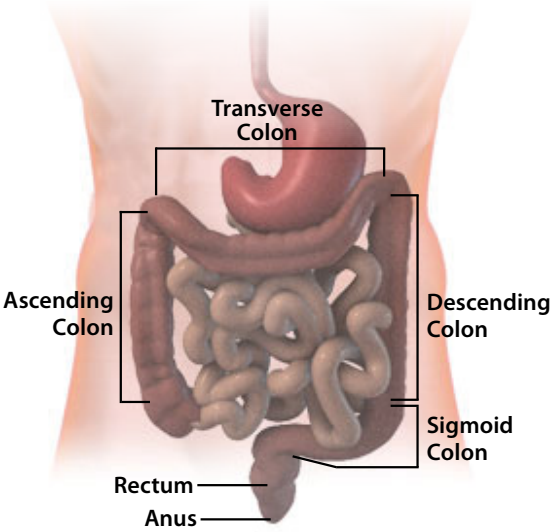
Colectomy

Surgical Removal of the Colon

ACS AMERICAN COLLEGE OF SURGEONS

Digestive System



The Condition

A **colectomy** is the removal of a section of the large intestine (colon) or bowel. This operation is done to treat diseases of the bowel, including Crohn's disease and ulcerative colitis, and colon cancer.

Common Symptoms

- Symptoms may include diarrhea, constipation, abdominal cramps, nausea, fever, chills, weakness, or loss of appetite and/or weight loss, or bleeding.
- There may be no symptoms. This is why colon cancer screening is essential.*

Treatment Options

Surgical Procedure

Open colectomy—An incision is made in the abdomen and the section of the diseased colon is removed. The two divided ends of the colon are sutured (sewn) or stapled together in an **anastomosis**. If the colon cannot be sewn back together, it is brought up through the abdomen to form a colostomy.

Laparoscopic colectomy—A light, camera, and instruments are inserted through small holes in the abdomen to remove the diseased colon or tumor.

Nonsurgical Procedure

Some diseases of the colon are treated with antibiotics, steroids, or drugs that affect the immune system.

Benefits and Risks of Your Operation

Benefits—Removal of diseased or cancerous sections of the intestine will relieve your symptoms and can reduce your risk of dying from cancer.

Possible surgical risks include temporary problems with the intestine that may require a stoma; leakage from the colon into the abdomen; lung problems including pneumonia; infection of the wound, blood, or urinary system; blood clots in the veins or lung; bleeding; fistula; or death.

Risk of not having an operation—Your symptoms may continue or worsen, and your disease or cancer may spread.

Expectations

Before your operation— Evaluation may include a colonoscopy, blood work, urinalysis, chest X-ray, or CAT Scan (CT) of the abdomen.[1] Your surgeon and anesthesia provider will discuss your health history, home medications, and postoperative pain control options.

Addressing risk factors such as smoking, alcohol use, anemia, and nutrition has been shown to improve patient outcomes and should be discussed at the pre-operative visit.[2]

The day of your operation—You may not eat for 4 hours but may drink clear liquids up to 2 hours before the surgery. Most often you will take your normal medication with a sip of water. Your surgical team will advise you if you need to clean your bowels with laxatives or enemas 1-2 days before surgery.[4]

Your recovery—The average length of stay is 3 to 4 days for a laparoscopic or open colectomy.[5] The time from your first bowel movement to eating normally is also about 3 to 4 days.

Call your surgeon if you have continued nausea, vomiting, leakage from the wound, blood in the stool, severe pain, stomach cramping, chills, or a high fever (over 101°F or 38.3°C), odor or increased drainage from your incision, a swollen abdomen or no bowel movements for 3 days.

Keeping You Informed

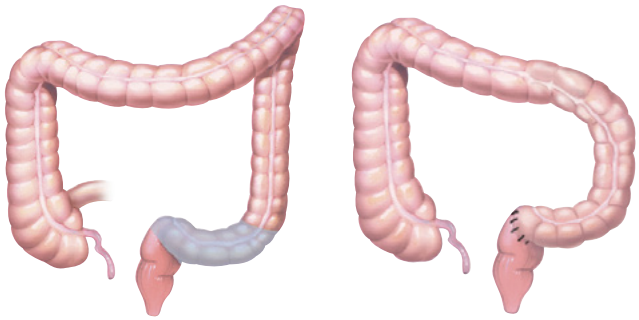
*Colorectal cancer is the third leading cause of cancer-related deaths in men and in women. The lifetime risk of developing colorectal cancer is about 1 in 23 (4.3%) for men and 1 in 25 (4.0%) for women. The American Cancer Society recommends that people at average risk of colorectal cancer start regular screening at age 45.

SURGICAL PATIENT EDUCATION PROGRAM
Prepare for the Best Recovery

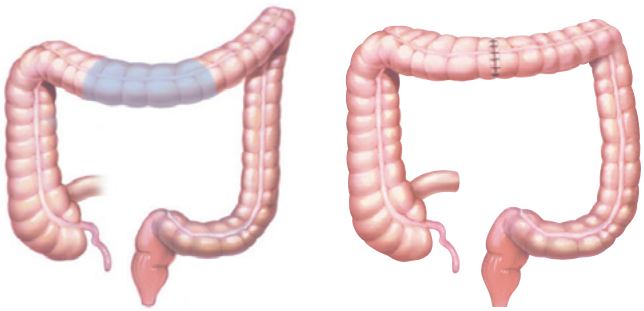
This first page is an overview. For more detailed information, review the entire document.

The Condition, Symptoms, and Diagnostic Tests

Sigmoid Colectomy (Sigmoidectomy)
Part or all of the sigmoid colon is removed.
The descending colon is then reconnected to the rectum.



Segmental Resection
One or more short segments of the colon are removed.
The remaining ends of the colon are reconnected.

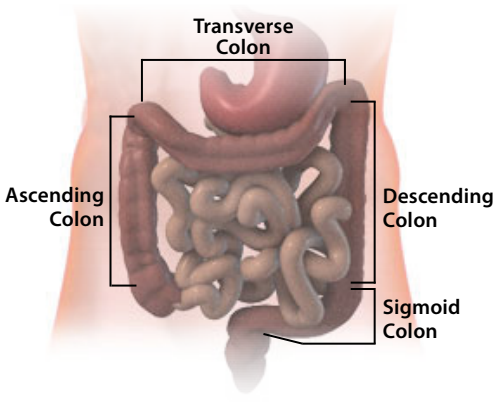


The Condition

There are different types of conditions and diseases that may affect the intestines:

- **Inflammatory bowel diseases** include ulcerative colitis and Crohn's disease.
- **Ulcerative colitis** is a chronic disease that presents as ulcers (tiny open sores) in the inner layer of the colon and includes bloody diarrhea and abdominal pain.[6]
- **Crohn's disease** is an inflammatory bowel disease (IBD) of the entire lining of the digestive tract, from the mouth to the anus. Most cases affect the anus to the small intestine.[7]
- **Diverticulitis** is an inflammation or infection of small, bulging pouches (diverticula) located in the colon.
- **Colorectal polyp** is any growth on the lining of the colon or rectum.
- **Colorectal cancer** is a malignant (cancerous) tumor in the colon or rectum.

Parts of the Colon



The Procedure

There are different procedures to treat diseases of the bowel and intestines:

- A **colectomy** is an operation to remove a part of the intestine (bowel) that is diseased. The name of the procedure depends on what section of the intestine is removed.
- **Right hemicolectomy** is the removal of the ascending (right) colon and is the most common type of colectomy (41.9%).
- **Left hemicolectomy** is the removal of the descending (left) colon.
- **Sigmoidectomy** is the removal of the lower part of the colon which is connected to the rectum.
- **Low anterior resection** is the removal of the upper part of the rectum.
- **Segmental resection** is the removal of only a short piece of the colon.
- **Abdominal perineal resection** is the removal of the sigmoid colon, rectum and anus and construction of a permanent colostomy.
- **Total colectomy** is when the entire colon is removed and the small intestine is connected to the rectum.
- **Total proctocolectomy** is the removal of the rectum and all or part of the colon.

Symptoms

The most common symptoms of colon and rectal disease are:

- Diarrhea, constipation, abdominal cramps, nausea, loss of appetite, or weight loss
- Fever, chills, or weakness

Common Tests

History and Physical Exam

You will be given a physical exam and asked about you and your family's complete medical history, including symptoms, pain, and stomach problems.

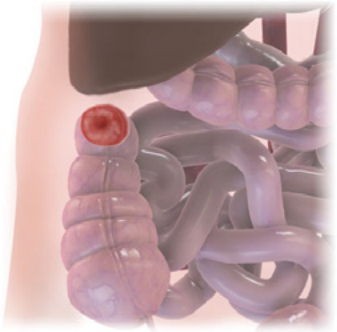
Additional Tests (see Glossary)

Other tests may include:

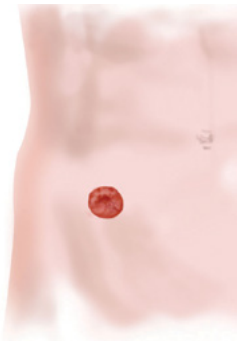
- Blood tests
- Urinalysis
- Digital rectal exam
- Abdominal X-ray
- Abdominal ultrasound
- Colonoscopy
- Computerized tomography (CT) scan
- Electrocardiogram (ECG)—for patients over 45 or if high risk of heart problems

Surgical and Nonsurgical Treatment

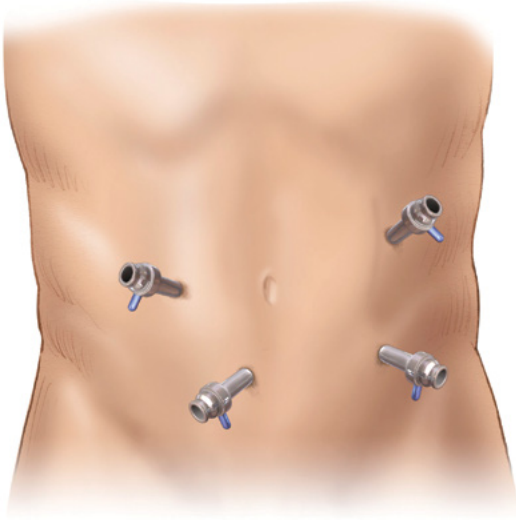
Stoma Interior



Abdominal Stoma Surface



Laparoscopic Repair



Surgical Treatment

A colectomy can be done by open or laparoscopic repair. The type of operation will depend on the condition, size of the diseased area or tumor, and location. Your health, age, anesthesia risk, and the surgeon's expertise are also important.

Open Colectomy

An incision is made in the abdomen and the diseased section of the colon is removed. The healthy parts of the colon are then stitched or stapled together (anastomosis). If the colon cannot be sutured back together, the colon is brought up through an opening on the abdominal wall (stoma) to form an ostomy. Waste will empty through the ostomy into a pouch that is fixed around the stoma on the abdomen.

Laparoscopic Colectomy

Several small incisions are made in the abdomen. Ports or hollow tubes are inserted into the openings. Surgical tools and a lighted scope are placed through the ports.

The abdomen is then inflated with carbon dioxide, which allows the surgeon to see the intestines and organs clearly. Small instruments inserted through the ports are used to remove diseased colon or a tumor. If the colon cannot be sewn back together, the ends of the intestine are joined together or a stoma is created.

Benefits of Laparoscopic Colectomy

The laparoscopic procedure with an enhanced recovery protocol results in lower complication rates, less scarring, shorter hospital stays and less chance of returning to the hospital.[3] The five year cancer survival rates between open and laparoscopic are not different.[8]

Non-Surgical Treatment

Some diseases of the intestines may be treated with medication. Depending on the stage of cancer, radiation and chemotherapy may also be part of the treatment plan.

Keeping You Informed

Conversion

Your surgeon may need to convert from a laparoscopic colectomy to an open colectomy. This may be needed due to:[9]

- Adhesions from prior surgery
- Bleeding
- Obesity
- Inability to see important structures
- Presence of a large tumor
- Inability to complete the operation

For patients having a laparoscopic colectomy, conversion occurs at a rate of 14.3%. The complications and length of hospital stay are longer when you are changed to an open procedure. There is no difference in the long term survival rate.[8] The right colectomy is the most common type and has the lowest conversion rate while Proctectomy has the highest rate of conversion to an open procedure.[10]

Risks of These Procedures

Risks Based on the ACS Risk Calculator*

Partial Colectomy with Anastomosis Procedure from the ACS Risk Calculator – April 25, 2022

Risks	Average Patient Percentage	Keeping You Informed
Pneumonia: Infection in the lungs	Open 2.8% Laparoscopy 0.8%	Stopping smoking before your operation and taking deep breaths plus getting up and walking after can help prevent pneumonia.
Heart complication: Heart attack or sudden stopping of the heart	Open 1.3% Laparoscopy 0.4%	Problems with your heart or lungs can sometimes be worsened by general anesthesia. Your anesthesia provider will take your history and suggest the best option for you.
Wound Infection	Open 9.8% Laparoscopy 4.1	Antibiotics are generally given before the surgery. You may be asked to use special soap before and after your surgery.
Urinary tract infection: Infection of the bladder or kidneys	Open 1.7% Laparoscopy 1.0%	A Foley catheter may remain in the bladder a few days after surgery to drain the urine. Adequate fluid intake and catheter care decrease the risk of bladder infection.
Blood clot: A clot in the legs that can travel to the lung	Open 2.3% Laparoscopy 0.9%	Longer surgery and bed rest increase the risk. Getting up, walking 5 to 6 times/day, and wearing support stockings reduce the risk.
Renal (kidney) failure: Kidneys no longer function in making urine and/or cleaning the blood of toxins	Open 1.3% Laparoscopy 0.4%	Pre-existing renal insufficiency, fluid imbalance, Type 1 diabetes, over 65 years of age, antibiotics, and other medications may increase the risk.
Return to surgery	Open 6.4% Laparoscopy 3.1%	Bleeding or a bowel leakage may cause a return to surgery. Your surgical and anesthesia team is prepared to reduce all risks of return to surgery.
Death	Open 1.8% Laparoscopy 0.3%	Your surgical team will review for possible complications and be prepared to decrease all risks.
Discharge to nursing or rehabilitation facility	Open 9.8% Laparoscopy 2.2%	
Risk of anastomotic leak: A leak from the connection that is made between two ends of the intestine	Open 4.0% Laparoscopy 1.9%	Increased age, emergency surgery, obesity, the use of steroids for inflammation and chemotherapy, and radiation as well as smoking and alcohol before surgery may increase the risk.[11]
Ileus	Open 21.1% Laparoscopy 7.2%	An ileus after surgery is an absence of bowel function for more than 3 days. Walking soon after surgery and limiting the use of Opioid pain medication can reduce the possibility of ileus.[12]

**1% means that 1 of 100 people will have this complication*

The ACS Surgical Risk Calculator estimates the risk of an unfavorable outcome. Data is from a large number of patients who had a surgical procedure similar to this one. If you are healthy with no health problems, your risks may be below average. If you smoke, are obese, or have other health conditions, then your risk may be higher. This information is not intended to replace the advice of a doctor or health care provider. To check your risks, go to the ACS Risk Calculator at *riskcalculator.facs.org*

The Day of Your Operation

Preparing for Your Operation

Home Medication

Bring a list of all of the medications, vitamins, and nutritional supplements that you are taking. Your medication may have to be adjusted before your operation. Some medications can affect your recovery, blood clotting, and response to the anesthesia. Tell your doctor if you are using Marijuana or CBD products. Most often you will take your morning medication with a sip of water.

Anesthesia

Let your anesthesia provider know if you have allergies, neurologic disease (epilepsy, stroke), heart disease, stomach problems, lung disease (asthma, emphysema), endocrine disease (diabetes, thyroid conditions), or loose teeth; if you smoke, drink alcohol, use drugs, or take any herbs or vitamins; or if you have a history of nausea and vomiting with anesthesia.

If you smoke, you should let your surgical team know. You should plan to quit. Quitting before your surgery can decrease your rate of respiratory and wound complications and increase your chances of staying smoke-free for life. Resources to help you quit may be found online at *https://www.facs.org/for-patients/preparing-for-your-surgery/quit-smoking/.*

Length of Stay

You may stay in the hospital for about 2 nights after a laparoscopic repair or longer after an open colectomy.[5] You may have a catheter in place in your bladder to measure and drain your urine for a few days. Severe nausea, vomiting, or the inability to pass urine may result in a longer stay.

The Day of Your Operation

- Do not eat for 4 hours or drink anything but clear liquids for at least 2 hours before the operation.
- Do not eat anything the day of surgery if you have had a bowel prep.
- Shower and clean your abdomen and groin area with a mild antibacterial soap.
- Brush your teeth and rinse your mouth out with mouthwash.
- Do not shave the surgical site; your surgical team will clip the hair nearest the incision site.

What to Bring

- Insurance card and identification
- Advance directive
- List of medicines
- Loose-fitting, comfortable clothes
- Slip-on shoes that don't require you to bend over
- Leave jewelry and valuables at home

What You Can Expect

An identification (ID) bracelet and allergy bracelet with your name and hospital/clinic number will be placed on your wrist. These should be checked by all health team members before they perform any procedures or give you medication. Your surgeon will mark and initial the operation site.

Fluids and Anesthesia

An intravenous line (IV) will be started to give your fluids and medication. For general anesthesia, you will be asleep and pain-free. A tube will be placed down your throat to help you breathe during the operation.

After Your Operation

You will be moved to a recovery room where your heart rate, breathing rate, oxygen saturation, blood pressure, and urine output will be closely watched. Be sure that all visitors wash their hands.

Preventing Pneumonia and Blood Clots

Movement and deep breathing after your operation can help prevent postoperative complications such as blood clots, fluid in your lungs, and pneumonia. Every hour, take 5 to 10 deep breaths and hold each breath for 3 to 5 seconds.

When you have an operation, you are at risk of getting blood clots because of not moving during anesthesia. The longer and more complicated your surgery, the greater the risk. This risk is decreased by getting up and walking 5 to 6 times per day, wearing special support stockings or compression boots on your legs, and, for high-risk patients, taking a medication that thins your blood.

Questions to Ask

About My Home Medications

- What medications should I stop taking before my operation?
- Should I take any medicines on the day of my operation?

About My Operation

- What are the risks and side effects of general anesthesia?
- What procedure will be used to repair the colon? Laparoscopic or open?
- Will the colon be sutured or do I need to be trained how to care for an ostomy?
- What are the risks of this procedure?
- Will you be performing the entire procedure yourself?
- What level of pain should I expect and how will it be managed?
- How long will it be before I can return to my normal activities—work, driving, and lifting?

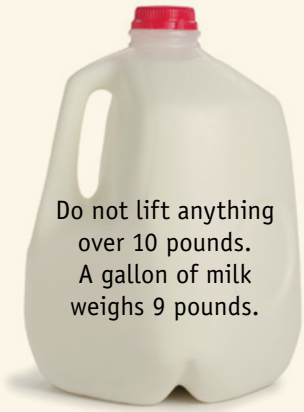
Your Recovery and Discharge

Keeping You Informed

If You Have a Stoma

If you have a stoma, your stool will pass into a pouch that is attached to the skin around the stoma. The pouch will have an opening at the end for the stool to drain through. It will need to be changed daily. Before you leave the hospital, you will be shown how to care for your stoma and supplies. Some stomas may be temporary and closed at a later date, while others may be permanent, depending on your diagnosis and surgery.

You can learn more about how to care for your stoma by reviewing the American College of Surgeons Ostomy Home Skills Kit available online at *https://www.facs.org/for-patients/home-skills-for-patients/ostomy/*. You will continue to have support in the care of your stoma once you're home and caring for it will become part of your routine if it is permanent.



Your Recovery and Discharge

Thinking Clearly

If general anesthesia is given or if you need to take narcotics for pain, it may cause you to feel different for 2 or 3 days, have difficulty with memory, or feel more tired. You should not drive, drink alcohol, or make any big decisions for at least 2 days.

Nutrition

If you follow an enhanced recovery protocol, the aim is to return to a normal diet as soon as possible. Right after surgery, you will be able to drink water and be provided with anti-nausea medication if you need it. On postoperative day 1, you can eat a normal diet. IV fluids will continue for 1 to 2 days after the surgery. For up to 4 weeks, a low-residue/low-fiber diet is recommended to reduce the amount and frequency of stools. This reduces trauma to the healing intestinal reconnection.[13] Continue to drink about 8 to 10 glasses of fluid per day. A dietician can help you understand your diet.

Activity

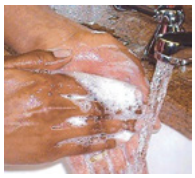
- After surgery, you will sit in a chair. The next day, you should be up and walking the hallway. Your pain should be managed with pain medication. Get up and walk every hour or so to prevent blood clot formation.
- You may be able to resume most normal activities in 1 or 2 weeks. These activities include showering, driving, walking up stairs, working, and engaging in sexual activity.[14]

Work and Return to School

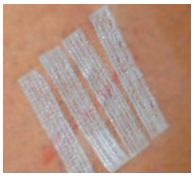
- You may return to work after you feel healthy, usually 1 to 2 weeks after laparoscopic repair and 2 to 3 weeks for open procedures.
- You will not be able to lift anything over 10 pounds, climb, or do strenuous activity for 4 to 6 weeks following surgery.

Wound Care

To learn more about how to care for your wound, go to *https://www.facs.org/for-patients/home-skills-for-patients/wound-management/*.



Handwashing



Steri-Strips®

- Always wash your hands before and after touching near your incision site.
- Do not soak in a bathtub until your stitches, Steri-Strips®, or staples are removed. You can usually shower within 2 days unless you are told not to.
- A small amount of drainage from the incision is normal. If the dressing is soaked with blood, call your surgeon.
- If you have Steri-Strips in place, they will fall off in 7 to 10 days.
- If you have a glue-like covering over the incision, allow the glue to flake off on its own.
- Avoid wearing tight or rough clothing. It may rub your incisions and make it harder for them to heal.
- Protect your new skin, especially from sun. The sun can burn and cause darker scarring.
- Your scar will heal in about 4 to 6 weeks and will become softer and continue to fade over the next year.

Bowel Movements

In the first 2 weeks, your bowel movements may be more frequent and looser than usual until you fully resume eating solid food. Avoid straining with bowel movements. Be sure you are drinking 8 to 10 glasses of fluid each day.

When to Contact Your Surgeon

Contact your surgeon if you have:

- Pain that will not go away
- Pain that gets worse
- A fever of more than 101°F (38.3°C)
- Repeated vomiting
- Swelling, redness, bleeding, or bad smelling drainage from your wound site
- Strong or continuous abdominal pain or swelling of your abdomen
- No bowel movement 2 to 3 daysafter the operation

Pain Control

Your pain can be controlled using acetaminophen (Tylenol®) and ibuprofen (Motrin®,Advil®). Nonmedication therapies, such as ice may also be effective. For severe pain that is keeping you from moving and sleeping, an opioid may be needed. By day 4, most people report no severe pain after an operation. Pain from the surgical incision is usually gone in 7 to 10 days. See the **Safe and Effective Pain Control Guide** below or on the ACS website for more information. *https://www.facs.org/for-patients/safe-pain-control/*

Pain	How Intense is my pain	What Can I Take to Feel Better	Most Common Therapies
Mild	• I hardly notice my pain, and it does not interfere with my activities. • I notice my pain and it distracts me, but I can still do activities (sitting up, walking, standing).	**Non-medication therapies** + **Non-opioid, oral medications** • Take as needed when you feel pain. • These help to decrease pain and swelling (inflammation)	**Non-medication Therapies** • Ice, elevation, rest, meditation, massage, distraction (music, TV, play) walking and mild exercise • Splinting the abdomen with pillows **Non-Opioid Medication** • Acetaminophen (Tylenol®) • Non-steroidal anti-inflammatory drugs (NSAIDS) Aspirin, Ibuprofen (Motrin®, Advil®) Naproxen (Aleve®)
Moderate	• My pain is hard to ignore and is more noticeable even when I rest. • My pain interferes with myusual activities.	**Non-Medication Therapy** + **Non-opioid, oral medication** Take these on a regular schedule	**Non-medication Therapy plus Non-opioid medication** on a regular schedule instead of as needed. (Ex: Tylenol® every 6 hours at 9am, 3pm, 9pm, 3am and Motrin® every 6 hours and 12am,6am,12pm, 6pm
Severe	• I am focused on my pain, and I am not doing my daily activities. • I am groaning in pain, and I cannot sleep. I am unable to do anything. • My pain is as bad as it could be, and nothing else matters.	**Non-Medication Therapy** + **Non-opioid, oral medication** • Take these on a regular schedule **Short-acting Opioids** • Take for a few days and decrease/ stop as soon as possible	Opioids block pain and give a feeling of euphoria (feel high). Addiction, a serious side effect of opioids, is rare with short term use. Examples of short-acting opioids include: Tramadol (Ultram®), Hydrocodone (Norco®, Vicodin®), Hydromorphone (Dilaudid®

Keeping You Informed

Following a laparoscopic procedure, pain may be felt in the shoulder. This is due to the gas inserted into the abdomen during the procedure. Moving and walking helps to decrease the gas and the shoulder pain.

More Information

For more information, please go to the American College of Surgeons Patient Education website at facs.org/patient education.
For a complete review of colectomy, consult Selected Readings in General Surgery, *"Vol. 45,2019, No. 2, 3, 4, 2019, Colon, Rectum, and Anus Part I,II, III. at* facs.org/SRGS.

GLOSSARY

Advance directives: Documents signed by a competent person giving direction to health care providers about treatment choices.

Anastomosis: The connection of two structures, like two ends of the intestines.

Computerized tomography (CT) scan: A diagnostic test using X-ray and a computer to create a detailed, three-dimensional picture of your abdomen. A CT scan is commonly used to detect abnormalities or disease inside the abdomen.

Electrocardiogram (ECG): Measures the rate and regularity of heartbeats as well as any damage to the heart.

General anesthesia: A treatment with certain medicines that puts you into a deep sleep so you do not feel pain during surgery.

Hematoma: A collection of blood that has leaked into the tissues of the skin or in an organ, resulting from cutting in surgery or the blood's inability to form a clot.

Ileus: A decreased motor activity of the digestive tract due to nonmechanical causes.

Local anesthesia: The loss of sensation only in the area of the body where an anesthetic drug is applied or injected.

Nasogastric tube: A soft plastic tube inserted in the nose and down to the stomach. It is used to empty the stomach of contents and gases to the rest of the bowel.

Stoma: An artificial opening of the intestine or urinary tract onto the abdominal wall.

Ultrasound: Sound waves are used to determine the location of deep structures in the body. A hand roller is placed on top of clear gel and rolled across the abdomen.

Urinalysis: A visual and chemical examination of the urine, most often used to screen for urinary tract infections and kidney disease.

DISCLAIMER

Important Note on the Use of This Document

The American College of Surgeons (ACS) is a scientific and educational association of surgeons that was founded in 1913 to improve the quality of care for the surgical patient by setting high standards for surgical education and practice. The ACS endeavors to provide procedure education for prospective patients and those who educate them. It is not intended to take the place of a discussion with a qualified surgeon who is familiar with your situation. The ACS makes every effort to provide information that is accurate and timely, but makes no guarantee in this regard.

Reviewed 2014 and 2015;
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SURGICAL PATIENT EDUCATION PROGRAM
Prepare for the Best Recovery

REFERENCES

The information provided in this report is chosen from recent articles based on relevant clinical research or trends. The research below does not represent all that is available for your surgery. Ask your doctor if he or she recommends that you read any additional research.

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