Laparoscopic Fundoplication

Surgery for Treating Symptoms of GERD
GERD: A Common Problem

Repeated bouts of heartburn and sour-tasting fluid in your throat are classic symptoms of a common health problem called gastroesophageal reflux disease, or GERD (also known as reflux disease). The heartburn caused by GERD may strike after you eat a large meal or when you bend over or lie down. Without treatment, GERD can lead to serious problems, even cancer. GERD can sometimes be controlled with simple lifestyle changes and medication. If your symptoms persist, surgery may offer more lasting relief from GERD.

What Causes GERD?
GERD is caused by acid that escapes from your stomach through a weakened one-way valve near the top of your stomach. The acid can travel backward as far as your throat. Eating certain foods and taking certain medications can add to the problem. Smoking, caffeine, and alcohol all increase the level of acid in your stomach, and can make your symptoms worse.

What Are the Symptoms of GERD?
The symptoms of GERD may include:
- A burning feeling in the chest (heartburn)
- A bitter or sour taste in the back of the mouth
- Belching
- Pain in the upper abdomen
- Worsening of the above symptoms when bending over or lying down
- Chronic cough and hoarseness

If You Have Chest Pain
Be sure to have any chest pain evaluated by your doctor right away. The chest pain or discomfort caused by serious heart problems may feel similar to the pain caused by GERD.
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 many people. Losing excess weight can also help. Some over-the-counter antacids may offer relief. If symptoms continue, your doctor may prescribe medications that reduce stomach acid or speed up digestion.

Relief Through Surgery

If other attempts to control your GERD don’t offer relief, you may be a candidate for laparoscopic fundoplication. This surgery is done using a laparoscope, a small telescope attached to a camera. The laparoscope allows the doctor to see clearly into your abdomen. During the surgery, the doctor re-creates the one-way valve where the esophagus (the tube that food travels through) meets the stomach. Any other necessary repairs can be done at this time.
How Food Reaches Your Stomach

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 normally. It allows food and stomach acid to travel back (reflux) into the esophagus.
Normal Digestion
The digestive process usually runs smoothly. First, swallowed food travels through the esophagus to the stomach. Then acids and enzymes in the stomach continue breaking down the food before it moves into the intestines.

Digestion with 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.

How GERD May Progress
Exposing sensitive tissue in the esophagus to stomach acid over a long period can lead to inflammation, ulcers, 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 throat. Having GERD may also increase the risk of cancer of the esophagus.

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

A weak LES does not close off the top of the stomach, allowing food and fluids to travel back, or reflux, into the esophagus.

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

Ulcer
A 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

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.

Medical History and Physical Exam

To help diagnose your condition, your doctor will 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.

Taking a Direct Look

Esophageal endoscopy is a test that sends light and images to a video screen from an endoscope (tiny, flexible tube) that you swallow. This lets the doctor see if there are any problems as the scope moves from the throat, through the LES, and into the stomach. This test will help your doctor rule out problems such as ulcers. Before your test, you will be given a sedative. Your throat may be sprayed with an anesthetic. This makes it easier to swallow the lubricated scope. 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.

Viewing the Digestive Tract

A barium upper GI is a series of x-ray films that reveal your digestive tract 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 taking this brief, painless test.
Esophageal manometry measures the actual pressure of the LES at rest and while you swallow.

Measuring Muscle Tone

If surgery is a possibility for you, esophageal manometry may be used to measure the muscle tone of the LES and to 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. Water is passed through the tube. 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.

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.

Ruling Out Gallbladder Problems

To rule out problems with your gallbladder, such as gallstones, a painless ultrasound test may be performed. Ultrasound uses high-frequency sound waves to create images on a screen as your abdomen is scanned for gallstones.
**Lifestyle Changes**

Simple lifestyle changes, such as avoiding spicy, fried, or fatty foods and losing any excess weight, can often help reduce the symptoms of GERD. Try to avoid bending over, especially after eating. Also avoid eating within 2 to 3 hours of lying down. Sleeping with the head of your bed raised and exercising regularly may also help relieve your symptoms.

**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

To take the pressure off your LES, try eating six small meals a day instead of three large meals. Taking a short walk after eating will help aid your digestion. Try to avoid bending over or lying down for 2 to 3 hours after eating.

**Raise Your Head**

Reflux is more likely to strike when you’re lying down because it's easier for stomach acid to flow backward. To help prevent this while you sleep, try raising the head of your bed 6 to 8 inches. One way to do this 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 increase pressure and make GERD worse.

**Don’t Drink Alcohol or Smoke**

Alcohol and the nicotine found in tobacco can make GERD worse by greatly increasing stomach acid production and irritation. Alcohol also relaxes the LES.

**Ease the Pressure**

Too much pressure on your stomach can cause reflux. Follow these tips:

- Maintain a healthy weight.
- Loosen your belt and don’t wear tight clothing.
- Avoid bending over.
- Avoid lying flat.
- Exercise to keep fit. (Talk to your doctor before starting any exercise program.)
Medical Treatment

GERD is sometimes treated with over-the-counter antacids that you can buy without a prescription. If antacids don’t provide enough relief, your doctor may prescribe other medication to help with digestion. 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 be dilated (stretched) in a medical procedure.

Neutralizing Stomach Acid

Many brands of over-the-counter antacids are available to neutralize stomach acid. You may take these antacids only when you need to, or according to your doctor’s advice.

**NOTE:** Although most people experience no side effects from taking over-the-counter antacids, constipation and diarrhea may occur. If you have high blood pressure, check with your doctor first. Some antacids can be high in sodium.

Avoid Certain Medications

Aspirin and anti-inflammatory medications like ibuprofen reduce the protective lining of your stomach, which can lead to more irritation. Be sure to check with your doctor or pharmacist before taking any new medication.

Reducing Stomach Acid

If antacids alone don’t work, your doctor may recommend stronger medications. These medications are called **H-2 blockers**. Sold under the generic names of cimetidine, ranitidine, famotidine, and nizatidine, these medications suppress most of the stomach’s acid production. Many of these medications are now available at a lower dosage without a doctor’s prescription.

**NOTE:** H-2 blockers may cause confusion in elderly patients. Cimetidine and ranitidine can increase the effects of alcohol. Antacids and cimetidine should be taken 1 hour apart because antacids reduce the medication’s effectiveness. If you’re a man, you may want to ask your doctor about the rare possibility that long-term use of H-2 blockers could affect your sperm count.
Beyond Medication — Dilation

If you have a stricture, your doctor may perform a procedure called dilation to stretch and widen your esophagus. One method is shown here. Dilation 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.

Stimulating Stomach Muscles

Medications that strengthen the squeezing action of the esophagus and tighten the LES may relieve GERD. These medications are usually used along with H-2 blockers. Some have the added benefit of making the stomach empty faster.

NOTE: Side effects of these medications may include abdominal cramps, diarrhea, fatigue, and the “jitters.” Some medications may cause nausea and vomiting if they are taken too soon after eating. Ask your doctor how to take your specific medications and what their side effects may be.

Eliminating Stomach Acid

If other medications are no longer effective, your doctor may prescribe a proton pump inhibitor (PPI). These medications completely stop stomach acid production, and are very effective at controlling the symptoms of GERD.

NOTE: These medications are mainly prescribed for short-term use. Side effects of PPIs include diarrhea, headache, and sometimes pain or nausea.
Preventing Drug Interactions
Your doctor may request blood tests, an ECG (electrocardiogram), and a chest x-ray to check your heart and lungs.

Don’t Eat or Drink
No food or drink (including water) may be taken after midnight on the evening before surgery. If you have been told to take your regular medications, take them with small sips of water.

Arrange for Help
You’ll want to take it easy right after surgery, so arrange for help at home. Plan to have someone drive you to the hospital and pick you up afterward.

Risks and Complications
Any surgery has 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

Ask About Medications
Ask your doctor if you need to stop taking any other medications, including aspirin, before surgery. Also ask about stopping supplements, including vitamins and herbal preparations.

Preparing for Surgery
If other types of treatment haven’t brought you relief, your doctor may recommend a surgical procedure called laparoscopic fundoplication. If you smoke, try to quit beforehand, since smoking adds risk to surgery and recovery. You may also have to stop taking certain medications. Before surgery, your general health will be checked with routine blood and other tests. Then you’ll be admitted to the hospital, usually on the same day as your surgery.
During Surgery

First you will be given an anesthetic and any other medications through an IV (intravenous) tube. You will be asleep during the surgery. Your abdomen will be inflated with carbon dioxide (CO₂) gas to provide more space for your doctor 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 may be inserted through other incisions. The CO₂ gas is removed at the end of surgery.

Your Surgery

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

Before Your Surgery

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

Open Surgery

If your doctor 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 esophagus
If the opening of the hiatus is too large (hiatal hernia), the doctor 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 doctor wraps the 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 doctor dilates the esophagus during the surgery.

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

A full wrap goes all the way around the LES (360° wrap).

A partial wrap does not go all the way around the esophagus.
Your Recovery

Most people go home 1 to 3 days after laparoscopic surgery and return to work in 1 to 2 weeks. Because only small incisions are made, you will likely experience less postoperative pain than from open surgery. You may be able to start on a liquid diet soon after surgery. When your small incisions heal, the scars may be nearly invisible. Best of all, you’ll be able to eat without the pain and discomfort that GERD can cause.

In the Hospital

After surgery, you’ll be in the recovery area, where your blood pressure, pulse, and breathing are closely monitored. After you wake up, you’ll be taken to your hospital room. You may be given extra oxygen to help you breathe. You may also have an IV in your arm for fluids and medication. You’ll have small bandages over your incisions, and will be given medications to relieve any discomfort you may feel. Later that day or the next morning, you’ll probably be out of bed and walking around. Within a day or so after surgery, you’ll start a liquid diet. Your doctor will determine when you can begin eating soft foods.

During Recovery

- Swelling inside the esophagus may produce a feeling of tightness and difficulty swallowing. This goes away gradually in 6 to 8 weeks, if not sooner.
- Once you start eating solid foods, you’ll need to chew your food thoroughly, avoid gulping, and avoid carbonated drinks for 3 to 4 weeks. This will prevent gas bloat and ease swallowing during the healing process.
- Once you begin eating regular meals, you may feel full faster. This will go away with time.
At Home
Take it easy when you return home. Don’t do any heavy lifting or vigorous activities. Follow your doctor’s advice about showering, driving, and returning to work. Eat slowly and be careful about what you eat:
■ Eat foods that are easy to swallow and digest, such as soup, bananas, gelatin, pudding, and yogurt.
■ Eat frequent, small meals.
■ Avoid carbonated drinks.
■ Chew your food well and don’t gulp. This helps prevent gas build-up and makes swallowing easier.

Follow Up
During the first week to month after surgery, your doctor may meet with you to check on your progress and answer your questions. If you have any skin staples or stitches, they’ll be removed. This is a good time to ask your doctor for tips on maintaining a healthy diet after you’re fully recovered. Any follow-up visits will be scheduled as needed.

When to Call Your Doctor
Be sure to call your doctor if you develop any of the following:
■ Fever (over 101°F or 38.3°C) or chills
■ Bleeding from the incision(s)
■ Increased abdominal swelling or pain
■ Nausea or vomiting
■ Cough or shortness of breath
■ Difficulty swallowing that doesn’t go away within a few weeks
Feeling Good Again

GERD can often be managed with a combination of simple lifestyle changes, 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 started.

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

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