

by Robert K. Cleary, M.D., John C. Eggenberger, M.D., Amalia J. Stefanou., M.D.
location: Michigan Heart and Vascular Institute, 5325 Elliott Dr., Suite, 104
mailing address: P.O. Box 974, Ann Arbor, MI 48106

Colon Cancer

There are an estimated 140,000 to 150,000 new cases of colorectal cancer each year in the USA. The average age of a patient with colorectal cancer is 65, though all ages may be affected. Those with hereditary cancers tend to be younger. For example, those with Hereditary Nonpolyposis Colon Cancer develop cancer at an average age of 45 years, with 50% less than age 40. Those with Familial Adenomatous Polyposis develop colorectal cancer at an average age of 40 years.

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. The colon and rectum stores stool until it is ready to be expelled. Removing a portion or all of the colon and rectum may result in diarrhea, urgency, or gas/stool leakage but usually not.

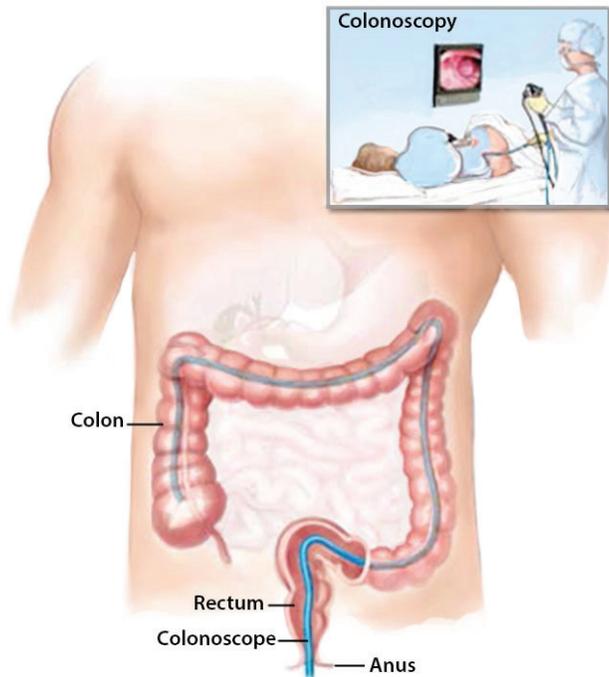
Symptoms

Symptoms of colon cancer may include rectal bleeding, change in bowel habits (new onset diarrhea or constipation), a feeling of incomplete evacuations, and others. Abdominal pain, constipation, and weight loss may reflect a cancer that is near obstructing. Many cancers are found in patients without symptoms through screening methods. Colonoscopy is very important because it detects cancers in individuals without any symptoms and often at an early curable stage.

Colorectal Cancer Screening

Those individuals without risk factors for colorectal cancer (rectal bleeding, positive family history of colon cancer) should be screened for colon cancer 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 other factors involved. If you have a first degree relative (mother, father, brother, sister, child) with colorectal cancer or polyps, you should have colonoscopy starting at age 40 years or 10 years prior to the age of the youngest relative with the colorectal cancer or polyps. 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. About 15-20% of colorectal cancers have an hereditary component and some syndromes (Familial Adenomatous Polyposis and Hereditary Nonpolyposis Colon Cancer Syndrome, for example) are characterized by the development of colorectal and other cancers. Some of these patients and other patients with a potentially hereditary component may benefit from genetic counseling (www.informedna.com).

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.



At the Time of Your Visit

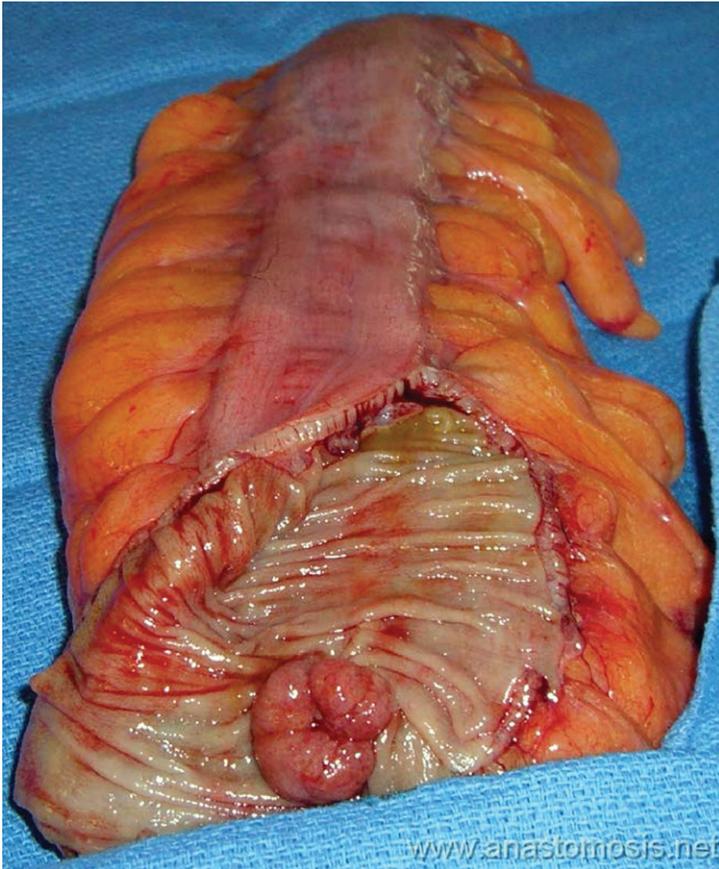
When you visit your colorectal specialist, you will be asked several questions with respect to your history. If you have had blood tests, x-rays, colonoscopy, ultrasound, and CT scans, make sure these are made available to your colorectal specialist prior to your visit. Some of these tests may be ordered 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 will be asked to undergo pre-procedure testing which may include blood tests, a chest xray, a CT scan, and an EKG. You may 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) Surgery



Right Colectomy
Right Hemicolectomy
Transverse Colectomy
Left Colectomy
Sigmoid Colectomy
Low Anterior Resection

2) Radiation Therapy

3) Chemotherapy

4) Immunotherapy

Surgery

You may be asked to drink a solution that clears the colon and rectum of stool and is similar or the same as the solution you drank for colonoscopy. 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 solid food after midnight prior to surgery. If are participating in the Enhanced Recovery Program, you will be asked to drink Gatorade up to 2 hours before your surgery. 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 anesthetic or abdominal wall catheter in addition to the general anesthetic. The epidural catheter is taped to your back (well secured) and provides the best pain control after surgery.

You will be expected to be up in a chair and walk with assistance as soon as you are awake and alert after surgery. We expect you to feel comfortable, especially if you have an epidural or abdominal wall catheter in place. 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.

Surgery for colon cancer generally requires the segmental removal of a portion of the colon. This may entail the removal of 1-2 feet in patients with a single colon cancer. Some patients with multiple neoplasms or with other concomitant conditions may require the removal of much or all of the colon, in which case the small bowel is sutured or stapled to the top of the rectum. It is usually not possible to remove just a few inches of colon. A cancer-curing operation includes removing the involved lymph nodes and blood supply and this often requires resecting at least a foot of colon. The operation most suited for you will be discussed with you in detail at the time of your office visit. The operation is typically done through a midline (up and down) incision. Smaller incisions are made for those who are candidates for laparoscopic or robotic (minimally invasive) surgery. 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 during this office visit.

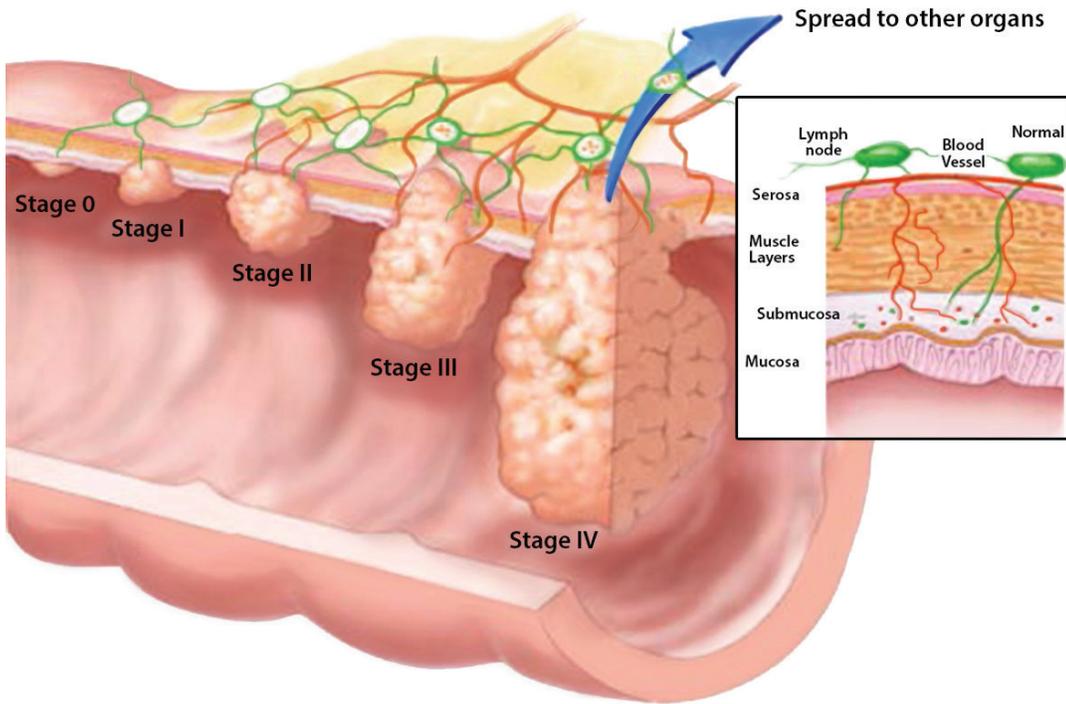
Except in patients operated on under urgent conditions with obstructing or perforated colon cancers, it is unusual to need a colostomy (bag) or ileostomy during elective surgery for colon cancer. Rarely, unexpected findings or complications may warrant a temporary or permanent colostomy or ileostomy. When this occurs, an Enterostomal Nurse with expertise in stomas will see you.

Radiation

A small number of patients with locally advanced colon cancers may need radiation therapy after surgery. If you are a candidate for this, a consultation with a Radiation Oncologist will be obtained.

Chemotherapy

Occasionally, patients with colon cancers that have spread to other organs may benefit from chemotherapy prior to surgery. If that is the case, you will see a Medical Oncologist and this option will be discussed in detail. More often, patients who are candidates for chemotherapy have this treatment option after surgery for 6-12 months. Those patients who are candidates usually have a tumor that has invaded all layers of the colon wall and/or have lymph nodes involved with tumor. The Pathologist will provide us with this information and this will be discussed with you in detail. Patients with early stage tumors without lymph node involvement do not need chemotherapy.



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 cancer of the colon 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 and/or dysfunction of urinary bladder
- 11) bowel obstruction
 - a. usually from adhesions from surgery
 - b. can occur in 10-20% of patients
 - c. 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 so theoretically only possible with distal sigmoid colon cancers
 - 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) 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
- 20) 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. Depending on the results of this report you may need 6-12 months of chemotherapy. A Medical Oncologist will discuss the options and risks with regard to chemotherapy.

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.

Websites

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

For information regarding genetic counseling, go to www.informedna.com