**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.

**Symptoms**

The most common symptoms of cholecystitis are:

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

**Treatment Options**

**Surgical Procedure**

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 ribcage.

**Nonsurgical Procedure**

Stone removal by endoscopy

**For Gallstones without Symptoms**

Watchful waiting for all patients

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.

**Complications are rare. Possible risks include**—Bile leak, bile duct injury, bleeding, infection, fever, liver injury, numbness, raised scars, hernia at the incision, anesthesia complications, puncture of the intestine, and death.

**Risks of not having an operation**—The possibility of continued pain, worsening symptoms, infection or bursting of the gallbladder, blood clots, and possibly death.

**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**—Check with your surgeon for when you have to stop eating and drinking. Usually, you stop eating for 6 hours before surgery. You may drink clear liquids up to 2 hours before. 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.

**Call your surgeon** if you have severe pain, stomach cramping, chills, a high fever (over 100.4°F or 38°C), odor or increased drainage from your incision, your skin turns yellow, no bowel movements for three days, or vomiting.

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**Additional Information**

- Benefits and Risks of the Operation
- Expectations
- Additional information on surgical removal of the gallbladder including benefits, risks, and recovery.

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**AMERICAN COLLEGE OF SURGEONS • DIVISION OF EDUCATION**

**Cholecystectomy**

Surgical Removal of the Gallbladder

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**Surgical Patient Education Program**

Prepare for the Best Recovery

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

**AMERICAN COLLEGE OF SURGEONS • SURGICAL PATIENT EDUCATION • www.facs.org/patienteducation**
The Condition, Common Tests and Questions to Ask

The Condition

The Gallbladder

The gallbladder is a small pear-shaped organ under the liver. The liver makes 3 to 5 cups of bile every day which is stored in the gallbladder. The gallbladder sends bile to the small intestine through ducts to help digest fats in food.1

Gallstones

Gallstones are hardened digestive fluid that can form in your gallbladder. Gallstones can leave the gallbladder and block the flow of bile through the ducts and cause pain and swelling of the gallbladder (Cholecystitis).

Common Tests

History and Physical Exam6

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

Additional Tests (see Glossary)

Other tests may include:
- Blood tests, including complete blood count
- Liver function tests
- Coagulation profile
- Abdominal ultrasound is a common test for gallbladder disease. You may be asked not to eat for 8 hours before the test.
- Hepatobiliary iminodiacetic acid scan (HIDA scan)

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 after surgery 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?
- What can I expect after the operation?
- What type of care will I have to provide for myself?
- Will I have drains or tubes?

Endoscopic retrograde cholangiopancreatography (ERCP)

Magnetic resonance cholangiopancreatography (MRCP)

Gallstones are more common in:4

- American Indian and Mexican Americans
- Have a family history of gallstones
- Overweight
- Have sickle cell disease
- Pregnant
- Use estrogen

Cholecystitis in Children

In children, inflammation of the gallbladder can be caused by gallstones. This is called acute (sudden) calculous (with gallstones) cholecystitis (ACC). ACC is most common in children with intestinal and sickle cell disease.7 Children with sickle cell disease should have an ultrasound screening for gallstones.9-10 A more frequent type of cholecystitis in children is acute acalculous (without gallstones) cholecystitis (AAC). Children with cholecystitis who have pain, fever, nausea, or jaundice (yellow skin) may be treated with IV fluids, antibiotics and non-opioid pain medication in the hospital. Cholecystectomy may be recommended for children with painful gallstones. The procedure is most often done laparoscopically through small incisions in the belly button or abdomen.
Surgical and Non-Surgical Treatment

Laparoscopic Cholecystectomy
This technique is the most common for cholecystectomy. The surgeon will make several small incisions in the abdomen. Ports (hollow tubes) are inserted into the abdomen, through 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.

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 reach the gallbladder. The gallbladder is removed, and the cystic duct is 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. Your surgeon may start with a laparoscopic technique and need to change (convert) to an open technique.

The procedure takes about 1 to 2 hours.
- Conversion rates from laparoscopic to open for elective surgery in healthy patients can range from 1 to 7.5%.
- The chance of conversion increases if you are over male, over 50 years old, and have acute cholecystitis. Past abdominal surgery, high fever, high bilirubin and repeat attacks also increase your risk.

Nonsurgical Treatment
Gallstones affect about 1 in 7. Eighty percent of adults with gallstones are not bothered by them and many go 20 years without symptoms. Current guidelines recommend watchful waiting until they cause symptoms. If you have gallstones without pain, exercising and eating a diet low in fat and sugar and high in fruits and vegetables can reduce your risk of cholecystitis.
# Risks Based on the ACS Risk Calculator

Open Cholecystectomy and Laparoscopic Cholecystectomy from the ACS Risk Calculator – June, 2024

<table>
<thead>
<tr>
<th>Risks</th>
<th>Percent for Average Patient</th>
<th>Keeping You Informed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pneumonia:</strong> Infection in the lungs</td>
<td>Open 1.6%</td>
<td>You can decrease your risk by rinsing with antiseptic mouthwash the morning of your operation (to decrease mouth bacteria), quitting smoking, and getting up to walk 4-5 times each day after surgery.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0.2%</td>
<td></td>
</tr>
<tr>
<td><strong>Heart complication:</strong> Heart attack or sudden stopping of the heart</td>
<td>Open 0.9%</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0%</td>
<td></td>
</tr>
<tr>
<td><strong>Wound infection</strong></td>
<td>Open 7.2%</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 1.0%</td>
<td></td>
</tr>
<tr>
<td><strong>Urinary tract infection:</strong> Infection of the bladder or kidneys</td>
<td>Open 0.8%</td>
<td>A Foley catheter may be placed during surgery to drain the urine. It is taken out right after surgery. Let your surgical team know if you have trouble urinating after the tube is removed.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0.4%</td>
<td></td>
</tr>
<tr>
<td><strong>Blood clot:</strong> A blood clot in the legs can travel to the lung</td>
<td>Open 1.9%</td>
<td>Longer surgery and bed rest increase the risk. Walking 5 times/day and wearing support stockings reduce the risk.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0.2%</td>
<td></td>
</tr>
<tr>
<td><strong>Renal (kidney) failure:</strong> Kidneys no longer function in making urine and/or cleaning the blood of toxins</td>
<td>Open 0.8%</td>
<td>Pre-existing renal problems, Type 1 diabetes, being over 65 years old, and other medications may increase the risk.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0%</td>
<td></td>
</tr>
<tr>
<td><strong>Return to surgery</strong></td>
<td>Open 2.6%</td>
<td>Bile leakage or a retained stone may cause a return to surgery or additional tests.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0.6%</td>
<td></td>
</tr>
<tr>
<td><strong>Death</strong></td>
<td>Open 1.0%</td>
<td>Your surgical team will review for possible complications and be prepared to decrease all risks.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0%</td>
<td></td>
</tr>
<tr>
<td><strong>Discharge to nursing or rehabilitation facility</strong></td>
<td>Open 5.8%</td>
<td>Pre-existing health conditions can increase this risk.</td>
</tr>
<tr>
<td></td>
<td>Laparoscopic 0.7%</td>
<td></td>
</tr>
<tr>
<td><strong>Bile Duct Injury/Leakage</strong></td>
<td>Open 1/1,000 patients</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Retained common bile duct stone</strong></td>
<td>Open 1.8%</td>
<td>A gallstone may pass after surgery and block the bile from draining. The stone should be removed because of an increased risk of blockage or swelling of the pancreas or bile duct.</td>
</tr>
<tr>
<td><strong>Pregnancy Complications, premature labor and fetal loss</strong></td>
<td>Fetal loss 4% (uncomplicated removal) up to 60% if pancreatitis</td>
<td>Most pregnant women with gallstones will have no symptoms during pregnancy.</td>
</tr>
</tbody>
</table>

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

*Results from the last 10 years of literature

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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](http://riskcalculator.facs.org).
Preparing for Your Operation

Home Medication
Bring a list of all of the medications you are taking. This includes over-the-counter medication and supplements, weight loss meds and injections, alcohol, cannabis/marijuana, and other drugs. Some may have to be stopped or changed before your surgery because of the effect on anesthesia and your recovery. You can usually take your morning medication with a sip of water. Learn more about medications and surgery at www.facs.org/patienteducation/medications.html.

Anesthesia
Ask about what type of anesthesia (pain control) you will have during surgery. General, regional, epidural and spinal may be options. You will also be asked about your health, allergies, and if you have had nausea and vomiting after anesthesia in the past.

Smoking and vaping cigarettes or marijuana can increase your risk of problems with breathing and wound healing. Quitting at least 4 weeks before surgery can decrease these risks. Quitting for at least one day is needed to prevent irregular heart beats and blood pressure issues. Learn more www.facs.org/patienteducation/quitsmoking.html.

Prepare for Home Care
Ask for clear guidance on how to care for your incision, your activity, and the type of help you may need.

Length of Stay
If you have a laparoscopic cholecystectomy, you may go home the same day. You may stay overnight if you had an open cholecystectomy, a laparoscopic repair with a longer anesthesia time, severe nausea and vomiting after surgery, or you are unable to pass urine.

The Day of Your Operation
- Check with your surgeon for when you have to stop eating and drinking. Usually you stop eating for 6 hours before surgery. You may drink clear liquids up to 2 hours before.
- Shower and wash your abdomen the evening before and again in the morning of surgery. Use a clean cloth and antibacterial soap (ex. Dial).
- Brush your teeth and rinse your mouth with antiseptic mouthwash.
- Do not shave your abdomen for 5-7 days before surgery. This will decrease any small cuts or ingrown hairs at the incision 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 any procedures or given any medicine.

Fluids
An intravenous line (IV) will be started to give your fluids and medication.

After Your Operation
You will be moved to a recovery room where your heart rate, breathing rate, oxygen level, blood pressure, glucose level, and urine will be watched. Ask for warm blankets if you feel cold in the recovery room. Keeping your body warm after surgery can decrease your risk of infection. 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.

You can decrease blood clots 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.
Your Recovery and Discharge

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.

Thinking Clearly
Anesthesia or pain medication may cause you to feel different for 2 or 3 days. You may have difficulty with memory or feel tired. 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. Patients usually take 1 to 3 weeks to return comfortably to normal activity.
- 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 surgery, as long as you don’t do any heavy lifting. Discuss the timing with your surgeon. Typically, you are discouraged from lifting items heavier than 10 pounds or participate in strenuous activity for at least 4 to 6 weeks.

Wound Care
- Always wash your hands before and after touching near your incision site.
- You may take a shower usually 1-2 days after surgery. Let the water run over the incision site, but do not scrub. Do not soak in a bathtub until your stitches, Steri-Strips®, or staples are removed or fall off (Steri Strips®).
- 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, leave them in place. They will fall off in 7 to 10 days.
- If your incision is closed with surgical glue, just let the glue flake off on its own.
- Avoid wearing tight clothing. It may rub your incisions and make it harder for them to heal.
- Your scars will heal in about 4 to 6 weeks. They will become softer and fade over the next year.
- Learn more at: facs.org/woundcare

When to call your surgeon:
- Severe continuous abdominal pain or swelling
- A fever of more than 100.4°F or 38°C
- Continuous vomiting
- Redness, swelling, bleeding or bad smelling drainage from your wound
- No bowel movement 2 to 3 days after 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. To learn more go to Safe and Effective Pain Control Guide. [https://www.facs.org/education/patient-education/safe-pain-control](https://www.facs.org/education/patient-education/safe-pain-control)

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


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.

Gallbladder: The gallbladder is a small pear-shaped organ under the liver. The liver makes 3 to 5 cups of bile every day which is stored in the gallbladder.

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

Gallstone Pancreatitis: Gallstones can move to and block the common bile duct, the pancreatic duct, or both.

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.