WHAT IS LAPAROSCOPIC SURGERY?

Today, laparoscopic surgery is a widely accepted surgical technique that uses small incisions and long pencil-like instruments to perform operations with a camera. As the incisions are much smaller than their open counterparts, recovery is faster and post-operative pain is typically less. Procedures such as hernia repairs, gastric bypass, bowel resection, and organ removal are now routinely carried out laparoscopically.
MINIMIZING PHYSIOLOGICAL STRESS

Laparoscopic approaches avoid large incisions on the skin and abdominal wall. These techniques avoid having the intestines exposed to the room air during surgery. While not fully understood, laparoscopic approaches cause less systemic inflammation and post-operative intestinal scar tissue.

Laparoscopic surgery has successfully replaced open surgery as the preferred treatment option for issues such as bariatric surgery and gallbladder removal. In fact this surgery can now be performed as an outpatient operation. The treatment of gastroesophageal reflux disease is now carried out using minimally invasive techniques. Laparoscopic fundoplication offers the advantage of faster recovery and quicker return to oral ingestion of food. Laparoscopic surgery for weight loss has caught on in a big way. Laparoscopy has advanced sufficiently to the extent that it can be repeated for a patient who has undergone a previous laparoscopic operation. However, care needs to be taken than organs do not get injured and to this end the entry site may have to be different and an alternate entry technique may have to be used. The risk to benefit ratio of laparoscopic surgery is improving continuously in favor of benefits.
TOOLS FOR MINIMALLY INVASIVE SURGERY

LAPAROSCOPE

Surgical scopes are among the oldest forms of medical instrument, with some of the earliest examples on record dating back to 70AD. Initially consisting of simple hollow tubes, over time these rudimentary devices were adapted to include magnifying lenses and illumination, eventually evolving into the sophisticated surgical scopes used today. Once the image has been digitized, it may undergo additional processing, with some systems offering features such as filtering, noise reduction, color adjustment and image enhancement. The resulting video feed is then sent to a monitor, where it can be viewed by the surgeon and the rest of the surgical team.

TROCAR

In its simplest form, a trocar is a pen-shaped instrument with a sharp triangular point at one end, typically used inside a hollow tube, known as a cannula or sleeve, to create an opening into the body through which the sleeve may be introduced, to provide an access port during surgery. Today, a very wide range of precision-engineered laparoscopic trocars exists, with instruments available in a variety of lengths and diameters, and with many different styles of tip. Most modern trocars comprise an outer housing assembly, a sleeve that fits inside the housing assembly and a piercing stylus which slots into the sleeve such that the tip protrudes from the lower end of the instrument.

GRASPER
Wielding bowel graspers requires practice and skill because the tips of the graspers are small and pressure at the tips is magnified; too much pressure can lead to tissue damage and too little pressure can cause the tissue to slip out of grasp. Minimally invasive techniques can deprive surgeons of the tactile feedback, depth perception and hand-eye co-ordination available to them during open procedures, making it much more difficult to judge how much force to apply. Bowel tissue is considered to be among the most delicate in the human body, so it is essential that the grasping tip is able to offer a safe, secure grip, without exerting excessive pressure.

**NEEDLE DRIVER**

Needle drivers, or needle holders, are used to grasp and manipulate needles to enable free-hand suturing of wounds or surgical incisions within the body during laparoscopic procedures. Laparoscopic needle drivers typically comprise a long narrow shaft, with a handle at one end and a set of hinged jaws at the other. The shaft is made of surgical steel with an outer layer of non-conductive plastic or silicone. Jaws are generally made of tungsten carbide and may have additional coatings applied to improve grip.

**SURGICAL MESH**

Mesh-like structures, woven from the suture materials of the day or formed from organic materials such as animal tendons, have been used in surgical repairs for more than a century. However, it was not until the development of synthetic polymer mesh that such techniques were widely adopted. Meshes can be
categorized in terms of weight, pore size, material, fiber type and flexibility. Heavyweight meshes tend to form a dense scar plate and are best suited to applications where mechanical stability is a factor. Lightweight meshes are formed from thin fibers and are designed to flex with normal physiological movement.

THE BENEFITS OF LAPAROSCOPIC SURGERY

There is no doubt that surgery has changed humankind. Surgical treatments allow us to live longer, healthier lives. However, surgery is also a trauma to the body. It causes an inflammatory immune reaction as the body reacts to this trauma. Small immune reactions are fine, even healthy. However, large inflammatory reactions can cause problems a slow recovery.

THE MOST IMPORTANT BENEFITS OF LAPAROSCOPIC SURGERY ARE THE ONES YOU DON’T SEE
While you may think the most important benefit of laparoscopic surgery over traditional surgery is faster recovery time or smaller incisions, the actual answer is something you can’t even see. The most important benefit of laparoscopic surgery is likely that it causes far less inflammation than traditional, open surgery.

Open surgery causes larger inflammatory reactions than laparoscopic procedures. Large inflammatory reactions can make people more prone to bacterial and viral infection after surgery, and can temporarily worsen pre-existing chronic inflammatory conditions. While you may not see it, laparoscopic surgery causes less inflammation than open procedures.

Another unseen benefit of laparoscopic surgery is that the incisions cause fewer adhesions than open surgery. Abdominal adhesions are pieces of tough, fibrous tissue that connect abdominal organs and tissue to one another. Adhesions are caused by inflammation, surgical procedures, or both. While a few small abdominal adhesions usually
cause no real problems, adhesions may sometimes interfere with a woman’s ability to conceive, and even block the normal action of the intestines. The exact reason why laparoscopic surgery causes fewer adhesions is still not known but thought to be due to the fact that laparoscopy does not expose intraabdominal organs to open air and because of the smaller incisions typically employed.

SURGICAL SCARS ARE SMALLER WITH LAPAROSCOPIC SURGERY
For many patients, the most important benefit of laparoscopic surgery is that it leaves them with much smaller scars than open surgery. In open abdominal surgery, surgeons make a long incision that typically runs down the center of the abdomen, circling the navel (i.e. belly button). Depending on the size of the patient's abdomen and the operation performed, the incision can be 6 inches long or longer. With laparoscopic abdominal surgery, on the other hand, the surgeon makes a few small incisions that are typically between a few millimeters and a centimeter. Patients who opt for laparoscopic surgery avoid a long and obvious surgical scar that is cosmetically unappealing. Smaller incisions are less painful and heal faster than larger incisions, which mean a quicker recovery. They are also less prone to incisional hernias for the long-run.

HOSPITAL STAYS ARE SHORTER AFTER LAPAROSCOPIC SURGERY
Smaller surgical scars are not the only benefit of smaller incisions. Large surgical incisions generally mean longer hospital stays after surgery. Minimally invasive laparoscopic surgery, on the other hand, is simply a less traumatic process for the body, which means patients can usually be discharged home much faster than they would have had open surgery.
LAPAROSCOPIC INCISIONS MAY BE SAFER THAN OPEN INCISIONS
Laparoscopic surgery involves much smaller incisions than open surgery. Smaller incisions mean less risk of infection because there is simply a smaller space for bacteria and other microbes to enter the abdomen.

LAPAROSCOPIC SURGEONS USE MINIATURE CAMERAS
Laparoscopic surgeons get a close-up view of the surgical field, and so they are able to work with incredible skill and efficiency.

LAPAROSCOPIC SURGERY IS JUST AS EFFECTIVE AS OPEN SURGERY
Hundreds of clinical studies have been done to assess the safety and efficacy of laparoscopic surgery since when it was first developed in the
1970s. These studies consistently show that for routine abdominal procedures, laparoscopic surgery is just as effective as open surgery. In fact, in most abdominal surgeries from gallbladder removal to colon cancer removal laparoscopic surgery, has become increasingly popular.

Laparoscopic surgery is quickly becoming the gold standard for bariatric surgery (i.e. weight loss surgery) as well. Studies have shown that the most commonly performed gastric bypass surgery, the Roux-en-Y gastric bypass may be safer than open gastric bypass surgery. The fact that the mortality rate has decreased almost ten-fold in the last ten years with the rising proportion of bariatric surgeons performing laparoscopic surgery is another testament to the success of the laparoscopic approach.

**LAPAROSCOPIC SURGERY MAY HAVE ECONOMIC BENEFITS**

When you add up all of the costs of surgery, laparoscopic surgery may be less expensive than open surgery. Less time in the hospital after surgery is a real cost savings when you consider that a single night in the hospital can cost several thousands of dollars. However, even out of the hospital, the costs associated with laparoscopy are lower. Small surgical incisions and shorter recovery periods means that patients have to buy and use fewer dressings (i.e. bandages), less topical medicines, and less pain medication.

In most cases, a patient who undergoes a laparoscopic procedure recovers faster than a patient who has that same procedure through a large open incision. A faster recovery means getting back to the things you enjoy more quickly—exercising, pursuing your career, having dinner with friends, visiting with loved ones. The faster recovery that laparoscopic surgery affords can help you get back to life faster.
WHAT IS THE GALLBLADDER?

The gallbladder is located near the liver and it is a small pear-shaped organ that stores extra bile. Bile is made of water, cholesterol, biliary salts and biliary acids and is a substance that is required to dissolve fat during digestion. The liver produces about one liter of bile a day and the gallbladder serves as a small storage container for a small fraction of the bile produced daily. This extra bile is released by the gallbladder to aid in digestion during especially fatty meals.

Normally, the bile stays liquid, and does not form deposits. But, if the composition of the bile modifies, cholesterol crystals can form. They are likely to combine with biliary salts and pigments producing gallstones,
which are yellow-greenish and of variable sizes, up to the size of a golf-ball.

Because the majority of gallstones produce no symptoms, they require no treatment. These "silent stones" are often discovered during routine medical checkups or exams for other illnesses and therefore classified as asymptomatic. A conservative or wait-and-see approach is recommended.

In some instances gallstones may cause mild discomfort to severe pain. This pain is classically located in the right-upper quadrant of the abdomen and made worse after eating fatty foods. If your physician determines that gallstones are likely the cause of your discomfort and must be removed then gallbladder surgery is typically required. Gallbladder surgery is one of the most common types of surgery in the United States.

The gallbladder connects to the liver through a series of bile tubes. The liver produces a large amount of bile every day that travels through these
tubes. A small amount is diverted into the gallbladder which then stores it until it is used as an extra reserve during fatty meals. The bile tubes connect with the tube system of the pancreas where they release their respective contents into the intestines, specifically the duodenum.

WHAT LIFESTYLE FACTORS CONTRIBUTE TO GALLSTONES?

Family risk factors do contribute to gallstone formation. This means that if your mother and your father both needed gallbladder surgery during their lives then it is more likely that at some point in your future, you may also need a gallbladder operation. Some medications may possibly contribute to gallstone formation including cholesterol lowering drugs and hormone replacement therapy. Gallstones are more common in women.

Obesity, the diet associated with being over-weight as well as weight-loss also causes gallstones to develop. Therefore if you have an operation such as a gastric bypass, gastric sleeve or the Lap-Band and lose the excess weight that you are hoping to lose, then there is a good chance you may require gallbladder surgery in the future. This increased risk does not mean that you must have your gallbladder removed during a weight-loss operation. Typically gallbladder surgery is only performed at the same time as weight-loss surgery if you already have both gallstones and a history of being bothered by them.
WHAT IS LAPAROSCOPIC CHOLECYSTECTOMY?

THE CRITICAL VIEW

The Triangle of Calot is demonstrated during Laparoscopic Cholecystectomy. The gallbladder is being adequately retracted allowing the common bile duct to be definitively visualized.

Gallbladder surgery when performed through the small cuts and a camera is called laparoscopic cholecystectomy. Removing the gallbladder is the preferred treatment for the majority of people who have gallstones that cause symptoms. Laparoscopic cholecystectomy requires several small incisions in the abdomen to allow the insertion of surgical instruments and a small video camera. After the initial incisions, the surgeon will use carbon dioxide to inflate the abdominal cavity. The camera sends a magnified image from inside the body to a video monitor, giving the surgeon a close-up view of the organs and tissues. The surgeon watches the monitor and performs the operation by manipulating the surgical instruments through separate small incisions.

The gallbladder is identified and carefully dissected free from its attachments under the liver. One of the most important portions of the procedure is the identification of Calot's Triangle. Calot’s triangle is an anatomic area bounded by the liver, cystic duct, and common hepatic duct. The cystic duct and the cystic artery are identified, clipped with tiny...
titanium clips and cut. The gallbladder is then separated from the liver bed and removed through one of the small incisions.

WHAT TOOLS ARE USED FOR LAPAROSCOPIC CHOLECYSTECTOMY?
A laparoscope is a small, thin tube that is attached to a video camera and placed into your body through a tiny cut. The surgeon can then see the gallbladder on a television screen and do the surgery with tools inserted in three other small cuts made in the right upper part of your abdomen. Only small incisions are required. The video camera then produces a magnified view on a television monitor of the inside of your abdomen allowing a very detailed view. A number of other laparoscopic instruments are typically used. The gallbladder is then removed through one of the small incisions.

ARE THERE ANY BENEFITS OF LAPAROSCOPIC CHOLECYSTECTOMY COMPARED WITH OPEN CHOLECYSTECTOMY?
Surgery to remove the gallbladder with a laparoscope does not require that the muscles of your abdomen be cut in the same manner as in open surgery. With laparoscopic cholecystectomy, you may return to work sooner, have less pain after surgery, and have a shorter hospital stay and a shorter recovery time. Although there are more than one incisions, each incision is much smaller than the typical open incision which makes recovery much quicker.

Most laparoscopic cholecystectomy procedures are performed as an outpatient surgery meaning that you go home the same day as the operation and recover in the comfort of your home.

**IS THERE ANY REASON WHY I WOULDN'T BE ABLE TO HAVE A LAPAROSCOPIC CHOLECYSTECTOMY?**

If you have previously had surgery in the area of your gallbladder, if you tend to bleed a lot or if you have any problem that would make it hard for your doctor to see your gallbladder, an open surgery may be better for you. Your doctor will decide which type of surgery is best for you.

**WHAT ARE THE COMPLICATIONS OF**
LAPAROSCOPIC CHOLECYSTECTOMY?
Complications may include bleeding, infection and injury to the duct (tube) that carries bile from your gallbladder to your stomach. Also during laparoscopic cholecystectomy, the intestines or major blood vessels may be injured when the instruments are inserted into the abdomen. All of these complications are rare but still possible when performed by a laparoscopic surgeon.

WHAT OTHER PROCEDURES MAY BE REQUIRED?
If you have stones in the bile duct as well as your gallbladder, you may require removal of both the duct stones and your gallbladder. In some cases it is best to remove the stones in the bile duct before your operation using an endoscope. If you look at the image to the right, you can see that the stomach and intestines provide a route to get directly to the bile tubes without making cuts on the wall of the abdomen.

The procedure is called an endoscopic retrograde cholangiopancreatography (ERCP) and consists of a scope that is inserted through the mouth, down the digestive tract and then used to instrument the bile tubes from inside the intestines. If you have ERCP, your gallbladder may be removed at a later date or during the same hospitalization. Often, a cutting instrument is inserted through the
endoscopy, and the entrance of the bile duct is enlarged so the stone can pass through it. The same procedure may be used to remove a stone from a blocked pancreatic duct.

**ARE THERE LONG TERM EFFECTS AFTER GALLBLADDER REMOVAL?**

Your liver will continue to produce enough bile to digest a normal diet after you have surgery. Please remember the liver produces over one liter of bile a day therefore it is unlikely that the small amount that was stored by the gallbladder will play a noticeable difference in digestion. You may notice you're having more bowel movements than usual and that their consistency is less solid. These symptoms usually lessen over time. It is normal to have a self-limited change in digestive habits that is unrelated to your type of operation and will improve over time. Some patients however find that diarrhea remains a problem, and a ‘heart-healthy’ diet or one that is low in rich, fatty foods will usually alleviate the problem.

**WHY BARIATRIC SURGERY FOR WEIGHT LOSS?**

Obesity is a worldwide problem of increasing prevalence. Ideally, and in its less severe stages, obesity can be controlled with diet management and a regular exercise program. At times, obesity may be so severe that it is termed morbid obesity.
A PERSONAL LOOK AT OBESITY AND ITS PROBLEMS

Every person has a slightly different set of reasons for thinking about metabolic weight-loss surgery. Being 100 pounds overweight and wanting a change is not enough. Success requires proper support, commitment to diet and exercise, as well as appropriate timing when life is already full of responsibilities.

DEFINING MORBID OBESITY

Medically, the term, morbid obesity, is defined as a body mass index (BMI) greater than 40 kg/m^2. Although this calculation depends upon both an individual’s height and weight, persons who are approximately 100 pounds over their ideal body weight are likely to be morbidly obese. Depending on the study, estimates for obesity in America may suggest that up to 35% of adults (or one in every three) suffers obesity and that from between 3-7% of the adult US population currently suffers from morbid obesity. Several life-threatening complications such as diabetes,
high blood pressure and coronary artery disease are associated with this condition. Medical weight reduction practices often do not yield good results in these situations. Surgical intervention may be indicated to stop weight gain, achieve weight loss and reverse some of the obesity-related medical conditions described above.

Weight loss surgery, including gastric bypass, gastric sleeve and the Lap-Band are surgical procedures whose utility in combating morbid obesity are recognized by both medical and surgical specialists. Patients who have a BMI greater than 40 or those with a BMI of 35 or more who are also suffering from life-threatening illnesses curable with weight loss are considered as possible candidates for bariatric surgery.

The United States government also supports bariatric surgery in appropriate candidates, as Medicare will cover the costs of both the gastric bypass and gastric banding in appropriate candidates. Most insurance carriers will now cover the laparoscopic sleeve. Although the criteria that insurance carriers look for in determining whether or not an individual warrants this surgery vary, doctors generally agree on a set of qualifying criteria. The decision to proceed with surgery always represents a comparison between risks and benefits, as any surgical procedure involves some risk. Generally accepted criteria for proceeding with this type of surgery include that an individual have been obese for at least two years, be between the ages of 18 and 65 years and have no medical or psychiatric contraindications to undergoing surgery.

**OBESITY LIMITS DAILY FUNCTION**
Morbid obesity is not just an inconvenience. Morbid obesity is a disease that shortens the average lifespan and also limits mobility and societal routines that many of us take for granted. Candidates must also have failed a regimented and organized diet program. The length of this organized diet program varies across practitioners and insurers. Dr. Belsley current recommends a minimum of a 3 month program performed with your primary care doctor even if your insurance carrier does not have a time requirement. Other criteria include an organized set of measurements. Something to remember, however, is that is not acceptable to undergo bariatric surgery if you suffer from untreated depression or any other major psychiatric disorder.

Obesity is a serious disease with symptoms that build slowly over an extended period of time. The National Institutes of Health (NIH) define morbid obesity as:
• Being 100 pounds or more above your ideal body weight
• Or, having a Body Mass Index (BMI) of 40 or greater
• Or, having a BMI of 35 or greater and one or more co-morbid condition

The disease of morbid obesity interferes with basic physical functions such as breathing or walking. Long-term implications of the disease include shorter life expectancy, serious health consequences in the form of weight-related conditions such as type 2 diabetes and heart disease, and a lower quality of life with fewer economic and social opportunities.

CO-MORBID CONDITIONS

Bariatric surgery may improve some pre-existing health conditions. The presence of obesity increases the risk of a number of medical conditions, including cancer. A co-morbid condition is a health condition related to a primary disease such as obesity. There are many health conditions related to morbid obesity, but some of the most common are:

• Type II Diabetes
• Heart Disease And High Blood Pressure
• High Cholesterol
• Obstructive Sleep Apnea
• Acid Reflux/Gerd
• Cancer
• Depression
• Osteoarthritis And Joint Pain
• Stress Urinary Incontinence
• Female Reproductive Health Disorder
An emerging body of literature demonstrating relationships between maternal obesity and structural birth defects, including an increased risk of spina bifida and heart defects. These conditions occur more frequently in people with morbid obesity. Mortality rates from many of these conditions are also higher among people with morbid obesity.

**BARIATRIC SURGERY: A TOOL**

Bariatric surgery is intended for people who are 100 pounds or more overweight (with a Body Mass Index (BMI) of 40 or greater) and who have not had success with other, less risky weight loss therapies such as diet, exercise, and medications. In some cases, a person with a BMI of 35 or greater and one or more co-morbid condition may be considered for bariatric surgery. Bariatric surgery has a history of helping patients effectively transform their health. Bariatric surgery restricts the amount of food patients can eat and, depending on the procedure, the number of calories and nutrients the body can absorb. As a tool, bariatric surgery has impressive long-term weight loss results and, in many cases, has resolved or improved co-morbid conditions.

Bariatric surgery should not be considered until you and your doctors have explored all other options. The best approach to bariatric surgery calls for a discussion of the following:

- Bariatric surgery is not cosmetic surgery.
- Bariatric surgery does not involve the removal of adipose tissue (fat) by suction or surgical removal.
- You must understand the benefits and risks.
• You must commit to long-term lifestyle changes, including diet and exercise, which are key to the success of bariatric surgery.
• Complications after surgery may require further operations. There are several different bariatric surgery procedures, but the two general ways in which they work are restriction and malabsorption:

Restriction limits the amount of food you can eat. Whether it is a gastric banding device around the stomach or the surgically-created, smaller stomach pouch that is created in both the gastric bypass and the gastric sleeve, restriction ensures that the patient feels satisfied with less food.

Malabsorption limits the number of calories and nutrients your body can absorb. During malabsorptive procedures, the surgeon reroutes the small intestine so that fewer calories and nutrients are absorbed.

**LAPAROSCOPIC SLEEVE GASTRECTOMY**

Laparoscopic sleeve gastrectomy (SG) also known as laparoscopic gastric sleeve surgery is a procedure in which a portion of the stomach is surgically removed. The procedure is performed on obese and morbidly obese patients to cause weight loss and resolve or improve overall health with respect to obesity related co-morbidities such as diabetes, sleep apnea, osteoarthritis, gastroesophageal reflux disease, and hypertension. Sleeve gastrectomy is slowly gaining wide acceptance as an independent surgical procedure for treating obesity.
This procedure is typically performed laparoscopically and unlike the Lap-Band, is a non-reversible procedure. It is named 'a sleeve gastrectomy' because of the sleeve that is formed by surgically stapling the edges of the stomach. The stomach size can be reduced to as little as 15% of the original size. The small size is achieved by dividing the stomach on its vertical axis and preparing a small, long pouch. As a result of this
surgery, a person feels fuller upon eating a relatively small amount, body metabolism is altered and the craving for food is reduced.

WHAT HAPPENS DURING LAPAROSCOPIC SLEEVE GASTRECTOMY?

Laparoscopic sleeve gastrectomy is a restrictive procedure that reduces the size of the stomach but does not alter the gastrointestinal tract or the pylorus. Because the route of ingested food through the gastrointestinal tract is not altered, nutrients are better absorbed. The patient is less dependent on vitamin supplements as the food is absorbed in a more natural manner. The long-term effects of this procedure on nutrient absorption need to be better understood, particularly because the size of the stomach can be reduced by as much as 85%.

The length of the procedure varies between one to three hours. On an average, patients stay in the hospital for two to three days. Similar to other bariatric procedures, return to normal activities and office work usually takes a fortnight. Your post-operative adherence to lifestyle regulations as presented by Dr. Belsley and your surgical team will play a large role in determining the need for a second bariatric procedure in the future. You will be on a liquid and semi-liquid diet during the post-operative period after the surgery.

After the first month, there are few concrete food restrictions and a common sense approach and dedication to a life-long diet are necessary. Calorie rich foods and items that are difficult to digest will remain problematic. Smaller portion sizes are advised. You should chew the food
properly to ensure that there is less bulk that reaches the digestive system. A balance between the quantity and quality of food consumed along with regular exercise is the key to achieving and maintaining a healthy weight after surgery.

When the gastric sleeve surgery is performed as a part of a two-stage procedure, the procedure is termed a staged procedure. Here, the sleeve gastrectomy is performed first as a restrictive strategy for surgical weight loss. A gastric bypass, which would be performed months or years after the first stage, involves changing the route of the food through the digestive tract.

A two-staged procedure may be performed if you are extremely overweight and not yet ready for the gastric bypass. You may not be ready for a gastric bypass because of the shape of your body, a history of multiple prior operations, or that you have too many medical comorbidities. The advantage of a two-staged procedure is that you can lose weight after the laparoscopic gastric sleeve so that there would be less hypothetical risk for the gastric bypass performed at a second stage.

WHAT ARE THE DIFFERENCES OF LAPAROSCOPIC SLEEVE GASTRECTOMY VERSUS
LAPAROSCOPIC GASTRIC BYPASS?

During *gastric bypass*, the original *stomach* is left in place. Food travels from the pouch directly into the re-routed intestines. During sleeve gastrectomy and unlike during *gastric bypass*, the remaining *stomach* is removed. Food therefore travels along its original path. The fact that the food does not empty directly into the *small intestine* helps prevent dumping syndrome that sometimes occurs after *gastric bypass*.

There are hypothetical benefits with hormonal changes responsible for satiety after laparoscopic sleeve gastrectomy. For example, a portion of the *stomach* that is removed produces Ghrelin which is thought to play a role in causing a person to feel hungry. Although not yet completely understood, with less *stomach*, there should be less of this hormone and therefore a decrease in the feeling of hunger.

The procedure originated as a bridge or preliminary operation to *gastric bypass* surgery, however today is often performed as a stand-alone definitive surgery. Laparoscopic sleeve gastrectomy represents an additional surgical option in high-risk patients who cannot be exposed to the rigors of a *gastric bypass* operation. In this setting it could be used as a risk-reduction strategy in a staged bariatric procedure for high-risk patients.
RESULTS AND RESEARCH ON THE LAPAROSCOPIC SLEEVE GASTRECTOMY

Data gathering on the sleeve gastrectomy is an ongoing process. Present results from research on the effects of the procedure show that weight loss from sleeve gastrectomy is less than what is achieved after gastric bypass and probably higher than what is possible with Lap-Band surgery.

Over the years, improved clinical outcomes in terms of weight loss and controlling comorbidities has resulted in greater acceptance for laparoscopic gastric sleeve surgery not only for the super-obese but also for obese patients with a lower BMI. The simplicity of the procedure, durable weight loss, and fewer post-operative restrictions on diet are reasons why laparoscopic sleeve gastrectomy is gaining scientific acceptance and now represents a surgical options to treat morbid obesity.

WHAT OCCURS DURING LAPAROSCOPIC GASTRIC BYPASS?

Roux-en-Y Gastric Bypass works by temporarily decreasing hunger and cravings, restricting the amount of food you can eat at one time and reducing the absorption of calories.
The Roux-en-Y Gastric Bypass is considered by many experts to be the current gold standard procedure for bariatric surgery. Although the surgery is typically not reversible, it is the most popular form of bariatric surgery.

This procedure is widely viewed as a safe and the most effective means of achieving long-term weight loss in patients who suffer severe obesity.
Laparoscopic Roux-en-Y gastric bypass was introduced approximately twenty years ago and over the years has demonstrated an excellent balance of weight loss and side effects that are manageable.

In this surgery, the stomach is sewn or stapled to create a smaller stomach pouch that can hold only hold about a half-cup of food. The idea behind the pouch is that an individual feels full more quickly with a smaller stomach, and thus eats less. This is called the restrictive part of laparoscopic gastric surgery, as it restricts food intake. In the bypass part of the surgery, the small stomach pouch is disconnected from the first part of the small intestine, called the duodenum, and then reconnected to a portion of the small intestine further downstream, called the jejunum.

The fact that the intestines are changed from their natural route to the shape of a Y is called a roux-en-Y intestinal bypass. Once in place, food passes from the stomach pouch directly into the jejunum, bypassing the duodenum and a portion of the intestines.

Because part of the small intestine is bypassed, there is reduced absorption of calories and nutrients. This accounts for this portion of the operation being classified as malabsorptive. Like other laparoscopic operations, the laparoscopic gastric bypass is performed using a tiny camera called a laparoscope and requires only a few small incisions on the abdominal wall. The laparoscopic approach is popular because of improved visualization, less pain, minimal blood loss, quicker recovery, and lower risk of complications such as infection or hernia.

Gastric bypass surgery requires a stay in the hospital. It is performed while you are asleep under general anesthesia which means you will not experience any pain during the surgery. The operation usually lasts one to three hours and has a typical hospital stay of two to three days. This
statistic depends on a number of factors including whether or not an individual has had a previous abdominal operation, the persons gender and the BMI.

Laparoscopic Gastric Bypass is a different operation than the Lap-Band and the laparoscopic gastric sleeve. Although the incisions are similar, there are many physiological differences between the three operations. Those who undergo laparoscopic gastric bypass start losing weight quickly after the surgery. **Weight loss** is marked and lasts about one and a half years. After that period of time, the body compensates for the surgery and **weight loss** stops. Those who undergo the laparoscopic gastric band procedure or the laparoscopic gastric sleeve lose weight more slowly, but the weight loss may be sustained for a longer period of time.

**LIFE AFTER SURGERY**

Patients typically stay in the hospital between two and four days after a Laparoscopic Gastric Bypass. The **criteria** that determine when a patient is ready to return home include being able to eat and drink a certain amount of liquid each hour and no longer needing any injectable pain medications. A typical post-gastric bypass diet consists of liquid and pureed food for a few weeks after surgery.

Immediately after the surgery, patients feel full quickly because the **stomach** will only be able to hold a tablespoon of food. The reason for this temporary change in diet is that the connection that the surgeon creates between the stomach pouch and the intestine swells after surgery. This swollen connection causes the food that is in the stapled part of the stomach to pass at a slow rate. This change is temporary and once all the healing and swelling is complete, the **stomach** will be able to hold a maximum of one half-cup of thoroughly chewed food.
Sometimes gastric bypass can cause dumping syndrome, which occurs when food moves too quickly through the stomach and intestines. This results in weakness, nausea, a feeling of faintness, sweating and perhaps diarrhea after eating. Eating highly refined sugars and high calorie foods aggravates this condition, which may require lying down until the symptoms pass. Dumping syndrome can be viewed as a benefit of the operation because it can stop patients from eating high calorie foods.

After the surgery, it is important to maintain healthy lifestyle changes, such as a strict diet and an exercise regime. Laparoscopic gastric bypass is meant as a means to a healthier and long-lasting life, which requires dedication and hard-work. It is very important that patients considering bariatric surgery spend the time to speak to others who have had the surgery. Although doctors can predict some of the body changes that occur after this surgery, there are many emotional and lifestyle changes that occur with bariatric surgery that only someone who has had the surgery can understand and explain.

**RISKS WITH LAPAROSCOPIC GASTRIC BYPASS**

As is the case with all surgery, there are risks associated with gastric bypass. They include an infection at the site of the incision, a leak from the stomach to the abdominal cavity or from the intestinal connection and a blood clot that can travel to the lung.

**METABOLIC WEIGHT-LOSS SURGERY IS NOT COSMETIC SURGERY**
Laparoscopic weight-loss surgery involves some degree of risk. The procedures are performed under general anesthesia and usually last for between one and three hours.

Hepatobiliary & Pancreatic Surgery

What is Hepatobiliary & Pancreatic Surgery?

The liver, pancreas, gall bladder and bile duct are known as the hepatobiliary and pancreatic system. Surgery to treat cancers and disorders in these organs is highly complicated and challenging and requires a high level of skill and expertise.

Hepatobiliary and pancreatic surgery can be performed
using minimally invasive techniques. Some common procedures include:

- Removal of the distal (lower) stomach with the Whipple procedure
- Anti-reflux surgery for the gastrointestinal system
- Removal of part of the pancreas
- Removal of the gall bladder and reconstruction of the bile duct
- Liver transplant and liver resection (removal of all or part of the liver)

**Why do You Need Hepatobiliary & Pancreatic Surgery?**

Hepatobiliary and pancreatic surgery is used to treat cancers and diseases of these organs. It includes the resection (removal) of primary and metastatic (secondary) tumours of the liver, gall bladder, bile duct and pancreas. It is also used to treat benign diseases like cysts, bile duct injuries and strictures (blockage), and portal hypertension. Some tumours affecting the liver, gall bladder and bile duct might need major resections, and might therefore need complex reconstruction of the bile duct, hepatic artery and portal vein.
Such procedures involve a multidisciplinary team to provide a individualised treatment plan for each patient. This team of specialists and clinicians include hepatobiliary and transplant surgeons, medical oncologists, interventional radiologists, radiation oncologists, gastroenterologists and anaesthesiologists.