

Cholecystectomy

Surgical Removal of the Gallbladder

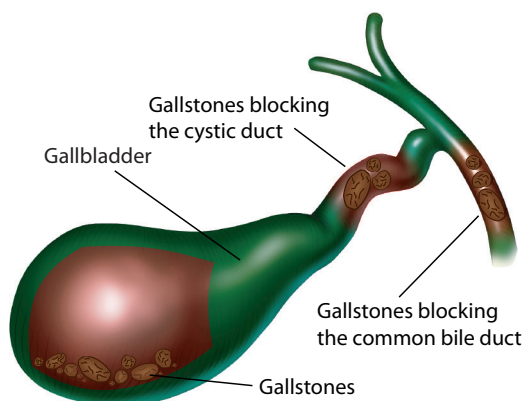
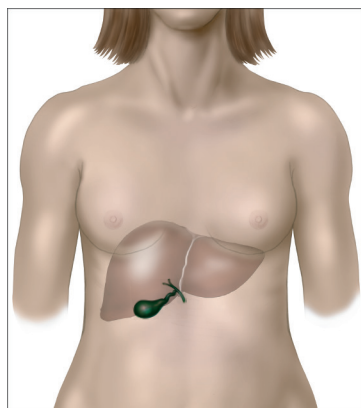


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Keeping You Informed

This information will help you understand your operation and provide you with the skills to actively participate in your care.

Education is provided on:

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The Condition

Cholecystectomy is the surgical removal of the gallbladder. The operation is done to remove the gallbladder due to gallstones causing pain or infection.

Common Symptoms

- Sharp pain in the upper right part of the abdomen that may go to the back, mid abdomen, or right shoulder
- Low fever
- Nausea and feeling bloated
- Jaundice (yellowing of the skin) if stones are blocking the common bile duct¹

Treatment Options

Surgical Procedure¹⁻³

Laparoscopic cholecystectomy—The gallbladder is removed with instruments placed into small incisions in the abdomen.

Open cholecystectomy—The gallbladder is removed through an incision on the right side under the rib cage.

Nonsurgical Procedure

- Stone retrieval by endoscopy

For Gallstones without Symptoms

- Watchful waiting for all patients^{1,4}
- Increased exercise

Benefits and Risks of the Operation

Benefits—Gallbladder removal will relieve pain, treat infection, and, in most cases, stop gallstones from coming back.

Possible risks include—Bile leak, bile duct injury, bleeding, infection of the abdominal cavity (peritonitis), fever, liver injury, infection, numbness, raised scars, hernia at the incision, anesthesia complications, puncture of the intestine, and death.¹⁻³

Risks of not having an operation—The possibility of continued pain, worsening symptoms, infection or bursting of the gallbladder, serious illness, and possibly death.^{1,2}

Expectations

Before your operation—Evaluation usually includes blood work, a urinalysis, and an abdominal ultrasound. Your surgeon and anesthesia provider will discuss your health history, home medications, and pain control options.

The day of your operation—You will not eat for 4 hours but may drink clear liquids up to 2 hours before the operation. Most often, you will take your normal medication with a sip of water. You will need someone to drive you home.

Your recovery—If you do not have complications, you usually will go home the same day after a laparoscopic procedure or in 1 to 2 days after an open procedure.⁵

Call your surgeon if you have severe pain, stomach cramping, chills, a high fever (over 101°F or 38.3°C), odor or increased drainage from your incision, your skin turns yellow, no bowel movements for three days, or vomiting and the inability to keep fluids down.

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

Keeping You Informed

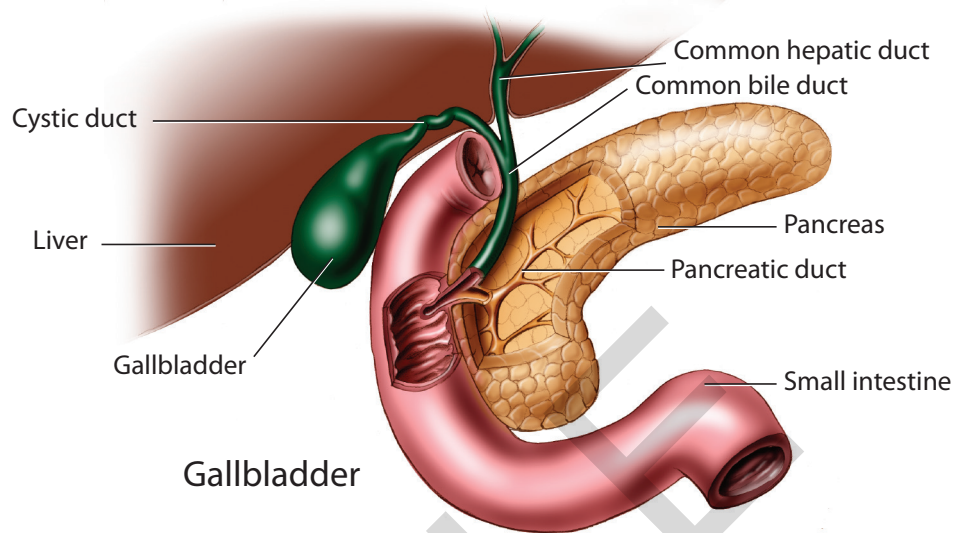
Most adults with gallstones do not have symptoms. Eighty percent of people with gallstones go 20 years without symptoms.^{1,6}

Gallstones are more common in people who:^{1,7-8}

- Are Native American
- Have a family history of gallstones
- Are overweight
- Have sickle cell disease
- Are pregnant
- Lose weight rapidly
- Use estrogen to manage menopause

Gallbladder pain or biliary colic is usually temporary. It starts in the middle or the right side of the abdomen and can last from 30 minutes to 24 hours. The pain may occur after eating a fatty meal.

- Acute cholecystitis pain lasts longer than 6 hours, and there is abdominal tenderness and fever.
- Pain on the right side of the abdomen can also be from ulcers, liver problems, and heart pain.
- Standard treatment of acute cholecystitis is intravenous (IV) fluids, pain medication, and cholecystectomy.⁹



The Condition

The Gallbladder

The gallbladder is a small pear-shaped organ under the liver. The liver makes about 3 to 5 cups of **bile** every day. Bile helps in digesting fats and is stored in the gallbladder. When fatty foods are eaten, the gallbladder squeezes bile out through the duct and into the small intestine.

Gallstones

Gallstones are hardened digestive fluid that can form in your gallbladder. The medical term for gallstone formation is **cholelithiasis**. Gallstones can leave the gallbladder and block the flow of bile to the ducts and cause pain and swelling of the gallbladder. A gallstone in the common bile duct is called **choledocholithiasis**.

Cholecystitis is inflammation of the gallbladder, which can happen suddenly (acute) or over a longer period of time (chronic).

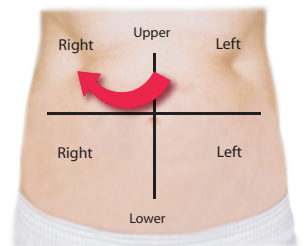
Gallstone Pancreatitis is caused by stones moving into and blocking the common bile duct, the pancreatic duct, or both. A **cholecystectomy** may be recommended.¹

Cholecystectomy is the surgical removal of the gallbladder. Gallstones that cause biliary colic (acute pain in the abdomen caused by spasm or blockage of the cystic or bile duct) are the most common reason for a cholecystectomy.

Symptoms

The most common symptoms of cholecystitis are:¹

- Sharp pain in the right abdomen
- Low fever
- Nausea and bloating
- **Jaundice** (yellowing of the skin) may occur if gallstones are in the common bile duct



Common Tests

History and Physical Exam

Your health care provider will ask you about your pain and any stomach problems.

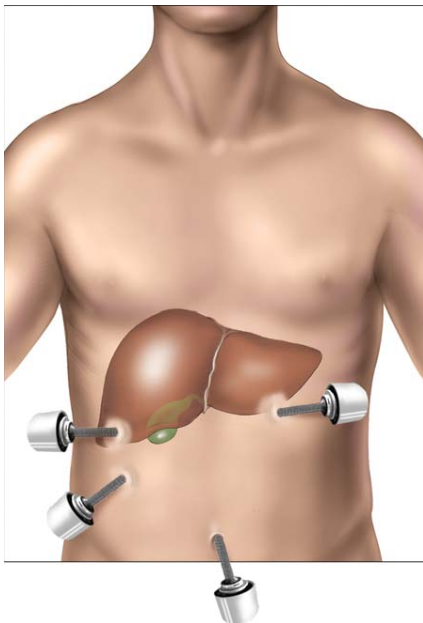
Additional Tests (see Glossary)

Other tests may include:¹

- Blood tests, including complete blood count
- Liver function tests
- Coagulation profile
- **Abdominal ultrasound** is the most common study for gallbladder disease.¹⁻² You may be asked not to eat for 8 hours before the test.
- **Hepatobiliary iminodiacetic acid scan (HIDA scan)**
- **Endoscopic retrograde cholangiopancreatography (ERCP)**
- **Magnetic resonance cholangiopancreatography (MRCP)**

Surgical and Nonsurgical Treatment

Laparoscopic Cholecystectomy



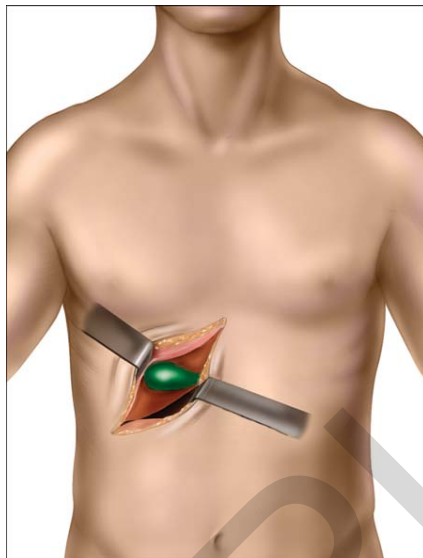
Surgical Treatment

A cholecystectomy, or removal of the gallbladder, is the recommended operation for gallbladder pain from gallstones.

Laparoscopic Cholecystectomy

This technique is the most common for simple cholecystectomy. The surgeon will make several small incisions in the abdomen. Ports (hollow tubes) are inserted into the openings. Surgical tools and a lighted camera are placed into the ports. The abdomen is inflated with carbon dioxide gas to make it easier to see the internal organs. The gallbladder is removed, and the port openings are closed with sutures, surgical clips, or glue. Your surgeon may start with a laparoscopic technique and need to change (convert) to an open laparotomy technique. The procedure takes about 1 to 2 hours.

Open Cholecystectomy



Open Cholecystectomy

The surgeon makes an incision approximately 6 inches long in the upper right side of the abdomen and cuts through the fat and muscle to the gallbladder. The gallbladder is removed, and any ducts are clamped off. The site is stapled or sutured closed. A small drain may be placed going from the inside to the outside of the abdomen. The drain is usually removed in the hospital. The procedure takes about 1 to 2 hours.

Nonsurgical Treatment

Watchful waiting is recommended if you have gallstones but do not have symptoms.^{1,4}

About 1 in 5 newly diagnosed patients with acute cholecystitis who do not have surgery readmit to the emergency room within about 12 weeks.⁴

Gallstones only, without cholecystitis

- Increase your exercise. Exercising 2 to 3 hours a week reduces the risk of gallstones.¹¹⁻¹²
- Eat more fruit and vegetables, and eat less of foods high in sugars and carbohydrates like donuts, pastry, and white bread.

Keeping You Informed

- Conversion rates from a laparoscopic to an open technique are less than 1% for young healthy people.
- Conversion rates from laparoscopic to open range from 1.3% to 7.4% in the presence of common bile duct stones.¹⁰⁻¹¹
- The risk of conversion increases up to 30% if you are over 50 years old, are male, and have acute cholecystitis; have had past abdominal operations; or have high fever, high bilirubin, repeated gallbladder attacks, or conditions that limit your activity.¹⁰⁻¹¹

Cholecystitis in Children

Four of 100 gallbladder removals are done in children.¹³ Almost 70% of children with gallstones do have symptoms. Symptoms in children include abdominal pain, nausea, vomiting, jaundice, fatty food intolerance, and fever.¹⁸

Children also receiving continuous IV nutrition and those with long-term antibiotic use, cystic fibrosis, obesity, or a family history have a higher chance of developing gallstones.¹⁴ Nearly 50% of all children with sickle cell disease develop gallstones and should have a screening ultrasound.^{1,15}

Children with cholecystitis confirmed by ultrasound, those with severe pain, or those not able to take food or fluids should be evaluated for surgery.

Risks of this Procedure

Risks Based on the ACS Risk Calculator

Open Cholecystectomy and Laparoscopic Cholecystectomy from the ACS Risk Calculator – August 2, 2015

Risks	Percent for Average Patient	Keeping You Informed
Pneumonia: Infection in the lungs	Open 1.7% Laparoscopic 0.2%	You can decrease your risk by rinsing with mouthwash the morning of your operation (to decrease mouth bacteria), quitting smoking before your operation, and getting up often to walk post-operatively.
Heart complication: Heart attack or sudden stopping of the heart	Open 0.7% Laparoscopic 0.1%	Problems with your heart or lungs can be affected by general anesthesia. Your anesthesia provider will take your history and suggest the best option for you.
Wound infection	Open 7.6% Laparoscopic 1%	Antibiotics are not routinely given except for high-risk patients. You should wash your abdomen with an antimicrobial soap such as dial the night before the operation.
Urinary tract infection: Infection of the bladder or kidneys	Open 1.5% Laparoscopic 0.5%	A Foley catheter is placed during surgery to drain the urine. Let your surgical team know if you have trouble urinating after the tube is removed—this is more common in older men or if an epidural is used for pain.
Blood clot: A blood clot in the legs can travel to the lung	Open 1% Laparoscopic 0.2%	Longer surgery and bed rest increase the risk. Walking 5 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 0.9% Laparoscopic 0.1%	Pre-existing renal problems, Type 1 diabetes, being over 65 years old, and other medications may increase the risk.
Return to surgery	Open 3.3 % Laparoscopic 0.8%	Bile leakage or a retained stone may cause a return to surgery. Your surgical team is prepared to reduce all risks of return to surgery. ¹
Death	Open 0.8% Laparoscopic 0.1%	Your surgical team will review for possible complications and be prepared to decrease all risks.
Discharge to nursing or rehabilitation facility	Open 5.4% Laparoscopic 0.6%	Pre-existing health conditions can increase this risk.
Bile Duct Injury/Leakage ^{*1,16}	0.5%	Injury can happen between 1 week to 6 months after the operation from fever, pain, jaundice, or bile leakage from the incision. Further testing and surgery may be needed. ^{1,17}
Retained common bile duct stone ^{*1}	4% to 40%	A gallstone may pass after surgery and block the bile from draining. The stone should be removed because of an increased risk of biliary obstruction or inflammation of the pancreas or bile duct. ¹
Pregnancy Complications, premature labor and fetal loss [*]	Fetal loss 4% (uncomplicated removal) up to 60% if pancreatitis	Most pregnant women with gallstones will have no symptoms during pregnancy. If you have biliary disease or pancreatitis, gallbladder removal will be offered to reduce maternal complications. ¹⁸

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

^{*}Results from the last 10 years of literature

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 <http://riskcalculator.facs.org>.

Expectations: Preparing for Your Operation

Preparing for Your Operation

Home Medication

Bring a list of all of the medications and vitamins that you are taking, including blood thinners, aspirin, or NSAIDS, and inform your surgical team. Some medications can affect your recovery and response to anesthesia and may have to be adjusted before and after surgery. Most often, you will take your morning medication with a sip of water. Resources about medications can be found at www.facs.org/patienteducation/medications.html.

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, and 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 at www.facs.org/patienteducation/quitsmoking.html.

Length of Stay

If you have a laparoscopic cholecystectomy, you will usually go home the same day. You may stay overnight if you had an open removal of the gallbladder, a laparoscopic repair with a longer anesthesia time, post-anesthesia issues such as severe nausea and vomiting, or you are unable to pass urine.

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.
- 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 directives (see Glossary)
- List of medicines
- Loose-fitting, comfortable clothes
- Slip-on shoes that don't require that you 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. For spinal anesthesia, a small needle with medication will be placed in your back near your spinal column.

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 operation:

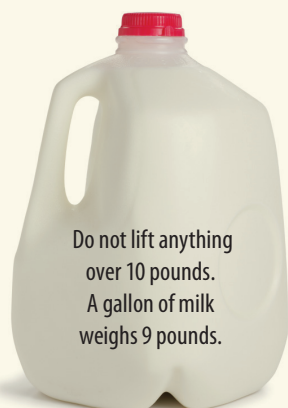
- What are the risks and side effects of general anesthesia?
- What type of procedure will be used to remove the gallbladder—laparoscopic or open?
- Ask your surgeon how frequently they perform this procedure?
- What are the risks of this procedure for myself or my child?
- What level of pain should I expect and how will it be managed?
- How long will it be before I can return to my normal activities—work, driving, lifting?

Your Recovery and Discharge

Keeping You Informed

High-Fiber Foods

Foods high in fiber include beans, bran cereals and whole-grain breads, peas, dried fruit (figs, apricots, and dates), raspberries, blackberries, strawberries, sweet corn, broccoli, baked potatoes with skin, plums, pears, apples, greens, and nuts.



Your Recovery and Discharge

Thinking Clearly

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

Nutrition

- When you wake up from the anesthesia, you will be able to drink small amounts of liquid. If you do not feel sick, you can begin eating regular foods.
- Continue to drink about 8 to 10 glasses of water per day.
- Eat a high-fiber diet so you don't strain while having a bowel movement.

Activity

- Slowly increase your activity. Be sure to get up and walk every hour or so to prevent blood clot formation.
- Patients usually take 1 to 3 weeks to return comfortably to normal activity.¹⁶
- You may go home the same day after a laparoscopic repair. If you have other health conditions or complications such as nausea, vomiting, bleeding, or difficulty passing urine, you may stay longer.
- Persons sexually active before the operation reported being able to return to sexual activity in 14 days (average).

Work and Return to School

- You may usually return to work 1 week after laparoscopic or open repair, as long as you don't do any heavy lifting. Discuss the timing with your surgeon.
- Do not lift items heavier than 10 pounds or participate in strenuous activity for at least 4 to 6 weeks.



Handwashing



Steri-Strips®

Wound Care

- 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 may take a shower after the second postoperative day unless you are told not to.
- Follow your surgeon's instructions on when to change your bandages.
- 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, just let 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.
- Your scars will heal in about 4 to 6 weeks and will become softer and continue to fade over the next year.

Bowel Movements

Anesthesia, decreased activity, and pain medication (narcotics) can contribute to constipation. Avoid straining with bowel movements by increasing the fiber in your diet with high-fiber foods or over-the-counter medicines (like Metamucil® and FiberCon®). Be sure you are drinking 8 to 10 glasses of fluid each day. Your surgeon may prescribe a stool softener if necessary.

Pain

The amount of pain is different for each person. The new medicine you will need after your operation is for pain control, and your doctor will advise how much you should take. You can use throat lozenges if you have sore throat from the tube placed in your throat during your anesthesia.

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 or 38.3°C
- Continuous 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 days after the operation

Pain Control

Everyone reacts to pain in a different way. A scale from 0 to 10 is used to measure pain. At a "0," you do not feel any pain. A "10" is the worst pain you have ever felt. Following a laparoscopic procedure, pain is sometimes felt in the shoulder. This is due to the gas inserted into your abdomen during the procedure. Moving and walking help to decrease the gas and the right shoulder pain.

Extreme pain puts extra stress on your body at a time when your body needs to focus on healing. Do not wait until your pain has reached a level "10" or is unbearable before telling your doctor or nurse. It is much easier to control pain before it becomes severe.

Common Medicines to Control Pain

Narcotics or opioids are used for severe pain. Possible side effects of narcotics are sleepiness, lowered blood pressure, heart rate, and breathing rate; skin rash and itching; constipation; nausea; and difficulty urinating. Some examples of narcotics include morphine and codeine.

Non-Narcotic Pain Medication

Most non-opioid analgesics are classified as non-steroidal anti-inflammatory drugs (NSAIDs). They are used to treat mild pain and inflammation or can be combined with narcotics to treat severe pain. Possible side effects of NSAIDs are stomach upset, bleeding in the digestive tract, and fluid retention. These side effects usually are not seen with short-term use. Let your doctor know if you have heart, kidney, or liver problems. Examples of NSAIDs include ibuprofen, Motrin®, Aleve®, and Toradol® (given as a shot).

Pain Control without Medicine

Splinting your stomach by placing a pillow over your abdomen with firm pressure before coughing or movement can help reduce the pain.

Distraction helps you focus on other activities instead of your pain. Listening to music, playing games, or other engaging activities can help you cope with mild pain and anxiety.

Guided imagery helps you direct and control your emotions. Close your eyes and gently inhale and exhale. Picture yourself in the center of somewhere beautiful. Feel the beauty surrounding you and your emotions coming back to your control. You should feel calmer.

OTHER INSTRUCTIONS:

FOLLOW-UP APPOINTMENTS

WHO:

DATE:

PHONE:



Splinting Your Stomach



Distraction



Guided imagery

More Information

For more information on tests and procedures, please go to the National Institutes of Health website at www.nlm.nih.gov/medlineplus/encyclopedia.html.

GLOSSARY

Abdominal ultrasound: A handheld transducer, or probe, is used to project and receive sound waves to determine the location of deep structures in the body. A gel is wiped onto the patient's skin so that the sound waves are not distorted as they cross through the skin.

Advance directives: Documents signed by a competent person giving direction to health care providers about treatment choices. They give you the chance to tell your feelings about health care decisions.

Adhesions: A fibrous band or scar that causes internal organs to adhere or stick together.

Bile: A fluid produced by the liver and stored in the gallbladder which helps in the digestion of fats.

Biliary colic: Sudden pain in the abdomen caused by spasm or blockage of the cystic or bile duct lasting for more than 30 minutes.

Bilirubin: A yellow breakdown product of the red blood cells. High levels may indicate diseases of the liver or gall bladder.

Complete blood count (CBC): A CBC measures your red blood cells (RBCs) and white blood cells (WBCs). WBCs increase with inflammation. The normal range for WBCs is 5,000 to 10,000.

Endoscopic retrograde cholangiopancreatography (ERCP): A tube with a light and a camera on the end is passed through your mouth, stomach, and intestines to check for conditions of the bile ducts and main pancreatic duct and to remove gallstones.

Gallstones: Hardened deposits of digestive fluid that can form in your gallbladder.

Hepatobiliary iminodiacetic acid scan or gallbladder scintigraphy (HIDA): A scan that shows images of the liver, gallbladder, and bile ducts following injection of a dye into the veins.

Intraoperative cholangiogram: During surgery to remove the gallbladder (cholecystectomy), a small tube called a catheter is inserted into the cystic duct, which drains bile from the gallbladder to check for remaining gallstones.

Magnetic resonance cholangiopancreatography (MRCP): A medical imaging technique that uses magnetic resonance imaging to visualize the biliary and pancreatic ducts.

REFERENCES

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

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DISCLAIMER

This information is published to educate you about your specific surgical procedure. It is not intended to take the place of a discussion with a qualified surgeon who is familiar with your situation. It is important to remember that each individual is different, and the reasons and outcomes of any operation depend on the patient's individual condition.

The American College of Surgeons (ACS) is a scientific and educational organization that is dedicated to the ethical and competent practice of surgery. It was founded to raise the standards of surgical practice and to improve the quality of care for the surgical patient. The ACS has endeavored to present information for prospective surgical patients based on current scientific information; there is no warranty on the timeliness, accuracy, or usefulness of this content.

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**SURGICAL PATIENT
EDUCATION PROGRAM**

Prepare for the Best Recovery