Patient information regarding care and surgery associated with **DIVERTICULITIS**

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Diverticulitis

Diverticulosis is the presence of protrusions or outpouchings of the lining of the colon through the muscular layer. Diverticulosis occurs in 1-2% of people less than 30 years of age, 5% less than 40, 10-15% less than 50, and up to 60% of those greater than 60 years of age. The etiology of diverticulosis is not known but may be associated with increased pressure inside the colon and a weakened colon wall at the site where blood vessels penetrate. Diverticulitis occurs when inflammation is superimposed on diverticulosis and may occur in 10-25% of all patients with diverticulosis. The sigmoid colon is affected in 95% of patients with diverticulitis.

75-85% of patients with uncomplicated diverticulitis will respond to antibiotics and bowel rest. Of those who respond to antibiotics, 25-45% will have a second episode of diverticulitis within 2 years of the first attack. 20-33% of patients admitted to the hospital with diverticulitis will require an operation during that admission.

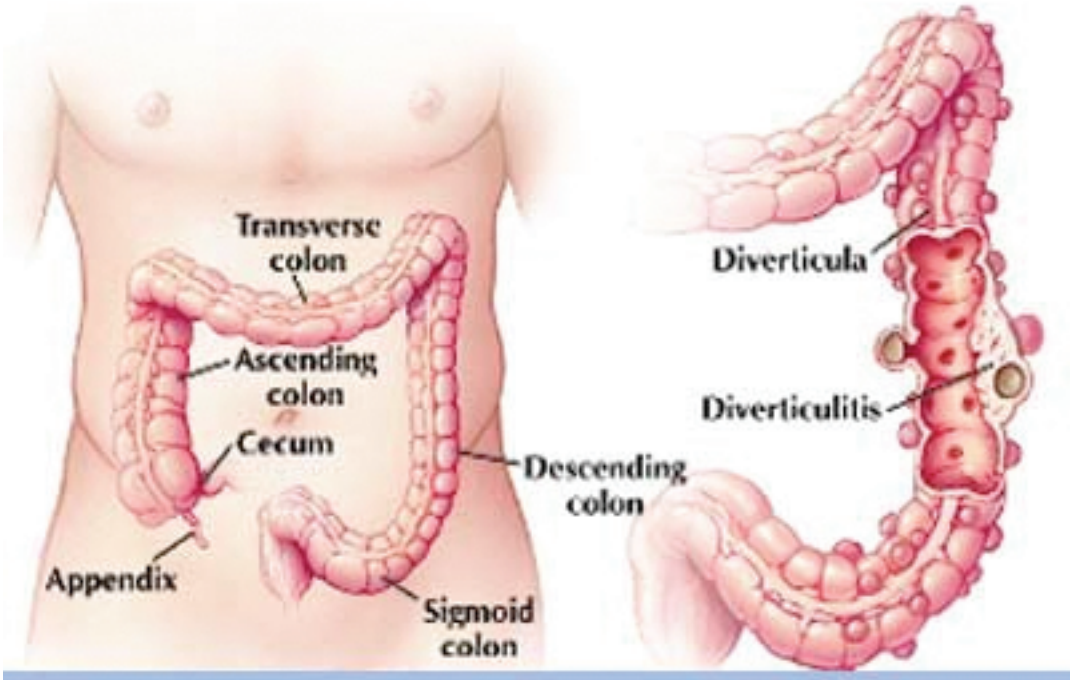
About the Colon and Rectum

The colon and rectum is about 5 feet long. Food passes through the stomach, then the small bowel, then the colon, and finally the rectum and anus. The small bowel is 12-20 feet and is largely responsible for absorption of nutrients and vitamins in food. The colon absorbs water but the small bowel can assume this function in the absence of the colon. In fact, there are several diseases that require removal of the entire colon and rectum. These patients generally lead normal lives and do not develop malnutrition because their small bowel is intact. Removing a portion or all of the colon and rectum may result in diarrhea, urgency, or gas/stool leakage but usually not.

Symptoms

Symptoms of diverticulitis may include abdominal pain, nausea, vomiting, fever, chills, change in bowel habits (new onset diarrhea or constipation), a feeling of incomplete evacuations, and others. Some of these same symptoms occur in patients with colon cancer and so it is important to differentiate these two diseases. This may be done with colonoscopy or flexible sigmoidoscopy and contrast enema xray, but sometimes requires surgery. Some patients have low-grade symptoms that interfere little with activities of daily living. Others have episodes that require a visit to the emergency room or admission to the hospital. Some patients may require a CT scan to confirm the diagnosis or evaluate for a possible abscess. A smaller number of patients have severe symptoms of diffuse abdominal pain and distention related to a perforation that ultimately requires emergency surgery. Others may have symptoms related to the urinary tract. These symptoms include urinary urgency and frequency, passing gas or stool out the urinary tract, or frequent urinary tract infections.

Other diseases result in symptoms that may mimic diverticulitis and include irritable bowel syndrome (IBS), ischemic colitis, ulcerative colitis, infectious colitis, Crohn's disease, rarely colon cancer, and others.



At the Time of Your Visit

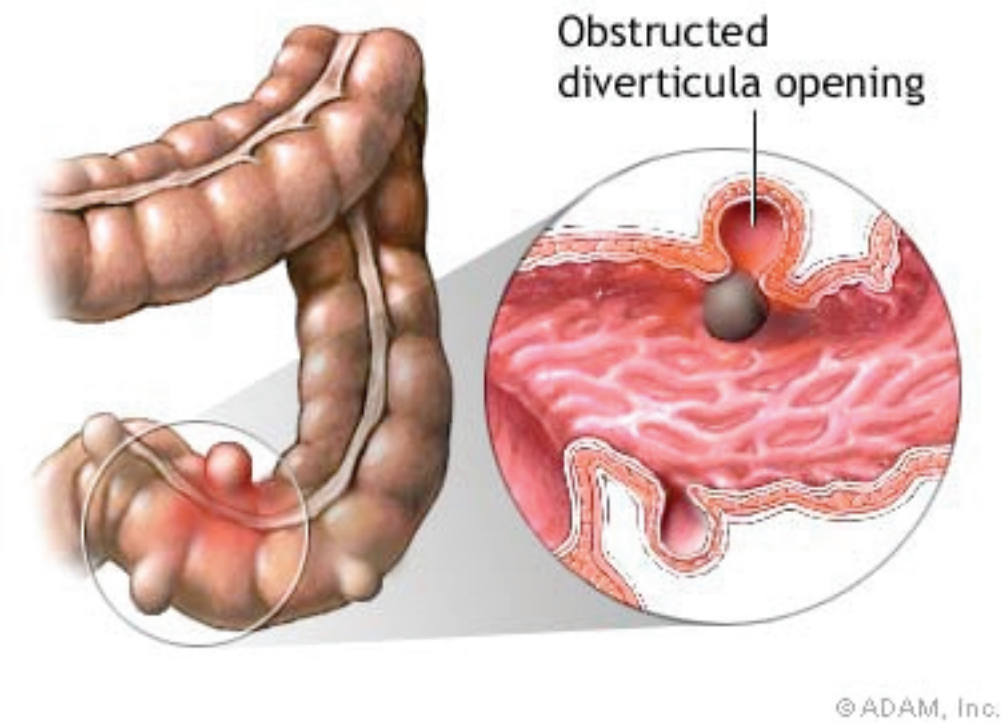
When you are seen by the colorectal specialist, you will be asked several questions with respect to your history. If you have had blood tests, x-rays, colonoscopy, ultrasound, and CT scans, make sure these are made available to your colorectal specialist prior to your visit. Some of these tests may be ordered by the colorectal specialist if they have not already been done. A general examination to include heart, lungs, and abdomen will likely be performed. Following this examination, if enough information is available, a detailed discussion with your colorectal specialist regarding treatment options will follow. If your operation involves the possibility of a colostomy or ileostomy, you should have an appointment with the enterostomal nurse prior to surgery. She will provide important information regarding life with a stoma, educate you regarding any nuances, and may mark an optimum site on your abdominal skin.

At the time your surgery is scheduled, you may be asked to undergo preprocedure testing which may include blood tests, xrays, and an EKG. You will also be instructed in a mechanical bowel prep that will clean out your colon in preparation for surgery and is described below.

Treatment Options

1) High Fiber Diet or Fiber Supplements

20 grams or more of fiber in the diet results in high fiber bowel movements that cause less pressure in the colon and are easier for the colon to propel forward. Unprocessed bran may reduce pain in patients with diverticular disease but does not decrease the incidence of inflammatory attacks, that is diverticulitis.



2) Antibiotics

Some patients with relatively low-grade symptoms may be treated as an outpatient with oral antibiotics. Those that do not respond or those who present with more severe symptoms requiring hospitalization are usually treated with intravenous antibiotics. If your colorectal specialist feels by examination that there is no free perforation, then you may be treated with bowel rest and intravenous antibiotics alone at first. Those patients who resolve their symptoms within 24-48 hours may be well enough to eventually be discharged from the hospital without an operation. If you are a candidate for an elective operation, this will be discussed with you by your colorectal specialist. This group of patients should have a colonoscopy or flexible sigmoidoscopy and contrast xray as an outpatient to exclude colon cancer and other diseases that may mimic diverticulitis. Those patients who do not resolve their symptoms in a short time frame (days) may undergo a CT scan. If an abscess is discovered, this may require drainage with a catheter under guidance of the CT scan. This may allow the infection to resolve enough to allow more elective surgery. Others may require more urgent operation if the abscess is not amenable to drainage.

3) CT Scan-Guided Percutaneous Drainage

As stated above, some patients with diverticulitis do not respond initially to antibiotics or have symptoms that warrant a CT scan. These patients may be found to have an associated abscess. This abscess may be amenable to drainage under CT scan guidance. This may allow the infection to resolve enough to allow surgery to be performed more electively and with less risk for a colostomy.

4) Surgery

Sigmoid Colectomy
Low Anterior Resection
Subtotal Colectomy

Since diverticulitis affects the sigmoid colon about 95% of the time, surgery for diverticulitis usually requires removal of the sigmoid colon. Occasionally this requires removal of a portion of the rectum. This is then referred to as a low anterior resection. After removing the involved portion of colon, the 2 open ends are then sutured or stapled together. Under some circumstances (about 5%) it may be necessary to perform a colostomy (bag) or ileostomy, especially if the operation needs to be done emergently or if the inflammation and scarring is greater than expected.

Surgery is often indicated for patients with complicated diverticulitis. Complicated diverticulitis is defined as diverticulitis associated with perforation, an abscess, obstruction, or a connection between colon and bladder or colon and vagina. Surgery may also be indicated if it is difficult to rule out cancer after standard studies are performed.

The indications for surgery in patients with uncomplicated diverticulitis are less clear. Some would suggest that surgery is indicated in patients who have had 2 episodes of diverticulitis requiring hospitalization. However, some patients may benefit from surgery even after 1 episode in some circumstances. Others may have 3, 4 or even 5 episodes of diverticulitis and not require surgery. The difficulty lies in predicting which patients with uncomplicated diverticulitis are at risk for complicated diverticulitis, especially those complicated by free perforation, the need for emergent surgery, and the need for a colostomy. Recent literature suggests that most patients who have free perforations do so during their first episode. The decision whether or not to proceed with surgery is made by patient and colorectal surgeon together after discussing options, risks, and benefits to non-operative and operative treatment.

Those patients who are not operated on emergently may be asked to drink a solution that clears the colon and rectum of stool in preparation for surgery. This preparation is usually done at home the day prior to surgery. You may be asked to take antibiotics by mouth every hour for 3 doses after completing the mechanical bowel preparation. You will be asked not to eat or drink anything after midnight prior to surgery but you may take your medications with a sip of water. You will be asked to arrive at the hospital several hours prior to the scheduled surgery time. Upon arrival you will meet the nursing staff who will ask you historical questions and prepare you. You will meet the anesthesiologist who will explain anesthetic options. The vast majority of our patients have an epidural (in the back) or abdominal wall (in the front) anesthetic in addition to a general anesthetic. The epidural catheter is left in your back (well secured) during and after surgery as it is the best method to obtain pain control without many of the mental cloudy side effects.

You will be expected to be up in a chair and walk with assistance as soon as you are awake and alert after surgery. You will be started on liquids as soon as you are awake and alert after surgery, and will be offered a soft diet shortly thereafter. You may be the best judge of what you can and cannot tolerate after surgery. If it is appealing to you, it is probably OK to drink liquids and/or eat food. If it is not appealing, there is no rush. If you have an ileostomy or colostomy, an Enterostomal Nurse will visit you and educate and instruct you with regard to care of the stoma.

The operation best suited for you will be discussed with you in detail at the time of your office visit or during your hospital stay in you are an inpatient. The operation is typically done through a midline (up and down) incision. Some patients may be candidates for laparoscopic or robotic (minimally invasive) surgery in which case the incisions may be much smaller. Options and risks will be discussed at length at this time. If anything is not clear or if you have questions, you should feel free to ask your colorectal specialist.

Risks of Surgery

Our hope and expectation is that you have uncomplicated surgery and a successful outcome. This is not always predictable, however, and something that cannot be guaranteed.

The risks of surgery for diverticulitis include

1) bleeding

2) infection
   a. abdominal wound or intra-abdominal infection or abscess

3) anastomotic leak (suture or staple line leak)
   a. may require antibiotics, longer hospitalization, drainage with CT scan guidance, or another surgery to resolve
   b. may require temporary or permanent colostomy or ileostomy
   c. may result in death from sepsis

4) abscess
   a. may require antibiotics, longer hospitalization, drainage with CT scan guidance, or another surgery to resolve

5) increased bowel movement frequency

6) bowel movement leakage

7) bowel movement urgency

8) injury to ureter
   a. structure than carries urine from kidneys to bladder

9) injury to other bowel and blood vessels

10) injury to or dysfunction of urinary bladder

11) bowel obstruction
   b. usually from adhesions from surgery
   c. can occur in 10-20% of patients
   d. may require another operation

12) ileus
   a. The bowels may stop working after surgery. About 10% of patients require a nasogastric tube (tube placed through nose to stomach) to relieve nausea and bloating. When this occurs, it is referred to as an ileus.

13) sexual dysfunction
   a. impotence or retrograde ejaculation in men (rare)
   b. depends on age and level of rectal dissection
   c. pain with intercourse in women

14) possible temporary or permanent colostomy (bag) or ileostomy

15) stoma complications
   a. for those patients with ileostomy or colostomy
   b. retraction, ischemia (poor blood supply), hernia, prolapse

16) general operative complications
    a. heart attack: especially those with heart history
    b. pneumonia
    c. sepsis
    d. blood clot in leg
    e. blood clot from leg to lung (can be life threatening)
    f. urinary tract infection
    g. leg nerve injuries (result of retractors or leg stirrups: rare)

17) incisional hernia
    a. may require operation to repair

18) anastomotic stricture
    a. may result in constipation (unusual)
    b. may require dilation through scope to repair
    c. may require operation to repair

19) persistent abdominal pain and other symptoms 25% of patients who have successful surgery for diverticulitis will continue to have symptoms which may include abdominal cramps, constipation, abdominal distention or bloating, and diarrhea

20) trocar injury to bowel and blood vessels (laparoscopic and robotic) this risk is rare and is in addition to the above risks for open surgery

21) possible death

After Surgery

After major abdominal surgery, expect to be in the hospital 2-3 days. Some patients are ready for discharge as early as 1-2 days after laparoscopic and robotic surgery. Most patients are ready for discharge 3-4 days after open surgery, and occasionally as early as 2 days. Some may remain longer if the bowels are slow to recover (ileus) or if a complication develops. The specimen removed at the time of surgery is sent to the pathologist who examines it. About 4 working days (not including Saturday and Sunday) after surgery, a pathology report will be generated. Your colorectal surgeon will review this report with you and discuss what it means.

After Discharge

During your office visit, you will receive written handouts about colon cancer. In addition to scheduling your surgery, you will be scheduled to meet with the Nurse Navigator to discuss the Enhanced Recovery protocol. Be sure to follow the directions learned during this meeting and emphasized in the handouts. Prior to discharge from the hospital, you will receive oral and written discharge instructions.

Activities:

1) No lifting > 10 lbs for 6 weeks.
If you have an abdominal incision you should not lift anything greater than 10 pounds for 6 weeks from your surgery date. Unless otherwise instructed you may walk and climb stairs.

2) Rest.
You may feel like resting more after surgery. Slowly start to do more each day. Rest when needed. Because smoking interferes with wound healing, don't smoke. Your chances of stopping are greatly increased if you use medication or attend a program to help you. Discuss this with your doctor.

3) No driving.
You should not drive a car until your first office visit at which time you will be further instructed. You may ride in a car. When you get the OK to drive, do not do so while taking narcotic pain medications (oxycodone). This is the same as driving drunk.

Diet: You may eat a regular diet unless otherwise directed.

Medications:

1) Unless otherwise directed, you should restart the medications you were taking prior to admission to the hospital.

2) Fiber supplements: We generally do not recommend restarting fiber supplements (Metamucil, Citrucel, Benefiber) for 4-6 weeks after surgery. We will discuss this with you again at your first office visit after surgery.

3) Stool softeners: We often recommend stool softeners (colace 100mg twice a day) after surgery unless you have diarrhea. This is especially important if you are taking narcotic pain medications, all of which can be constipating.

4) Pain Medication: You may receive a prescription for pain medicine. Remember that narcotic pain medication (Vicodin, Percocet, hydrocodone, Norco, etc.) can be constipating and you may need a stool softener and you should drink plenty of fluids. If you have nausea or vomiting, it may be related to the pain medicine and you should call the office. Always take your medication as directed by your physician. If you feel it is not helping, call your physician. Do not drink alcoholic beverages (beer, wine or liquor) when taking pain medications.

5) Ask your doctor before taking any supplements, herbal or over-the-counter medications. Call your doctor if you have any questions regarding cost, dose, frequency or purpose of medications.

Enhanced Recovery:

If you are participating in Enhanced Recovery, you may be asked to record your inputs (fluids by mouth) and Outputs (urine and stool output). If there are abnormalities with respect to this or if you have questions, you should call our office. Follow the instructions you received before surgery unless otherwise directed. Again, if you have questions, please feel free to call our office.

Colostomy or Ileostomy:

If you have a stoma (colostomy or ileostomy bag), you will be seen by our Enterostomal Nurses and may receive separate discharge instructions. If you have questions, call our office or the Enterostomal Nurses.

Instructions:
You should call our office (734-712-8150) for :

1) Fever > 100.5 degrees (38 degrees Celsius). You should take your temperature at least 4 times a day. If you develop a cold, sinus problems, flu-like symptoms, or fever for any reason, call the office.

2) Problems urinating, (burning or stinging) or if you suspect an infection of any type, call your doctor immediately.

3) Nausea, vomiting, or not tolerating liquids/meals. Call the office first. We will then direct you and if you need to be seen, we may be able to see you in the office. If we can not see you in the office (especially after hours and on weekends), we will tell you whether or not you should come to the Emergency Room.

4) Watch your incision for signs of infection: unusual or increasing pain, redness, warmth, increasing swelling, yellow or green drainage, foul odor, separation of skin or underlying tissues, if your bandage becomes soaked with blood or other drainage, call the office. To prevent infection, always wash your hands before caring for your wound or incision. You may shower. Let soap/water run over your incision; pat dry. No baths, hot tubs, or swimming for at least 2 weeks. Bruising around your incision is normal.

5) Constipation or diarrhea, or other problems that you feel need to be addressed.

6) If pain is not controlled, call the office.

7) If you develop chest pain or shortness of breath or leg swelling or pain in the legs, you should call your primary physician or our office or come to the Emergency Room. If you feel it is an emergency, call 911.

Most patients take 6 weeks off from work after having abdominal surgery. You may feel more tired than usual. You may take naps more frequently than usual. Do not be alarmed if you feel fatigued and are not your old self for about 4-6 weeks after surgery.

Colorectal Cancer Screening

Those individuals without risk factors for colorectal cancer (rectal bleeding, personal history of cancer or polyps, positive family history of colorectal cancer or polyps) should be screened starting at age 50 years. There are several options that include testing stool for blood, flexible sigmoidoscopy, and colonoscopy. You should discuss the most appropriate option with your primary care physician or colorectal specialist. If you have rectal bleeding, colorectal cancer screening may be warranted at an earlier age depending on the presence of other factors. If you have a first degree relative with colorectal cancer, you should have colonoscopy starting at age 40 years or 10 years prior to the age of the youngest relative with colorectal cancer. The test should be repeated every 3 to 5 years if normal and possibly sooner if polyps are found. If you have had colorectal cancer or polyps, your relatives should be screened by colonoscopy.

Others at risk for colorectal cancer that warrant further investigation are those with a history of inflammatory bowel disease (ulcerative colitis and Crohn's disease) and possibly those with other cancers (breast, uterus, ovary). At this time, many colorectal specialists advocate 2 colonoscopies 10 years apart starting at age 50 for those without risk factors. Again, you should discuss these options with your colorectal specialist.

Websites

For additional information try the American Society of Colon and Rectal Surgeons at www.fascrs.org and www.uoaa.org