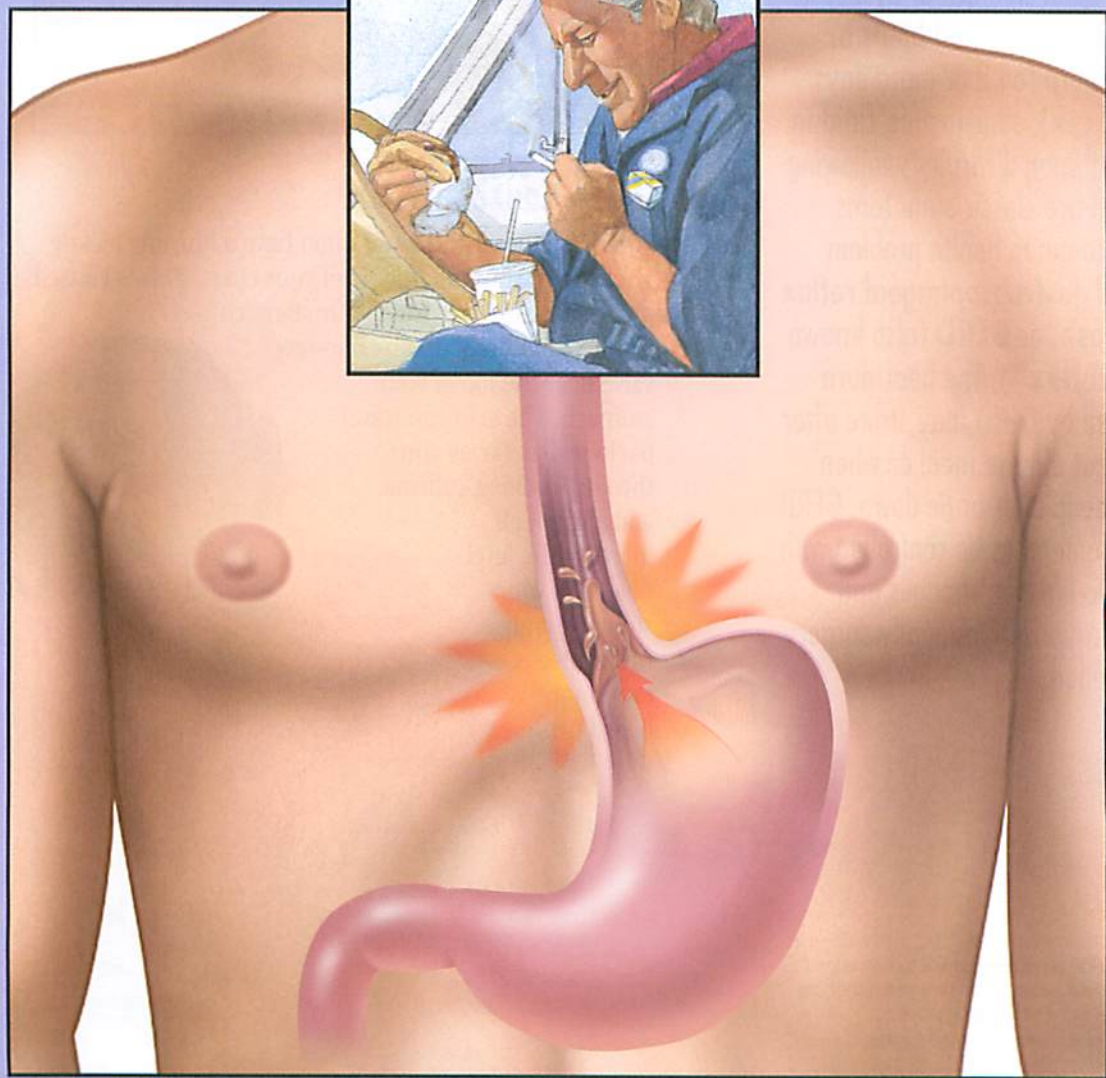


GASTROESOPHAGEAL REFLUX DISEASE (GERD)

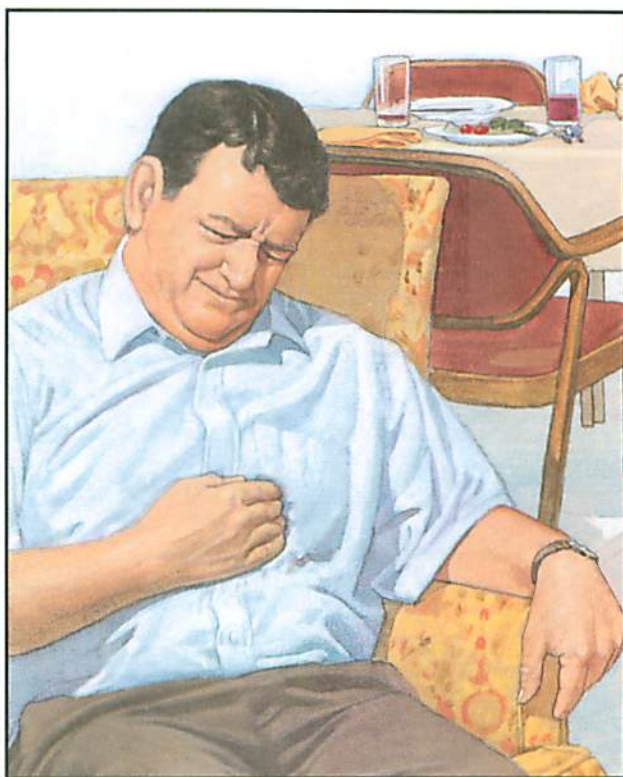
A Look at the Disease and Its Treatment



Heartburn or GERD? A Common Problem

2

Occasional heartburn is common with upset stomach or dyspepsia. However, repeated bouts of heartburn (on 2 or more days per week), sour-tasting fluid in your throat, difficulty swallowing—all are classic symptoms of a common health problem called **gastroesophageal reflux disease**, or **GERD** (also known as “reflux”). The heartburn caused by GERD may strike after you eat a large meal or when you bend over or lie down. GERD can sometimes be controlled with simple lifestyle changes and medication. Occasionally surgery is needed.



What Causes GERD?

When you have GERD, you often have a burning feeling (**heartburn**) in the middle of your chest. This is caused by acid that escapes from your stomach through a malfunctioning one-way valve near the top of your stomach. The acid can travel backward as far as your throat. Smoking, caffeine, and alcohol all increase the level of acid in your stomach and may cause even more heartburn.



This booklet is not intended as a substitute for professional medical care. Only your doctor can diagnose and treat a medical problem.

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Relieving Your Discomfort

You and your doctor can work together to find the treatment options that best relieve your symptoms. These may include lifestyle changes, medication, and possibly surgery.



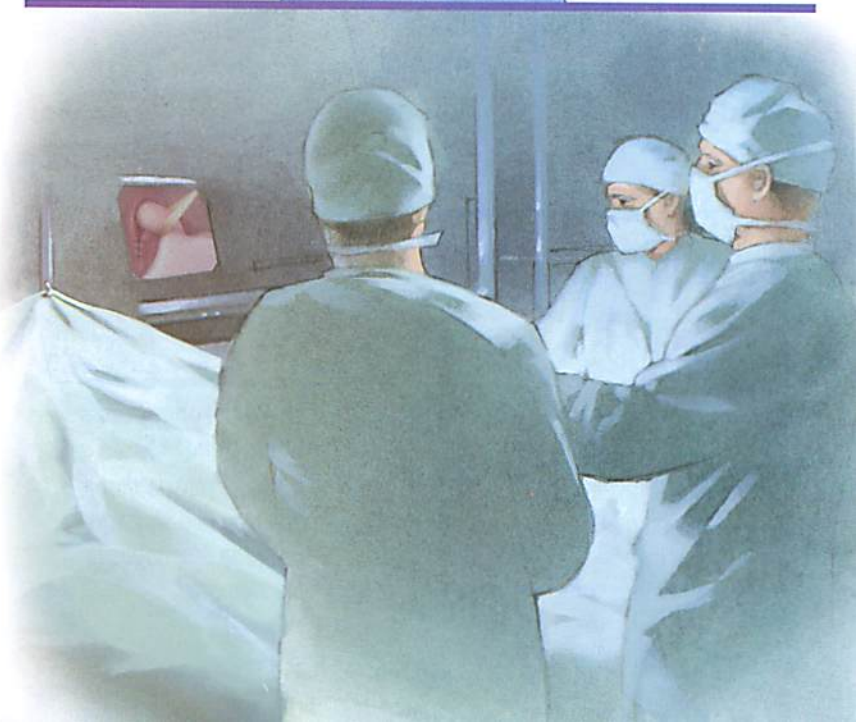
Relief Through Lifestyle Changes and Medication

Raising the head of the bed or avoiding food close to bedtime can ease the discomfort of GERD for people with nighttime symptoms. Taking off any extra pounds can sometimes relieve daytime symptoms. Over-the-counter antacids and acid reducers such as H₂-blockers may also offer relief. If symptoms continue, your doctor may prescribe medications that cut down stomach acid production. Many people need long-term treatment for this chronic condition.



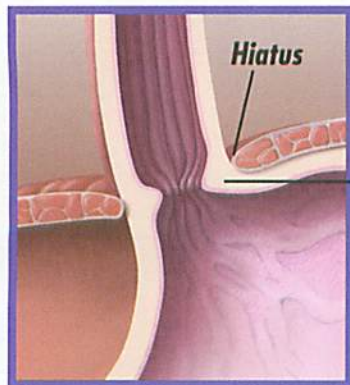
Relief Through Surgery

If other attempts to control your GERD don't offer relief, you may be a candidate for **laparoscopic fundoplication**. The surgery is done using a **laparoscope**, a small telescope that allows the doctor to see clearly into your abdomen. During surgery, the doctor strengthens the one-way valve where the **esophagus** (the tube that food travels through) meets the stomach.



How Food Reaches Your Stomach

4 When you eat, food travels from your mouth down the esophagus to your stomach. Along the way, food passes through a one-way valve called the **lower esophageal sphincter (LES)**, the opening to your stomach. Normally the LES opens when you swallow. It allows food to enter the stomach, then closes quickly. With GERD, the LES doesn't work right. It relaxes without swallowing and allows food and stomach acid to wash back (**reflux**) into the esophagus.



Esophagus

A tube that food travels through to reach the stomach

Diaphragm

A muscle that helps you breathe and that separates the chest and abdomen

Hiatus

An opening in the diaphragm for the esophagus to pass through

Liver

Gallbladder

Spleen

Lower Esophageal Sphincter (LES)

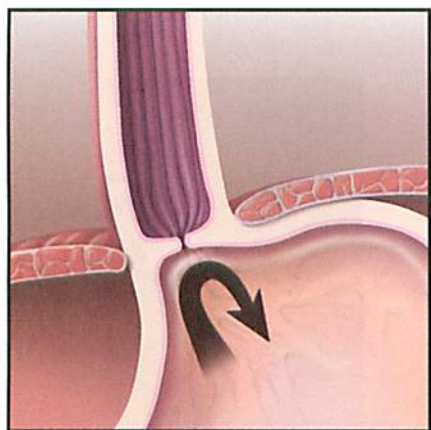
A ring of muscle that acts as a one-way valve from the esophagus to the stomach

Stomach

A reservoir where food is broken down by acids and enzymes before moving on to the intestines

Normal Digestion

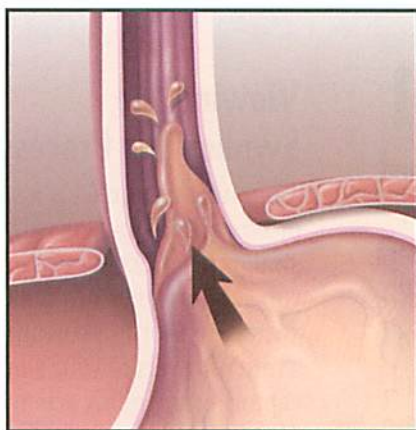
The digestive process usually runs smoothly as swallowed food travels through the esophagus to the stomach. In the stomach, acids and enzymes continue the process of breaking down the food before it moves into the intestines.



A healthy LES acts as a one-way valve at the top of the stomach to keep food and fluids down.

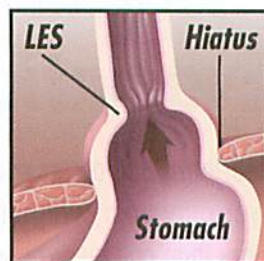
GERD

With GERD, the LES does not work well enough to hold food and fluids in the stomach. Escaping stomach acid irritates the esophagus. Sometimes the top of the stomach slips through an enlarged hiatus (**hiatal hernia**). This can make GERD worse.



An abnormal LES relaxes frequently, allowing food and fluids to wash back, or reflux, into the esophagus.

Hiatal Hernia



A weakened or enlarged opening (hiatus) in the diaphragm allows the stomach to bulge into the chest cavity. You can have a hiatal hernia without having GERD.

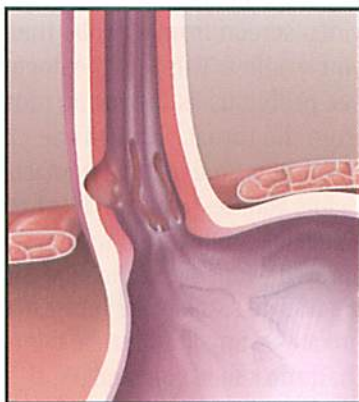
How GERD May Progress

Exposing sensitive tissue in the esophagus to stomach acid over a long period can lead to esophagitis (inflammation), ulcers (erosions), and scarring (called a **stricture**). People with severe GERD may have difficulty swallowing (called **dysphagia**) and often have the sensation that food is stuck in their throats.



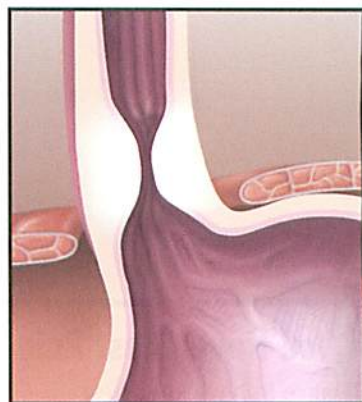
Esophagitis

Irritation or inflammation in the esophagus (called **esophagitis**) can lead to pain, pressure, and burning in your chest and throat.



Ulcer

An erosion or sore anywhere in the lining of the esophagus (called an **ulcer**) can produce pain and bleeding, and can make it hard to swallow.



Stricture

Scarring may develop along the esophagus. This narrows the tube, making it harder and harder to swallow some foods.

Your Medical Evaluation

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Heartburn that occurs over and over may be a symptom of more than one medical problem. To confirm a diagnosis of GERD, your doctor may perform a thorough physical exam and request diagnostic tests. These tests may be performed by a **gastroenterologist**, a doctor who specializes in treating digestive problems, or by a specially trained technician. Based on the results of these tests, your doctor will recommend the treatment that best suits your needs.

If You Have Chest Pain

Be sure to have any chest pain evaluated by your doctor immediately. The chest pain or discomfort caused by serious heart problems may feel similar to the pain caused by GERD.

Medical History and Physical Exam

To help diagnose your condition, your doctor may ask you to describe your symptoms. The more you can tell your doctor about your symptoms, the better. Your doctor may also ask you questions about your eating, sleeping, smoking, and drinking habits. Then your doctor will perform a physical exam. Your medical history, combined with the results of your physical exam, will help your doctor rule out other causes of discomfort and determine the best treatment for your symptoms.

Viewing the Swallowing Process

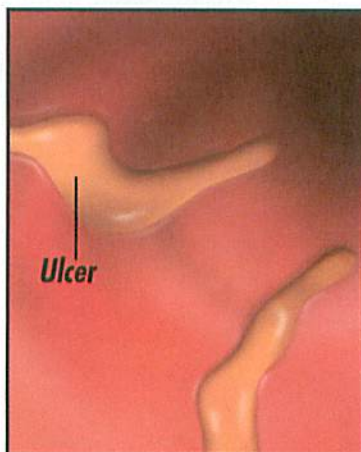
A **barium upper GI** is a series of x-ray films that reveal your swallowing process in action. As you swallow a barium milk shake, x-rays monitor the barium dye while it travels to your stomach, capturing any reflux action on film. The x-rays may also show whether you have a hiatal hernia. You should not eat or drink anything for 6 to 8 hours before having this brief, painless test.

X-ray reveals reflux.

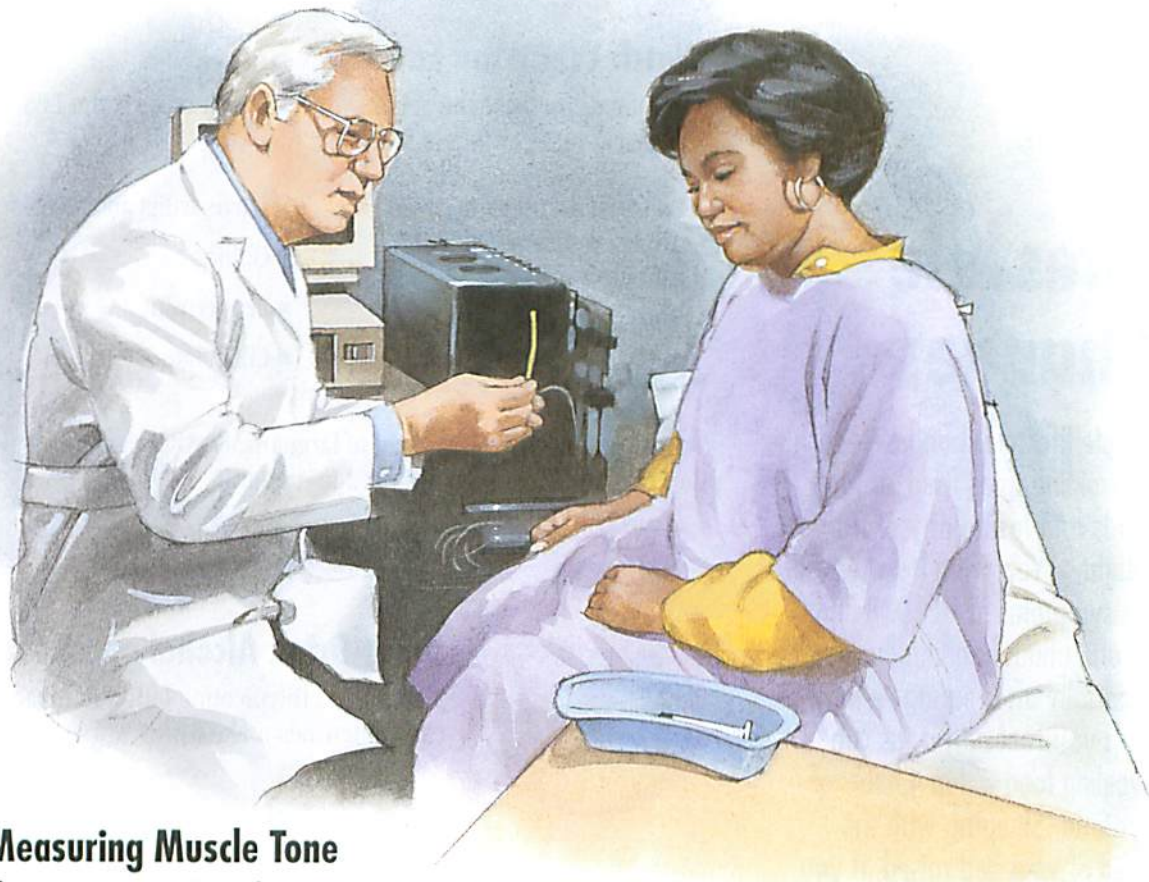


Taking a Closer Look

Esophageal endoscopy is a test that sends light and images to a video screen from a probe that you swallow. This lets the doctor see problems as the probe moves from the throat, through the esophagus, and into the stomach. Before your test, you will be given a sedative. Your throat may be sprayed with an anesthetic to make it easier to swallow the lubricated probe—a tiny, flexible tube thinner than most food you swallow. If needed, your doctor may take a sample of tissue, called a **biopsy**. Don't eat or drink anything for 6 to 8 hours before the test. The day after the test, you may have a sore throat.

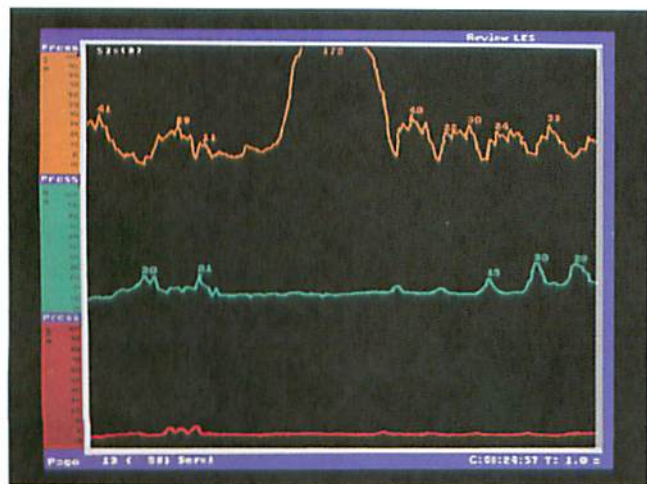


Endoscopy shows an ulcer and irritated areas of the esophagus.



Measuring Muscle Tone

If surgery is a possibility for you, **esophageal manometry** may be used to measure the muscle tone of the LES and tailor the surgical procedure to you. This test also shows how well the esophagus squeezes food along. Your nose and throat will be numbed with an anesthetic to make it easier to swallow a lubricated tube. The flexible tube is then gently guided from your nose into your stomach. Measurements are taken as the tube is slowly withdrawn from your stomach into the esophagus. You must not eat anything for 8 to 12 hours before this test, which takes about 30 minutes. You may have a slightly sore throat after the test.



Esophageal manometry measures the actual pressure of the LES—both while you swallow and at rest.

Monitoring Acid in the Esophagus

Your doctor may ask you to undergo a **pH monitoring** test. A thin, acid-measuring probe is placed in your esophagus for up to 24 hours to record how much acid washes back from your stomach into your esophagus. Antacids may be used to control symptoms before and during the test, but avoid stronger medications because they may affect the accuracy of the test.

Lifestyle Changes

Simple lifestyle changes—such as avoiding spicy, fried, or fatty foods and losing any extra weight—can often help reduce the symptoms of GERD. Being careful about bending over—especially after eating—may help you feel better, as can avoiding food within 4 hours of bedtime. Sleeping with the head of your bed raised, if you have nighttime symptoms, may bring some relief.

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Raise Your Head

If you have nighttime symptoms, try raising the head of your bed 6 to 8 inches. There are two ways to do this. One way is to place a wedge under the head of your mattress. Another way is to slide blocks or books under the legs at the head of your bed.

NOTE: Tilting your bed is better than trying to sleep on several pillows, which can make GERD worse.



Raising the mattress 6 to 8 inches



Raising the bed 6 to 8 inches

Watch What You Eat

Some foods increase the acid in your stomach or relax the LES. You may want to avoid the following:

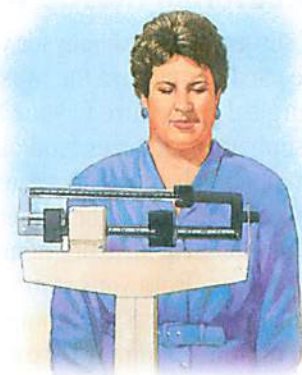
- Coffee, tea, and carbonated drinks, with *and* without caffeine
- Fried and fatty foods
- Spicy foods
- Citrus fruits and tomatoes
- Onions
- Peppermint
- Chocolate

Try eating small meals instead of large meals. After eating, don't bend over or lie down for 2 to 4 hours.



Don't Drink Alcohol or Smoke

Alcohol and the nicotine found in tobacco can sometimes make GERD worse.



Ease the Pressure

Too much pressure on your stomach can cause reflux. Follow these tips to help take the pressure off:

- Maintain a healthy weight.
- Lose weight if you need to.
- Loosen your belt and don't wear tight clothing.
- Avoid bending over.

Treatment

You may be treating your heartburn associated with GERD with antacids or over-the-counter H_2 -blockers. When these self-treatments don't work, your doctor may prescribe other medication to help relieve symptoms. Some of these medications may be used together. Your doctor will tell you which combination is best for your symptoms. If you are having trouble swallowing, your esophagus may need to be stretched in a medical procedure. Sometimes surgery is needed, but this is not usual.



Neutralizing Stomach Acid

Many brands of over-the-counter antacids are available to neutralize or weaken stomach acid, and you don't need a doctor's prescription to buy them. You may take these antacids when you need to, or according to your doctor's advice.

Reducing Stomach Acid

If antacids alone don't work, your doctor may recommend stronger medications. Some of these medications are called **H_2 -blockers**. Many H_2 -blockers are available over-the-counter without a doctor's prescription. If self-medication with such medicines is not working, your doctor may give you a prescription for a Proton Pump Inhibitor, often called a **PPI**, or for a prescription strength H_2 -blocker.

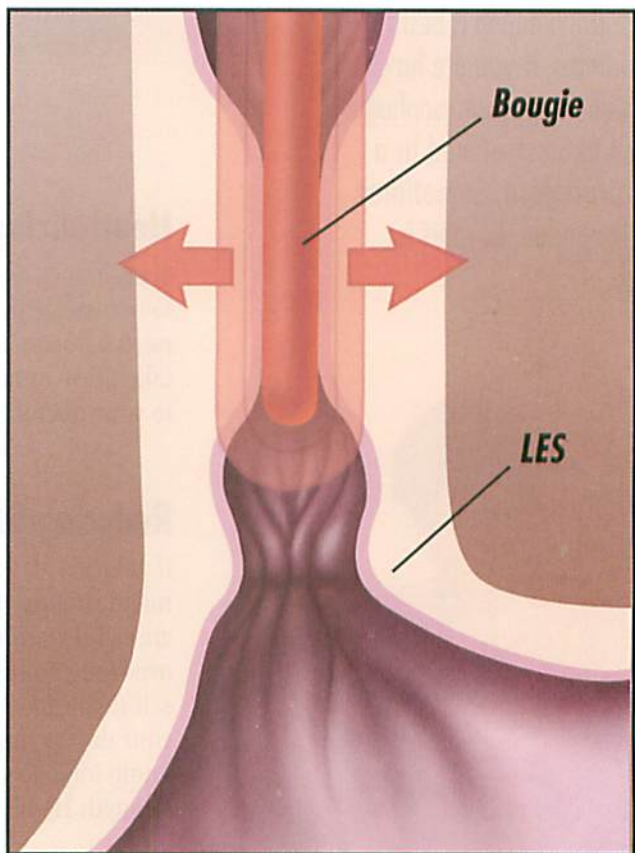
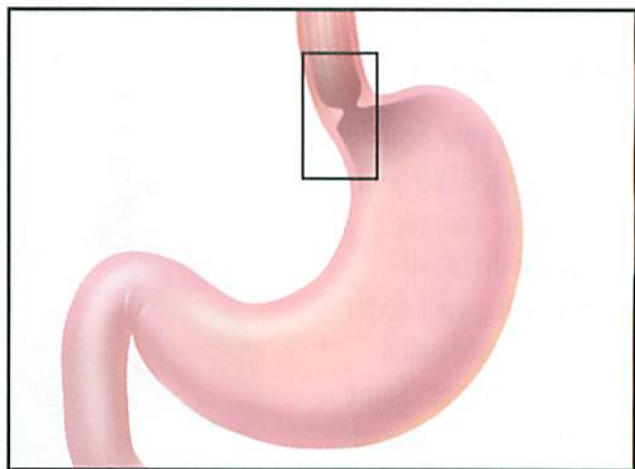
Increasing Motility

Medications that increase the motility of the esophagus and stomach may help relieve heartburn. They are available only by prescription.



If You Need Dilatation

If your disease has progressed to the point of stricture, your doctor may perform a procedure called dilatation to stretch and widen your esophagus. One method is shown here. Dilatation is performed while you receive an intravenous sedative to keep you comfortable and free from pain. The procedure may need to be repeated over a period of a few days until your esophagus is wide enough to pass solid food again. Your doctor will thoroughly discuss the procedure with you.



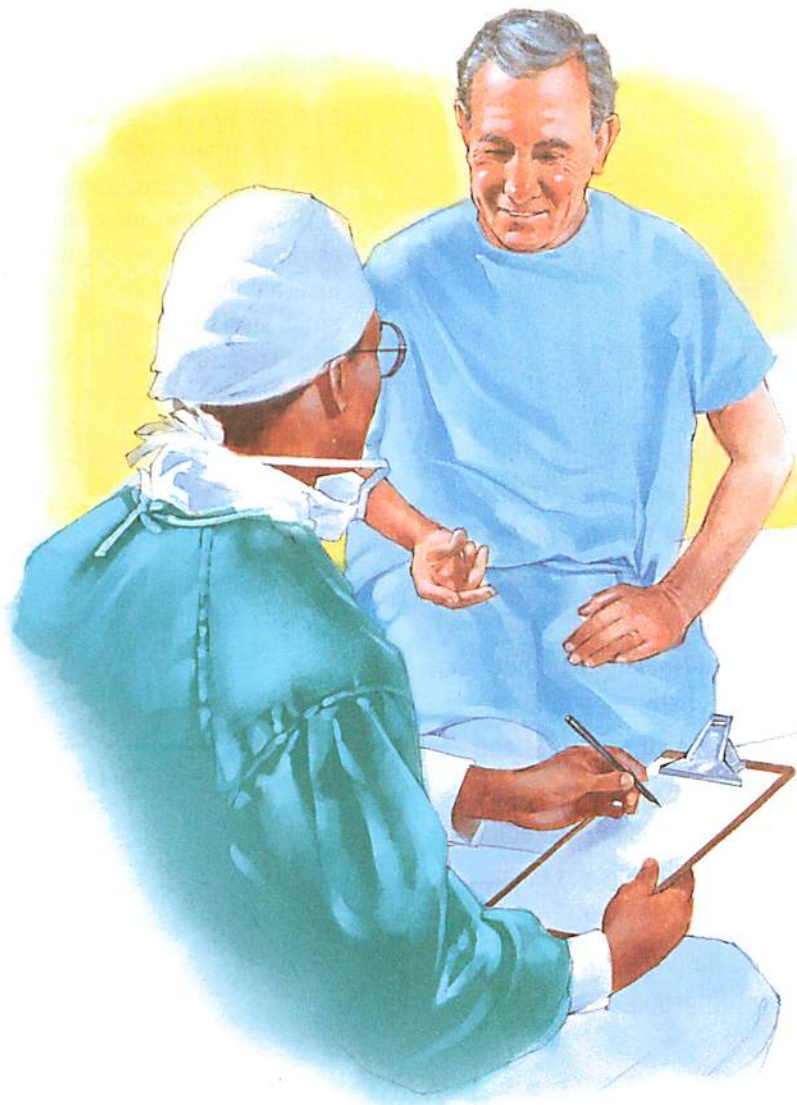
Bougie Dilatation

A series of increasingly larger **bougies** (flexible rubber tubes) are used to stretch the esophagus and make the passageway wider. This procedure may be repeated if you start to have trouble swallowing again.

If Medical Treatment Fails . . .

You May Need Surgery

Surgery is usually not needed. However, if other types of treatment haven't brought you relief, your doctor may recommend a surgical procedure called laparoscopic fundoplication. You may have to stop taking certain medications. Before surgery, your general health will be checked with routine blood tests and other tests. Then you'll be admitted to the hospital—usually on the same day as your surgery.



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Before You Have Your Surgery



Schedule Lab Tests

Your doctor may request blood tests, an ECG or EKG (electrocardiogram) to check your heart, and a chest x-ray to check your lungs.



Don't Eat or Drink

No food or drink—not even water—may be taken after midnight the night before surgery. This reduces the risk of vomiting while you're under anesthesia.



Ask About Medications

Ask your doctor if you need to stop taking any other medications, including aspirin.



Arrange for Help

You'll want to take it easy right after surgery, so arrange for help at home. Also, plan to have someone drive you to and from the hospital.

Risks and Complications

Any intestinal surgery has possible risks and complications. For laparoscopic fundoplication, these include:

- Injury to the liver, spleen, esophagus, or stomach during surgery
- Bleeding
- Infection
- Increased gas or bloating
- An inability to vomit
- Difficulty swallowing
- Failure of the operation to completely eliminate GERD

Your Surgery

During this procedure, the doctor re-creates your LES by wrapping the very top of your stomach around the esophagus. The surgery usually lasts from 2 to 4 hours. Laparoscopic surgery is performed through several small incisions instead of the single long one used in the traditional open procedure. As a result, there is less pain, a quicker recovery time, shorter hospital stay, and lower risk of infection.

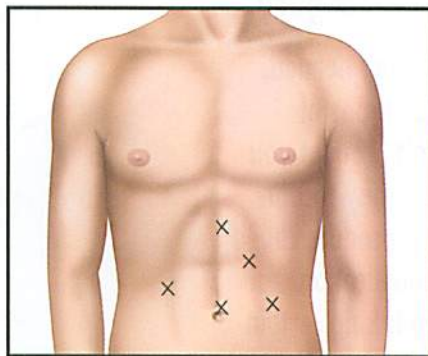
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Just Before Your Surgery

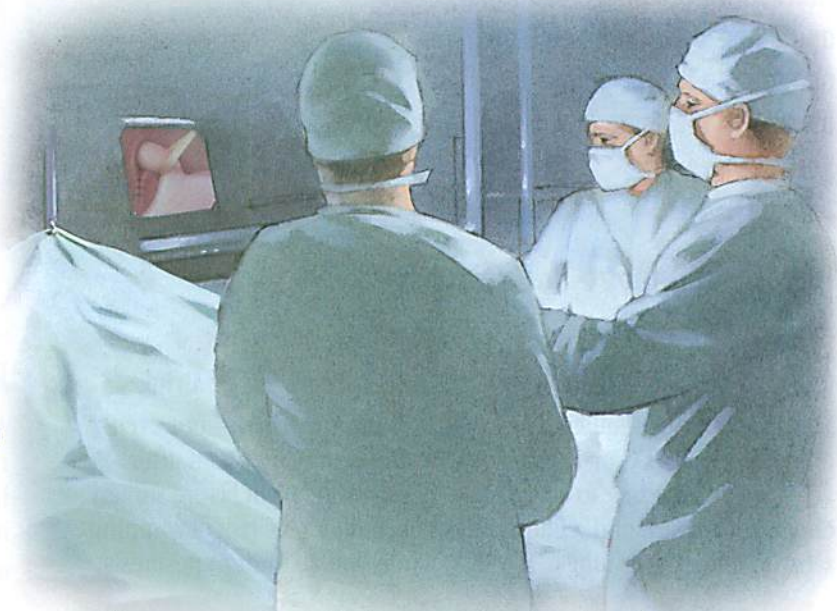
You'll be asked to sign a legal consent form authorizing your doctor to perform the surgery. Also, you may be given a mild laxative or enema to clear your system before surgery. An **anesthesiologist** may meet with you to discuss the type of anesthetic that will be used to keep you free of pain throughout surgery.

During Surgery

First you will be given anesthesia and any other medications through an intravenous tube (called an IV). You will be asleep during surgery. Your abdomen will be inflated with carbon dioxide (CO₂) gas to provide more space for your surgeon to see and work. The laparoscope, which has a camera attached, is then inserted through an incision to send images to a video screen. Small surgical instruments are inserted through other incisions. The CO₂ gas is removed at the end of surgery.



Possible laparoscopic incision sites



***Your surgeon** can easily view your stomach and esophagus on a video screen by using a laparoscope, which has a tiny camera on one end.*

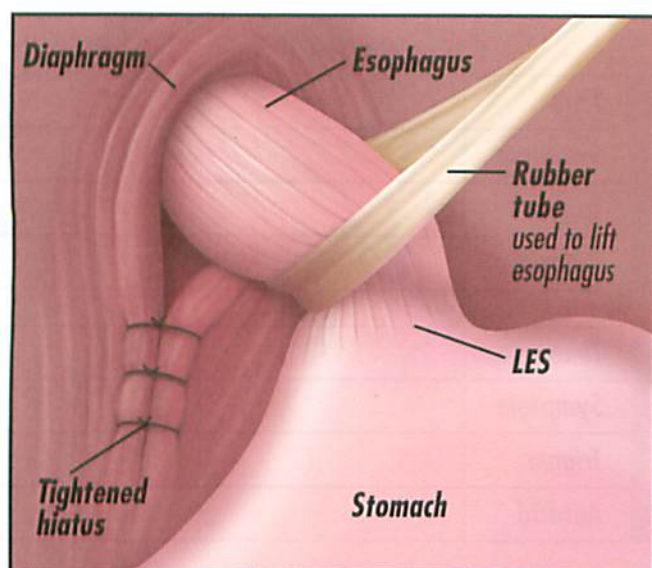
Open Surgery

If your surgeon feels it isn't safe to continue with a laparoscopic procedure once surgery has started, he or she will complete the operation through a larger incision in your abdomen. This is called an open procedure, or **open fundoplication**. This surgery requires a longer recovery time—up to 1 week in the hospital and from 4 to 6 weeks at home.

The Laparoscopic Surgical Procedure

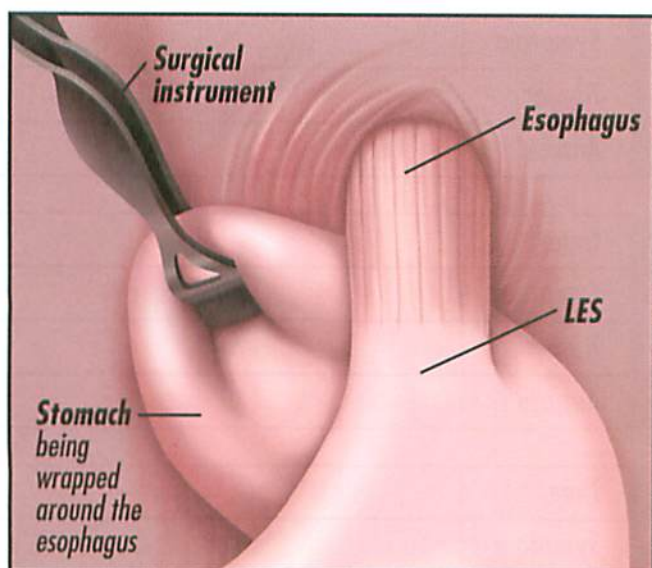
Lifting the LES

If the opening of the hiatus is too large (hiatal hernia), the surgeon may tighten it with a few stitches (**sutures**). This repairs the hiatal hernia. Then the esophagus is lifted out of the way for a short time. Nothing is opened, removed, or rerouted during the procedure.



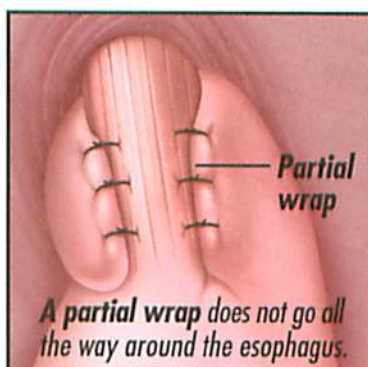
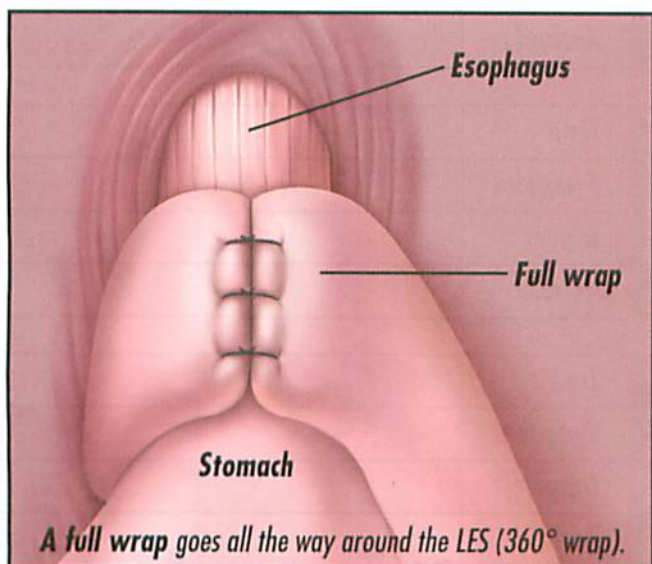
Wrapping the top of the stomach around the esophagus

The surgeon wraps the very top of the stomach around the outside of the esophagus. This added support helps prevent reflux. To make sure the wrap is not too tight, a flexible rubber tube (bougie) may be temporarily inserted into the esophagus. Sometimes the surgeon performs a dilatation procedure along with the surgery.



Choosing the wrap

Next, the wrap is permanently stitched in place. Two commonly used wraps are shown here. The surgeon selects the wrap that is best for your condition.



Your GERD Diary

To help your doctor decide how to treat you, it is important to record any and all GERD symptoms you may have and how often they occur. Do this for the next 4 weeks. **Record symptoms each time you have them, even if they are repeated throughout the day.** It helps to carry a diary like this with you at all times so you can keep it accurate and complete.

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1. Record the approximate time of the symptom.
2. Enter the code letter(s) corresponding to the symptom(s) you experienced:
H=Heartburn
R=Acid regurgitation or sour taste in the mouth
O=Other (please specify)
3. Write down what you think caused the symptom (for example, smoking or caffeine). Be very specific. If you are not sure, enter a question mark (?).
4. Indicate whether or not an antacid was used: **Y** (yes) or **N** (no).

If GERD is still interfering with your life, **tell your doctor.** There may be a more appropriate treatment program for your condition.

DAY 1	Time	7:30 pm
	Symptom	H
	Trigger	Lasagna
	Antacid	Y

Week 1

Week 2

DAY 1	Time		
	Symptom		
	Trigger		
	Antacid		

DAY 2	Time		
	Symptom		
	Trigger		
	Antacid		

DAY 3	Time		
	Symptom		
	Trigger		
	Antacid		

DAY 4	Time		
	Symptom		
	Trigger		
	Antacid		

DAY 5	Time		
	Symptom		
	Trigger		
	Antacid		

DAY 6	Time		
	Symptom		
	Trigger		
	Antacid		

DAY 7	Time		
	Symptom		
	Trigger		
	Antacid		

Week 3

Week 4

Week 5

Week 6

Week 7

Feeling Good Again

GERD can often be managed with a combination of simple lifestyle changes and medication, and sometimes surgery. Your doctor can help you find the option that's right for you. With proper treatment, you can return to living a full and healthy life—eating the foods and doing the activities you enjoyed before your heartburn problems started.



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