-30
Obese	30-35
Severely Obese	35-40
Morbidly Obese	40-50
Super Morbidly Obese	>50

You may also see obesity categorized as:

	BMI in kg/m^2
Class I obesity	30-35
Class II obesity	35-40
Class III obesity	>40

The BMI system is not accurate for all individuals. It is accurate for most individuals that lead a relatively sedentary lifestyle. Very active individuals, such as athletes and manual laborers that have a higher percentage of muscle mass, or women that are pregnant, should not be evaluated with the BMI system as it would be inaccurate for them.

WHAT IS MY IDEAL BODY WEIGHT, MY EXCESS WEIGHT? Ideal body weight for women is 100 lbs. for the first 5 ft and 5 lbs. for every inch above. For men it is 106 lbs. for the first 5 ft and 6 lbs. for every inch above. Excess weight = Actual weight – Ideal Body Weight.

HOW DOES OBESITY AFFECT MY HEALTH?

Life expectancy may drop by as much as 20 years in its worse form, morbid obesity. The average life expectancy in the US is 78. For morbidly obese individuals, it is 58. More than ¼ of life expectancy can be lost to obesity.

There are life-threatening (cause death), as well as life-limiting (cause pain and suffering) health conditions that occur more frequently with obesity. The mortality or death rate for morbidly obese people that then develop other life-threatening conditions such as those listed below, can be as high as 4.5% a year. This equates to nearly a 1 in 20 chance of death every year.

Life-threatening (cause death) conditions:

Diabetes (high blood sugar)
Hypertension (high blood pressure)
Cardiovascular disease (blockage of arteries of heart)
Dyslipidemia (high cholesterol or triglycerides or fats in the blood)
Obstructive Sleep Apnea (difficulty breathing and low oxygen while sleeping)
Obesity Hypoventilation Syndrome (Low oxygen while awake due to less lung capacity)
Liver disease (fatty liver, inflammation of liver and hardening of liver or cirrhosis)
Cancer (Breast, Prostate, Colon, Endometrial or lining of the Uterus)

Life-limiting (cause pain and suffering) conditions:

Osteoarthritis (joint pain, can cause disability)
Gallstones (gallbladder issues often requiring surgery)
Reflux (heartburn, sometimes not felt, causes damage to esophagus)
Stress Urinary Incontinence (leaky bladder)
Erythema Intertrigo (skin fold infections)
Varicose veins
Edema (legs and belly)
Hernias (defect in belly muscles causing bulging and pain)
Menstrual irregularity/Infertility
Depression (from social stigmatization and discrimination)

WHAT CAUSES OBESITY?

Simply put, obesity results from our (human) genetics in today's environment. Our genetics determines our metabolism. We as humans do not require many calories to sustain ourselves. There was a selective advantage in the distant path for humans to hold on to as many calories as possible when food was not as abundant. In recent history our (human) genetics have not changed that much however our environment is very different. Readily available, high calorie foods are now abundant and cheap. The average American female's baseline calorie burn at rest is 1,400 calories a day. For men it is 1,700

calories a day. The average fast food restaurant meal is 1,600 calories. Do we on average eat just 1 meal a day? The answer is no. When we look at what we burn and what is readily available for us to eat, it is easy to see how the average person can easily get in more calories than they are burning. What has caused the increase in obesity is… Our genetics in the face of today's environment.

WHO IS HAVING A PROBLEM?

More than 2/3 of the US population (69.5%) is at least overweight (about 25 lbs. over). If you are not having a problem with your weight, you are part of the minority. More than 1/3 of the US population (36.3%) is at least obese (about 55 lbs. over). Severe obesity equates to about 80 lbs. over. More than 1 in 20 (6.9%) of the US population is morbidly obese (about 110 lbs. over). Women are more morbidly obese than men and our children are having obesity issues as well.

CAN DIETING WORK?

Dieting can work in the lower BMI categories however there are no long-term studies that show dieting is effective when BMI is 30 or above. When you diet you are fighting your genetics which is always a losing battle. The estimated success rate of diets being successful in the morbidly obese population is 5 out of 1000 (0.5%). It is not impossible but almost impossible for diets to be successful in the morbidly obese population. Weight loss can be achieved with diets, but your genetics takes over and you regain the weight almost every time. The role of dieting in the morbidly obese population is to improve health and shrink the liver in order to reduce risk prior to weight loss surgery. This can be done in 2 weeks.

WHAT DOES WORK?

The only proven method to help someone that is morbidly obese to lose weight and to keep the weight off has been surgery. There are many surgeries available. Some older surgeries have been abandoned due to high failure rates. No surgery has a 100% success rate however modern bariatric surgery is much more effective than dieting, which has an almost 0 success rate. There are newer procedures that are being developed that are not surgeries but what are called EBTs (Endoscopic Bariatric Therapy). EBTs generally are not as effective as traditional surgery but there is much less risk involved as there is typically no incision and the procedures are done through the mouth with an endoscope (examples include the intragastric balloon and the Endoscopic Sleeve Gastroplasty) and they are performed on an outpatient basis. These therapies due to their very low risk are now being used to treat people that normally would not qualify for traditional surgery (BMI 30 -39), however, since they are considered investigational, they are not covered by insurance and are performed only on a self-pay basis.

WHO IS APPROPRIATE FOR SURGERY?

Criteria established by the National Institutes of Health (NIH), the World Health Organization (WHO) and the American Society for Metabolic and Bariatric Surgery (ASMBS) are below. These criteria were established more than 30 years ago and do need revising as the success rate and safety of all surgeries have improved dramatically over the years and there has been a need to expand coverage to patients with lower BMIs with traditional surgery and EBTs (Endoscopic Bariatric Therapy, through the mouth, no incision). Most insurance requirements mirror these criteria for traditional bariatric surgery.

- BMI 40 or above, automatically qualifies
- BMI 35 or above with some life-threatening comorbidities

- Evidence of diet attempts (outdated criteria that needs to be removed)

Other considerations:

- No contraindications for surgery (not too high risk due to underlying health)
- Informed consent (Understanding what surgery involves, the risks and benefits and the need to follow other recommendations for diet and exercise and other behavior modifications to achieve the highest success rate. Need for life-long follow up/vitamins/lab evaluation)

Criteria for EBTs

- BMI 30-39, with or without other health conditions
- No contraindications for procedure (not too high risk due to underlying health and must be healthy enough to be performed as an outpatient)
- Informed consent (Understand these procedures are investigational and typically do not have as much weight loss as traditional surgery. Long term weight loss success is not known. Risk for EBTs are much lower than for traditional surgery)
- No coverage by insurance. Performed on a self-pay basis only

WHAT IS YOUR RISK FOR SURGERY BASED ON?

The risk for possible complications for those having surgery is not related to the type of surgery someone has. It is related to the underlying health of the person undergoing surgery. The Older someone is, the heavier someone is, the more health conditions someone has accumulated, the higher the risk for possible complications. Every aspect of caring for someone becomes more difficult the bigger that person becomes. At a certain point, the underlying health of the individual is so bad, that surgery can not be safely done.

WHAT ARE SOME OF THE MISPERCEPTIONS ABOUT WEIGHT LOSS SURGERY?

"Surgery is an extreme measure to help someone lose weight."

It is more extreme to understand that morbid obesity will take 20 years of life away and then you choose to do nothing about it. Short of surgery, you are doing nothing about it as the success rates for diets in the morbidly obese population is estimated to be 5 in 1000. Surgery is the only thing that works.

"Surgery is the treatment of last resort. You should try everything else before surgery."

This is an outdated misperception based on the assumption that diets can work in the morbidly obese population. Diets do not work in the morbidly obese population. If diets don't work and surgeries do, why leave surgery for last? When people wrongfully support the idea of leaving surgery for last, they are hurting the people that need the help the most. Delaying surgery results in more health conditions developing and the gaining of more weight and increasing age, all of which increases the risk at the time of surgery. **Surgery is not the treatment of last resort in the morbidly obese population. Surgery is the treatment of first choice, as nothing else has been proven to be effective**.

"I heard it's dangerous and lots of people die from weight loss surgery?"

This is another outdated misperception based on false beliefs that weight loss surgery is by its nature more dangerous than other abdominal surgeries. It is not. The risk for surgery is not dependent on the type of surgery done, it is dependent on the underlying health of the person undergoing surgery. Morbidly obese people are higher risk for any surgery due to the morbid obesity and associated conditions. A better question to ask is, "Will a morbidly obese person do better with surgery or without surgery. The answer is clearly that they will do better with surgery than without surgery. The death rate for morbidly obese people who then develop life-threatening conditions like diabetes is 4.5% a year, every year. The death rate for weight loss surgery is a 1 time 0.3%. After surgery when weight is lost and life-threatening health conditions go into remission the 4.5% death rate goes away. Morbidly obese people's chances of survival and improved health are far better with surgery than without surgery. Weight loss surgery saves lives. It saves many lives.

WHAT KINDS OF WEIGHT LOSS SURGERIES ARE AVAILABLE?

Weight loss surgeries/procedures fall into several different categories. Some surgeries/procedures fall into more than one category. They are as follows:

1. Restrictive procedures
2. Malabsorptive procedures
3. Combination procedures
4. Pylorus preserving procedures
5. EBTs (Endoscopic Bariatric Therapy)

Restrictive operations generally work solely by restricting the amount of food someone can eat at one time. They are simpler to do and usually entail sectioning off part of the stomach with either a staple line or belt or band of some sort. There is usually no rearranging of intestine. They have largely been abandoned due to poor weight loss or maintenance of weight loss. The best example of a purely restrictive operation is the LapBand. Some would ask "Isn't the Sleeve gastrectomy purely restrictive?" The answer to that is no. There is restriction in a sleeve however there are other hormonal changes when 70% of the stomach is removed that have a positive effect on metabolism and the sleeve is not interpreted by the body as starvation as is the LapBand. Purely restrictive procedures tend to be interpreted as starvation by the body. Purely restrictive procedures have the least risk for vitamin deficiency.

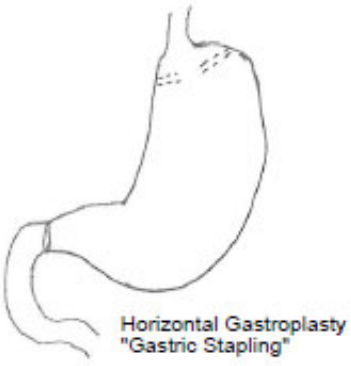
Malabsorptive operations are defined by operations that primarily work by bypassing more than half the small intestine so that there is less absorption of nutrients and calories by the body. This is combined with some sort of milder restriction of the stomach. Though you may think that it is the lack of absorption that is the primary cause of weight loss but it has been shown that it is not simply the malabsorption which results in positive effects. The bypassing of the first part of the small intestine seems to have a very positive metabolic effect on such conditions as diabetes and high cholesterol that can't be explained by the malabsorption alone. The Biliopancreatic Diversion (BPD) and the Biliopancreatic Diversion with Duodenal Switch (BPD-DS) are the best examples. In both procedures the upper 60% of the small intestine is bypassed (does not see food anymore but is not removed). They differ in how the stomach is reduced in size and whether the pylorus (valve at the end of the stomach) is preserved or not. Malabsorptive operations result in the most weight loss with the highest success at 10 years out from surgery. They also result in the highest risk of vitamin deficiency. There are some out dated misperceptions of malabsorptive operations in that they cause chronic diarrhea and can cause

liver failure. When on a balanced diet the chance of chronic diarrhea in a patient that has undergone BPD-DS is approximately 1%. Fatty meals will cause loose stools, however when the person is on a balanced diet, they should have 2-3 soft bowel movements a day. Liver failure was associated with an older malabsorptive procedure that is no longer done, the Jejunoileal bypass, in which 90% of the small intestine was bypassed. Liver failure should not occur with BPD or BPD-DS unless there has been severe noncompliance with diet associated with chronic diarrhea or when there is severe liver disease (near cirrhosis) already present before surgery. In this situation, the intestinal bypassing is reversed.

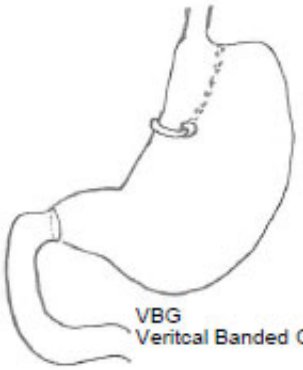
Combination procedures refer to operations in which the stomach is made smaller and less than 50% of the small intestine is bypassed. Gastric Bypass or Roux-en-Y Gastric Bypass (RYGB), is the best example. In a gastric bypass a very small stomach pouch is made from the upper most part of the stomach. The remainder of the stomach and the top 10% of the small intestine is then bypassed. The bottom 90% of the small intestine is then connected to the pouch. Nothing is typically removed and the bottom of the stomach and the upper 10% of the small intestine drain by a connection lower down to join the food. The stomach and upper 10% contain important enzymes and juices that the body needs to properly digest so they are not removed. RYGB is especially good for treating people with Heartburn as there is a 100% success rate with resolving acid reflux after RYGB. The down side of a RYGB is that the pylorus is not part of the food channel anymore and therefore patients can get ulcers right after the pouch if they take in the medications that can cause an ulcer which are called NSAIDs (Nonsteroidal Anti-inflammatory Drugs). NSAIDs include such medications as Aspirin, Motrin, Advil, ibuprofen, Naprosyn, Aleve. Tylenol is not an NSAID, therefore can be taken by patients that choose RYGB. Since the pylorus is not part of the food channel in a RYGB the food is not slowed down as much and RYGB patients are less tolerant to sugars and fats. Sugars and fats in the diet can cause significant discomfort with bloating, cramping, sweating, flushing and this effect is called Dumping Syndrome.

Pylorus preserving operations refer to surgeries in which the valve at the bottom of the stomach, the pylorus, is still part of the food channel. The pylorus has 2 functions. The first is to slow the passage of food from the stomach to the intestine and the second is to protect the intestine right after the stomach from ulcers caused by acid in the stomach. When the pylorus is preserved as is the case with some surgeries, there is less of a chance of ulcer formation and dumping syndrome. People with pylorus preserving surgeries are not restricted from taking NSAIDS. This is helpful to people that need medications for the heart, such as aspirin or medications for the joints, such as ibuprofen.

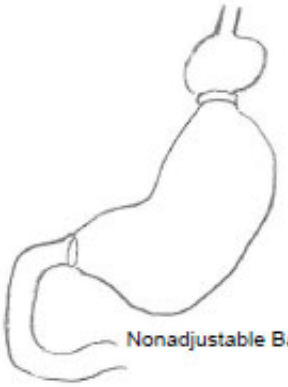
EBTs (Endoscopic Bariatric Therapies) are procedures and not surgery as there is no incision. They are performed with an endoscope passed through the mouth and down into the stomach. The most commonly recognized EBT is the intragastric balloon. It is an approved procedure by the ASMBS and not considered experimental. Unfortunately, the weight loss is less than with traditional surgery and the balloon must be removed at 6 months so the weight loss beyond 1 year is not known. A newer EBT is the ESG (endoscopic sleeve gastroplasty) where the stomach is shaped like the stomach is with a laparoscopic sleeve however the suturing is done from inside the stomach and no stomach is removed. At the time the intragastric balloon was being evaluated by the ASMBS in 2015, there was not enough data on the ESG to evaluate it and recommend it as an approved procedure, however there are newer studies that show the weight loss for ESG is superior to that of the balloon and when the ASMBS does evaluate the ESG in the near future, it should no longer be considered experimental. Other advantages of EBTs is that there is no incision so there is faster recovery and no exercise restriction as with surgery.



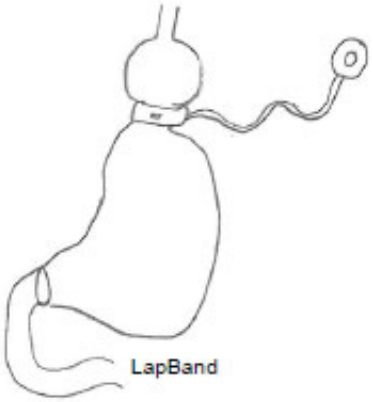
Horizontal Gastroplasty
"Gastric Stapling"



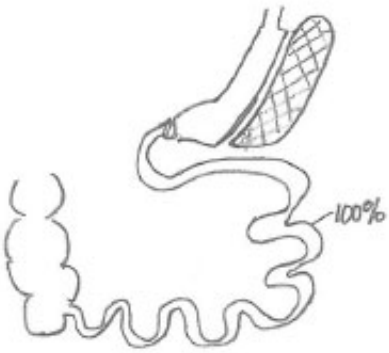
VBG
Veritcal Banded Gastroplasty



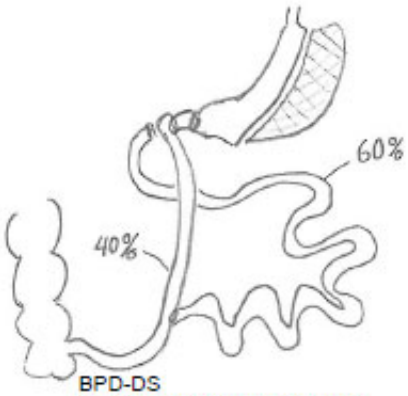
Nonadjustable Band



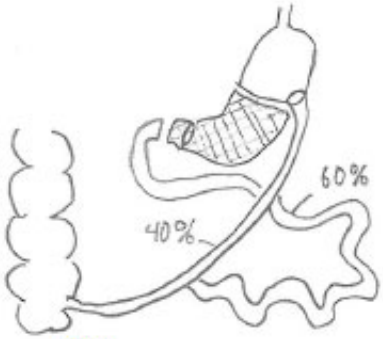
LapBand



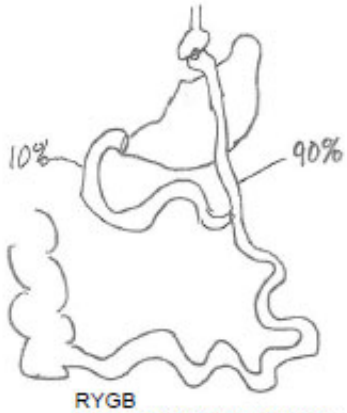
Sleeve Gastrectomy



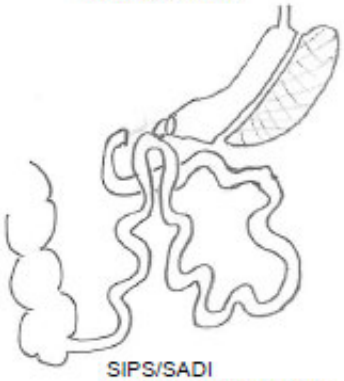
BPD-DS
Biliopancreatic Diversion with
Duodenal Switch



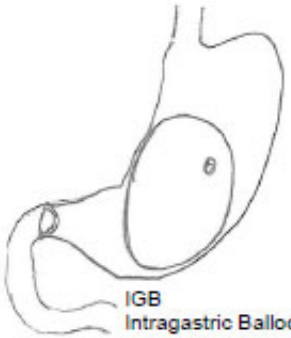
BPD
Bileopancreatic Diversion



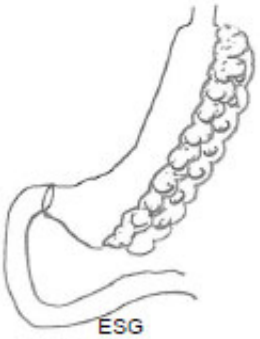
RYGB
Roux-en-Y Gastric Bypass



SIPS/SADI
Loop Duodenal Switch



IGB
Intragastric Balloon



ESG
Endosopic Sleeve Gastroplasty
(No incision, experimental)

HOW DOES HEALTH CHANGE AFTER BARIATRIC SURGERY?

Percentage of patients going into remission:

Condition	Sleeve	RYGB	BPD-DS
Diabetes	60-80	70-90	90-95
High Blood Pressure	60-80	70-90	90-95
High Cholesterol	60-80	70-90	90-95
Sleep Apnea	60-80	70-90	90-95

WHAT ARE THE RISKS OF WEIGHT LOSS SURGERY?

	National (%)	Syn (%)
Death	**0.3**	**0.3**
Heart attack	**<0.1**	**0**
Lung problems (pneumonia)	**1**	**1**
Blood Clots	**1-5**	**0.3**
Leaks (1st time surgery)	**1**	**0.3**
Leaks (revisions)	**3.5-35**	**3**
Spleen Injury (1st time surgery)	**1**	**0**
Spleen Injury (revisions)	**1-5**	**0.3**
Marginal Ulcer (RYGB)	**1-5**	**1**
Strictures	**1-10**	**2**
Internal hernias	**1**	**1**
Abdominal wall hernia (open)	**10%**	**7**
Abdominal wall hernia (laparoscopic)	**1**	**0.1**
Intestinal obstruction (any surgery)	**1**	**1**
Wound infection	**1**	**0.5**
Liver failure from malnutrition (BPD-DS)	**1**	**0.5**
Hair loss	**varies**	**varies**
Vitamin deficiency	**varies**	**varies**
Excess gas	**varies**	**varies**
Nausea Vomiting	**varies**	**varies**
Excess skin	**varies**	**varies**

MY EXPERIENCE

Finished training in 2002, In practice for 18 years

Number of procedures performed

4,000+ first time bariatric operations

1,000+ revisions of failed bariatric operations

Types of primary bariatric procedures done

Sleeve, RYGB, BPD-DS, ESG

Hiatal hernia repair commonly done at same time for all bariatric procedures

Gallbladder always removed for BPD-DS, sometimes removed for Sleeve or RYGB

Types of revisional bariatric procedures done

LapBand to RYGB/Sleeve/BPD-DS

Nonadjustable band to RYGB/Sleeve/BPD-DS

VBG to RYGB/Sleeve/BPD-DS

Sleeves to RYGB/BPD-DS

RYGB to BPD-DS

RYGB to RYGB (stoma revision, pouch reduction, complete revision)

Incisionless surgery, EBTs (Endoscopic Bariatric Therapy)

ESG (Endoscopic Sleeve Gastroplasty), suturing stomach from inside the stomach to shape the stomach like a sleeve

Stoma revision, making the opening of a gastric pouch of a RYGB smaller in order to feel full faster and reinitiate weight loss

Skin removal surgery

Abdominoplasty - Tummy tuck, football shaped area of skin removed from lower belly

Corset abdominoplasty -Tummy tuck with upper middle belly skin also removed

360 Total lower body lift- Tummy tuck but going all the way around the body to lift thighs and buttock as well

Brachioplasty -Remove extra skin from inner upper arms

Medial thigh reduction - Remove extra skin from inner thighs

WHAT TO EXPECT (averages)

Most surgeries are performed laparoscopically (small incisions with the belly filled with gas). Some surgeries may have to be converted to open if the anatomy does not allow for laparoscopy or if there is too much scar from previous surgery, the chance for this is less than 5%.

	ESG	SLEEVE	RYGB	BPD-DS	REVISION
TIME FOR SURGERY	1h	1h	1h	2-3h	1-3h
DAYS IN HOSPITAL	0	1	1	1-3	1-3

Diet (all)

Resume diet the day of surgery

Liquids X1 week

Soft foods X3 weeks

Regular food at 1 month

3 modest meals a day, 3 small snacks in between meals

High protein, Low fat, Low carb (sugars)

Liquid intake

8 cups a day (1 cup is 8oz) = 64 fluid oz a day

Return to work

Laparoscopic procedures

1-2 wks for desk jobs

4 wks for physically active jobs (lifting/straining)

No lifting more than 10 lbs. for 4 wks then no restriction

Open procedures

1-2 wks for desk jobs

8 wks for physically active jobs (lifting/straining)

o lifting more than 10 lbs. for 8 wks then no restriction

Endoscopic Sleeve Gastroplasty (ESG)

2-3 days for all types of work, no lift or exercise restriction

Vitamins/supplements: None for first week, dietician will discuss preop and first postop visit, 1w

Binder: Wear binder over a T-shirt for first 3 wks, may remove to bathe

Exercise:

First week, stand up every hour while awake. Short walks.

After 1st week 20 min walking twice a day

Resistance exercises at 4 weeks for laparoscopic surgery

Resistance exercises at 8 weeks for open surgery

Resistance exercises at 1 week for ESG

Showering: All Incisions are waterproof and showers can be taken the day after surgery. It is ok for the incision to get, however, do not soak for a prolonged period. Incisions are covered with Dermabond (medical grade crazy glue) that will slough off on its own. Internal sutures dissolve on their own and do not need removal

Pain: Is worst the day of surgery and improves dramatically over the next few days and almost not noticeable after 1 wk. Long lasting local anesthesia is used at the time of surgery. Use the pain meds prescribed at discharge sparingly for pain at the incisions only, not for bloating pain. Too much pain medication will cause bloating and nausea as it will slow your intestines. The pain is much less with the ESG as there are no incisions.

Blood thinner: You will be prescribed a blood thinner that you will inject into your belly skin every evening after surgery for 10 nights. Just clean the skin with alcohol and inject the solution in the pre-packaged injection needle. It does not hurt. This is extremely important as it will prevent blood clots in your legs. This is not required for ESG.

Follow up: The nurses will make a follow-up appointment for you before you leave the hospital. They can also fill your prescriptions for you at the hospital's retail pharmacy before you go home. Follow up will be at 1w, 1m, 2m, 3m and then every 3m until your goals are met. Then they will be annually for the rest of your life.

Long term Follow up: As stated before, none of these operations are 100% successful. Most of you will reach your goals for weight loss and improvement in other health conditions. **If you do not reach your goals, do not be ashamed or blame yourself. You will never be judged by me or my staff**. Do not be embarrassed because you have not reached your goals and then miss your follow up appointments due to that**. We are here to help you, not judge you. There are options for further weight loss if you do not reach your goals**. Your outcomes will be better if you keep your appointments and follow the recommendations for your diet and exercising.

AVERAGE WEIGHT LOSS FOR MORBIDLY OBESE INDIVIDUALS

	Excess wt loss	Success at 10y	Reflux	Vit Def Risk	BMs/d	NSAIDs
Diet and Exercise	0	< 1%				OK
LapBand	50-75%	40% or less	Worse	Rare	0-1	OK
Sleeve	45-70%	70-75%	+/-	Mild	0-1	OK
RYGB	50-75%	70-85%	none	Medium	1	No
BPD	75-90%	90-95%	+/-	High	6+	OK
BPD-DS	75-90%	90-95%	+/-	High	2-3	OK
BPD-DS (loop)	70-85%	90-95%	+/-	Medium	1	OK
ESG (incisionless sleeve)	30-50%	unknown	+/-	Rare	0-1	OK

OPTIONS FOR REVISIONAL SURGERY IF DESIRED WEIGHT LOSS IS NOT ACHIEVED

LapBands can be revised to:

- Sleeve (laparoscopic)
- RYGB (laparoscopic or open)
- BPD-DS (laparoscopic or open)

Sleeves can be revised to

- RYGB (laparoscopic)
- BPD-DS (laparoscopic)
- Re-sleeved (Traditional laparoscopic surgery or through the mouth as with ESG)

RYGB can be revised to

- BPD-DS (open)
- Revision to RYGB (open, pouch reduction and stoma reduction)
- Stoma revision with endoscopic suturing through the mouth

WILL I NEED SKIN REMOVAL AFTER MASSIVE WEIGHT LOSS?

Most individuals will want skin removal after massive weight loss. For sleeve and gastric bypass patients we can start the process for trying to obtain insurance approval about a year out from surgery. For Duodenal Switch patients the process can typically be started 1.5 years out from surgery as there is typically more weight that is lost for them. Any issues with skin fold irritation or infection should be documented by the primary care provider with documentation of prescriptions so that information can be gathered and sent to the insurance along with pictures documenting the amount of excess skin and the irritated skin folds. Not all insurance cover skin removal however the ones that do will typically want to see that the excess belly skin hangs below the pubic bone. If it does not, then they will not approve surgery. Even if it does, they sometimes will not approve the surgery and the process can take some time. Medicare never approves skin removal. There are self-pay options that can be discussed with my office staff that include medical loans and different payment options if you choose to pursue skin removal on a self-pay basis. It is not vain to want to have your excess skin removed. Now that you have accomplished your weight loss and improved health goals, there is nothing wrong with wanting to look better and have your clothes fit properly and to not have your excess skin be cumbersome during exercise or daily activities. Don't feel ashamed or judge yourself for wanting to have your excess skin removed. It is perfectly natural and acceptable.

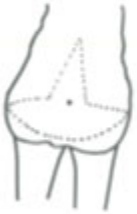
Before

After

Before and after bariatric surgery

Abdominoplasty

Fleur-de-lis (Corset) Abdominoplasty



360 degree total lower body lift

front

back

What is Your BMI?

Body Mass Index (BMI)

	4'8"	4'9"	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"	6'5"	6'6"
200	45	43	42	41	39	38	37	36	34	33	32	31	30	30	29	28	27	26	26	25	24	24	23
205	46	44	43	42	40	39	38	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24	24
210	47	46	44	43	41	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24
215	48	47	45	44	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	25
220	49	48	46	45	43	42	40	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	25
225	51	49	47	46	44	43	41	40	39	38	36	35	34	33	32	31	31	30	29	28	27	27	26
230	52	50	48	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	30	29	28	27	27
235	53	51	49	48	46	45	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	28	27
240	54	52	50	49	47	45	44	43	41	40	39	38	37	36	35	34	33	32	31	30	29	29	28
245	55	53	51	50	48	46	45	44	42	41	40	38	37	36	35	34	33	32	32	31	30	29	28
250	56	54	52	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	31	30	29
255	57	55	53	52	50	48	47	45	44	43	41	40	39	38	37	36	35	34	33	32	31	30	30
260	58	56	54	53	51	49	48	46	45	43	42	41	40	39	37	36	35	34	33	33	32	31	30
265	60	58	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	32	31
270	61	59	57	55	53	51	50	48	46	45	44	42	41	40	39	38	37	36	35	34	33	32	31
275	62	60	58	56	54	52	50	49	47	46	45	43	42	41	40	38	37	36	35	34	34	33	32
280	63	61	59	57	55	53	51	50	48	47	45	44	43	41	40	39	38	37	36	35	34	33	32
285	64	62	60	58	56	54	52	51	49	48	46	45	43	42	41	40	39	38	37	36	35	34	33
290	65	63	61	59	57	55	53	52	50	48	47	46	44	43	42	41	39	38	37	36	35	34	34
295	66	64	62	60	58	56	54	52	51	49	48	46	45	44	42	41	40	39	38	37	36	35	34
300	67	65	63	61	59	57	55	53	52	50	49	47	46	44	43	42	41	39	39	38	37	36	35
305	69	66	64	62	60	58	56	54	52	51	49	48	47	45	44	43	41	40	39	38	37	36	35
310	70	67	65	63	61	59	57	55	53	52	50	49	47	46	45	43	42	41	40	39	38	37	36
315	71	68	66	64	62	60	58	56	54	53	51	49	48	47	45	44	43	42	41	39	38	37	37
320	72	69	67	65	63	61	59	57	55	53	52	50	49	47	46	45	44	42	41	40	39	38	37
325	73	71	68	66	64	62	60	58	56	54	53	51	50	48	47	45	44	43	42	41	40	39	38
330	74	72	69	67	65	63	61	59	57	55	53	52	50	49	47	46	45	44	42	41	40	39	38
335	75	73	70	68	66	63	61	60	58	56	54	53	51	50	48	47	46	44	43	42	41	40	39
340	76	74	71	69	67	64	62	60	59	57	55	53	52	50	49	48	46	45	44	43	41	40	39
345	78	75	72	70	68	65	63	61	59	58	56	54	53	51	50	48	47	46	44	43	42	41	40
350	79	76	73	71	69	66	64	62	60	58	57	55	53	52	50	49	48	46	45	44	43	42	41
355	80	77	74	72	70	67	65	63	61	59	57	56	54	53	51	50	48	47	46	44	43	42	41
360	81	78	75	73	71	68	66	64	62	60	58	57	55	53	52	50	49	48	46	45	44	43	42
365	82	79	76	74	71	69	67	65	63	61	59	57	56	54	53	51	50	48	47	46	45	43	42
370	83	80	78	75	72	70	68	66	64	62	60	58	56	55	53	52	50	49	48	46	45	44	43
375	84	81	79	76	73	71	69	67	65	63	61	59	57	56	54	52	51	50	48	47	46	45	43
380	85	82	80	77	74	72	70	67	65	63	62	60	58	56	55	53	52	50	49	48	46	45	44
385	87	84	81	78	75	73	71	68	66	64	62	60	59	57	55	54	52	51	50	49	47	46	45
390	88	85	82	79	76	74	72	69	67	65	63	61	59	58	56	55	53	52	50	49	48	46	45
395	89	86	83	80	77	75	72	70	68	66	64	62	60	58	57	55	54	52	51	50	48	47	46
400	90	87	84	81	78	76	73	71	69	67	65	63	61	59	58	56	54	53	51	50	49	48	46
405	91	88	85	82	79	77	74	72	70	68	66	64	62	60	58	57	55	54	52	51	49	48	47
410	92	89	86	83	80	78	75	73	71	68	66	64	63	61	59	57	56	54	53	51	50	49	48
415	93	90	87	84	81	79	76	74	71	69	67	65	63	61	60	58	56	55	53	52	51	49	48
420	94	91	88	85	82	80	77	75	72	70	68	66	64	62	60	59	57	56	54	53	51	50	49
425	96	92	89	86	83	81	78	75	73	71	69	67	65	63	61	59	58	56	55	53	52	51	49
430	97	93	90	87	84	81	79	76	74	72	70	68	66	64	62	60	58	57	55	54	52	51	50
435	98	94	91	88	85	82	80	77	75	73	70	68	66	64	63	61	59	58	56	55	53	52	50
440	99	95	92	89	86	83	81	78	76	73	71	69	67	65	63	62	60	58	57	55	54	52	51
445	100	97	93	90	87	84	82	79	77	74	72	70	68	66	64	62	61	59	57	56	54	53	52
450	101	98	94	91	88	85	83	80	77	75	73	71	69	67	65	63	61	60	58	56	55	54	52
455	102	99	95	92	89	86	83	81	78	76	74	71	69	67	65	64	62	60	59	57	56	54	53
460	103	100	96	93	90	87	84	82	79	77	74	72	70	68	66	64	63	61	59	58	56	55	53
465	105	101	97	94	91	88	85	83	80	78	75	73	71	69	67	65	63	62	60	58	57	55	54
470	106	102	98	95	92	89	86	83	81	78	76	74	72	70	68	66	64	62	61	59	57	56	54
475	107	103	100	96	93	90	87	84	82	79	77	75	72	70	68	66	65	63	61	60	58	56	55
480	108	104	101	97	94	91	88	85	83	80	78	75	73	71	69	67	65	64	62	60	59	57	56
485	109	105	102	98	95	92	89	86	83	81	78	76	74	72	70	68	66	64	62	61	59	58	56
490	110	106	103	99	96	93	90	87	84	82	79	77	75	73	71	69	67	65	63	61	60	58	57
495	111	107	104	100	97	94	91	88	85	83	80	78	75	73	71	69	67	65	64	62	60	59	59