



Gastroesophageal Reflux Disease: GERD (Updated 10.08)

General information

Gastroesophageal reflux disease (GERD) is a common condition related to bouts of heartburn. Heartburn occurs when acid in the stomach refluxes back up into the esophagus (the tube that takes food from your mouth to your stomach) and damages the soft tissue there, causing the burning sensation we call heartburn. At the base of the esophagus is a ring of muscle called the lower esophageal sphincter (LES), that acts like a valve between the esophagus and the stomach. Normally, this valve closes to prevent stomach contents from traveling back into the esophagus, but when it malfunctions, stomach contents can leak back into the esophagus and damage the tissue there. Hiatal hernia and conditions that cause increased pressure within the abdomen, such as pregnancy and obesity, may lead to GERD.

A hiatal hernia occurs when the top portion of the stomach bulges into the chest cavity through the hiatus, which is the opening where the esophagus goes through the diaphragm. The diaphragm is the muscle that separates the chest from the abdomen, and normally it helps the LES keep acid from refluxing up into the esophagus, but sometimes it needs strengthening or repair. A hiatal hernia does not always cause GERD.

Other causes of GERD include:

- Certain medications, including aspirin and sedatives.
- Smoking, caffeine, and alcohol intake, which increase stomach acid production.
- Pregnancy or excess weight that increases the pressure in the abdomen.
- Foods that increase stomach acid, including citrus fruits, chocolate, fatty and fried foods, garlic, onions, peppermint, spicy foods, and tomato-based foods.

Evaluating GERD

Heartburn occurring over a long period of time may be a symptom of more than one medical problem. To confirm the diagnosis of GERD your doctor will ask you a lot of questions related to your symptoms, perform a physical exam, and request diagnostic tests. These tests are explained below.

- An **Upper GI** or **Barium Swallow Study** is a series of x-rays that show your digestive tract in action. Barium is a harmless dye that can be seen on x-ray and will show if reflux or a hiatal hernia is present. This study is done while you are awake and it is important that you not eat or drink anything for 6 to 8 hours before this brief, painless test.

- **Esophageal Endoscopy** allows the doctor to directly visualize the inner lining of your throat, esophagus, and stomach through a small camera the doctor inserts through your mouth. Before the test, you will be sedated so that you do not remember the procedure. Patients with GERD will usually have areas of irritation or ulceration of the esophagus and stomach that can be seen by the camera. It is important that you do not eat or drink anything for 6 to 8 hours before the test.
- A **pH monitoring test** can measure the acid present in the esophagus. A thin measuring probe is placed in the esophagus for 24 hours to record how much acid refluxes from the stomach back into the esophagus.

Treatment Options

Lifestyle Changes

In some individuals, GERD symptoms can be controlled with lifestyle changes including the following:

- Avoid foods that increase stomach acid or relax the LES as mentioned above.
- Eat six smaller meals per day.
- Maintain a healthy weight.
- Take short walks after eating to help digestion.
- Avoid bending or lying for 2 to 4 hours after eating.
- Do not drink alcohol or smoke.
- Raise the head of your bed 6 to 8 inches by placing books or bricks under the legs at the head of your bed.
- Avoid wearing tight-waisted clothing.

Medications to Reduce Stomach Acid

Antacids: Over-the-counter antacids such as Alka-Seltzer, Maalox, Mylanta, Pepto-Bismol, Roloids, and Tums contain various combinations of magnesium, calcium, and aluminum that neutralize stomach acids. Possible side effects include diarrhea and constipation.

H-2 blockers: A stronger class of medications, called H-2 blockers, are also available over the counter. These include Pepcid, Tagament, Zantac, and Axid.

PPIs: For severe GERD symptoms, your doctor may prescribe a proton pump inhibitor or PPI. These medications include Prilosec, Prevacid, Nexium, Protonix, and Aciphex. They work by stopping the production of acid in the stomach, so they are only recommended for short-term use. Side effects include nausea, diarrhea, headache, and pain.

Surgical Treatment

Dilation: If there is a narrowing of the esophagus, a dilation can be performed to stretch and widen the esophagus. After being sedated, an endoscope is put down the mouth and into the esophagus. Lubricated instruments are then used to stretch the esophagus. This may need to be repeated over several days until the esophagus is wide enough to allow food to pass.

Esophageal Nissen: During this surgery, the top part of the stomach is wrapped around the lower part of the esophagus to strengthen the lower esophageal sphincter. If a hiatal hernia is contributing to the GERD symptoms it will also be repaired during the surgery.

Laparoscopic Esophageal Fundoplication: This procedure is the same as the Esophageal Nissen, but it is done with a laparoscope, so the abdominal cavity does not need to be opened. The surgeon makes several small incisions in the belly and uses a harmless gas to inflate the abdominal cavity. A camera is inserted to allow the surgeon to see inside and perform the operation, during which special small laparoscopic instruments are used to wrap the stomach around the esophagus. The gas is removed at the end of the procedure. This approach is typically less painful and recovery time is shorter. A discussion with your doctor can determine whether you are a candidate for a laparoscopic procedure.

Treatment of GERD with Nissen Fundoplication

Post surgery patient information

Pain: Pain is common after surgery, especially around the incisions. You may also experience abdominal pain from the gas used to inflate the belly during surgery if you've had a laparoscopic Esophageal Fundoplication. The pain medication prescribed by your doctor should help with this pain, which should improve in the days following your procedure.

Fever: Your temperature can vary after surgery and a low-grade temperature is common. A temperature is concerning if it exceeds 101.5 degrees, or if it is accompanied by chills, vomiting, or flu-like symptoms.

Incisions: When you leave the hospital, your incisions will be covered by a sterile bandage. This will fall off or will be removed when you have your post-op visit. There may be some drainage from the incisions, which is normal. This drainage should be thin, watery, and slightly pink, but should not be bright red blood. An infection may be starting if the drainage is thick green or yellow, or if the skin around the incision is red or warm to touch. Some swelling and bruising around the incisions is normal and should improve in the days following your surgery.

Constipation: Constipation is very common following a surgery. The anesthetic used during the operation paralyzes the bowel, which can lead to constipation for up to a week following the surgery. Pain medications such as Vicodin and Percocet can also cause the bowel to move more slowly. You may try over-the-counter medications such as milk of magnesia, Colace, or Metamucil, as well as prune or apple juice to get your bowels moving.

Frequently Asked Questions

Q: When can I take a shower?

A: It is O.K. to take a shower the day after your surgery. Your incisions will be covered with steri-strips, and you may get them, just do not scrub them with soap. To prevent infection, do not soak in the bathtub or get into pools or hot tubs for 4 to 6 weeks following your surgery.

Q: When can I drive?

A: We want you to be safe on the road, so you must be off of narcotic pain medications such as vicodin or percocet. You must also be able to put a seat belt on without pain or irritation to the incisions.

Q: Do I have any dietary restrictions?

A: Please refer to our patient information sheet on *Diet After a Nissen Fundoplication*. It is important to follow these suggestions to avoid injury to your stomach.

Q: Do I have any activity restrictions?

A: You may return to work 1 to 2 weeks after a laparoscopic surgery and 3 to 4 weeks after an open procedure, depending on what kind of work you do. You should not lift more than 10 lbs in the 4 to 6 weeks following your surgery.

When to call the office:

- Fever over 101.5 degrees.
- Bleeding from the incision.
- Increased abdominal pain.
- Vomiting.
- Cough or difficulty breathing.
- Difficulty or inability to swallow.

You are always welcome to call the office with your questions or concerns. After hours, an answering service will direct your questions to the on-call providers. However, these individuals are unable to call in prescriptions for pain medication after 5 p.m.



Diet after a Nissen Fundoplication (Updated 10.08)

After a Nissen fundoplication, you may experience difficulty swallowing due to swelling at the site of the surgery. The increased tightness of the LES may also cause you to swallow more air when you eat. To speed your recovery, we recommend you follow a soft diet, and follow these suggestions:

Key Factors

- Eat small, frequent meals to prevent your stomach from stretching. We recommend eating 6 times per day, or every 2 to 3 hours.
- Eat foods that are easy to swallow and digest. These usually consist of soft, moist foods such as soup, gelatin, pudding, and yogurt. Avoid gummy foods such as bread and tough meats.
- Take small bites, chew your food well, and avoid gulping. This helps prevent gas build-up and aids in swallowing.
- To prevent swallowing air, which produces excess gas, avoid drinking through a straw and don't chew gum or tobacco. Also avoid caffeine, carbonated drinks, alcohol, citrus, and tomato products.
- Avoid any foods that you know cause stomach gas and distention, including corn, beans, peas, lentils, onions, broccoli, cauliflower, and cabbage.
- Use a blender to puree foods, such as soup or fruit, to a tolerable consistency.
- Remember to chew foods well before swallowing.
- To preserve nutrients when cooking foods, steam or microwave vegetables. When boiling potatoes, peel after cooking.

The Soft Diet

A soft diet serves as a transition from liquids to a regular diet. It generally eliminates foods that are difficult to chew or swallow and also spicy, fried, or gas-producing foods.

To ease digestion, the following foods are generally eliminated:

- Tough meats
- Raw fruits and vegetables
- Chewy or crispy breads
- Nuts and seeds
- Fried, greasy foods
- Spicy foods
- High fiber foods like whole grain breads and cereals

After Nissen Fundoplication surgery, your diet will change slowly from clear liquids to full liquids to a soft diet and then progress to a regular diet. A soft diet is recommended for the first 2 to 6 weeks following surgery. You will then slowly advance to a regular diet; depending on your progress and tolerance for food. The foods tolerable on this diet can vary greatly from one person to the next. Use the guidelines below to choose a soft diet and adjust it according to your own needs.

Eating Guide for a Soft Diet

Food Group	Foods Recommended	Foods to Avoid
Beverages	Milk Decaf tea Powdered drink mixes Non-citrus juices	Chocolate drinks Caffeinated drinks Decaf coffee Carbonated drinks Alcohol Citrus juices
Grains	Ready to eat cereal Refined bread Crackers Plain white rice Pasta Pancakes/waffles	Whole-grain breads and cereals Anything with seeds, nuts, raisins, dried fruit, or coconut Whole grain rice Sweet rolls, coffee cake, or donuts Seasoned crackers Popcorn
Meats and beans	Tender meat, pork, poultry, and fish (baked, broiled, boiled, roasted, stewed, or simmered) Eggs Tofu Smooth peanut butter	Anything fried Tough meats with gristle Smoked meats Sausage Shellfish Fatty meats Cold cuts/lunch meat Fried eggs Dried beans Nuts and seeds Crunchy peanut butter
Dairy	Low-fat milk products Smooth yogurt Mild cheese Cottage cheese	Sharp/strong cheeses Dairy with nuts or seeds Cheese with peppers
Vegetables	Soft-cooked or canned vegetables Fresh lettuce or tomato Potatoes without the skin Peeled white or sweet potatoes (boiled, mashed, baked or creamed)	Raw vegetables, tomatoes, or products of tomatoes Gas-producing vegetables: broccoli, Brussels sprouts, cabbage, onions, cauliflower, corn, green peppers, cucumber, radishes, sauerkraut Dried beans, peas, and lentils Fried potatoes or potato chips

Eating Guide for a Soft Diet contin.

Food Group	Foods Recommended	Foods to Avoid
Fruit	Soft raw fruits (without skin) Cooked and canned fruits Fruit Juice	Dried fruits Fruits with skins, seeds or pits, such as berries, figs or raisins All citrus fruits and juices Ripe bananas Coconut
Fats and Sweets	Ice cream sherbet and frozen yogurt Pudding Cake and cookies without hard pieces Sugar, syrup, honey, jelly, Seedless jam Molasses Marshmallows Butter and margarine Mayonnaise and vegetable oils Mildly seasoned salad dressings, sauces, and gravies Plain cream cheese and sour cream	Spicy salad dressings Bacon, bacon fat, ham fat, lard, salt pork Fried foods Nuts Anything with dried fruit, nuts, coconut, candied fruit Peanut brittle