COMMON SURGICAL PROCEDURES

HERNIA

A hernia occurs when tissue protrudes through a weakened area in the abdominal wall. The operation that repairs a hernia is called a herniorrhaphy or Hernia Repair. This page will explain:

- Why you may need to have your hernia repaired.
- The ways that a hernia may be repaired.
- What to expect before and after the operation.

Though a hernia repair is a very common operation, no two people undergoing a hernia repair are alike. The reasons for and the eventual outcome of the operation depend upon your overall health, your age, the severity and size of your hernia, and the strength of your abdominal wall tissues.

A hernia develops when the layers of the abdominal wall weaken, bulge, or tear. The hole in this outer layer allows the inner lining of the abdominal cavity to protrude and form a sac. Any part of the abdominal wall can develop a hernia. The most common site is in the groin. A hernia in this area is called an inguinal hernia. In an inguinal hernia, the sac protrudes into the groin toward and sometimes into the scrotum. Although most common in men, inguinal hernias can also occur in women.

Another type of hernia occurs in the navel. It is called an umbilical hernia. A hernia that develops in a surgical incision is called an incisional hernia. A hernia elsewhere in the abdomen could be a ventral, epigastric, or spigelian hernia.

Who Gets Hernias?

Most inguinal hernias in adults result from strain on the abdominal muscles, which have been weakened by age or by congenital factors. The types of activity associated with the appearance of an inguinal hernia include:

- Lifting heavy objects.
- Sudden twists, pulls or muscle strain.
- Marked gains in weight, causing increase in abdominal wall pressure.
- Chronic constipation.
- Repeated attacks of coughing.
- Straining to urinate.

A hernia is reducible if the protruding sac of tissue can be pushed back into the abdomen. If the hernia cannot be pushed back in, it is incarcerated.

The symptoms of hernias vary. Sometimes the onset is gradual, with no symptoms other than the development of a bulge. In others, the hernia may present with a sudden giving away of the abdominal wall, which may be accompanied by pain.

In some cases, an incarcerated hernia gets so constricted that the blood supply is cut off and the tissue swells. Increasing pain or a tender lump that won’t go away indicates that the hernia has strangulated. When this
occurs, the intestine can die quickly, leading to a life-threatening emergency that requires immediate Surgical attention.

**Preparing for an Operation**
Surgery is the only way to repair a hernia. They do not heal spontaneously and generally increase in size over time. Unless the hernia is strangulated, hernia repair is an elective operation. Most hernia repairs can be performed on an outpatient basis, although very large or extensive hernias may require a hospital stay for several days.

**Types of Procedures**
There are a variety of procedures available to repair hernias. The right one for you will be determined by your specific situation.

Most hernias are repaired by using a **mesh** material to reinforce the tissue in the affected area. This mesh allows for a “tension-free” repair. This decreases postoperative pain, allows for quicker recovery and decreases the chance of recurrence. Mesh comes in a variety of shapes and sizes. Your surgeon will choose the best one for your particular hernia.

An **inguinal hernia** can be repaired through a small incision in the groin (**open technique**) or with a **laparoscope**. The advantage of the open technique is that it can be done under mild sedation and local anesthesia. Laparoscopy requires general anesthesia. The recovery from both operations is very similar. Generally, a laparoscopic technique is preferred for **bilateral** hernias (hernias in both groins) or **recurrent** hernias. Otherwise the open technique may be the best option for you.

An umbilical hernia may be repaired by suturing only if it is small. Larger umbilical hernias are repaired with mesh. This is generally done through a small incision in the umbilicus.

An incisional hernia, a ventral hernia, or a very large umbilical hernia may be repaired with a laparoscopic technique. In this operation, a piece of mesh is placed under the hernia on the inside of the abdominal wall and secured in place.

**Complications**
As with any surgery, there are risks and there can be complications. Complications are not common but you should be aware of the possibility. Complications can include, but are not limited to:

- Infection.
- Bleeding.
- Hernia recurrence (1-2%).
- Injury to the testicle, cord or vas deferens.
- Other organ injury.
- Chronic pain.
- Numbness.
- Anesthetic complications.
- Complications related to the mesh.
- Adhesions or scar tissue formation.
- The need for further or repeat surgery.
Recovery
After the operation, you will be taken to the recovery room where you will be watched carefully for about 1-2 hours until the anesthetic wears off. Post-operative pain is usually well controlled with oral medication. Some patients report requiring no pain medicine at all. Occasionally, there will be some nausea until the anesthetic wears off. Your nurse can give you medication for this.

Most laparoscopic hernia patients go home the same day. After leaving the hospital, gradually return to normal, non-strenuous, activities over the next 3 to 5 days. In the first week after the surgery you may notice some bruising around the incisions. For inguinal hernia repair, you may have some swelling or bruising of the penis and scrotum. Mild abdominal distension is normal. You may shower the day following surgery.

You should see your surgeon for follow-up one or two weeks after surgery. Avoid strenuous activity for four weeks. Recovery varies depending on the type and extent of the hernia, the individual patient, and the type of repair. It is important not to over exert yourself too quickly. Constipation is also common after surgery, so beginning a stool softener 2 days prior to surgery can be helpful.

APPENDICITIS AND APPENDECTOMY
Appendectomy is the surgical removal of the appendix. This will explain why you may need an appendectomy and what to expect before and after the operation.

What is the Appendix?
The appendix is a three to six inch long tubular structure that is attached in the area of the junction of the large and small intestines. The appendix has no known function. Once the appendix becomes inflamed, it must be removed. The appendix may vary in its location in the abdomen and its relationship to other parts of the intestinal tract. This variation accounts in part for the variety of symptoms that can make diagnosis a challenge.

What is Appendicitis?
Obstruction of the appendix by fecal matter or some other cause can lead to inflammation called appendicitis. Appendicitis usually develops rapidly with little warning over the course of six to twelve hours. The usual symptom is abdominal pain, which begins as a vague discomfort around the navel. Over the next several hours, the pain becomes much more severe and is localized to the lower right side of the abdomen. The abdomen may become rigid and very sensitive to pressure. The pain may be accompanied by loss of appetite, nausea or vomiting. In advanced cases, the appendix may rupture and can lead to more serious infection.

Who gets Appendicitis?
Approximately two thirds of all people who get appendicitis are women, and about two thirds of all people who get appendicitis are between the ages of 15 and 44. However, the condition can affect any person at any age.

Diagnosing Appendicitis
Since appendicitis is an emergency situation, diagnosis is based primarily on symptoms and the physical exam. The white blood count may be elevated. If there is a question about the diagnosis and the condition does not appear urgent, other x-rays and tests may be ordered.
Preventing for Surgery
The procedure is done under a general anesthesia and therefore, it is important that you not eat or drink anything prior to surgery. An intravenous line will be inserted into your arm for giving antibiotics, fluids and the anesthetic. The operation usually takes about an hour.

The Surgical Procedure
The surgical procedure can be performed in two different ways: through an open operation or with a laparoscopic technique.

The open technique: In this operation, the surgeon makes a short incision through the skin and underlying fat. The muscles of the abdominal wall are then separated, allowing entry into the abdominal cavity. The abdominal organs in the area are inspected. The appendix is separated from the intestine and removed from the abdomen. The abdominal wall is then closed in layers with sutures. If the appendix has ruptured and there is a significant amount of contamination, the skin may be left open to prevent a wound infection.

The Laparoscopic Technique: A camera is inserted through a small incision in the umbilicus and is used to view the interior of the abdominal cavity. The surgeon can perform the appendectomy while viewing the image displayed on the TV monitor. Surgical instruments are placed through two other small incisions. The laparoscopic approach may let patients recover faster and results in less visible scarring. This technique also allows better visibility than that obtained through the typical appendectomy incision. Occasionally the appendix cannot be successfully removed with a laparoscopic technique, and it may be necessary to proceed with an open technique.

Recovery
You will stay in the recovery room for about an hour after your surgery. You will be up and walking within six hours. In the uncomplicated appendectomy, you can expect to go home in one or two days. If the appendix has ruptured, you may be hospitalized for several days. The incisions are usually quite strong and one can usually resume normal activities as the soreness decreases. You will be given pain medication to take after you leave the hospital.

Complications
Complications fortunately are rare, but since they do occur, we feel it is important that you know about them. The most common complication that may occur is infection of the abdominal cavity or wound. This is particularly common in those who have ruptured appendicitis and may require another surgery to drain the infection. It is possible that, upon exploration of the abdominal cavity, you will be found to have a normal appendix. This is not uncommon, and the appendix will usually be removed to prevent confusion in the future. Other problems that can mimic appendicitis may be encountered. If your surgeon finds one of these conditions, usually it will be dealt with at the time of surgery.

Complications can also include bleeding, injury to organs, conversion from laparoscopic to open surgery, and complications from anesthesia.

Call your surgeon if you have fever over 100.4 degrees F, worsening pain, unrelenting nausea or vomiting, worsening abdominal bloating, or signs of infection.
COLONOSCOPY

Your doctor has advised you to have a colonoscopy, a non-surgical endoscopic procedure. This routine exam allows your doctor to see directly inside your lower digestive tract (colon and rectum). It can help diagnose diseases of the colon. It is also the best method of screening for colon cancer.

The colonoscope consists of a long, flexible tube with a small camera and light on one end. The other end is held by your doctor who gently advances the camera through your colon. The scope is connected to a TV monitor so that the lining of the colon may be viewed. Instruments for performing biopsies and other procedures can be passed through the scope.

Viewing Your Colon
Your colon and rectum normally have a smooth lining. If your doctor sees polyps or other growths during colonoscopy, they can often be removed. Your doctor may take a biopsy of a large growth to study the tissue further. Colonoscopy helps your doctor to diagnose other abnormalities, such as bleeding or an area of inflammation, and to prescribe the best treatment for them.

Preparing for Colonoscopy
You will be given instructions for a bowel prep that you will begin the day before your colonoscopy. Because you will be sedated during the colonoscopy, you will need to make advanced arrangements for someone to take you home following the exam.

Bowel Pre-Op Instructions
During Colonoscopy
On arrival to the endoscopy area, an IV catheter will be inserted into a vein. Your vital signs will be monitored during the procedure. You will receive sedating medications. The lubricated colonoscope is then inserted slowly and gently through your anus. Because your doctor needs a clear view, air is used to inflate your colon. As a result, you may feel some pressure and cramping. The procedure usually takes less than an hour. When the exam is over, you’ll be taken to the recovery area.

After Colonoscopy
While recovering, you’ll be monitored for about an hour until you are ready to go home. Later that day, you will be able to eat normally and resume some of your usual activities, unless otherwise directed. It is normal to experience some gas pains and to pass the air used during the colonoscopy. Try taking a walk to help relieve the bloated feeling.

Call your doctor If you have abdominal pain, high fever or bleeding. Complications of colonoscopy are rare, but can include bleeding, perforation of the colon, spleen injury, anesthetic complications, and others.

Your Results
Your doctor will tell you the results of your colonoscopy either before you leave for home, or within a few days after the procedure. If your problem was treated during the exam, your doctor may give you special instructions to follow. If a biopsy was performed, allow a few days for the results. If necessary, further studies or treatments may be recommended.
GALLBLADDER DISEASE AND LAPAROSCOPIC CHOLECYSTECTOMY

Gallbladder
The gallbladder is a small pear shaped organ that lies in the right upper quadrant of the abdomen underneath the liver. It is connected to the common bile duct which carries bile from the liver to the small intestine. Its function is to store the bile made by the liver. During meals a hormone signal causes the gallbladder to contract and empty extra bile into the intestine to help with digestion.

Gallbladder Disease
When a gallbladder is inflamed or contains stones, it cannot function in its usual fashion. Anyone can develop gallbladder disease, but it is more common in women and in people who are overweight or over the age of 35. There also appears to be a strong hereditary component to gallbladder disease.

Symptoms of gallbladder disease can include abdominal pain, nausea, vomiting, diarrhea, indigestion, bloating, fever, and occasionally jaundice. The abdominal pain is most commonly experienced in the right upper portion of the abdomen or just below the breast bone. It typically occurs after eating fatty or greasy food and may radiate to the back or into the chest. The pain of a gallbladder attack may be severe.

Diagnosis
Ultrasound is the most useful test to detect gallbladder disease. Ultrasound can identify gallstones as well as determine if acute inflammation is present by evaluating gallbladder wall thickness, presence of surrounding fluid and size of the common bile duct. A HIDA scan with or without CCK injection may also be used in a typical cases. CT scan may be helpful but it is less sensitive.

Treatment
Surgical removal of the gallbladder is the treatment of choice when patients become symptomatic. The surgery can usually be performed with a laparoscopic camera. This means a camera with a magnified lens is inserted through an incision by the naval area. Three other incisions are made below the ribs in the right upper quadrant where instruments are inserted to perform the dissection using the camera. CO2 gas is used to distend the abdomen to create a working space. The gallbladder is freed up and removed. A cholangiogram (x-ray test of the bile ducts) is frequently done as well.

Occasionally, severe infection or other problems can prevent completion of the operation with the laparoscope. In this situation the surgery will be completed through an open incision in the right upper quadrant.

The Operation
Removal of the gallbladder is one of the most commonly performed operations. General anesthesia is utilized. The surgery is usually performed by laparoscopy, in which a camera is inserted through a small incision at the navel and used to view the gallbladder. Narrow instruments are inserted through three other small incisions. Carbon dioxide gas inflates the abdomen and creates space in which to work. The gallbladder is freed up and removed. A cholangiogram (x-ray test of the bile ducts) is frequently done as well.

Occasionally, severe infection or other problems can prevent completion of the operation with the laparoscope. In this situation, the operation will be completed through a standard “open” incision.
Recovery
Laparoscopic surgery allows for a much quicker recovery and less post operative pain than traditional open surgery. Most patients are able to go home the same day of surgery. Some may stay over night if needed. Post operative pain is usually not severe, and is well-controlled with prescribed pain medications.

You may shower the day after surgery. There will be small tape “steri-strips” on your incisions. Leave those on until they fall off. The small gauze pads over the steri-strips may be removed before you shower. You can resume usual activities over the 3 to 5 days following surgery but should avoid strenuous activities for 2 weeks. You should also avoid greasy or fatty foods for two weeks. Follow-up with your surgeon 1 or 2 weeks after surgery.

Complications
Although complications from gallbladder surgery are not common, they may occur. Possible complications can include the following:

- Bleeding or infection.
- Injury to organs (liver, stomach, intestines, bile ducts, others).
- "Bile duct injury leak", blockage, or retained stones.
- Pancreatitis.
- Diarrhea or other post cholecystectomy symptoms.
- Need for open surgery or other procedures, including endoscopic removal of bile duct stones.
- Complications from anesthesia.

LAPAROSCOPY
Laparoscopy, or laparoscopic surgery, is a way of performing surgery known as “Minimally Invasive Surgery.” Laparoscopic surgery is performed on organs and structures of the abdominal cavity through small incisions. A camera or “scope” is inserted through one of these small incisions so that the structures in the abdomen can be seen on a video monitor. Slim instruments are placed through other small incisions so that the surgical procedure can be carried out. Laparoscopy is performed under general anesthesia.

Traditional or “open” surgery is done through a longer incision. The operation is carried out directly with the surgeon’s hands and standard instruments. The advantages of laparoscopic surgery include less scarring, less post-operative pain, and quicker recovery.
We perform many different types of surgery with laparoscopy. Examples include gallbladder removal (cholecystectomy), appendectomy, hernia repairs, removal of part of the colon (colostomy) or small intestine, removal of adrenal glands, and removal of the spleen. There are other reasons for laparoscopy as well.

Your surgeon will evaluate your particular case to determine if laparoscopy is right for you. There may be situations where laparoscopy cannot be performed, and the surgery must be done with the traditional open technique. It is always possible that a surgery begun with laparoscopy will require switching to an open technique, depending on what is found at the time of surgery.

As with all surgeries, there are risks of complications associated with laparoscopic surgery. These complications do not occur frequently, but you should be aware of their possibility. They include bleeding, infection, injury to organs or other structures, scar tissue formation, obstruction of the bowel, hernias, complications related to anesthesia, and others.

**DIVERTICULOSIS AND DIVERTICULITIS**

If you are like many people, your colon (the large intestine) is not in perfect condition. Over time, small pouches may have formed in your colon wall. This is called diverticulosis. If these pouches become infected or inflamed, a painful and more serious problem called diverticulitis develops. Although aging may contribute to colon problems, what you eat makes the real difference in the health of your colon. We rarely see diverticular problems in countries where people eat plenty of unprocessed, high fiber foods.

A healthy colon is a flexible tube lined with muscles. These muscles help move stool through your colon into your rectum (the lower part of the colon) and out of your body. With enough fiber and water, the stool stays soft and passes smoothly through the colon.

**Diverticulosis**
Without enough fiber and water in your digestive system, stool becomes harder. Your colon’s muscles have to squeeze more to move the harder stools through your colon. That extra pressure can cause the lining of the colon to bulge out into pouches called diverticula. This usually occurs in the colon’s muscular, lower left section (sigmoid), though it can also occur in other parts of the colon. Diverticula may take years to develop, and you often feel no symptoms at all. If you do have symptoms, they might include mild cramping, bloating, constipation, and diarrhea.

**Diverticulitis**
Diverticulitis occurs when the diverticula become infected or inflamed. The cause of these infections is unknown, but it is possible that they occur when small particles such as seeds or undigested food lodge in the diverticula. Infection can lead to complications such as swelling or rupture of the diverticula. Symptoms often include pain, fever, chills, cramping, diarrhea, or constipation.

**Your Evaluation**
To diagnose your colon problem, your doctor will take your medical history, conduct an examination, and may recommend one or more diagnostic tests. After the evaluation, your doctor will talk with you about a treatment plan to control your condition.
Diagnostic Tests
Diagnostic tests may be used to pinpoint your problem or rule out other colon disorders. A CT scan can evaluate for diverticulitis. A barium enema is an x-ray that allows visualization of the colon after filling it with barium. It can show narrowing of the colon, growths, or pouches in the colon wall. A colonoscopy involves the use of lighted tube to look directly into the colon.

Managing Your Condition
Treatment for your diverticular problem depends on its severity. If you have a mild case of diverticulitis, changing your diet may be all you need to do to keep the condition under control. Your doctor may also prescribe medications to help relax your colon and relieve pain. Diverticulitis often requires additional treatment.

If your diverticulitis symptoms are mild, your doctor may begin treatment with a temporary liquid diet and oral antibiotics. A high fiber diet may be started once symptoms are relieved. If your diverticulitis is severe, you may need hospitalization and intravenous antibiotics. Surgery may be necessary if other types of treatment do not successfully control your problem, or to prevent recurrence and complications of the diverticulitis.

If You Need Surgery
If your symptoms do not improve with nonsurgical treatment, you may need surgery to remove the diseased portion of your colon. In some severe cases of infection or rupture, emergency surgery may be necessary. Generally, if you have had two or three bouts of diverticulitis, you are likely to continue having the problem and should consider surgery to remove the diseased portion of the colon.

Risks and Complications of Diverticulosis
Rupture or bleeding can be severe complications of diverticulosis. Rupture can lead to peritonitis, abscess formation, formation of a fistula (connection) to the bladder or other structures, or stricture (blockage). Bleeding can be rapid and require transfusion. Emergency surgery may be necessary and can often result in the need for a colostomy. This is usually reversible with further surgery after about three months.

Keys to Colon Health

Get Enough Fiber: You need 25-50 grams of fiber each day to keep your colon working at its best. Choose food like wholewheat bread, brown rice, bran, or raw vegetables. Daily fiber supplements such as Metamucil and Fibercon are also helpful.

Drink Enough Water: Most people should drink at least 8 glasses of water each day.
**BREAST BIOPSY**

Your doctor has recommended that you have a **breast biopsy**. Breast biopsy is performed to further evaluate a breast lump that can be felt or that has been identified by mammogram or ultrasound. The biopsy helps determine if the area of concern is cancer.

**Types of Breast Biopsy**

There are several ways that a biopsy can be performed. The method chosen for you depends on how the area of concern is best identified.

**Excisional Biopsy**

An excisional biopsy is done in the operating room for a lump that can be easily felt by your surgeon. You will be under sedation and monitored by an anesthesiologist. The area over the lump will be anesthetized with local anesthetic and a small incision will be made. The lump will be removed and sent to the lab for analysis.

**Stereotactic Biopsy**

The type of biopsy is performed for abnormalities best seen on mammogram. It is done with a special needle through a very small skin incision. Only local anesthetic is needed; you will not need to be sedated. There is minimal pain with the procedure. The biopsy is performed at a facility that has the appropriate equipment.

You will be asked to lay face down on a table. Your breast will be placed through an opening in the table and mammograms will be made. The skin will be anesthetized with a local anesthetic and a very small incision will be made. Using the images and the assistance of a computer, a biopsy needle will be positioned in the area of concern and biopsies will be taken.

The needle is then removed and a tiny metallic clip may be placed to mark the biopsy for future reference.

**Ultrasound Guided Biopsy**

This type of biopsy is performed for abnormalities best seen by ultrasound. It is done with the same type of needle as a stereotactic biopsy. Instead of using a mammogram to guide the positioning of the needle, an ultrasound probe is used. Again, the biopsy is performed at a facility with the appropriate equipment. You will lie on your back and the area of concern will be identified with the ultrasound. Under local anesthetic, the biopsy needle will be positioned and biopsies will be taken. A marking clip may be placed.

**Needle Localization Biopsy**

In certain cases, a needle localization procedure may be recommended. This is a two-part procedure. First, instead of going directly to the operating room, you will be taken to the mammography area. A mammogram machine will be used to determine the exact location of the tissue under study.

A localization needle will be inserted using the mammogram for guidance. When the needle is in the correct position, a small guide wire will be inserted through the needle to mark the position of the abnormality and the needle withdrawn. The wire will then be taped to your skin. You will be returned to the preoperative area to await transfer to the operating room. Your surgeon will use the wire as a guide to the area in question.
After surgery, you will be taken to the recovery area where a nurse will monitor your progress. Once you are consuming fluids and feel comfortable leaving, you will be discharged. If you had an excisional biopsy under sedation, you must have someone drive you home.

Discharge Instructions
Wear a bra to bed as well as during the day for the first week. Sports bras are especially comfortable for this purpose. An ice pack will help to decrease the swelling. Usually, over-the-counter medication such as Advil or Tylenol will provide sufficient relief for a needle biopsy. If you had an excisional biopsy, you will be given a prescription for a stronger painkiller. You may resume normal activities, including showering, the next day. Avoid exercise until cleared by physician. The biopsy results should be available 1 to 3 days after the procedure. Make an appointment to see your surgeon a week after the biopsy to examine the biopsy site and to discuss the biopsy results.

Don’t remove the steri-strips placed over the incision. They usually fall off after 7-10 days.

Risks of the Procedures
Complications of the procedures are not common, but can include bleeding, infection, scarring, inability to biopsy the areas in question for technical reasons, a false negative result, complications related to anesthesia, and others.

Call your Surgeon if:
- You have any bleeding other than a small spot on the dressing.
- You experience severe pain or swelling of the breast.
- You develop a fever over 100.4 degrees.

BREAST LUMPS
Breast lumps are very common and lead to concern when they are discovered. Most breast lumps are benign. A new breast lump could be a breast cancer, therefore your doctor must evaluate it. Breast cancer is a leading cause of death in women, but if found early breast cancer can be curable. The key to early detection is monthly self breast exam, yearly examination by your doctor, and periodic mammograms.

Who is at Higher Risk?
It is know that certain women are at greater risk for breast cancer. These risk factors are:
- Age over 40, and especially over 50.
- History of cancer in the other breast.
- Mother, sister, or daughter with breast cancer.
- Never having given birth or giving birth after the age of 30.
- Early onset of menstrual cycles.
- Carrier of certain genetic mutations.

Screening for Breast Cancer
Monthly Breast Self Exam (BSE) can help women distinguish the difference between "normal" lumpy breast tissue and lumps that must be evaluate by a surgeon. Particular attention must be paid to any lump that is new, persistent, especially prominent, hard, or enlarging. Breast cancer screening includes the following:
• Monthly Breast Self Exam (BSE) beginning at age 20.
• Yearly exam by your physician.
• Yearly mammogram beginning at age 40.

Understanding Your Breasts
Many women do not examine their breasts because they feel they don't know what to look for. Normal breast tissue often feels lumpy and varies in consistency from woman to woman, and even from week to week during the menstrual cycle. Understanding the normal anatomy of the breast and practicing regular breast self exam will help you to gain confidence in being able to distinguish between normal breast tissue and suspicious lumps. If you do not already have our booklet on self exam, be sure to get a copy.

The Normal Breast
Your breasts are loosely attached to the pectoral (chest) muscles and are suspended and supported by fibrous bands called Cooper's ligaments. The mammary glands are located throughout the breast. These glands produce milk during breastfeeding. Fatty tissue is present in varying amounts depending on weight and age.

Benign (Non-Cancerous) Lumps
Fibrocystic tissue is the most common cause of breast lumps in women ages 35 to 50. It is caused by the mammary gland's response to normal hormonal changes. The lump may consist of cysts, or there may be fibrous changes. Tenderness is often a factor. These changes usually improve after menopause. Often, symptoms of fibrocystic changes can be reduced by eliminating caffeine. Vitamin E and evening primrose oil can also be helpful. If you want more information, ask for our booklet on fibrocystic breasts. Simple cysts are single or multiple fluid filled sacs. Theses may be easily treated in the office by needle aspiration.

Fibroadenoma is a solid tumor occurring most commonly in women between ages 18 and 35. It is freely moveable and usually non-tender. It may be treated by removal.
**Papillomas** are small growths of the lining of the mammary ducts that can produce a clear or bloody discharge from the nipple.

**Malignant Tumors**
Malignant tumors are usually single, hard and painless. They develop from mammary ducts and glands. If not removed, these lumps continue to grow in an uncontrolled manner spreading to the lymph nodes, and eventually into the blood stream and distant organs such as the brain, lungs, liver and bone.

**Your Medical Evaluation**
Your surgeon will perform a complete history and physical exam with particular attention to examination of the size, location and consistency of any lumps. A mammogram and/or ultrasound may be ordered. In some cases, the lump may be evaluated in the office by performing a fine needle aspiration or a larger “core needle” biopsy.

**Breast Biopsy**
There are several methods for performing a biopsy of a breast lump. Click here for information about Breast Biopsy. All or part of the lump may be removed. The surgery may leave a small scar, but should have little effect on the contour of the breast itself. Biopsy is usually done on an outpatient basis.

**Abnormalities on Mammogram or Ultrasound**
Lumps or other abnormalities such as micro calcifications may be discovered by mammogram or ultrasound. It may not be possible to feel these abnormalities. If they have suspicious characteristics, a biopsy will be recommended.

**Fibrocystic Breasts**
Fibrocystic changes are the most common cause of breast lumps in women under the age of fifty. The condition is not cancerous. At least 50% of the women in their reproductive years have lumpy breasts as a result of fibrocystic changes.

**Diagnosing Fibrocystic Changes**
Usually fibrocystic changes can be diagnosed by physical examination. Mammography, ultrasound, needle aspiration, or biopsy may also be helpful in diagnosing fibrocystic lumps and ruling out cancer.
Causes of Fibrocystic Changes
The cause of fibrocystic changes is related to the way breast tissue responds to fluctuations in the levels of estrogen and progesterone, the female hormones produced by the ovaries during a woman’s reproductive years. Each month during a menstrual cycle, the breast tissue alternately swells and returns to normal. Hormonal stimulation of the breast tissue causes the blood vessels to swell, the milk glands and ducts to enlarge, and the breast to retain water. The breasts frequently feel swollen, painful, tender, and lumpy at this time. After menstruation, swelling decreases and the breasts feel less tender and lumpy. That is why the best time to examine the breast is right after the menstrual period.

Fibrocystic Changes
As a result of repeated hormone stimulation, there is an increase in firmness of breast tissue. Pockets of fluid called cysts may form in obstructed or enlarged milk ducts. The breast tissue may feel like an irregularly shaped area of thicker tissue with a lumpy or ridge-like surface. Fibrocystic tissue may feel like tiny beads scattered through the breast.

Generally, fibrocystic changes are found in both breasts and most frequently are found in the upper-outer quadrant and the underside of the breast. Pre-menopausal women with a fibrocystic condition may experience an increase in size of lumpy areas in the breast, as well as discomfort ranging from a feeling of fullness or heaviness to a dull ache, extreme sensitivity to touch, or burning sensation. The condition tends to subside after menopause.

Removal of Cysts
Cysts are fluid filled sacs that are usually smooth, firm, movable, and tender. The tenderness and lump size generally increase the week before the menstrual period and subside somewhat the week following. Large cysts feel round and similar to what you feel when you press.

Screening for Breast Cancer
Monthly Breast Self Exam (BSE) can help women distinguish the difference between “normal” lumpy breast tissue and lumps that must be evaluated by a surgeon. Particular attention must be paid to any lump that is new, persistent, especially prominent, hard, or enlarging.

Breast cancer screening includes the following:

- Monthly Breast Self Exam (BSE) beginning at age 20.
- Yearly exam by your physician.
- Yearly mammogram beginning at age 40.

Finding a New Lump
The discovery of a lump in your breast can cause a great deal of concern because of the possibility of breast cancer. It is important to discuss any new lump that you notice with your physician.
The Best Time for Breast Self Examination (BSE)
The American Cancer Society urges women to perform BSE once a month, about a week after the menstrual period. Post-menopausal women should choose a set day, such as the first of the month, to practice self-examination. For further information, ask for our brochure on BSE.

Treatment
The treatment of a fibrocystic condition may include the following:

- Needle aspiration of a cyst.
- Surgical removal (biopsy) of lumps that are concerning for the possibility of cancer.
- Avoidance of caffeine in coffee, tea, and colas.
- Non-steroidal anti-inflammatory drugs such as aspirin or ibuprofen.
- Local ice or heat applications.
- A good support bra.
- Vitamins A, B complex, and E.
- Evening Primrose.

UNDERSTANDING BREAST CANCER TREATMENT OPTIONS
Facing breast cancer treatment can be a bewildering and frightening experience. Coping with a new diagnosis of cancer is difficult because of the uncertainty about what the future will hold. Part of this uncertainty relates to your treatment options. The purpose of this booklet is to help you understand some of those options.

The options available to you will depend upon a number of factors; including the type of tumor, the extent of the disease at the time of diagnosis, and your age and medical history. Your personal feelings about the treatment and your self-image will also be important considerations in your doctor’s assessment and recommendations. You should discuss the treatment methods and how they apply to your particular situation with your doctors.

You may have several doctors involved in your treatment, including a surgeon, a medical oncologist, a radiation oncologist, and a plastic surgeon. Whether you will need to see a doctor in each of these fields will depend on your particular situation.

Treatment for breast cancer has advanced tremendously in recent years. Breast cancer treatment can include surgery, chemotherapy, radiation, and reconstructive surgery. The techniques in each of these fields have improved, leading to treatments that were not previously available. Consequently, breast cancer treatment has become more effective and the cosmetic results have improved.

Breast Cancer Surgery
The surgical treatment of breast cancer usually begins with a biopsy. Please see our Breast Biopsy brochure for more information. Further treatment will usually include surgical removal of the tumor. This may be done by a lumpectomy (also known as a partial mastectomy) or by a mastectomy (removal of the whole breast).

Because breast cancer may spread to lymph nodes in the axilla (armpit), breast cancer surgery can also include removal of some of these lymph nodes. Techniques for this include sentinel lymph node biopsy and axillary dissection.
Lumpectomy (Partial Mastectomy)
Lumpectomy is the removal of the tumor and a surrounding rim (margin) of normal breast tissue. The majority of the breast tissue is undisturbed. Radiation treatment will then be necessary for the breast. In combination with radiation, lumpectomy is as successful as mastectomy in treating breast cancer. This cosmetic result is usually excellent.

Depending on the location and size of the tumor, some women may not be candidates for this procedure, and may need to have a mastectomy. Also, some women may prefer to have a mastectomy, possibly with breast reconstruction, instead of lumpectomy and radiation. Occasionally, if microscopic analysis of the lump later reveals that the margins are not clear of cancer, a return to surgery for further removal of tissue or mastectomy may be necessary.

Modified Radical Mastectomy
This procedure removes the entire breast and the axillary lymph nodes. The removal of the axillary lymph nodes is called an axillary dissection. This may be the best option for women with certain types or stages of breast cancer. Some women may also prefer this treatment to a lumpectomy with radiation. If desired, a reconstruction of the breast can be performed by a plastic surgeon. A mastectomy with reconstruction is a more extensive operation and requires a longer recovery. Reconstructions may be performed at the time of mastectomy or at a later date. Usually one or two drain tubes are placed at the time of surgery and are removed one or two weeks after surgery. Additional drain tubes may be necessary if a reconstruction is performed.

Simple (Complete) Mastectomy
This type of surgery removes the entire breast without performing an axillary dissection. It may be combined with a sentinel lymph node biopsy in certain situations. A simple mastectomy may also be performed when a mastectomy is being done for prophylaxis, in other words to prevent breast cancer for women with high risk for future breast cancer.

Axillary Dissection
Axillary dissection is the removal of lymph nodes from under the armpit. This is done to determine if there has been spread of cancer to these lymph nodes and to remove such cancer. The lymph nodes are removed from an area that has certain anatomic boundaries. Anywhere from 5 to 25 lymph nodes may be present in this area. The lymph nodes will be analyzed in the laboratory to determine if cancer is present. Your oncologist will use this information to make decisions about chemotherapy.

The advantage of axillary dissection is that it is the most complete way to assess and treat for cancer that has spread to the lymph nodes. The disadvantage is that axillary dissection can be associated with swelling of the arm called lymphedema. There is also the possibility of nerve damage leading to numbness or muscle weakness, fluid collections in the wound cavity, and limited mobility of the arm.

These problems, however, are not very common. A drain tube will also be placed at the time of surgery and will remain for one to two weeks.

Sentinel Lymph Node Biopsy
Sentinel lymph node biopsy is a less invasive way to evaluate the axillary lymph nodes. Instead of removing many lymph nodes as in an axillary dissection, typically only 1 - 3 lymph nodes are removed. The advantage is that there is quicker recovery and lower risk of post-op problems. A drain tube is usually not necessary. If the sentinel node is found to have cancer in it, then an axillary dissection will be necessary. The disadvantage is that there is a small “false negative” rate; in other words the sentinel node may be negative but cancer is present in other lymph nodes. This could lead to under-treatment of the cancer.
Breast Reconstruction
If you consider mastectomy as a treatment option, you should be aware of breast reconstruction: a way to recreate the breast shape after mastectomy. Most women who have had a mastectomy can also have a breast reconstruction, but there are exceptions. If you are considering reconstruction, you will be referred to a plastic surgeon who will discuss the various techniques with you. The surgery is fairly lengthy and requires longer postoperative recovery in the hospital.

Radiation Therapy
Used in conjunction with surgery, particularly a partial mastectomy. Chemotherapy radiation therapy is administered by a radiation oncologist in one of two forms:

1. External beam radiation – the radiation is administered 5 days a week over approximately 6 weeks.
2. Partial breast irradiation - administered via a balloon device placed into the breast and is usually completed in 7 - 10 days. A consultation with a radiation oncologist is recommended prior to initiating radiation therapy.

For more information about this type of radiation, click here.

Chemotherapy
Chemotherapy also has an important role in the treatment of breast cancer. If chemotherapy is appropriate for you, a medical oncologist will discuss the best form for you. Chemotherapy may be in the form of a pill taken daily or may involve intravenous medications. You may need a special IV catheter if you will be receiving intravenous medications.

Risks of Breast Surgery
As with any surgery, there are risks and possible complications, although these are generally quite rare. Scarring or deformity of the breast after lumpectomy may occur. Numbness under the arm after axillary dissection is common. Other risks can include:

- Complications from anesthesia.
- Bleeding.
- Infection.
- Lymphedema.
- Muscle weakness.
- Fluid collections.
- Limited range of motion of the shoulder.
- Bruising, swelling or scarring.
- Pain.
- Cancer Recurrence.

There may also be other complications not listed here.

Post-Op Recovery
Most patients who undergo lumpectomy and lymph node removal are able to go home the same day. Those who have a modified radical mastectomy will go home in approximately one or two days. Hospitalization usually lasts several days after reconstruction. You will be prescribed an oral narcotic to control pain after discharge. You may have a drain tube to remove fluid that can accumulate in the area of surgery. You will receive instructions on care for this drain. Once a day, the dressing covering the drain should be removed. At this time, you may take a shower and wash this area, gently dry it, and apply a small amount of Neosporin around the tube. A small gauze pad should be placed over the drain site. The drain is usually removed about a week or two after the operation. You should make an appointment to see your surgeon one week after the surgery. You may also do a set of exercises to keep your arm and shoulder flexible after the drain is removed.
Breast Self Examination Instructions

Before a Mirror
Inspect your breasts with arms at your sides. Next, raise your arms overhead. Look for changes in shape or contour of each breast, a swelling, dimpling of skin, or changes in the skin or nipple.

Then, rest your palms on your hips and press down firmly to flex your chest muscles. Left and right breast will not exactly match - few women’s breasts do. Regular inspection shows what is normal for you and will give you confidence in your examination.

Lying Down
Lie down. Flatten your right breast by placing a pillow under your right shoulder. Fingers flat, use the sensitive pads of the middle three fingers on your left hand. Feel for lumps or changes using a rubbing motion. Press firmly enough to feel the different breast tissues. Completely feel all of the breast and chest area from your collarbone to the base of a properly fitted bra; and from your breastbone to the underarm. Allow enough time for a complete exam.

The above diagrams show the three patterns preferred by women and their doctors:

1. The vertical strip.
2. The circular, clock, or oval pattern.
3. The wedge.

Choose the method easiest for you and use the same pattern to feel every part of the breast tissue. After you have completely examined your right breast, then examine your left breast using the same method. Compare what you have felt with the other. Finally, squeeze the nipple of each breast gently between the thumb and index finger. Any discharge, clear or bloody, should be reported to your doctor.
In The Shower
Examine your breasts during bath or shower; hands glide easiest over wet skin. Fingers flat, move gently over every part of each breast. Check for any lump, hard knot, or thickening.

If You Find Any Changes
If you find a lump, dimple, or discharge during BSE, it is important to see your doctor as soon as possible. Do not be frightened. Most breast lumps or changes are not cancer, but only your doctor can make the diagnosis.

MELANOMA
Melanoma is an aggressive type of skin cancer. The tumor arises in pigmented cells in the skin called melanocytes. For reasons that we do not fully understand, these cells become cancerous. Sun exposure is thought to have a causative role. Despite ongoing public education, the incidence of melanoma continues to increase rapidly.

Melanoma usually forms at the site of a pre-existing mole, however, this is not always the case. Any mole that grows rapidly, bleeds, ulcerates, has an irregular margin, or an unusual color distribution should be considered suspect and a biopsy performed. Melanomas can form on any part of the body, but the sun-exposed areas are the most common. They may also form on the palms of the hands, on the soles of the feet, beneath finger and toe nails, and in the mouth, genital, or perianal areas. Melanomas are more common in Caucasians than in African-Americans, with a ratio of 20:1. The best treatment for melanoma is prevention through avoidance of prolonged sun exposure or use of strong sun blocking lotions if prolonged exposure is anticipated.

Prognostic Factors
The extent of the malignancy at the time of the diagnosis is the most important prognostic factor. Patients with disease confined only to the skin have the best prognosis. Patients with disease confined to the skin and adjacent lymph nodes, but no distant spread, have an intermediate prognosis. Patients who have disease spread to distant organs, i.e. liver, or bone, have a poor prognosis.

The depth of tumor invasion, that is, the thickness of the original lesion, helps predict the likelihood of spread, as well as the surgical treatment. Tumors less than 1.0 mm. thick have a low risk of spread. Tumors between 1.0 and 4.0 mm. in thickness (intermediate lesions) have at least a 20% chance of spread to the closest lymph nodes, even though no enlarged lymph nodes can be felt on exam. Tumors greater than 4.0 mm. in thickness (thick lesions) have a greater than 50% chance of spread to local lymph nodes, and beyond.

A second method of measuring tumor thickness is called the Clark's level, which determines the level of the dermis (a part of the skin) that has been penetrated. The Clark's level is used in conjunction with the mm. measurement to determine treatment.

Surgical Treatment
Surgical treatment of melanoma centers around a wide local excision of the melanoma with a possible biopsy of one or more of the local lymph nodes. The treatment is guided by the thickness of the original lesion.

- **Thin** tumors (< 1.0 mm) can be treated by wide local excision alone with a greater than 90% cure rate. A 1-cm. margin all the way around the tumor is used to prevent recurrence. No lymph node biopsy is necessary.
- **Intermediate thickness** lesions (1.0 to 4.0 mm) or Clark’s level IV or greater require a 2-cm. margin for adequate excision. Lymph node biopsy is performed at the same surgery.
- **Thick** lesions (> 4.0 mm) require a 2-cm. or greater margin to prevent local recurrence. Lymph node biopsy is included if there is no evidence of distant disease (spread beyond the local lymph nodes) on x-ray imaging.

Additionally, a lymph node dissection (removal of all of the closest lymph nodes) may be necessary if the patient has an enlarged lymph node that contains melanoma at the time of the original diagnosis, but no other identifiable distant disease. The goal is to remove all known disease in an attempt to achieve a cure. However, it should be noted that a high percentage these patients may already have spread beyond these local lymph nodes, even though x-rays studies suggest otherwise.

**Lymphatic Mapping and Sentinel Lymph Node Biopsy**
In the past, lymph node dissections were also performed on patients with intermediate thickness lesions in whom no enlarged lymph nodes could be felt. This was called an elective lymph node dissection. As mentioned above, 20% of these patients will have microscopic spread to the local lymph nodes that cannot be appreciated on exam. However 80% of these patients would not benefit from this procedure since they have no lymph node spread at the time of diagnosis. This operation carries a 40% risk of lymphedema (chronic severe swelling of the affected extremity) as well as other risks. In an effort to identify those patients with intermediate thickness lesions who would benefit from complete lymph node removal, a technique called lymphatic mapping and sentinel lymph node biopsy has been developed. In this procedure, only a single lymph node or two is removed; therefore, the operative risks are greatly decreased.

Lymphatic mapping is based on the theory that when a melanoma tumor spreads, it spreads first to the closest lymph node group. Within that group of lymph nodes, it spreads in an orderly fashion, so that there is one node that will become involved first: the sentinel lymph node. If this node can be identified and removed, the pathologist can tell if it contains metastatic melanoma cells. If it does, then that patient will likely benefit from a formal complete lymph node dissection. If it does not contain metastatic disease, then the patient has a < 2% chance of having melanoma in any of the remaining lymph nodes. In either case, patients still requires very close follow-up since the majority of recurrences (local or distant) occur within the first 2 years.

The technique of lymphatic mapping begins in a radiology department prior to surgery where a radiologist injects a small amount of a radioactive marker into the skin adjacent to the melanoma site. In some cases a scan called a lymphoscintigraphy is then performed, where a special machine is used to identify the lymph node region to which the melanoma drains. Some patients will not require this scan, depending on the site of the melanoma. Next, the patient is taken to surgery where the lymph node biopsy is performed. In surgery, a blue dye may be injected into the skin adjacent to the melanoma site. (Some surgeons may opt to forgo the blue dye injection) In 5 - 10 minutes, the sentinel lymph node is stained blue. This dye, as well as the radioactive marker injected earlier by the radiologist, helps the surgeon identify the sentinel lymph node so that it can be removed. In 90% of the cases, the sentinel node can be found. In the other 10% of the cases, no lymph node biopsy is performed. In these patients, lymph node biopsies are performed when and if the patient develops an enlarged node.

**Follow-Up**
A critical part of the post surgical care of a melanoma patient is close follow up. The patient with an intermediate thickness lesion or greater should be followed every 3 - 4 months for 2 years to monitor for local
recurrence or development of distant disease. A dermatologist should also perform local skin checks at least every 6 months to monitor moles and hopefully prevent development of new melanomas.

**Surgical Complications**
Although complications from melanoma excisions with lymphatic mapping and sentinel lymph node biopsies are not common, they may occur. Possible complications can include the following:

- bleeding or infection
- melanoma recurrence
- skin graft failures (if needed)
- inability to find and biopsy a sentinel node
- development of metastatic melanoma despite a negative sentinel node (false negative)
- nerve injury (sensory or motor)
- vascular injury

**Medical Treatment**
Medical treatment is used when the tumor has spread to the lymph nodes or beyond. A common medication used for patients with a positive sentinel node is interferon. A variety of other treatments are still being studied and recent advances appear very promising. Your oncologist can provide information about the latest treatments available to you.

**PORT-A-CATH**
A Port-a-Cath (or "port") is a device used to deliver medications into the bloodstream. The port is positioned underneath the skin. It is about the size of a quarter, and half an inch thick. The port is visible as a small raised area below the skin. Medication is carried from the port into the bloodstream through a small flexible tube called a catheter.

**Who Gets a Port**
Ports have many uses:
- To deliver chemotherapy to cancer patients.
- To deliver antibiotics for long periods of time.
- To deliver intravenous nutrition in patients who are unable to eat.
- To deliver blood products in patients with blood diseases.

**Port Placement**
The port is placed during a short day-surgery procedure. Often the operation can be performed with IV sedation and local anesthetic. In the operating room your surgeon will select the appropriate location for your port. The most common area is below the collarbone in your upper chest. The port is placed in a pocket underneath the skin. It is then connected to a catheter which is tunneled under the skin. The catheter will be inserted into the bloodstream. The incisions are closed and no tubes or catheters stick out of the skin.

**How Does the Port Work**
The port can be used as soon as the operation is over. Sometimes patients will start treatment the same day of the procedure. A nurse will access the port with a special needle called a huber needle. It is placed directly through the skin into the port. Most patients feel a mild pricking sensation during insertion. This sensation decreases over time. The port can also be used to draw blood for tests.

**Complications**
As with any surgery, there are risks. Complications are not common but you should be aware of the possibility. Complications can include, but are not limited to:
Recovery
After the operation you will be taken to a recovery area. You will be watched for 1-2 hours until the sedation wears off. A chest X-ray will be taken to confirm the position of the catheter and to check for signs of complications such as pneumothorax. Avoid any strenuous activity for one week. After one week you can resume physical activity. You will not harm the catheter or port. Typically it will be safe to resume showering 24-48 hours after the surgery. Also please wait to swim or submerge the incision under water for 10 days. You will be given a mild narcotic or ibuprofen for pain control. The port can remain in place for as long as you need treatment. When it is time for the port to be removed this can usually be done in the office with local anesthetic.

PILONIDAL CYSTS AND ABSCESSES
Pilonidal cysts occur in the cleft that exists between the two buttocks. When a pilonidal cyst becomes infected, it is called an abscess. These cysts may be congenital (present at birth) or may result from hairs penetrating the skin and accumulating beneath the skin. This condition occurs in this area because of the cleft between the buttocks allows hair to accumulate. There are usually one or more dimples or small holes overlying the cyst called pilonidal sinuses. Often there are hairs protruding from these small openings.

Pilonidal cysts are four times more common in men than women. This condition may be present form birth, but is not usually noticed until adolescence or later. The disease has been referred to as "jeep-driver’s disease", and it is thought that bumpy driving aggravates previously existing disease.

Symptoms
External appearance varies from a barely visible dimple at the upper end of the buttock crease to an obvious opening into the cyst. The cyst gradually enlarges and becomes susceptible to infection. When an abscess is present, there is a painful, swollen area with surrounding redness and often pus leaking from the sinuses. A sinus may chronically drain. Infection is more common in the warmer months when the area becomes moister and the bacterial count on the skin increases.

Treatment
If the cyst is abscessed, the only treatment is to open and drain the pus. Antibiotics are generally not helpful. The procedure can usually be accomplished under local anesthesia in the office. The open wound is packed with gauze which is then removed in a day or two.

Once the infection is cleared, the entire cyst must be removed in order to prevent further infection. This is usually scheduled for a week or two after the drainage of the abscess.

Surgery for Pilonidal Cyst
Not too many years ago, the only accepted operation for pilonidal cyst was to completely excise the area, leaving a defect 4-5 inches long by 2-3 inches wide. This was packed open with gauze that was changed daily.
The wound was allowed to heal in from the sides, a process that took several weeks. This still might be the operation of choice if infection is encountered during the operation or if the cyst keeps recurring.

More recently, we have found that with the use of a suction drain to remove fluid accumulation, the wound can be closed with sutures. The drain remains in place until the drainage subsides (usually about a week). It is removed at a follow-up visit in the office. The skin sutures are removed two weeks after the surgery.

This surgery can be done under intravenous sedation or general anesthesia. In either event, the surgery can be done as an outpatient.

Recovery
After recovery from the anesthetic, the nurses will instruct you in the care of the drainage tube. You will need to keep it clean to prevent infection. The easiest way to clean the drain tube is to remove all dressings and shower with soap and water. The surgical site is then carefully dried with a clean towel. A gauze dressing should be applied over the drain. You will be asked to empty the drainage reservoir daily and record how much drainage is present.

You probably will not want to return to work or other normal activity for the first few days. It is OK to walk, sit, and lay on your back, but you should avoid strenuous activity. It is helpful to use a pillow for extra padding when sitting.

Complications
Pilonidal cysts have a relatively high risk of recurrence - about 15%. Wound infections, wound separation, and wound drainage is also fairly common. These problems can sometimes be treated with dressings, but repeat surgery can also be necessary. Other risks include, but are not limited to: bleeding, infection, scarring, and complications related to anesthesia.

STOMACH SURGERY
The stomach is a muscular sac that lies between the esophagus and the upper small intestine. The stomach is an important organ. It serves as a reservoir. Different food stuff undergoes changes here. Starch hydrolysis, fat digestion, hydrochloric acid cleans it, proteins are changed, and acids start the digestive process here. The stomach is even a temperature regulator. We can however, live without the stomach.

Stomach surgery is most often required either due to stomach cancer or stomach ulcers.

Stomach Surgery for Stomach Cancer
The majority of stomach cancers begin in the innermost layer of the stomach lining, the mucosa. These types of cancers, called adenocarcinomas. This is the most common stomach cancer, about 95 percent. Lymphomas, carcinoid tumors, and gastrointestinal stromal tumors make up the other 5 percent.

Cancer occurs when the cells of the stomach lining begin to divide and grow out of control, causing one or more tumors. If left untreated, the cancer destroys the lining and spreads to other part of the body. Early detection is important, but early stomach cancer has few symptoms.

Some symptoms of advanced stomach cancer are:

- discomfort in the abdominal region
- black, tarry stools
- vomiting after meals or the vomiting of blood
- weakness,
- fatigue,
• weight loss
• feeling abnormally full after meal

When stomach cancer is detected early and not too widespread, the cancer can sometimes be removed using endoscopy. The endoscope is a long tube that is inserted into the patient’s mouth and esophagus and then into the stomach. The surgeon performs the surgery to remove the stomach cancer through the tube, seeing his way with tiny TV camera inserted into the tube.

When stomach cancer is more developed, then cancer is generally treated by surgically removing part or all of the stomach (called a partial or total gastrectomy). After a partial gastrectomy, the remaining portion of the stomach is reconnected to the esophagus and small intestine. After a full gastrectomy, the esophagus is attached directly to the small intestine. Sometimes completely removing the entire stomach is the only sure way to stop stomach cancer.

Radiation and chemotherapy may be used also with stomach removal or as an alternative.

**Stomach Surgery for Stomach Ulcers**

A stomach ulcer is a skin lesion or crater. An ulcer can result from infection, inflammation, or cancer. Certain foods, beverages and substances like smoking, alcohol, caffeine, and aspirin can irritate the stomach and irritate ulcers.

Non-surgical treatments for ulcers can include medicines that can reduce the amount of stomach acid and lessen irritation of an ulcer.

Bleeding from an ulcer can be stopped using endoscopic therapy.

When medicine and endoscopy cannot control an ulcer, surgery is often a last resort to remove the damaged part of the stomach wall. The goal is to remove as little of the stomach as possible.

**Preparing for Stomach Surgery**

• Your doctor will advise you about which of your regular medicines you can continue to take before, during and after stomach surgery.
• The night before your stomach surgery, you will stop eating and drinking fluids so your stomach will be completely empty during the surgery.

**After Stomach Surgery**
Since this is a major operation, following surgery you'll need post operative care for your comfort and nutrition:

- **Nasogastric (NG) tube** is a tube that goes keeps you from vomiting by removing gastric juices. It will be taken out after your normal digestion returns.
- **Feeding jejunostomy tube** is a small tube that provides your nutrition until you are able to drink and eat.
- **Intravenous (IV) fluids** will keep you hydrated. Antibiotics can be given if necessary through your IV.
- **Oxygen** may be needed for a short while through a small tube near your nostrils.
- **A catheter** can be used to drain urine, if needed.
- If the whole stomach is removed, Vitamin B12 shots will be necessary to prevent anemia.

Once your stomach and/or intestines are beginning to function normally, you will be allowed to drink liquids. Over the next day or days, you will progress through a soft diet to regular food, as tolerated.

Our dietitian will help you with the following:

- Eating smaller meals
- Eating more frequent meals
- Avoiding a high intake of fat at any given time
- Making sure that the calories you take in are as nutritious as possible
- Utilizing dietary supplements if you are having difficulty maintaining good nutrition

Sometimes patients develop a **dumping syndrome** where food passes too quickly through your system. Symptoms of dumping syndrome include diarrhea, cramping, nausea, vomiting, sweating, and dizziness after eating. If you have these symptoms, contact your doctor right away.

**THYROID SURGERY**

The thyroid is a small, butterfly-shaped gland situated in the neck just below the Adam's apple. In spite of its size, the thyroid has a huge impact on one's hormones, metabolism, emotions, and overall health. The thyroid regulates the body's production of certain hormones, primarily **thyroxine** (T4) and **triiodothyronine** (T3), which control your metabolism and promote the healthy development of many other systems in the body. In fact, a healthy thyroid keeps your heart, brain, digestive tract, muscles, nerves, and even your skin, hair, and nails in good condition. If you have a thyroid disorder, many or all of these vital body systems can be affected.

**Hypothyroidism**

If your doctor diagnoses you with hypothyroidism, it simply means your thyroid isn't working as hard as it should. An under-active thyroid doesn't produce enough of the thyroid stimulating hormone (TSH) that controls body temperature, regulates the amount of calcium in your blood, and regulates the rate at which you burn fat and carbohydrates and produce protein. The result is that your body slows down, and you feel sluggish and less energetic.

Symptoms of hypothyroidism include:

- Chronic fatigue
- Getting cold more easily
- Weight gain
- Pale, dry skin
- Achy muscles or swollen joints
- Constipation
- Depression
If you have any of these symptoms, your doctor can run a blood test to screen your hormone levels. Hypothyroidism is generally treated with drug therapy, and does not require surgery.

**Hyperthyroidism**
The effects of hyperthyroidism are just the opposite of hypothyroidism. In this case, your thyroid is working too hard and overproducing THS, making your body run faster than it should. Hypothyroidism causes your metabolism to speed up to an abnormal rate, resulting in:

- Rapid and unexplained weight loss
- Overheating and excessive sweating
- A rapid or irregular heartbeat
- Nervousness and irritability
- Feeling jittery and "wired" while also experiencing fatigue and muscle weakness
- Trouble sleeping

Treatment for hyperthyroidism can include medications to slow down the production of THS, radioactive iodine to kill the thyroid cells, or surgery to remove the thyroid completely (thyroidectomy).

**Nodules and Goiter**
Sometimes the tissue in the thyroid will begin to grow abnormally, producing solid or fluid-filled lumps known as **nodules**. The thyroid may develop one or many nodules, which can sometimes be felt from outside the neck. Nodules are usually benign, or non-cancerous, but can sometimes be malignant, or cancerous. If the nodules are cancerous or very large, they will need to be surgically removed.

When the thyroid gland becomes enlarged, it is called a **goiter**. Although it is generally not uncomfortable, you may notice swelling in your neck, making your collars or necklaces tighter than normal. After a certain point, a goiter can interfere with your breathing and ability to swallow. A goiter may occur if you have hyper- or hypothyroidism; either the thyroid grows in an attempt to make more hormones, or the thyroid cells multiply faster than they need to. If a goiter does not get smaller after hormone treatment, it may need to be surgically removed.

**Thyroid Surgery**
To determine whether a nodule is cancerous or not, your doctor may conduct a **fine-needle aspiration biopsy**. After numbing the area around your thyroid, your doctor will pass a fine needle into the nodule to remove a small amount of cells, which will be examined under a microscope by a pathologist. If the nodule is found to be cancerous, it will need to be removed.

There are generally three reasons that all or part of your thyroid will need to be surgically removed:
- You have a very large goiter or nodules
- You have one or more cancerous nodules
- You have hyperthyroidism that does not respond to hormone or iodine therapy

During surgery, you will be given general anesthesia and IV fluid support so that you sleep comfortably through the entire surgery. The surgeon will then make an incision along the base of the neck, and remove half, most, or all of the thyroid gland. Once the surgery is complete, the surgeon will close the incision with surgical clips, strips, or sutures.
After Thyroid Surgery

• The average hospital stay for thyroid surgery patients is one to three days, during which your doctors will monitor you for bleeding and make sure that your parathyroid glands are functioning properly.
• You will usually be able to eat and walk around the evening of surgery, but you may still feel a little nauseous from the anesthesia.
• You may experience a sore throat and hoarseness for about a week after surgery, but discomfort is usually minimal.
• Your doctor may ask you not to get your incision wet for a few days following surgery, and you should avoid any strenuous activity for a few weeks.

WHAT IS A PACEMAKER?
A pacemaker is a small device that's placed in the chest or abdomen to help control abnormal heart rhythms. This device uses electrical pulses to prompt the heart to beat at a normal rate.

Pacemakers are used to treat arrhythmias (ah-RITH-me-ahs). Arrhythmias are problems with the rate or rhythm of the heartbeat. During an arrhythmia, the heart can beat too fast, too slow, or with an irregular rhythm.

A heartbeat that's too fast is called tachycardia (TAK-ih-KAR-de-ah). A heartbeat that's too slow is called bradycardia (bray-de-KAR-de-ah).

During an arrhythmia, the heart may not be able to pump enough blood to the body. This can cause symptoms such as fatigue (tiredness), shortness of breath, or fainting. Severe arrhythmias can damage the body's vital organs and may even cause loss of consciousness or death.

A pacemaker can relieve some arrhythmia symptoms, such as fatigue and fainting. A pacemaker also can help a person who has abnormal heart rhythms resume a more active lifestyle.

Overview
Faulty electrical signaling in the heart causes arrhythmias. Pacemakers use low-energy electrical pulses to overcome this faulty electrical signaling. Pacemakers can:

• Speed up a slow heart rhythm.
• Help control an abnormal or fast heart rhythm.
• Make sure the ventricles contract normally if the atria are quivering instead of beating with a normal rhythm (a condition called atrial fibrillation).
• Coordinate electrical signaling between the upper and lower chambers of the heart.
• Coordinate electrical signaling between the ventricles. Pacemakers that do this are called cardiac resynchronization therapy (CRT) devices. CRT devices are used to treat heart failure.
• Prevent dangerous arrhythmias caused by a disorder called long QT syndrome.

Pacemakers also can monitor and record your heart's electrical activity and heart rhythm. Newer pacemakers can monitor your blood temperature, breathing rate, and other factors. They also can adjust your heart rate to changes in your activity.

Pacemakers can be temporary or permanent. Temporary pacemakers are used to treat short-term heart problems, such as a slow heartbeat that's caused by a heart attack, heart surgery, or an overdose of medicine.
Temporary pacemakers also are used during emergencies. They might be used until your doctor can implant a permanent pacemaker or until a temporary condition goes away. If you have a temporary pacemaker, you'll stay in a hospital as long as the device is in place.

Permanent pacemakers are used to control long-term heart rhythm problems. This article mainly discusses permanent pacemakers, unless stated otherwise.

**Who Needs a Pacemaker?**
Doctors recommend pacemakers for many reasons. The most common reasons are bradycardia and heart block.

Bradycardia is a heartbeat that is slower than normal. Heart block is a disorder that occurs if an electrical signal is slowed or disrupted as it moves through the heart.

Heart block can happen as a result of aging, damage to the heart from a heart attack, or other conditions that disrupt the heart's electrical activity. Some nerve and muscle disorders also can cause heart block, including muscular dystrophy.

Your doctor also may recommend a pacemaker if:

- Aging or heart disease damages your sinus node's ability to set the correct pace for your heartbeat. Such damage can cause slower than normal heartbeats or long pauses between heartbeats. The damage also can cause your heart to switch between slow and fast rhythms. This condition is called sick sinus syndrome.
- You've had a medical procedure to treat an arrhythmia called atrial fibrillation. A pacemaker can help regulate your heartbeat after the procedure.
- You need to take certain heart medicines, such as beta blockers. These medicines can slow your heartbeat too much.
- You faint or have other symptoms of a slow heartbeat. For example, this may happen if the main artery in your neck that supplies your brain with blood is sensitive to pressure. Just quickly turning your neck can cause your heart to beat slower than normal. As a result, your brain might not get enough blood flow, causing you to feel faint or collapse.
- You have heart muscle problems that cause electrical signals to travel too slowly through your heart muscle. Your pacemaker may provide cardiac resynchronization therapy (CRT) for this problem. CRT devices coordinate electrical signaling between the heart's lower chambers.
- You have long QT syndrome, which puts you at risk for dangerous arrhythmias.

Before recommending a pacemaker, your doctor will consider any arrhythmia symptoms you have, such as dizziness, unexplained fainting, or shortness of breath. He or she also will consider whether you have a history of heart disease, what medicines you're currently taking, and the results of heart tests.

**What to Expect During Pacemaker Surgery**
Placing a pacemaker requires minor surgery. The surgery usually is done in a hospital or special heart treatment laboratory.

Before the surgery, an intravenous (IV) line will be inserted into one of your veins. You will receive medicine through the IV line to help you relax. The medicine also might make you sleepy.

Your doctor will numb the area where he or she will put the pacemaker so you don't feel any pain. Your doctor also may give you antibiotics to prevent infection.

First, your doctor will insert a needle into a large vein, usually near the shoulder opposite your dominant hand. Your doctor will then use the needle to thread the pacemaker wires into the vein and to correctly place them in your heart.
An x-ray "movie" of the wires as they pass through your vein and into your heart will help your doctor place them. Once the wires are in place, your doctor will make a small cut into the skin of your chest or abdomen. He or she will slip the pacemaker’s small metal box through the cut, place it just under your skin, and connect it to the wires that lead to your heart. The box contains the pacemaker's battery and generator.

Once the pacemaker is in place, your doctor will test it to make sure it works properly. He or she will then sew up the cut. The entire surgery takes a few hours.

What to Expect After Pacemaker Surgery
Expect to stay in the hospital overnight so your health care team can check your heartbeat and make sure your pacemaker is working well. You'll likely have to arrange for a ride to and from the hospital because your doctor may not want you to drive yourself.

For a few days to weeks after surgery, you may have pain, swelling, or tenderness in the area where your pacemaker was placed. The pain usually is mild; over-the-counter medicines often can relieve it. Talk to your doctor before taking any pain medicines.

Your doctor may ask you to avoid vigorous activities and heavy lifting for about a month after pacemaker surgery. Most people return to their normal activities within a few days of having the surgery.

PRE-OPERATIVE INSTRUCTIONS (GENERAL)
These are general pre-operative instructions that apply to most procedures. If you have other specific questions about your surgery related to pre-operative preparations, please contact your surgeon.

1. Pre-op interviews are conducted by the facility where your surgery will occur. Some are conducted over the phone, while others require a visit with the anesthesiologist.
2. If you take daily medications, check with the anesthesiologist about what to do the morning of your surgery regarding your medication.
3. DO NOT EAT OR DRINK ANYTHING AFTER MIDNIGHT UNLESS OTHERWISE DIRECTED BY THE ANESTHESIOLOGIST.
4. Many times your surgeon will request pre-operative lab to be drawn. This will be done at the facility during the pre-op visit or at an outside lab. This lab should be done in a timely fashion so that results will be available before the operation.
5. In most cases you should stop taking aspirin or NSAID's such as Advil, Motrin, or Aleve at least 7 days prior to surgery. If you are taking these medications, ask your surgeon for specific instructions.
6. Be sure to inform your surgeon as soon as possible if you are on Coumadin (Warfarin), Plavix, Lovenox, or other prescription blood thinning medications. Stopping these medications should only occur at the direction of a physician. In some cases substitute medications will be used around the time of surgery.
7. If you are having colon surgery, or you surgeon instructed you to take a bowel prep prior to your surgery, click here for bowel prep instructions.
8. Arrive at the facility 1½ hours prior to your scheduled surgery time unless otherwise instructed. Late arrivals may cause your surgery to be delayed or cancelled.
9. Be aware that your surgery time may change. You will be informed as soon as possible if this is necessary.
10. Bathe or shower the morning of your procedure to reduce the risk of infection.
11. Wear loose comfortable clothes that are easy to take off and put on.
12. Remove all body piercings.
13. Leave all valuables at home including jewelry, watches, money, cell phones, computers, etc.
14. Bring cases for glasses, contact lenses, hearing aids, and dentures.
15. If you are scheduled for outpatient surgery, arrange for a responsible adult to drive you home. It is also a good idea to have a responsible adult stay with you for the first 24 hours after surgery.