

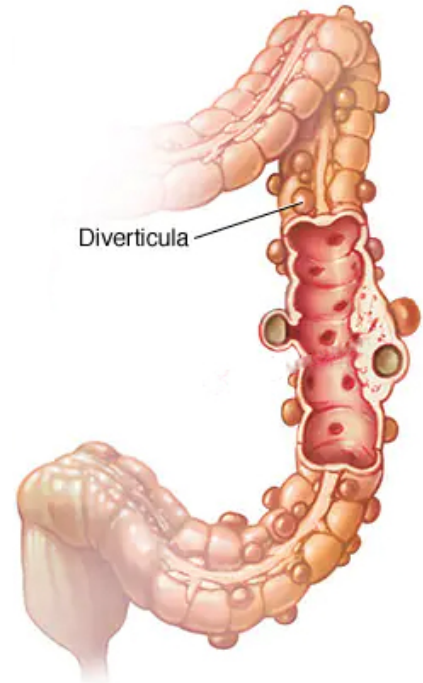
# DIVERTICULOSIS

## The Digestive Tract

To understand diverticulosis, it may be helpful to learn something about anatomy. The digestive tract is a tube-like passageway that connects the entrance to the exit of your body and contains the major segments of the digestive system. Each segment has a specific job associated with processing food within your body. After chewing, food is broken down by churning **stomach** muscles and powerful stomach acid enabling the absorption of nutrients into your body via the 20 ft of the **small intestine**. Once digestion is complete, any residual liquid waste is soaked up by the large intestine, or **colon**, where it is purified and recycled into the bloodstream. The remaining solid waste, or stool, eventually enters the rectum, where it is stored until it is excreted as a bowel movement. The sigmoid portion of the colon is close to the end of the digestive tract, in the lower-left abdomen, and is where diverticulosis most commonly occurs. (See diagram)

## What Is Diverticulosis?

Diverticulosis of the colon is a condition rather than a disease. The inner wall of a healthy colon is strong and relatively smooth. The colon wall affected by diverticulosis forms weak, balloon-like sacs or pouches that protrude outward - much like a bulge forming on a worn inner tube. A single pouch is called a **diverticulum**. The presence of these pouches in the colon is called **diverticulosis**. Some people may have several small pouches on the left side of the colon, while in others, most of the colon may be affected. When the pouches become inflamed or infected, it is called **diverticulitis**. (In medicine, the suffix “-itis” refers to inflammation or infection...like appendicitis.)



## Who Gets Diverticulosis

Diverticulosis is a common condition affecting men and women. It usually develops over a long time and therefore appears later in life. It affects half of all people over 60 years of age and almost everyone by 80. It is a rare condition for someone under the age of 40, but it is a more aggressive problem for those individuals when it does. Diverticulosis is primarily a disorder of Western Society. It is scarce in rural Africa or India, where diets are very high in dietary fiber. Many researchers believe that a typical low-fiber American diet is accountable for the high incidence of diverticulosis. A diet deficient in fiber induces constipation leading to straining too hard during bowel movements, possibly worsening diverticulosis. Approximately 50% of diverticulosis cases may also have a hereditary component, as studies have shown that the risk in siblings is three times more likely.

## Diagnosis of Diverticulosis

Because diverticulosis usually causes no symptoms, it is often found incidentally during an abdominal examination performed for other reasons. This may include tests such as an abdominal CT scan, abdominal MRI scan, or colonoscopy. When symptoms suggest the possibility of diverticulitis, a CT scan is usually performed.

## **Complications of Diverticulosis**

Most people with diverticulosis experience no symptoms. However, complications can occur, including abdominal pain, rectal bleeding, and diverticulitis.

### Abdominal pain

Most diverticular pouches are painless. But over time, individuals may experience intermittent dull or crampy pain in the left lower abdomen. Pain is usually associated with a change in bowel habits. When diverticulosis is advanced, the lower colon may become restricted and distorted, causing thin or pellet-shaped stools and persistent bouts of constipation, with occasional rushes of diarrhea.

### Rectal bleeding

Bleeding can result in a gush of red blood from the rectum or maroon-colored stools caused by a ruptured blood vessel in one of the pouches. Bleeding often stops on its own, without treatment, but it requires careful evaluation and may include brief hospitalization until it's stabilized. Emergency surgery is rarely necessary to stop the loss of blood.

### Diverticulitis

Many beneficial bacteria reside in the colon - they are helpful as long as they stay there. Sometimes, the bacteria inside the colon can seep through the wall and cause infection outside the colon when one of the diverticular pouches becomes thin. This is called diverticulitis. Diverticulitis can be mild, accompanied by slight discomfort in the left lower abdomen, or extreme, with abscess formation, perforation, severe tenderness, and fever. Although diverticulosis leads to diverticulitis in only a tiny percentage of individuals, it remains a common disease in the United States, generating approximately 1.9 million outpatient visits and over 200,000 inpatient hospitalizations annually.

Treatment of diverticulosis varies and is unnecessary if there are no symptoms, but a fiber-rich diet is recommended. When diverticulitis does occur, simple bowel rest with a liquid or low-fiber diet for a few days, and antibiotics can usually halt a mild attack. In severe cases, patients may need hospitalization for intravenous antibiotics. Most people recover from diverticulitis without surgery, but it is sometimes essential to remove the affected portion of the colon. If a recent colonoscopy hasn't been performed, it is a recommended procedure six or eight weeks after the first episode to exclude other pathology such as malignancy.

## **Can You Prevent Complications?**

Unfortunately, there is no guaranteed way to prevent the complications of diverticulosis. The likelihood of complications increases with the severity of the diverticulosis. Sometimes the attacks of abdominal pain, rectal bleeding, and diverticulitis are random. While some individuals with extensive diverticulosis remain asymptomatic, others with very few diverticula develop one of the complications.

You need to know that there are certain risk factors you can alter to reduce your risk of diverticulitis. A high-fiber Mediterranean-type diet has been shown to reduce the risk. More vigorous physical activity, weight reduction, and nonsmoking may also be helpful. Avoid regular use of non-steroidal anti-inflammatory drugs (NSAIDs like Advil, Aleve, and Motrin), steroids, and opiates, as they increase the risk of complications of diverticulosis. (Low-dose aspirin taken for cardiac prophylaxis is not a problem.) Studies have shown that a low vitamin D blood level can increase the risk of diverticulitis. Therefore vitamin D3 supplementation is often recommended.

### **How About Probiotics?**

The microbiome is the collection of all microbes that naturally live on and inside our bodies. Although microbes such as bacteria, fungi, viruses, and their genes are so small that they can only be seen using a microscope, they contribute in big ways to human health and wellness: They protect us against pathogens; help to develop our immune system; and enable us to digest food to produce energy. It was hoped that taking probiotics may help prevent or treat diverticulitis, but both over-the-counter and prescription probiotics are *not* as worthwhile as anticipated. Research is ongoing on the microbiome's role in diverticulitis.

### **How About Surgery?**

For some patients, the best course of action is surgery. Known as surgical resection, the sigmoid colon is removed before reattaching the remaining colon to the rectum. Elective surgical referral is considered on an individualized basis. Asymptomatic patients and most patients with complications of diverticulosis do not require surgery. Surgery is rarely necessary for bleeding as the episodes are often infrequent and stop on their own. Patients who develop chronic lower left abdominal pain can benefit from surgical resection.

The most common reason for surgery is to stop recurrent attacks of diverticulitis. After the first attack, the recurrence rate is 8% in the first year and 20% within ten years. After a second episode, the recurrence risk is 18% in the first year and 55% by ten years. After a third episode, recurrence risk is 40% within three years. After three significant, well-documented attacks of diverticulitis, surgical resection of the sigmoid colon is often recommended. If it is necessary, it is always best to perform elective surgery between attacks. Most elective surgery cases for diverticulitis can be completed with minimally invasive techniques that require only small incisions, without the need for a colostomy. Emergency surgery during an attack is a much more complicated procedure resulting in a larger incision, greater risk of infection, longer recovery, and often requiring a temporary colostomy. It is best to recover from your acute episode, then plan elective surgery later whenever feasible. Patients immunosuppressed due to illness or prescription medication should consider surgical resection after the first documented episode as immunosuppression increases the risk of severe progressive disease.

### **Can Diverticulitis Occur After Surgical Resection?**

Yes, but after elective surgery for diverticulitis, the recurrence rate is quite low. Scientific trials estimate about a 10% chance of recurrent diverticulitis in the five years following surgical resection. In real-world clinical experience, the risk is much lower.

### **High-Fiber Diet**

Most health experts agree that a typical low-fiber American diet is the leading cause of chronic constipation and diverticular disease. In addition, as our foods are now more highly refined, an increasing number of the population is suffering from symptoms of irreversible diverticular disease. Once diverticular pouches have formed, they are there for the rest of your life.

Statistically speaking, the probability is high that you are not getting enough fiber in your diet. People in the United States generally average 10-15 g of dietary fiber per day instead of 25-35 g per day used by most dietitians as the minimum benchmark for a "high-fiber diet." Adding fiber and bulk to your diet promotes regular bowel function and is crucial in controlling and minimizing diverticular disease. Include foods rich in fiber, such as bran cereals, whole wheat bread, various beans, fresh fruits, and vegetables, to keep your stools soft and bulky. We can all benefit by making an effort to include more fiber or roughage in our diet. But don't get too carried away! Don't add too much fiber too soon. Otherwise, troublesome side effects such as increased gas and bloating may occur. *The golden rule regarding fiber is to go slow.* Start with small amounts and gradually increase the extra fiber in your diet.

Your doctor may also recommend a supplemental fiber product such as Metamucil or Benefiber. Adding a stool softener such as MiraLAX is often helpful when constipation persists. These products may be combined indefinitely without fear of dependency or side effects.

An essential part of a high fiber diet and supplements is hydration. Four 8-ounces glasses of water daily (32 ounces) is the minimum amount for normal bowel function. Drinking too little water is the most common reason for failure in a high-fiber diet.

### **How About Seeds?**

Many patients ask about seeds. It's a common misconception that eating seeds, nuts, or corn can worsen diverticulosis and precipitate an attack of diverticulitis, but there is no scientific evidence to support this belief. In fact, a 2008 Harvard Medical School study that followed 47,288 men for 18 years demonstrated that individuals who frequently consume such items had a 28% **decrease** in the risk of diverticulitis and bleeding. So, enjoy a high-fiber diet without restricting your favorite nuts and seeds intake.

The following list illustrates various categories of foods high in dietary fiber. Try to include foods from each group in your daily diet.

#### **Grains**

Bran cereals  
Shredded wheat  
Grape Nuts  
Whole wheat  
Fiber One

#### **Vegetables**

Green peas  
Carrots  
Winter squash  
Broccoli  
Brussel sprouts  
Sweet potatoes  
Artichokes  
Lima Beans

#### **Fruits**

Apples  
Pears  
Prunes  
Oranges

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The *Center for Digestive Health & Nutrition* is a private medical practice comprised of experienced Gastroenterologists, Nurse Practitioners, and staff members dedicated to preventing and treating digestive disorders. Our physicians have been serving the needs of those in Western Pennsylvania and surrounding areas since 1977, having cared for tens of thousands of individuals with digestive problems. Our mission is to deliver high-quality gastroenterology services efficiently and cost-consciously. We realize the very sensitive nature of GI illness and understand the necessity to provide our services in an environment that stresses patient privacy and confidentiality and where patient satisfaction is the goal. Appointments can be conveniently scheduled online via our website above. Learn more about diverticulosis and other digestive issues on Instagram @thedigestivetract

# Fiber Content of Common Foods

Basically, the term fiber refers to carbohydrates that cannot be digested. Fiber is present in all plants that are eaten for food, including fruits, vegetables, grains, and legumes. Looking to add more fiber to your diet? Fiber — along with adequate fluid intake — moves quickly and relatively easily through your digestive tract and helps it function properly. A high-fiber diet may also help reduce the risk of obesity, heart disease and diabetes.

<b>Almonds</b> slivered 1 tbsp 0.6 sliced 1/4 cup 2.4	<b>Carrots</b> raw, slivered (4-5 sticks) 1/4 cup 1.7 cooked 1/2 cup 3.4	<b>Greens, cooked</b> 1/2 cup 20 collards, beet greens, dandelion, kale, Swiss chard	<b>Potatoes</b> Idaho, baked 1 sm (6 oz) 4.2 mashed potato (with 1/2 cup milk) 1/2 cup sweet: baked 1 sm (5 oz) 4
<b>Apple</b> raw 1 small 3 raw 1 med 4 raw 1 large 4.5 applesauce 2/3 cup 3.6	<b>Cauliflower</b> raw, chopped 3 tiny buds 1.2 cooked, chopped 7/8 cup 2.3	<b>Lentils</b> brown, raw 1/3 cup 5.5 brown, cooked 2/3 cup 5.5 red, raw 1/2 cup 6.4 red, cooked 1 cup 6.4	<b>Prunes</b> pitted 3 1.9
<b>Apricots</b> raw 1 whole 0.8 dried 2 halves 1.7 canned in syrup 3 halves 2.5	<b>Celery</b> raw 1/4 cup 2 chopped 2 tbsp 1 cooked 1/2 cup 3	<b>Lettuce</b> (Boston, leaf, iceberg) shredded 1 cup 0.8	<b>Radishes</b> 3 5
<b>Artichokes</b> cooked 1 large 4.5 canned hearts 4 or 5 sm 4.5	<b>Cereal</b> All-Bran 3 tbsp 5 Bran Buds 3 tbsp 5 Bran Chex 2/3 cup 5 Bran Flakes, plain 1 cup 5 with raisins 1 cup 6 Cornflakes 3/4 cup 2.6 Cracklin' Bran 1/2 cup 4 oatmeal 3/4 cup 7.7 Nabisco 100% Bran 1/2 cup 4 Puffed wheat 1 cup 3.3 Raisin Bran 1 cup 5 Wheaties 1 cup 2	<b>Macaroni</b> whole wheat, cooked 1 cup 5.7 regular baked 10 oz 2.2	<b>Raspberries, red</b> fresh/frozen 1/2 cup 4.6 Raspberry jam 1 tbsp 1
<b>Asparagus</b> cooked, small spears 1/2 cup 1.7	<b>Cherries</b> sweet, raw 10 1.2 sweet, raw 1/2 cup 1.0*	<b>Muffins</b> English, whole wheat 1 whole 3.7 Bran, whole wheat 2 4.6	<b>Rice</b> white 1/2 cup 2 brown 1/2 cup 5.5 instant 1 serv 0.7
<b>Avocado</b> diced 1/4 cup 1.7 sliced 2 slices 0.9 whole 1/2 avg.size 2.8	<b>Chickpeas (garbanzos)</b> canned 1/2 cup 6 cooked 1 cup 12	<b>Mushrooms</b> raw 5 sm 1.4 sautéed or baked 4 lg 2 canned sliced 1/4 cup 2	<b>Sauerkraut</b> canned 2/3 cup 3.1
<b>Baked beans</b> in sauce (8-oz can) 1 cup 16	<b>Corn (sweet)</b> on cob 1 med ear 5 kernels 1/2 cup 5 cream-style, canned 1/2 cup 5 succotash 1/2 cup 6	<b>Noodles</b> whole wheat egg 1 cup 5.7 spinach whole wheat 1 cup 6	<b>Shredded wheat</b> large biscuit 1 piece 2.2 spoon size 1 cup 4.4
<b>Banana</b> whole 1 med 8" 3	<b>Crackers</b> graham 2 1.4 Ry-Krisp 3 2.3 Triscuits 2 2 Wheat Thins 6 2.2	<b>Onion</b> raw 1 tbsp 0.2 cooked 1/2 cup 1.5 instant minced 1 tbsp 0.3 green, raw (scallion) 1/4 cup 0.8	<b>Spaghetti</b> whole wheat, plain 1 cup 5.6 with meat sauce 1 cup 5.6 with tomato sauce 1 cup 6
<b>Beans</b> black, cooked 1 cup 19.4 Great Northern 1 cup 16 kidney beans, canned or 1/2 cup 9.7 cooked 1 cup 19.4	<b>Cucumber, raw</b> unpeeled 10 thin slices 0.7	<b>Orange</b> 1 lg 7.0 1 sm 3.5	<b>Squash</b> summer (yellow) 1/2 cup 2 winter 1/2 cup 3.5
<b>Beets</b> cooked, sliced 1/2 cup 2.5 whole 3 sm. 3.7	<b>Dates, pitted</b> 2 39	<b>Peach</b> raw 1 med 2.3 canned in light syrup 2 halves 1.4	<b>Zucchini</b> raw or cooked 1/2 cup 3
<b>Blackberries</b> raw, no sugar 1/2 cup 4.4 canned, in juice pack 1/2 cup 5 jam, with seeds 1 tbsp 0.7	<b>Eggplant</b> baked with tomatoes 2 thick slices 4	<b>Peanut butter</b> 1 tbsp 86	<b>Strawberries</b> 1 cup 3
<b>Bread</b> Boston brown 2 slices 4.0 cracked wheat 2 slices 3.6 high-bran bread 2 slices 7.0 white 2 slices 1.9 dark rye (whole grain) 2 5.8* slices 5.8* pumpnickel 2 slices 4 seven-grain 2 slices 6.5 whole wheat 2 slices 6 whole wheat raisin 2 slices 6.5	<b>Endive, raw</b> salad 10 leaves 0.6	<b>Peanuts</b> dry roasted 1 tbsp 1.1	<b>Sunflower</b> kernels 1 tbsp 0.5 Sweet pickle relish 1 tbsp 0.5
<b>Broccoli</b> raw 1/2 cup 4 frozen 4 spears 5 fresh, cooked 3/4 cup 7	<b>Figs</b> dried 3 10.5 fresh 1 2	<b>Pear</b> 1 med 8.8	<b>Tomatoes</b> raw 1 sm. 1.4 canned 1/2 cup 1 sauce 1/2 cup 0.5
<b>Brussel sprouts</b> cooked 3/4 cup 3 1 cup 9.6	<b>Grapefruit</b> 1/2 3	<b>Peas</b> green, fresh or frozen 1/2 cup 9.1 black-eyed 1/2 cup 8 split peas, dried 1/2 cup 6.7 cooked 1 cup 13.4	<b>Walnuts</b> shelled, chopped 1 tbsp 1.1
<b>Cabbage, white or red</b> raw 1/2 cup 1.5 cooked 2/3 cup 3	<b>Grapes</b> white 20 1 red or black 15-20 1	<b>Peas and carrots</b> frozen 1/2 pkg(5 oz) 6	<b>Watermelon</b> 1 thick slice 6.8
	<b>Green (snap) beans</b> fresh or frozen 1/2 cup 2.1	<b>Peppers</b> green sweet, raw 2 tbsp 0.3 green sweet, cooked 1/2 cup 1.2 red sweet (pimento) 2 tbsp 1 red chili, fresh 1 tbsp 1.2 dried, crushed 1 tsp 1.2	<b>Yams</b> (orange fleshed sweet potato) cooked or baked 1 med (6oz) 6.8

