Digestive System

DIVERTICULAR DISEASE
(DIVERTICULOSIS AND DIVERTICULITIS)

What Is It?

Diverticula (the plural form of diverticulum) are herniations or protrusions that out-pouch from any portion of the intestinal tract, but most commonly from the colon. These outpouchings occur between the outer muscular coat and the arteries and veins that penetrate the outer wall of the colon. Colonic diverticula generally are pea-sized, but vary in diameter from a few millimeters to several centimeters. The number of diverticula in a patient varies from one to several dozen.

Diverticula usually form in the lower left (sigmoid) portion of the colon, though they may also be present in the transverse colon (which runs horizontally from right to left side). These sacs may form in the right (ascending) side of the colon as well, although this is not common. When diverticula are present, the condition is known as diverticulosis. When a diverticulum becomes inflamed, the condition is referred to as diverticulitis. These types of diverticula are usually an incidental finding on X-rays or in surgery, but occasionally can be the source of bleeding.

What Causes It?

The cause of diverticular disease is not known with certainty, but there are a few factors that contribute to its development. These include:

• Lack of dietary fiber
• Intestinal pressure and spasms
• Dysbiosis (imbalance in the ratio of good to bad bacteria in the gut)
• Stress

It is believed that lack of dietary fiber may play a key role, for it has long been noted that diverticular disease is practically non-existent in groups of people who eat high-fiber diets. Fiber is abundant in fruits, vegetables and whole grains that are largely lacking in the Standard American Diet (SAD). Such a low-fiber diet disrupts normal motility (movement of food waste through the colon), setting the stage for development of diverticula. Dietary fiber increases the bulk of the stool, softens it and maintains normal colonic diameter.

Dietary fiber gives the colon something to push against; in a sense, it exercises the colon. When stool stays in the colon too long, it becomes dry, small and hard. The colonic muscles have to contract harder to move the constipated stool through the colon, which creates greater pressure in the colon. Eventually, the muscle layer hypertrophies (thickens) and can even become rigid. In addition, straining to pass stool may further increase intracolonic pressure and also promote diverticular formation.

It has also been proposed that diverticula form as a result of spasms of the muscles in the intestinal wall. Such spasms may cause the lining of the intestine to bulge through the weakest area of the muscular wall. Here again, dietary fiber plays a role, for by giving the muscles bulk to work against, the likelihood of spasm is decreased.

Emotional stress is another factor that can adversely affect musculature and increase intestinal pressure. Along with
stress, it has also been established that smoking makes diverticulitis worse.

With regard to the inflammation of diverticulitis, it is thought to be the result of the entrapment of a piece of hard, dry stool in a diverticular pouch that triggers inflammation. This is due to pressure, bacteria and free radicals in the stool that can damage the diverticular wall, and cause bleeding from the adjacent blood supply and/or lead to perforation, infection and abscess formation.

Another contributor to diverticulitis seems to be altered gut flora, or dysbiosis, an imbalance in the ratio of good to bad bacteria in the gut. This, coupled with low-grade chronic inflammation, may lead to acute episodes of diverticulitis similar to inflammatory bowel disease (IBD).

Diverticular disease is a disease of modern civilization. Interestingly, diverticulosis was not reported in the U.S. until the beginning of the 20th century when it became routine to remove fiber from grain products. Also of interest is the fact that diverticulosis is seldom seen in vegetarians, and is almost unknown in India and parts of Africa where high-fiber diets are the standard.

While diverticular disease can affect people of any age, it most commonly makes its first appearance in people between the ages of 50 and 90. Diverticula tend to occur equally in men and women, and those with a family history of the disease are more apt to develop it.

What Are the Signs and Symptoms?

Many people who develop diverticulosis are asymptomatic, or without symptoms, however the primary symptom is constipation. An individual may not even know the condition is present unless it shows up on a diagnostic test done for another purpose. Where symptoms are present, they may include localized tenderness or pain, usually over the left side of the abdomen. The pain may be intermittent and vary in intensity, often increasing when pressure is applied to the abdomen. There may be muscle spasms in the abdomen, and, in some cases, blood in the stool when feces get trapped inside a pouch, and cause an adjacent
blood vessel to rupture. Abdominal distress may increase after eating.

The mere presence of diverticular pouches is not a problem requiring treatment; only when the pouches become inflamed is action needed. While diverticulosis may be asymptomatic, a person with diverticulitis will definitely know that something is amiss. The symptoms will probably move a sufferer to seek immediate medical attention, which is a correct course of action, since this disease can lead to potentially life-threatening consequences. A person who has developed diverticulitis may experience any of the following symptoms:

- Abdominal pain, cramping, tenderness (usually left-sided)
- Fever
- Chills
- Bloating
- A change in bowel habits (constipation or diarrhea)
- An almost continual need to eliminate
- Blood in the stool
- Elevated white blood cell count (an indication of infection)
- Nausea
- Vomiting

Serious complications, including intestinal obstruction and perforation, may develop. With obstruction, there is blockage of the flow of fecal material out of the body. In perforation, a tear or hole in the wall of the colon develops allowing colon bacteria to spill over into other areas of the body. If the person is lucky, the body will seal off the infection with the surrounding tissue. If the inflammation does not seal this perforation, the colon bacteria can infect the peritoneal abdominal cavity, a very serious condition called peritonitis. If the infection gains systemic access through the bloodstream, septicemia (infection of the bloodstream) results. Such infections are very serious, and can lead to death if not promptly treated.
Infection can spread to other areas of the body in the form of a fistula, which is an abnormal passage between two organs or between an organ and the skin. Most commonly this occurs between the colon and the bladder when colonic bacteria invade the bladder and cause infection there.\textsuperscript{10} Formation of a fistula is a serious medical problem usually requiring surgical intervention.

\section*{How Is It Diagnosed?}

Many times, diverticular pockets are found in the course of routine diagnostic procedures, such as x-rays or endoscopy, done for other purposes. Since many people with diverticulosis have no symptoms, they are surprised to learn of the presence of the condition.

Abdominal palpation will give the examining physician a clue regarding the correct diagnosis. Even with mild diverticulitis, discomfort tends to increase as pressure is applied. Routine blood tests can be helpful because an elevated white blood cell count will indicate infection, a common sign of diverticulitis. An ultrasound examination or computerized tomography (CT) scan can provide more information if diverticulitis is suspected.

A barium enema may be used to confirm the diagnosis, but some doctors caution against using this procedure during acute episodes since it involves filling the colon (or a portion of it) with liquid barium.\textsuperscript{11,12} The reason for concern is, if the bowel has already perforated, there will be spillage of barium, which is quite irritating, into the abdominal cavity.

A sigmoidoscopy or a colonoscopy may also be performed. In these procedures, the doctor is also able to take tissue samples for later analysis. As with the barium enema, some doctors feel that an endoscope may be a dangerous instrument to pass into an inflamed colon.\textsuperscript{13} It may be prudent to hold off on any invasive diagnostic procedures until inflammation has subsided. In some cases the patient’s own clotted blood can be mixed with clotting agents and injected into the identified bleeding site which may obviate the need for surgery.

Where bleeding is present, a bleeding scan is employed as an initial screen. An isotope (a mildly radioactive material) is injected into an arm vein and allowed to circulate in the body. To confirm the site of bleeding, a special X-ray, called an angiography, is done. In this procedure, a dye is injected into an artery that goes into the colon so the site of bleeding can be located. This is very helpful in the event that emergent surgery is needed to locate the general problem area.

In the rare instance where inflamed diverticular pouches occur in the ascending colon (right side of the abdomen) distinguishing diverticulitis from appendicitis can be
problematic for the physician. It is also significant that soft tissue, abdominal, muscular or ovarian problems can mimic diverticular disease.\textsuperscript{14} Additionally, the inflammation of diverticulitis can resemble the segmental inflammation characteristic of Crohn’s disease, and the symptoms of diverticulitis may mimic those of colon cancer and other conditions. Differential diagnosis in these situations becomes extremely important.

**What Is the Standard Medical Treatment?**

Where diverticula are found, but no symptoms or inflammation is present, treatment is not recommended, though the patient may be counseled to increase the amount of fiber in the diet as a preventive measure. One very large study has found that insoluble fiber is of particular importance.\textsuperscript{15} A good diet, one that is free of processed foods and high in fiber, can help keep existing diverticula free of infection. There is no known way to get rid of diverticula once they have formed, but individuals can take steps to prevent more of them from forming, and to avoid their development into diverticulitis by following the Fiber 35 Eating Plan in the Appendix of this book.

In the acute stages of an episode of diverticulitis, whether it is a mild or severe case, there are two critically important steps that must be taken to successfully treat the condition:

1. **Rest the bowel** – bowel rest is accomplished through elimination of solid foods and adhering to a clear liquid diet during the initial phases of the episode. If the condition is severe, the patient may be placed strictly on intravenous fluids, and hospitalization may be required. As symptoms subside, a soft, low-fiber diet is initiated. Keeping fat intake low may also help in reducing pressure inside the colon.\textsuperscript{16}

2. **Control the infection**\textsuperscript{17} – infection control is traditionally accomplished through the use of antibiotics. These will be administered intravenously to the patient whose condition is severe enough for him/her to be hospitalized. Total bed rest will be required. In milder cases, bed rest is still advised, though the patient need not be hospitalized. The patient will be given oral antibiotics and put on a clear liquid diet initially, then a soft, low-fiber one. The Fiber 35 Eating Plan can be initiated within a month of recovery from the acute episode of diverticulitis. The majority of patients recover without surgery.

Once a normal diet is resumed, in addition to emphasizing high-fiber foods, the patient is often counseled to avoid tiny seeds and nuts as it is believed that these may get trapped in diverticula causing inflammation. These are healthy foods, though, and can be ground in a coffee grinder before eating without having a harmful effect on the intestine. Although diverticulitis is a serious condition, it is encouraging that diverticula do not predispose a person to colon cancer, or even to precancerous polyps.\textsuperscript{18}
In my own personal experience I have treated many patients with acute diverticulitis but have not found it necessary to operate on but a small percentage. With bed rest, IV fluids, antibiotics, and even in some cases hyperalimentation, it was surprising how many patients recovered without surgery. Furthermore, on long-term follow up, a percentage of these patients did not appear to develop recurrent diverticulitis. This was most likely the outcome in people who were willing to follow a prescribed program which included hydration, and the HOPE program – High fiber, Omega oils, Probiotics and digestive Enzymes. In addition, supplements with multivitamins, minerals and antioxidants were recommended.

The sad part of early surgical intervention for diverticulitis is that it invariably results in two, if not three operations. Typically, the first operation will be drainage of an abscess and a diverting colostomy; the second operation being resection of the area of the diverticular perforation, often with much of the surrounding area that includes diverticuli; and third, closure of the colostomy. When all three operations are necessary, it often takes at least three to six months for the patient to recover, and at great expense. However, sometimes all of this is necessary.

We now know that at least SCAD (segmental colitis associated with diverticula) may occur due to dysbiosis, or microfloral imbalance. Therefore, in order to prevent diverticulosis/diverticulitis, good hydration, exercise, daily bowel movements, good nutrition, fiber and probiotics should be used on a regular basis as part of a wise health program.
Diverticulosis is clearly due to a lack of dietary fiber. A high-fiber diet is protective against the development of diverticulosis, as well as protective of the inflammation of diverticulitis in people who already have diverticulosis. Follow the Fiber 35 Eating Plan (see the Appendix) as an important part of maintaining health with diverticulosis.

Diverticulitis can be a dangerous condition, especially if a ruptured diverticula is involved, which can poison the whole body. A medical doctor should be consulted in the case of diverticulitis. For those who have been treated by a doctor, are coming out of an attack of diverticulitis, and are allowed to eat food, the following suggestions will be helpful.

**Diet**

- Active diverticulitis may require a total liquid diet and/or intravenous fluids under hospital supervision.
- If you are recovering from a recent attack, and have been approved to eat soft foods, follow the Fiber 35 Eating Plan in the Appendix until feeling better.
- When using nuts and seeds, soak them overnight, and then grind with a high-speed blender or coffee grinder before eating.
- Use fresh garlic liberally as it is a great natural antibiotic, and can help prevent recurrent infections.
- Cook whole grains with twice the recommended water and for twice as long.

**Lifestyle**

- Exercise, such as walking or light jogging, has been shown to be helpful to protect against diseases of the colon.
- Avoid constipation by using stool softeners or natural laxatives.
- Use the LifeStep, a toilet step that will help raise your feet, so you are in natural squatting position for better elimination.

**Complementary Mind/Body Therapies**

- Periodic Colon hydrotherapy can be extremely helpful with diverticulosis as part of your preventive measures. Colon hydrotherapy should NOT be used during a diverticulitis attack.
- Yoga and/or pilates could be beneficial as there are exercises to strengthen the abdominal area. The colon is a muscle and, just like any other muscle, needs to be toned.

**Brenda’s Bottom Line**

- Eat slowly and chew foods well to mush before swallowing.
- Drink plenty of clean, purified water.
<table>
<thead>
<tr>
<th>Recommended Nutraceuticals</th>
<th>Dosage</th>
<th>Benefit</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical Phase</strong></td>
<td>Daily maintenance recommendations should also be taken during this phase unless otherwise indicated.</td>
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<tr>
<td><strong>Follow daily maintenance protocol below.</strong></td>
<td>In the case of diverticulitis, medical intervention is necessary. Always follow your doctor’s suggestions and care. The following recommendations are for maintenance of diverticulosis and reduction of the likelihood of infection and inflammation.</td>
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<tr>
<td><strong>Helpful</strong></td>
<td></td>
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<tr>
<td>Natural Laxative Formula</td>
<td>Use as directed</td>
<td>Reduces straining and pressure due to constipation.</td>
<td>Use products based on magnesium with mild herbs. Avoid purgative herbs like cascara and senna.</td>
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<tr>
<td>Antioxidant Supplement</td>
<td>Use as directed</td>
<td>Protects tissue from damage.</td>
<td>Look for a high potency antioxidant formulation.</td>
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<td><strong>Daily Maintenance</strong></td>
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<td>Probiotics</td>
<td>50 billion culture capsule 1-2 times daily</td>
<td>Maintains and restores bacterial ecology and pH of the colon.</td>
<td>Look for one with high amounts of bifidobacteria. This is the main bacteria in the colon.</td>
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<td>Fiber</td>
<td>10-15 grams twice daily</td>
<td>Adds bulk to strengthen the colon wall. Reduces the chance of waste getting into diverticula.</td>
<td>Extremely important to the prevention of diverticulitis and the further development of diverticula.</td>
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<tr>
<td>L-Glutamine Powder with Gamma Oryzanol</td>
<td>5-10 grams daily</td>
<td>Helps maintain health and integrity of intestinal lining. Reduces inflammation.</td>
<td>Best taken in loose powder form verses capsules.</td>
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<tr>
<td>Omega-3 Fatty Acids</td>
<td>At least 2 grams daily of EPA/DHA combination</td>
<td>Helps restore moisture to the intestinal tract. Provides lubrication.</td>
<td>Look for a concentrated, enteric coated fish oil.</td>
</tr>
<tr>
<td>Digestive Enzymes</td>
<td>Take with meals</td>
<td>Needed for normal digestion of foods.</td>
<td>Look for one that includes protease, lipase, amylase and lactase.</td>
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See further explanation of supplements in the Appendix