

Laparoscopic and Minimally Invasive Treatment for Heartburn (GERD)

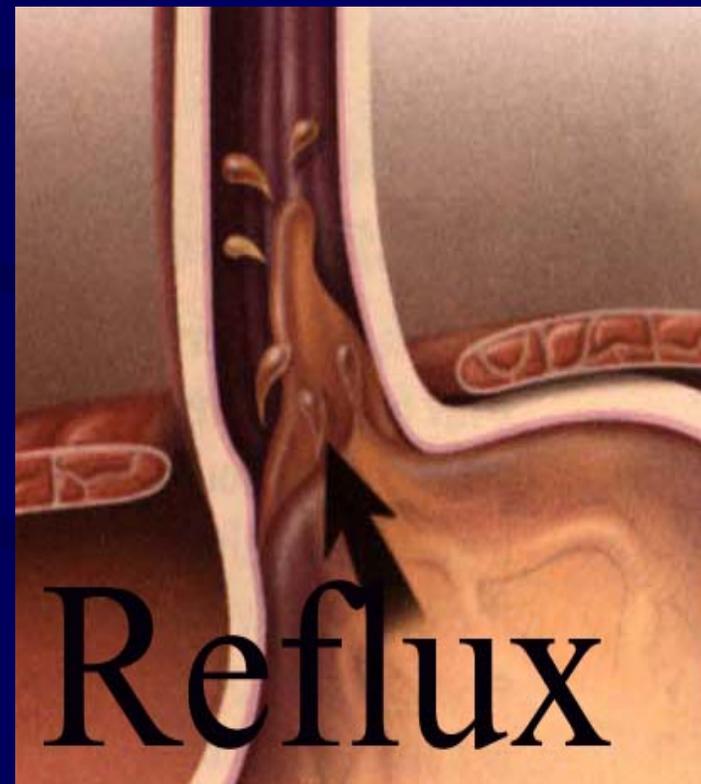
A Simple Guide to Help Answer Your Questions.





What is GERD?

- Gastroesophageal reflux disease (GERD): is a term used to collectively describe the problems and symptoms that occur when acid from the stomach washes up into the esophagus (food tube which brings food from the mouth to the stomach). This can lead to inflammation and irritation of the lining of the esophagus as well as causing the typical symptoms that are generally associated with GERD or acid reflux.
- Alternate names: reflux, acid reflux, reflux esophagitis, acid regurgitation, and heartburn.





What are the Symptoms of GERD?

- GERD encompasses a wide range of symptoms which include:
 - Heartburn** – burning or tightness behind the breastbone or at the top of the belly
 - Acid regurgitation** – sour or bitter taste in the throat or mouth
 - Water brash** – a hot sensation in the stomach followed by a large amount of watery liquid in the mouth
 - Dysphagia** - difficulty swallowing or painful swallowing. The sensation of a lump in the throat or food getting “stuck” after swallowing
 - Asthma, laryngitis** and **chronic cough** are unusual symptoms, but can be caused by GERD



What are the Symptoms of GERD?

- Symptoms typically occur after eating a meal and can be especially noticeable with a large meal or spicy foods.
- Symptoms may be relieved by antacids.
- Symptoms often are worse when lying flat, straining or sleeping.



What can worsen the symptoms of GERD?

- Fatty foods, chocolate, coffee, peppermint as well as alcohol and use of tobacco products can cause or worsen symptoms.
- Certain drugs such as Theophylline, Albuterol, and Calcium channel blockers can also cause symptoms of GERD.



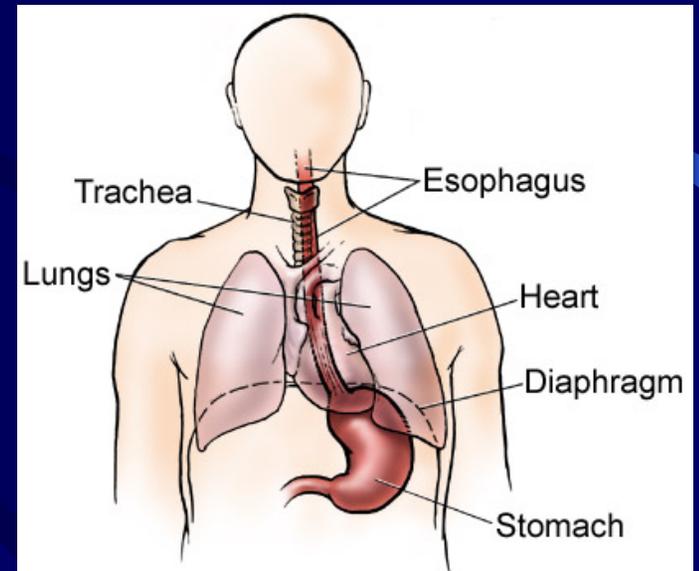
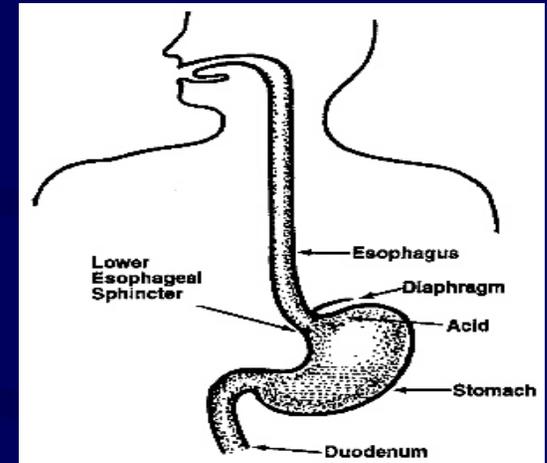
Are any other problems or diseases associated with GERD?

- Pregnancy is the most common condition associated with GERD. The pressure of the fetus on the stomach can increase the amount of acid “splashing” up into the esophagus
- Diseases characterized by high stomach acid production as well as connective tissue disorders (i.e. scleroderma) are also frequently associated with GERD.
- Obesity which causes an increase in abdominal pressure is also thought to contribute to and worsen acid reflux.



Anatomy

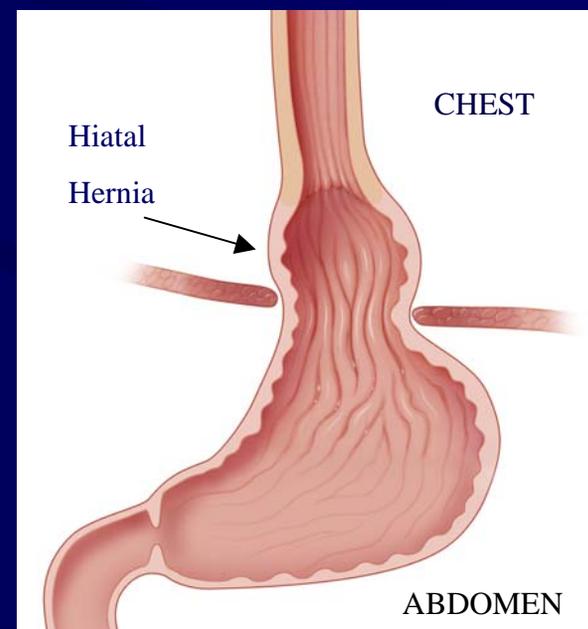
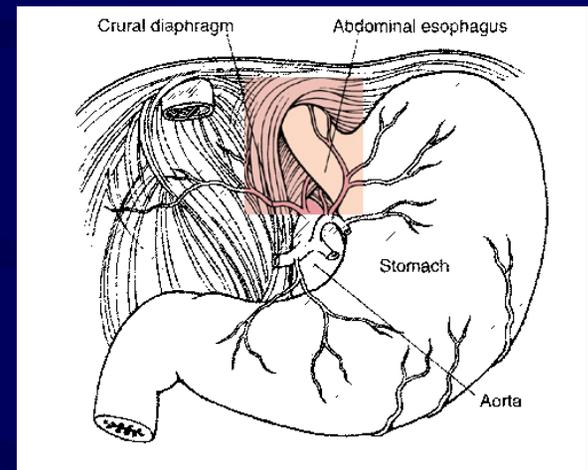
- **Esophagus** – tube which brings food from the mouth to the stomach
- **Stomach** – holds food and produces acid to help with digestion. Breaks up food into small pieces to prepare it for the small intestine where digestion takes place.
- **Duodenum** – receives food from stomach. Enzymes from the pancreas and bile from the liver mix with the food to break it down into nutrients that can be absorbed.





Anatomy

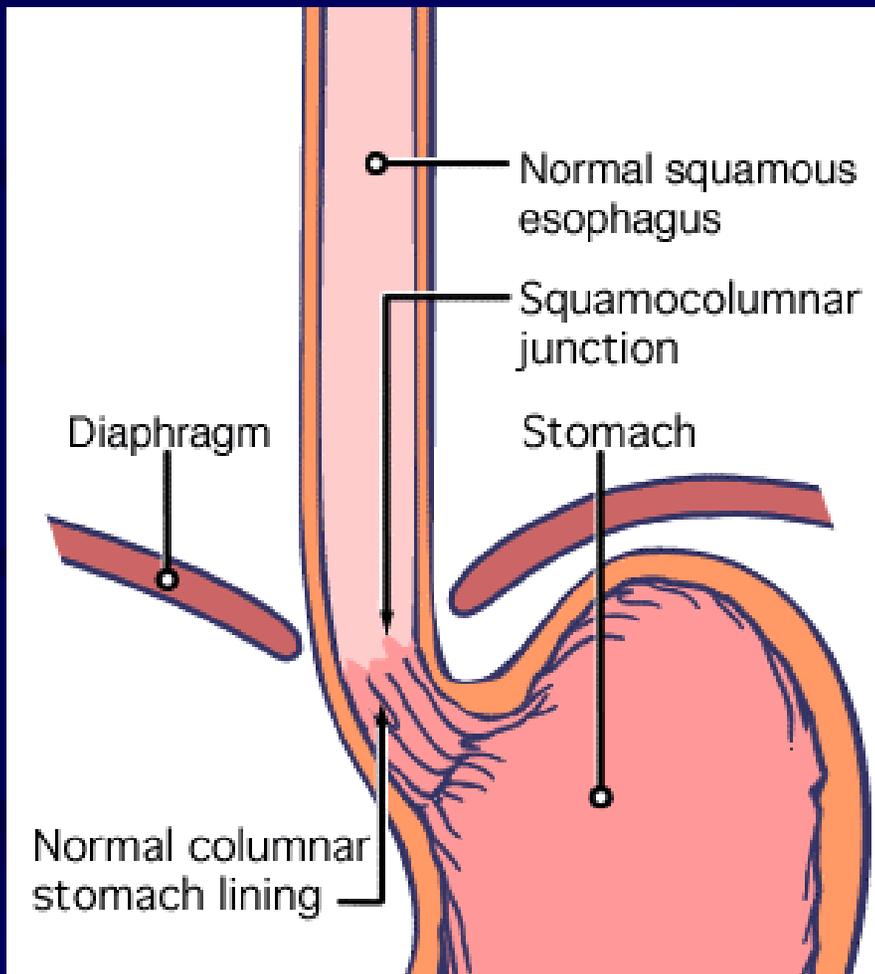
- **Hiatus of Diaphragm (colored area)** – where the esophagus passes through the diaphragm to connect with the stomach. Muscular fibers of the diaphragm wrap around the esophagus as it passes into the abdomen. When this area is too loose or lax, the stomach can “slip” or “slide” through up into the chest. This creates a pressure differential which allows stomach acid to freely wash up into the esophagus. This condition is known as a hiatal hernia.





Anatomy

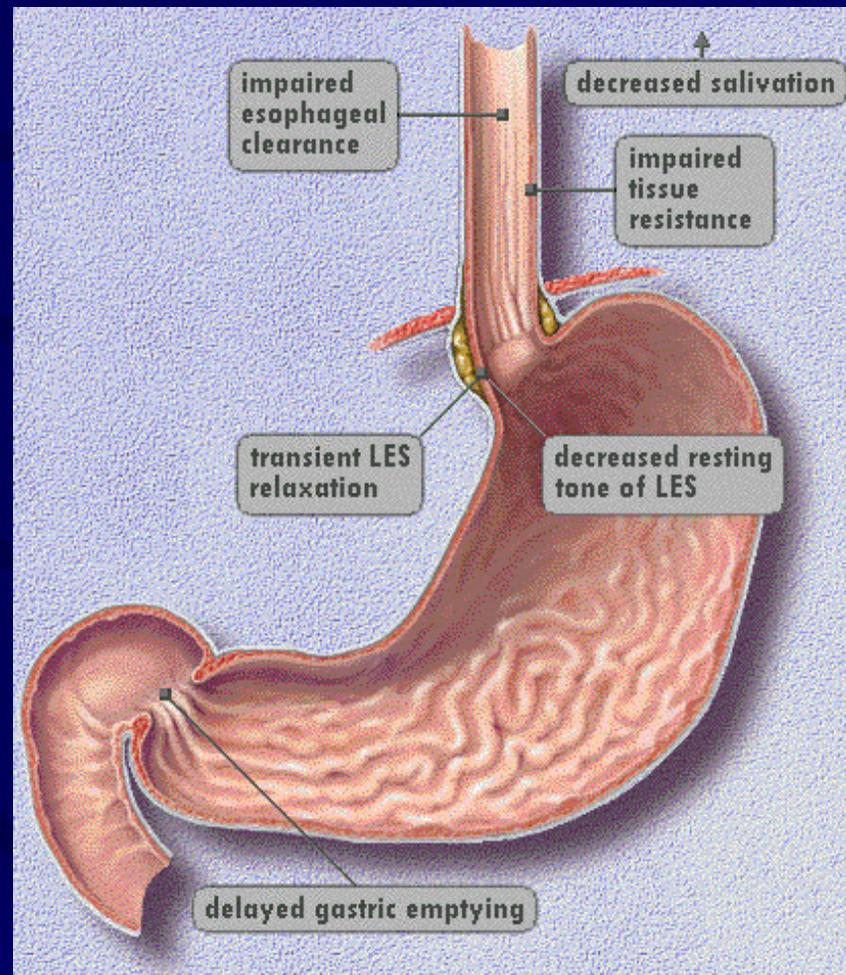
Normal inner anatomy of esophagus and stomach – normally, the lining of the esophagus and stomach are made of different types of cells. The cells which line the esophagus are not as resistant to acid as the cells which line the stomach. There is normally a sphincter muscle (a “gate”) between the esophagus and stomach called the LES (lower esophageal sphincter) which serves as a barrier and protects the esophagus from acid.





What actually causes GERD

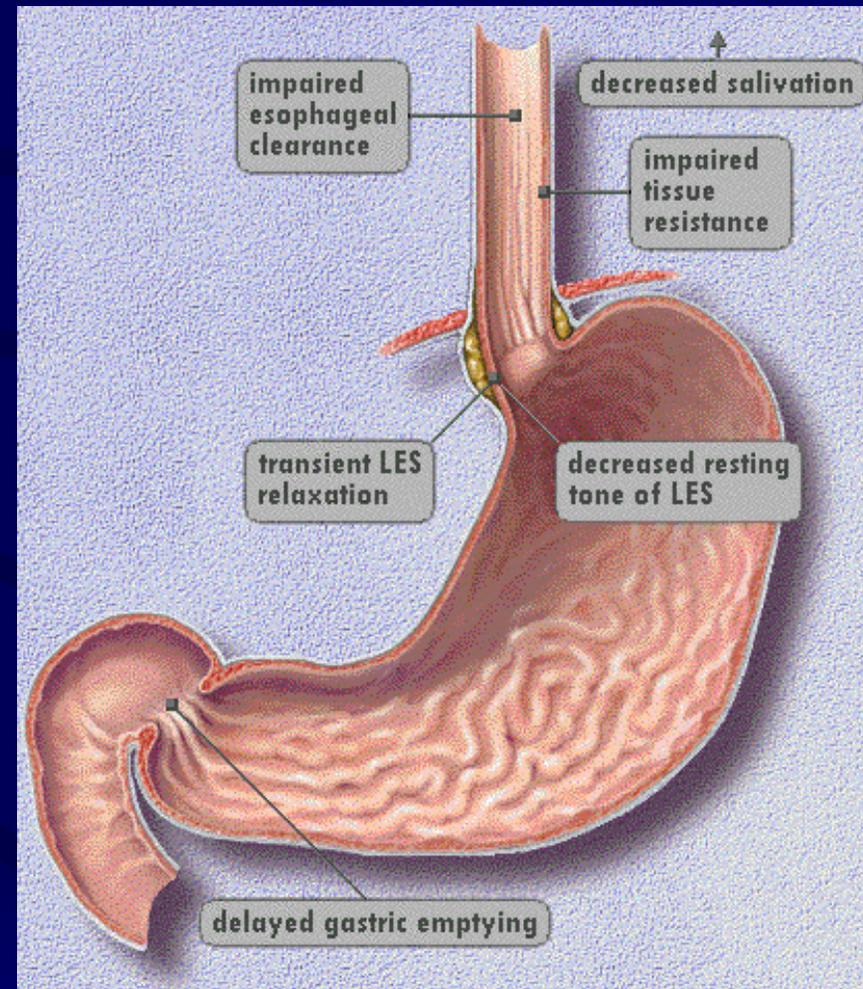
- A complex interaction of many problems can cause reflux:
 - Esophageal Dysmotility - weak or uncoordinated esophageal contractions (movement)
 - Inadequate saliva production – seen in smokers, in certain diseases and normally seen during sleep. Saliva normally “buffers” any acid which is found in the esophagus.





What actually causes GERD?

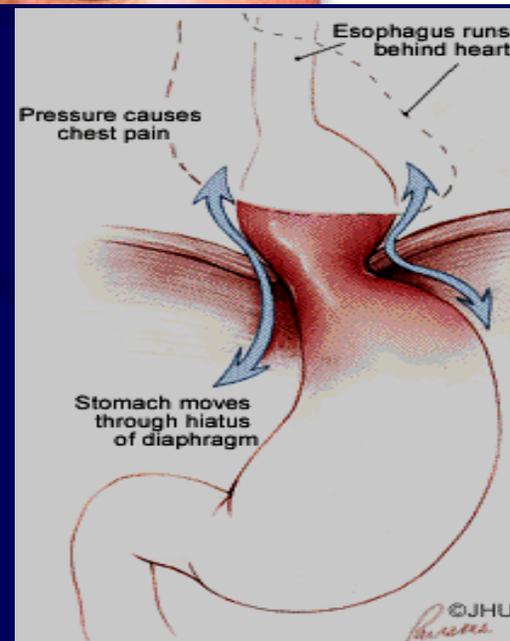
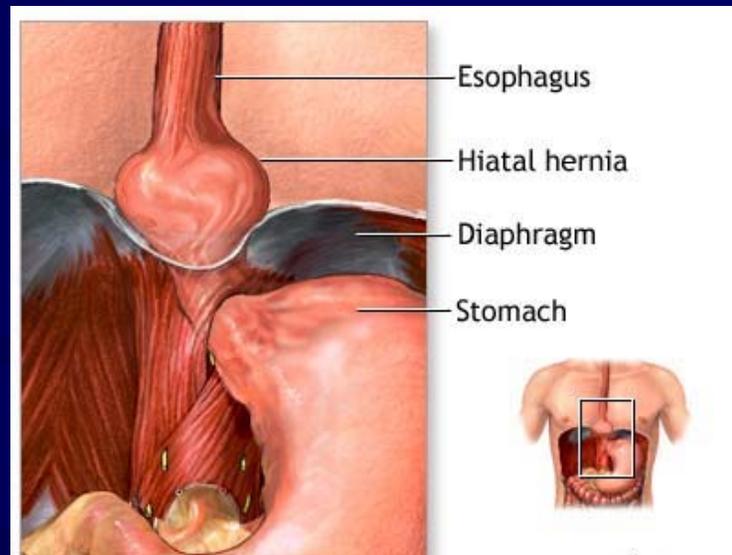
- **Impaired resistance of esophageal lining** defective protection of the esophagus against acid by the cells which make up the lining of the esophagus
- **LES dysfunction** – poorly functioning sphincter muscle (gate between stomach and esophagus) allowing acid to wash up into the esophagus
- **Delayed emptying of the stomach** – poor motor function of the stomach (not draining into the intestine) allowing acid to “pool” in the stomach.





What actually causes GERD?

- **Hiatal hernia** – allows acid to wash up into the esophagus due to pressure differences between the abdomen and chest.
- **Loose hiatus muscle fibers** causes reflux even without a hiatal hernia.

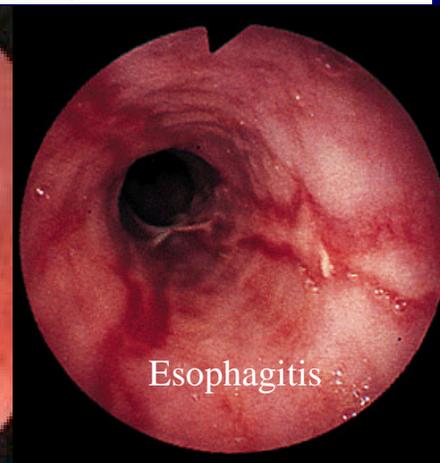
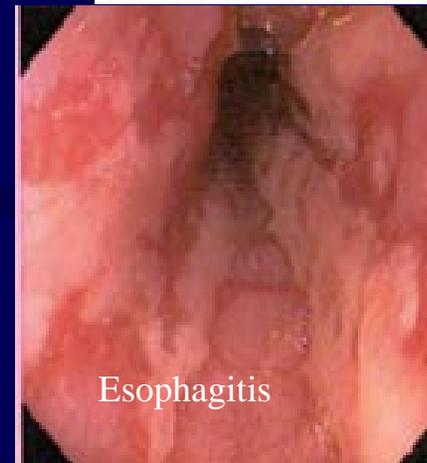
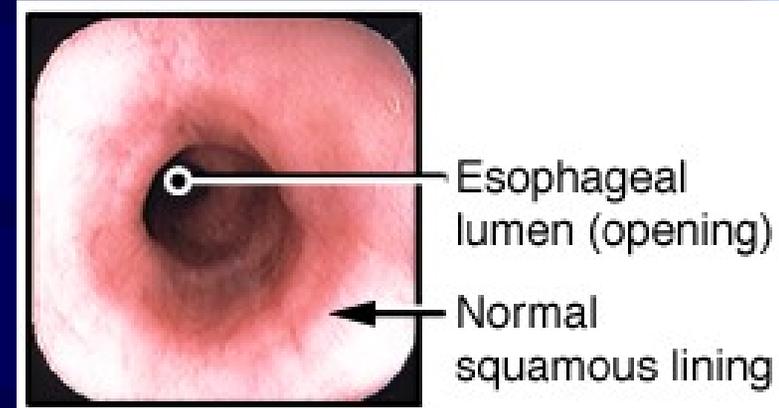




What kind of problems does GERD cause in the Esophagus?

- **Reflux esophagitis**

- Injury and inflammation of the inner lining of the esophagus from prolonged exposure to acid and digestive enzymes.
- This produces pain as well as sometimes painful swallowing (known as “dysphagia”)





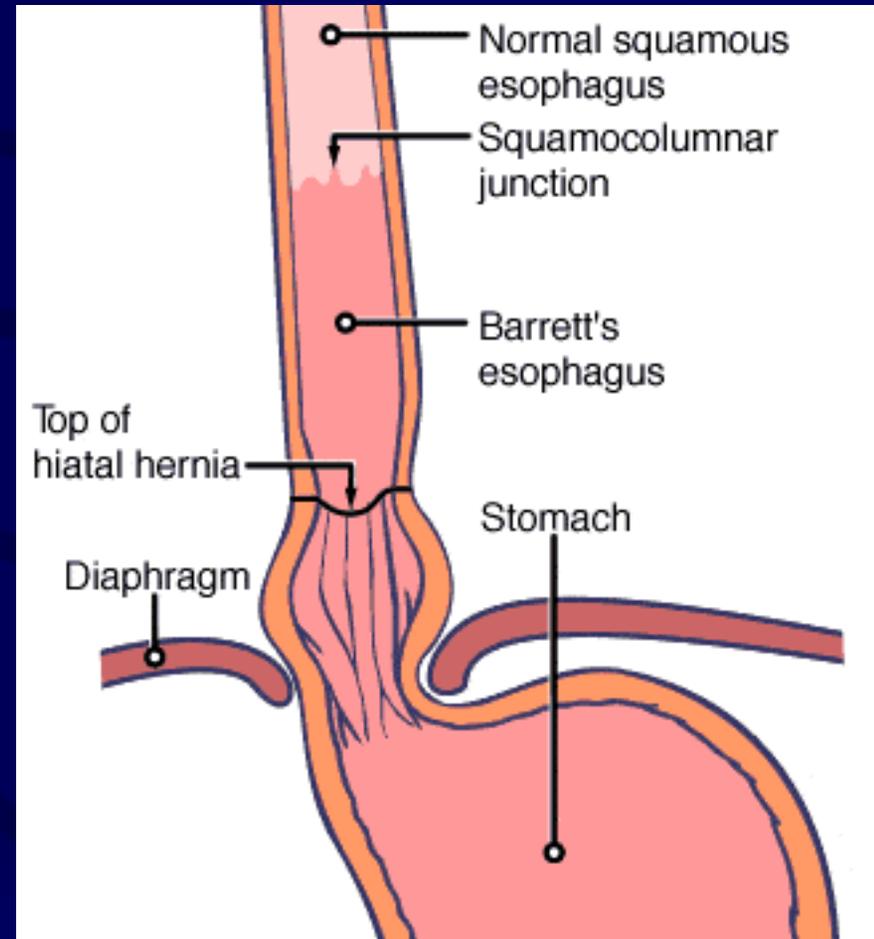
What kind of problems does GERD cause to the Esophagus?

- **Reflux esophagitis can progress to complications:**
 - Long-standing inflammation and scarring can progress to **Barrett's esophagus** which is a premalignant condition.
 - Severe scarring and narrowing of the esophagus can occur called **strictures**. These can cause food to become “stuck” or can cause pain when swallowing.
 - Advanced cases can lead to outpouchings of the walls of the esophagus called **a diverticula**.



What kind of problems does GERD cause to the Esophagus?

- **Barrett's Esophagus**
 - This is the replacement of the cells lining the esophagus with cells more typical of the stomach or intestines (metaplasia) due to the long-term damage caused by GERD and acid.
 - Occurs in approx 10% of patients with GERD.

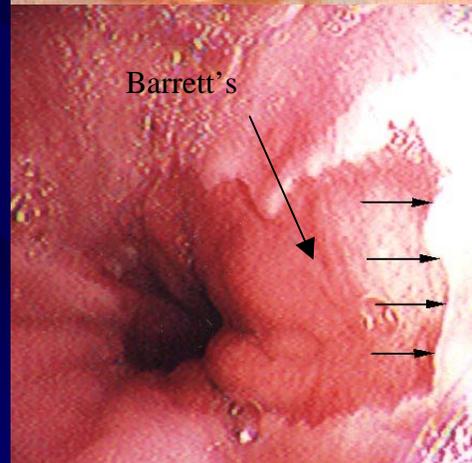
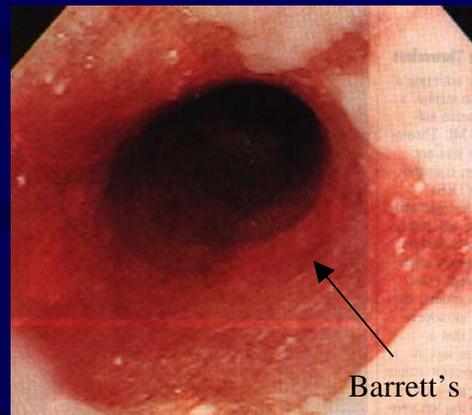




Effects of GERD on the Esophagus

- **Barrett's esophagus**

- Represents one of the more serious complications of GERD. It is a precancerous condition associated with cancer of the esophagus. It is thought to be caused by ongoing injury, inflammation and damage to the lining of the esophagus.





How many people suffer from GERD?

- It is one of the most common conditions affecting the gastrointestinal system.
- Anywhere from 36-77% of people have symptoms of GERD (heartburn, regurgitation of acid etc.) spread equally between men and women.
 - 7% have daily heartburn
 - 14-20% have weekly heartburn
 - 15-50% have monthly heartburn



Can children get GERD?

- Yes. Children and even infants can have GERD, particularly those with neurodevelopmental disorders (such as cerebral palsy). As many as 80 or 90% of children with these problems can have some degree of chronic GERD.



How do you get GERD?

- GERD is a problem which has many inciting factors such as diet, smoking, obesity, alcohol, pregnancy, the presence of a hiatal hernia, as well as some other diseases affecting the gastrointestinal system. These all contribute to the onset and severity of GERD however no one single factor that has been identified as the “cause” of this disease.



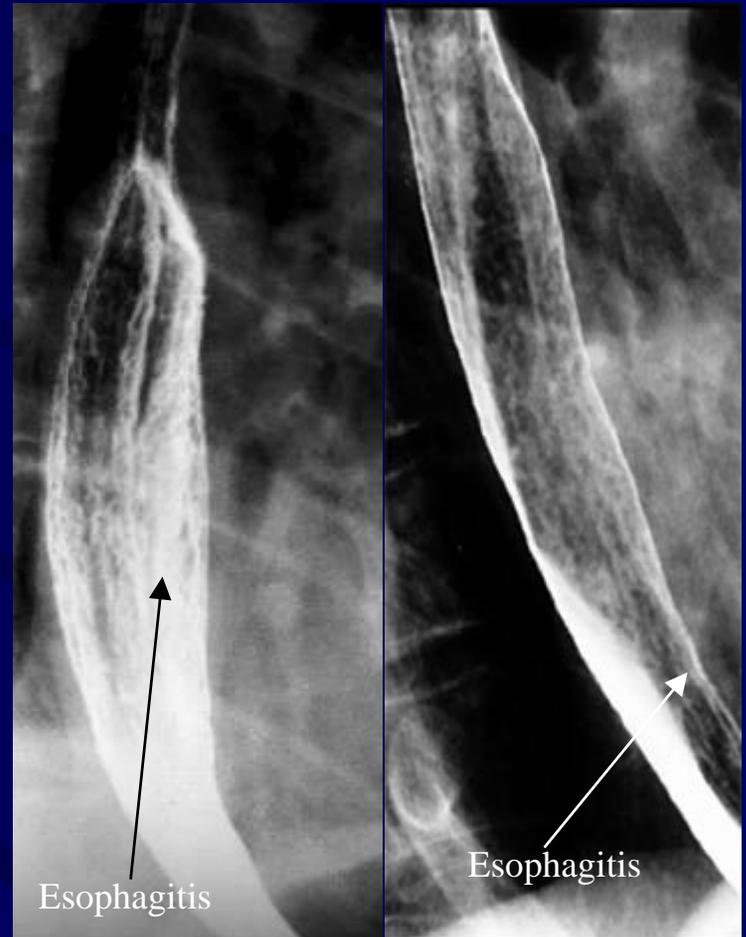
How do I know if I have GERD?

- The presence of frequent or recurrent symptoms should be evaluated by your doctor.
- Most often the diagnosis of GERD is based on the presence of these symptoms and their improvement with antacid medications. In some instances - such as symptoms that are vague, unusual, or long standing - your doctor may decide to perform other tests to help in the diagnosis.



Diagnostic Tests

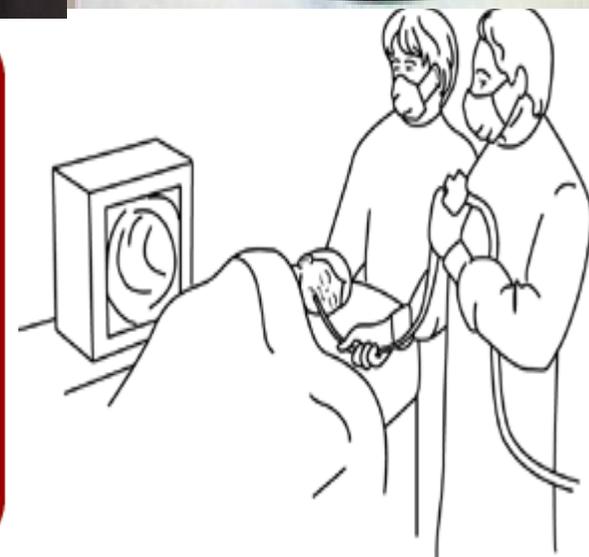
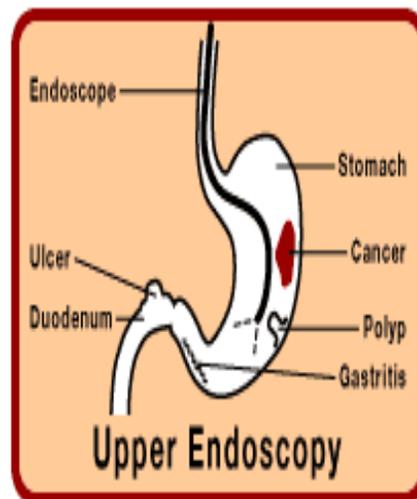
- **Barium swallow**
 - This is a special x-ray exam of the stomach and esophagus. It requires that you drink a chalky substance that coats the lining and produces a very detailed pictures of the inner lining of the esophagus and stomach.





Diagnostic Tests

- **Upper endoscopy**
 - The most commonly used test to evaluate the esophagus and stomach.
 - This is a test that requires mild sedation (medication to make you comfortable) to perform. It is the most accurate way to evaluate damage to or inflammation of the upper gastrointestinal tract.
 - A flexible scope with a camera and light on the end is placed through the mouth and guided into the esophagus, stomach, and small intestine.

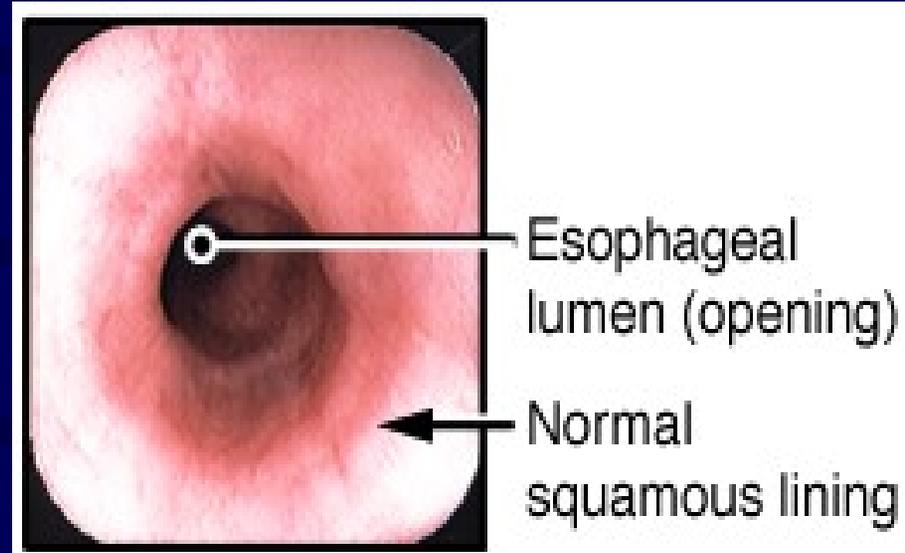




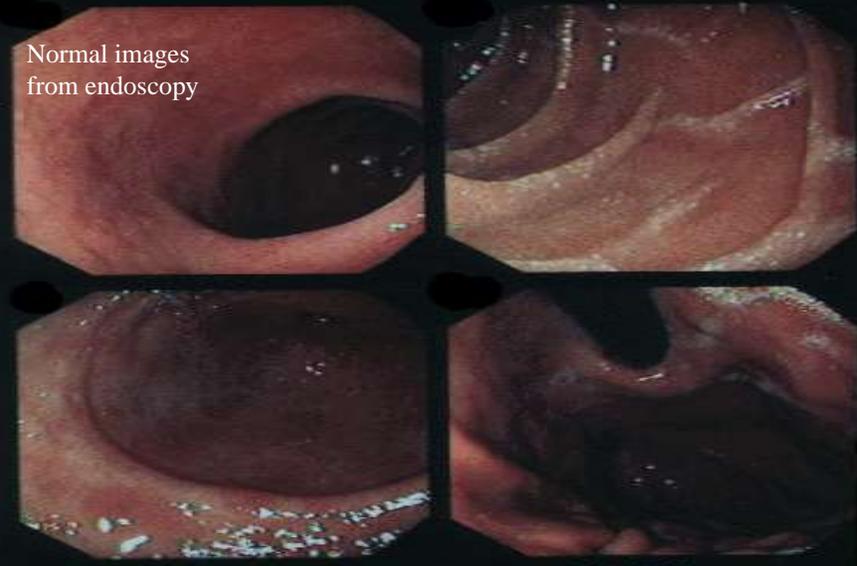
Diagnostic Tests

- **Upper endoscopy**

- The scope and camera allow for clear and detailed viewing of the lining of the esophagus and stomach as well as the ability to take small biopsies to examine the cells if irregularities are noted.



Normal images
from endoscopy

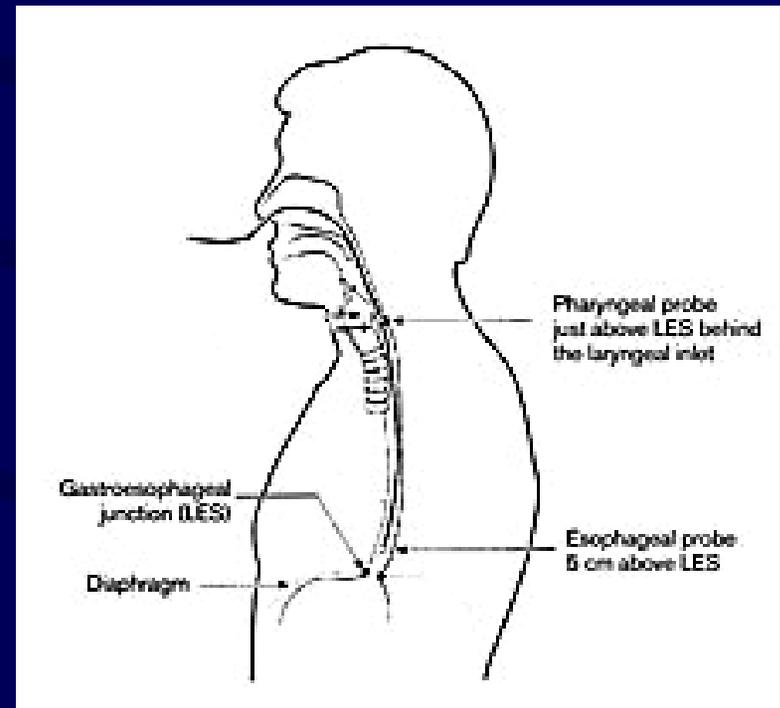




Diagnostic Tests

- **24-hr pH Monitoring**

- Registers the amount and frequency of acid in the esophagus and allows correlation with symptoms such as heartburn and pain. A probe is placed into the esophagus which records the acid level in both the esophagus and stomach for a full 24 hours.
- This is the most accurate method of detecting reflux and GERD.

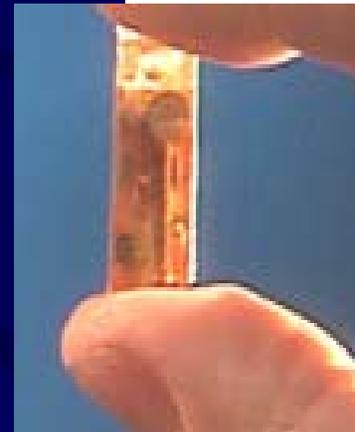
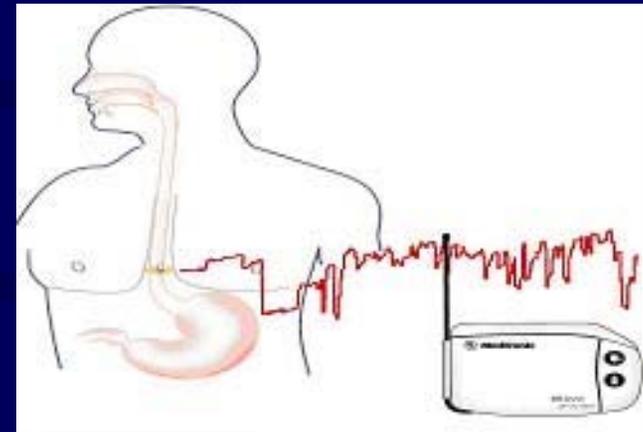




Diagnostic Tests

- 24-hr pH Monitoring

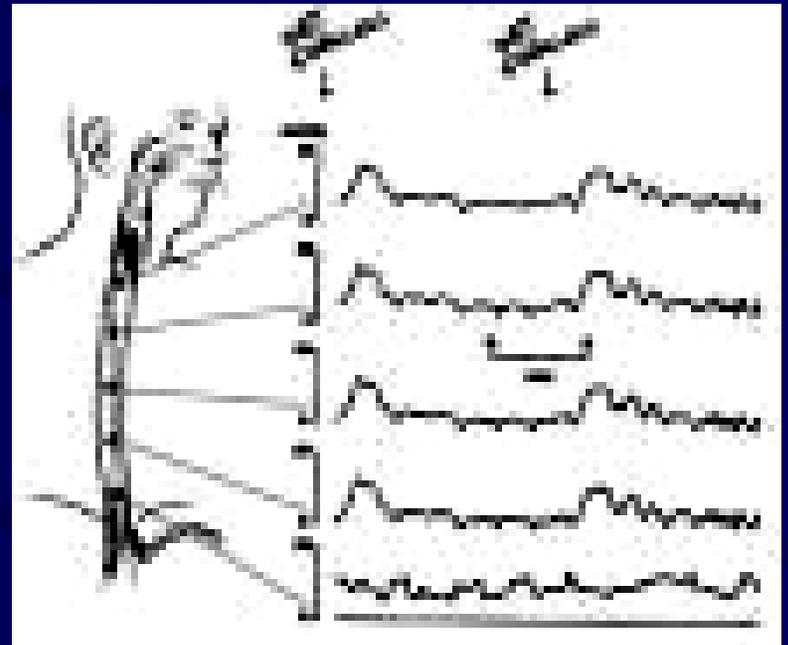
- Newer systems now allow 24-hr monitoring of esophageal acid without the need for an uncomfortable and unsightly nasal probe.





Diagnostic Tests

- **Esophageal Manometry**
 - Measures the motor activity (movement) of the esophagus and the sphincter pressure via a probe placed into the esophagus.
 - Usually used in patients who are considering surgery to treat their GERD.





When should I be treated for GERD?

- GERD should be treated when the frequency and intensity of one's symptoms begins to have an effect on quality of life.
- Long-standing reflux may cause an increase risk of esophageal cancer, and therefore people with chronic symptoms should probably be treated.
- Long-standing reflux may also lead to complications such as strictures or bleeding and therefore those with frequent or recurring symptoms should be treated



How is GERD treated?

- **Mild and infrequent symptoms**
 - Nonprescription therapy is often enough
 - Avoiding foods that induce reflux (coffee, fat, etc.)
 - Avoid eating close to bedtime, and lying down after meals
 - Elimination of smoking
 - Reduction/elimination of alcohol
 - Elevation of the head of the bed
 - Weight loss
 - Over-the-counter antacids as needed



Treatment

- Severe or frequent symptoms and in patients with esophagitis
 - Prescription therapy is almost always necessary in patients who have severe or frequent symptoms. It is important to see your doctor so that he/she can diagnose and treat you and this problem appropriately. Initially, drugs such as Zantac, Pepcid, Tagamet or Axid may be used to treat the symptoms of GERD. In addition to these drugs, the lifestyle changes that are noted in the last slide are also important to implement.
 - If the above mentioned drugs don't relieve the symptoms, then a proton pump inhibitor (PPI) such as Prilosec, Protonix, Nexium, Aciphex, or Prevacid will most likely be used.
 - Anyone taking over the counter antacid medication for more than 2 months should always see their doctor to make sure their symptoms are not being caused by something more serious.



What should I know about PPIs?

- Proton pump inhibitors are a group of drugs that are the most effective at stopping acid production in the stomach and relieving the symptoms of GERD.
- They function by actually blocking the production of acid in the stomach.
- They are safe, and generally well tolerated.
- Unfortunately, they are expensive and usually will require an increase in their dosage the longer they are taken.



Treatment

- Those individuals who after maximizing their medical (non-surgical) treatment for GERD and experience the following problems should consider surgical or interventional treatment for their reflux disease:
 - Incomplete relief of their symptoms
 - Development of a stricture or esophageal narrowing
 - Barrett's Esophagus
 - Relapse of their symptoms after discontinuing medical treatment (after at least 8 weeks of medication)
 - Intolerable side effects from the GERD medication



Do I have to take the medicines for life?

- That depends on a number of variables - the frequency and severity of your reflux (GERD) symptoms, whether you have any complicating conditions (esophagitis, Barrett's), and whether you *desire* to take daily medications for the remainder of your life.
- For most patients with frequent symptoms or with severe symptoms, discontinuing the use of antacid medications will cause the reflux symptoms and GERD to return.



What if my symptoms persist?

- Persistent symptoms while on medication **mandates that you be seen and evaluated by your doctor.**
- Additional testing may be needed to confirm the diagnosis and exclude complications of GERD (such as stricture or Barrett's), or a more serious problem.



Do I have options other than taking long-term medications?

- Surgery to improve or prevent GERD has shown excellent results in experienced hands.
- Patients with GERD that is not well controlled with medicine alone, complicated GERD (severe esophagitis, Barrett's or strictures), the presence of a hiatal hernia and patients who are young and face life long medication use are considered good candidates for anti-reflux surgery.
- The surgery to fix GERD and reflux is known as a Fundoplication



What are my options other than medicines?

There are also some new endoluminal treatments (those that are done using a flexible scope through the mouth) for GERD. Procedures such as Stretta, EndoCinch, Enteryx, and the Plicator are approved by the FDA, and initially have shown encouraging results. Because they are new, the long-term results are unclear at this time.



What are my options other than medicines?

At this time, the most clinically effective and proven treatment for severe or complicated GERD is Fundoplication surgery. This procedure has been performed for more than 30 years by gastrointestinal surgeons. Recently, innovative surgical techniques have allowed surgeons to perform this operation using laparoscopic techniques (use of very small incisions, special instruments, and a video camera).



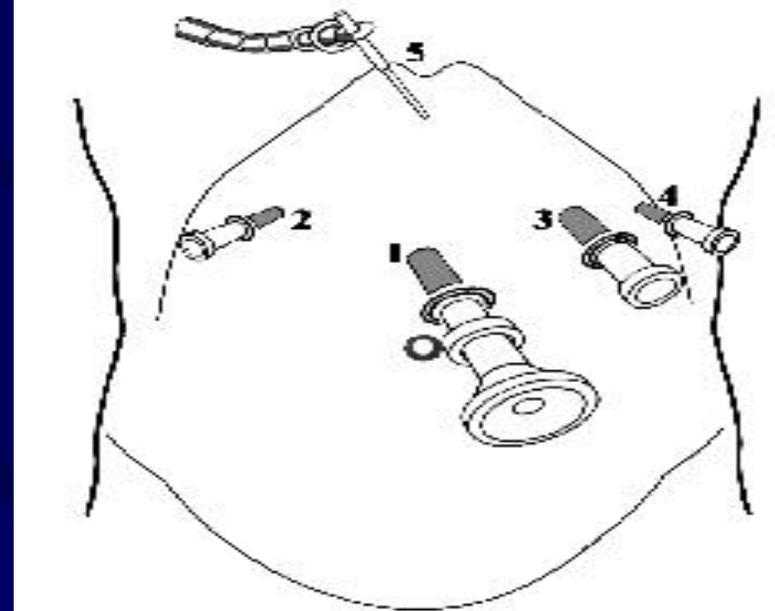
What is a Laparoscopic Fundoplication?

- A **Laparoscopic fundoplication** is a surgical procedure in which a portion of the stomach (the fundus) is used to wrap around the lower esophagus in order to prevent reflux of gastric acid and fluid into the esophagus. It is performed through 4-5 very small incisions (<1/2 inch) allowing a rapid recovery, minimal time in the hospital (<24 hours usually), and very little pain and scarring.



Laparoscopic Fundoplication

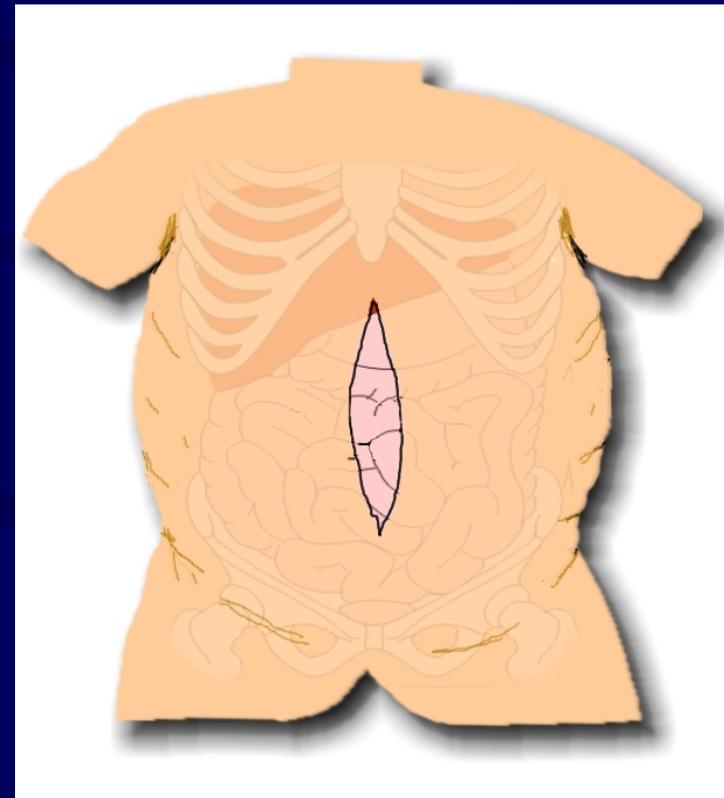
- **Laparoscopic fundoplication** is performed using a telescopic camera, a TV monitor and 5, 1/2 inch incisions. Small instruments are placed through the incisions allowing surgeons to complete the surgery. Most patients are able to leave the hospital the day after their surgery is performed.





Open Fundoplication

Even though both the open and laparoscopic procedures make the same internal changes, the open approach to this operation requires a much larger incision than the laparoscopic approach. This translates to a longer hospital stay, more discomfort and a longer recuperation period.





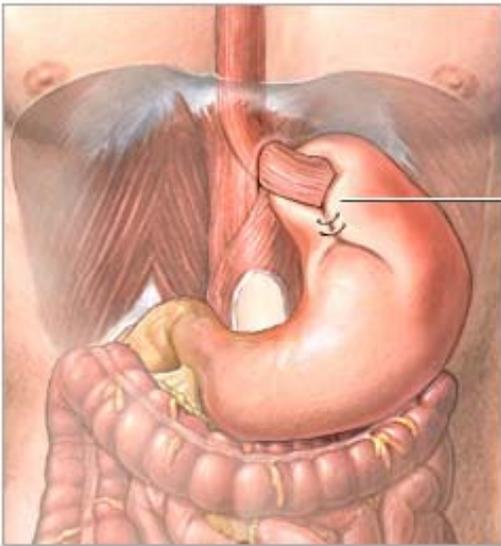
What is a laparoscopic fundoplication?

The two most commonly performed types of Fundoplication are –

1. **The Nissen Fundoplication** – a complete (360°) wrap of the stomach around the esophagus
2. **The Toupet Fundoplication** – an incomplete (270°) wrap of the stomach around the esophagus

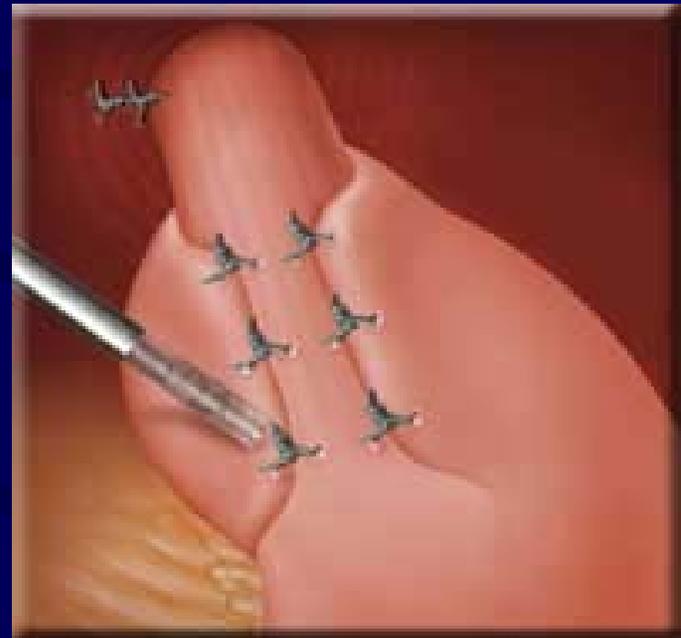


What is a laparoscopic fundoplication?



Fundoplication

Nissen Fundoplication



Toupet Fundoplication



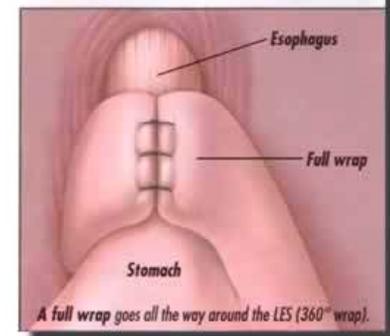
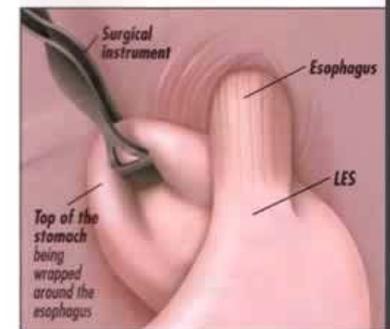
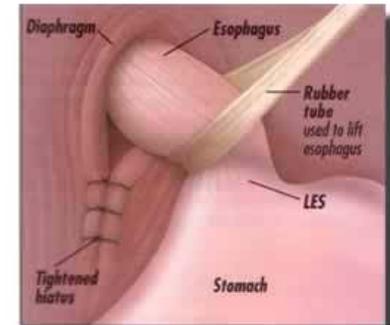
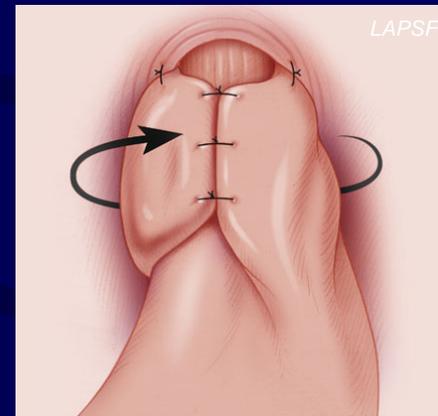
What is a laparoscopic fundoplication?

Your surgeon will decide which one is best for you based on the results of your testing. Most patients will undergo the Nissen Fundoplication because it seems to have the best results in the long-term.



Laparoscopic Fundoplication

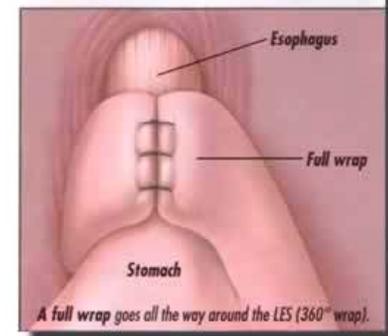
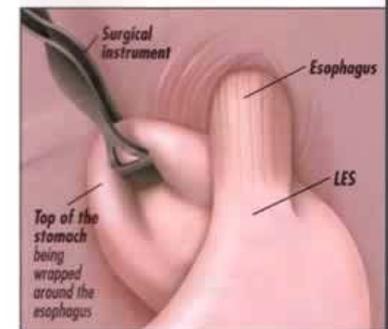
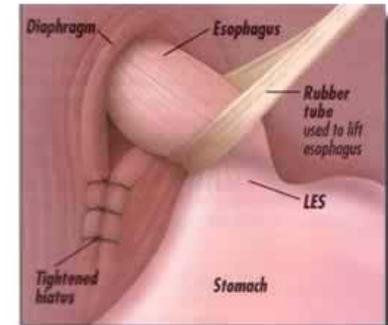
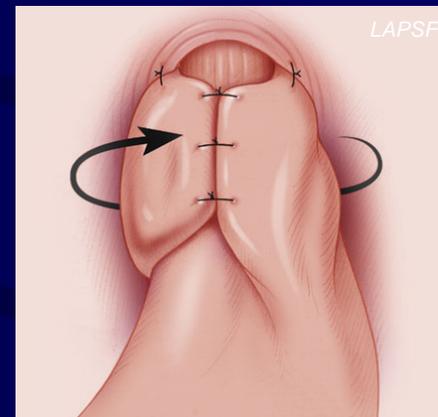
- The top part of the stomach is wrapped around the esophagus which forms a “valve” between the stomach and esophagus. This valve prevents acid from refluxing up into the esophagus, thereby greatly improving or preventing symptoms of GERD.





Laparoscopic Fundoplication

- In addition, the esophageal hiatus is narrowed with stitches and any hiatal hernia is repaired. The operation usually takes less than 2 hours to perform in routine cases.



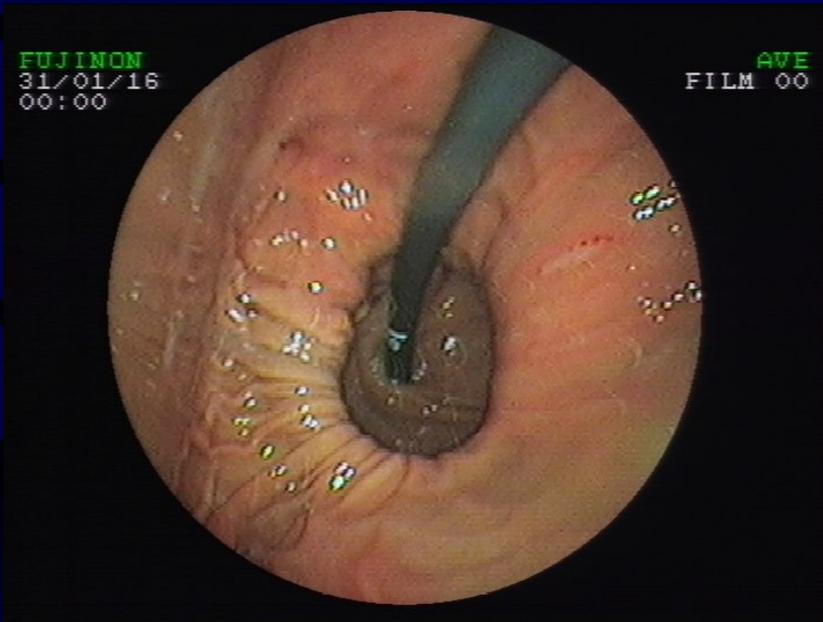


What can I expect from the surgery?

- **Laparoscopic fundoplication** has been shown to provide excellent/good results in more than 90% of properly selected patients with GERD. In addition, recent evidence has shown that the operation can resolve much or all of the damage that has been done to the esophagus by stomach acid from long-standing reflux. Most patients no longer require medication or have reflux symptoms following surgery



What can I expect from the surgery?



Large hiatal hernia seen on upper endoscopy before surgery



Following surgery, the hernia is fixed and there is a “flap valve” of tissue to prevent reflux



Are there any problems that can occur with surgery?

The Laparoscopic fundoplication is a very safe and effective surgery, but all surgery does have some risk. It will be important that you choose a surgeon who has good training and experience with this procedure. Make sure to ask your surgeon how many procedures that he or she has done and what his or her results have been. In the hands of an experienced surgeon, the overall risk of serious complications is less than 2%.



Potential Complications of Surgery

- Injury to an abdominal organ or to the bowel, stomach, or esophagus
- Bleeding
- Failure to completely relieve reflux symptoms
- Difficulty swallowing
- Inability to vomit



Potential Complications of Surgery

- Diarrhea
- Distended, painful stomach
- Injury to the nerve that controls movement of the stomach



What should I do if I am interested in surgery to treat my GERD?

The most important thing is to ask your primary care doctor, gastroenterologist, or family doctor for a referral to a surgeon who is trained and familiar with laparoscopic anti-reflux surgery. You and your surgeon will be able to decide what is best both to treat your symptoms as well as to prevent future problems which can develop with long-standing GERD.



What should I do if I am interested in surgery to treat my GERD?

If you need assistance finding a surgeon who is experienced with this procedure and laparoscopic surgery, please go to the SAGES website where you will find a complete listing of member surgeons in your area who can help you.

[www. SAGES. org](http://www.SAGES.org)