

Gallstones and Cholecystectomy

Patient education

Stones in the gallbladder are very common, and surgery is often advised for this problem. Cholecystectomy is surgical removal of the gallbladder. If you or someone close to you has gallstones, this booklet is for you.

This booklet has been prepared to tell you about gallstones and the treatment options available for them. Information about the benefits and risks involved will help you to make an informed decision.

It is important to remember that each person is different. This booklet cannot replace the professional advice and expertise of a doctor who is familiar with your condition. You may have questions that this booklet does not cover; you should discuss these with your surgeon.

Keeping you informed

Information that will help you further understand your operation. This includes:

- Gallbladder overview
- Treatment options
- The anaesthetic
- Risks and possible complications
- Preparation for operation
- Recovery and discharge
- Activity and pain control
- If you have a problem
- References

Gallbladder overview

The Gallbladder

The gallbladder is a small pear-shaped organ under the liver. The liver makes bile, and it is stored in the gallbladder. When we eat, stored bile is released from the gallbladder into the gut through a small channel called the cystic duct, which then joins the larger channel, the common bile duct (originating in the liver) which then enters the duodenum (first part of the small bowel) Bile helps the body to digest fats in the food.

Small stones of various sorts can develop within the gallbladder. These are commonly referred to as gallstones, and the medical term for this condition is *cholelithiasis*. A gallstone in the common bile duct is called choledocholithiasis. Gallstones can cause a number of problems, which can be serious and life-threatening. These include inflammation of the gallbladder (*cholecystitis*) occurring both suddenly (acute) or over a period of time (chronic), severe pain (*biliary colic*) as a stone tries to pass through the cystic duct; *jaundice*, if a stone becomes blocked in the common bile duct, *cholangitis* if this become infected and *pancreatitis* as the stone attempts to enter the duodenum close to the pancreatic duct. The gallbladder itself becomes diseased and can perforate possibly resulting in *peritonitis* or develop *pre-malignant* changes.

Symptoms

The most common gallstones-related symptoms are:

- Pain in right and upper abdomen, with possible radiation to the back and right shoulder
- Fevers
- Nausea, sickness and bloating
- Jaundice (yellowing of the skin), dark urine, pale stools

Common diagnostic tests

Ultrasound - This is the most common test to check for gallstones. You may be asked not to eat for 8 hours before the test.

Routine Blood tests - Including liver function tests.

Magnetic Resonance Cholangio-pancreatography (MRCP) - Magnetic resonance imaging of the gallbladder and biliary tree.

Endoscopic Retrograde Cholangio-pancreatography (ERCP) - Use of an endoscope to image and also remove some stones from the biliary tree.

Keeping you informed

Some people with gallstones do not have symptoms

Gall stones are more common in people who:

- have a family history of gallstones
- are overweight
- eat a lot of sugar
- are pregnant
- do not exercise regularly
- lose weight rapidly
- use oestrogen to manage menopause

Gallbladder pain or biliary colic is usually temporary. It starts in the middle or 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 hospital admission, intravenous fluids, antibiotics, pain medication, and cholecystectomy.

Surgical and non-surgical treatments

Surgery

There is no one single treatment best suited for all patients. Your doctor will discuss all treatment choices with you, and advise what he or she feels is best for you.

An operation to remove the gallbladder is the recommended treatment for symptomatic gallstones. This can be done by keyhole (laparoscopic) or standard (open) surgery.

The operation can be performed as an urgent, delayed or elective procedure.

An urgent operation is a procedure carried out during the patient's hospital admission. This is for patients who fit specific clinical criteria and can provide resolution of the clinical picture in one single admission. This option of treatment may carry increased intra and post-operative risks, and a prolonged hospital stay.

A delayed procedure is for patients who do not meet the urgent operation criteria, and occurs between 4 or 8 weeks, after all the inflammation has settled. This is to allow a safer surgery.

An elective procedure is reserved for non-urgent or non-previous hospitalized patients, and is performed according to the surgical capacity of the hospital.

Laparoscopic cholecystectomy

This technique is the most common for simple cholecystectomy. The surgeon will usually make 4 small incisions in the abdomen. A port is inserted into one, and carbon dioxide gas inflates the abdomen. This process allows the surgeon to see the gallbladder more easily. A *laparoscope* is then inserted through the port. It looks like a telescope with a light and video camera on the end that projects a clear image onto a TV screen allowing the surgeon to see inside the abdomen. The other ports are inserted and special instruments are placed through these to dissect the gallbladder away from its attachments. The cystic duct is clipped and divided and the gallbladder dissected from the liver bed. The gallbladder is then removed, with the help of a small bag or pouch through one of the ports.

The gas is released and the sites are closed with sutures, metal clips called staples, or steristrips. Your surgeon may start with a laparoscopic technique and need to change to an open technique. The procedure takes roughly an hour. Most patients can go home the same day, others require an overnight stay.

Open cholecystectomy

When it is not possible to perform the operation by keyhole surgery, an incision is made under the rib cage in the upper right side which is usually 10-15 cm (4-6 inches) long. The gallbladder can then be identified and removed from underneath the liver. A drain may be inserted to ensure that no fluid collects inside the abdomen. The drain is usually removed in the hospital during the first 24 hours after the operation. Most patients stay in hospital a for a few (3-5) days.

Procedure Options

An X-ray of the bile ducts during surgery (*cholangiogram*) may occasionally be necessary during the operation. This is to help identify the correct anatomy or to assess for stones in the bile ducts.

Procedures may be done to remove gallstones from the common bile duct. Laparoscopic (or open) common bile duct stone extraction is performed with insertion of special instruments into the abdomen similar to laparoscopic cholecystectomy. The bile duct is entered, and stones are removed directly or with a wire basket or balloon.

Non-surgical treatment

Watchful Waiting (Conservative Management)

If gallstones are seen on your ultrasound but you do not have symptoms, watchful waiting is recommended. Improving your diet and doing more exercise may help reduce the chance of problems occurring.

Gallbladder Polyps are sometimes seen on scans and may also require laparoscopic surgery or annual surveillance. This should be discussed with your surgeon.

Keeping you informed

What are the benefits of keyhole surgery?

- Reduced pain and ease of recovery after surgery.
- Less pain medication required.
- Shorter hospital stay.
- Earlier return to full activity and work.
- Less visible abdominal scars.

According to a National review, the total conversion rate is about 5%.

The conversion rate in the Exeter Upper GI Service is about 1-2%.

- The need to convert from a laparoscopic to an open procedure can increase significantly if you are over 65 years, are male, have a history of acute cholecystitis, past abdominal operations, high fever, high bilirubin, repeated gallbladder attacks, and diseases that limit your activity.

What about the anaesthetic?

Both types of cholecystectomy are performed under a general anaesthetic. The anaesthetic usually started by giving an injection into the arm. The operation usually takes about one hour and the surgeon will often inject some long-lasting anaesthetic into the incision sites to try and make you as comfortable as possible afterwards.

You will be advised clearly about having no food for about 6 hours before the operation, and nothing to drink for 2 or 3 hours beforehand. After the operation you can get up as soon as you feel able: a nurse will be sure you can manage when you first get up.

The risks of a general anaesthetic

General anaesthetics have some risks, which may be increased if you have chronic medical conditions, but in general they are as follows:

- **Common temporary side-effects** (risk of 1 in 10 to 1 in 100) include bruising or pain in the area of injection, blurred vision and sickness (these can usually be treated and pass off quickly).

■ **Infrequent complications** (risk of 1 in 100 to 1 in 10,000) include temporary breathing difficulties, muscle pains, headaches, damage to teeth, lip or tongue, sore throat and temporary difficulty speaking.

■ **Extremely rare and serious complications** (risk of less than 1 in 10,000). These include severe allergic reactions and death, brain damage, kidney and liver failure, lung damage, permanent nerve or blood vessel damage, eye injury, and damage to the voice-box. These are very rare and may depend on whether you have other serious medical conditions.

The risks of this procedure

The risk	What happens	Keeping you Informed
Infection	Infections occur in less than 2 per 100 patients who have laparoscopic procedure. Infection of the wound is a risk, but is uncommon.	In selected cases antibiotics are given right before the operation. If a wound starts to become red, then antibiotics may be needed after the operation. If pus starts to come out, then the wound may need to be opened up to release the infection.
Bleeding/ Bruising	Bleeding is rare. If you have chronic biliary disease, your liver may not form clotting factors.	Your surgeon will check a coagulation profile to monitor for bleeding problems. A blood transfusion usually is not required for cholecystectomy.
Pneumonia	General anaesthesia, lack of deep breathing and movement are possible causes.	Deep breathing exercises can help expand your lungs and prevent complications after surgery.
Heart Problems	Heart problems are rare. Cardiac arrhythmias were reported in about 5/1,000 patients and heart attack in 1/1,000.	Your surgeon may refer you to a heart specialist before your operation, when it is necessary. Your anaesthesia provider is always prepared in advanced cardiac life support.
The risk	What happens	Keeping you Informed
Kidney Problems	Kidney or urinary problems have been reported in 5/1,000 patients. Dehydration and liver problems can increase this risk.	You may need to drink extra fluids before your operation. Let your nurse know when you urinate.
Deep Vein Thrombosis (DVT)	No movement during surgery can lead to blood clots forming in the legs. In rare cases the clots can travel to the lungs.	Your surgeon or nurse will place support or compression (squeezing) stockings on your legs and may give you blood thinning medication. You will be prescribed to wear stockings on your legs for a week after the operation. You will be encouraged to get up and walk after surgery.
Death	Death is extremely rare in healthy people and is reported as 0 to 1 per 1,000 patients. The risk of death increases with gangrene, a burst gallbladder or severe diseases that limit your activity.	Your entire surgical team will review for possible complications and be prepared to decrease all risks.

Specific complications

The risk	What happens	Keeping you Informed
Common bile duct injury	Injury to the bile duct is reported in 1/1,000 patients for open cholecystectomy and in 1-5/ 1,000 for laparoscopic cholecystectomy.	Usually presents with jaundice, fever, and abnormal blood tests. Further testing or surgery may be needed to repair the problem. All surgeons are aware of this risk and work very hard to avoid the problem.
Bile leak	Bile leakage after surgery is rare (1-2/100) approximately.	Fever and abdominal pain are associated with this. Blood tests and other investigations such as USS, MRCP and ERCP may be required. Further surgery may also be necessary.
Retained common bile duct stones	A gallstone may pass after surgery and block the bile from draining.	Your surgeon will check blood tests for your liver function.
Retained stones	Stones may be dropped in the abdomen or abdominal wall whilst removing the gallbladder and remain in the abdomen.	They do not normally cause problems, but can lead to infections requiring drainage and removal. Fever, abdominal pain and abnormal blood tests are the main symptoms.
The risk	What happens	Keeping you Informed
Injury to the intestine or abdominal organs	Instrument insertion and use during laparoscopic technique can injure the intestines or other organs (visceral injury) – this is also rare (1/200).	The surgeon will use extreme care and continuously watch for any bleeding or bowel contents during the procedure. This risk is higher in patients who are obese or who have a history of past abdominal operations.
Hernia	A swelling, sometimes painful around the incision sites.	Care will be taken to close the wounds. Avoid very heavy lifting or straining.
Diarrhoea	A small percentage of patient notice their bowels become looser after cholecystectomy (1 -5 /100).	This is usually very minor but occasionally medication is needed to control this effect. Many patients will have had problems before surgery (irritable bowel) which becomes more noticeable after gallbladder symptoms have gone.

Emergency Cholecystectomy

If you have come into hospital as an emergency with complications of gallstones there may be a narrow window of opportunity to perform your surgery before you go home. Surgery to remove an inflamed gallbladder is more difficult and so your doctor may prefer to settle the inflammation and perform surgery at a later date, but this runs the risk that you develop further complications of gallstones whilst you wait for surgery. Your surgeon will be able to explain exactly how this delicate balance applies to your case.

When the gallbladder is inflamed, or has been inflamed the risks of surgery are slightly higher. For example, the risk of bile leaking or pneumonia is 2/100 rather than 1/100. So the risk remains low but is actually twice as high as patients that never had inflammation.

Although many complications are easily treated the total proportion of patients having surgery for a non-inflamed gallbladder, including minor complications, is about 7.5% and if the gallbladder is, or has been inflamed this is as high as 15%. These risks must be balanced against the risk of not performing the surgery and risking further problems related to the diseased gallbladder.

Undergoing surgery

Preparation for your operation

Preparing for your operation

You will usually have a routine pre-operative assessment carried out by a specialist nurse who may take advice from your surgeon or an anaesthetist. Remind them about other medical problems that you may have, and bring a list of all the medications you are taking.

Take your morning medication with a sip of water. If you are taking blood thinners, your surgeon will probably have requested you stop taking these a few days beforehand.

Home preparation

You can often go home the same day after laparoscopic procedure. Your hospital stay will be longer (3 - 5 days) for an open operation.

Anaesthesia

You will meet with your anaesthetist before the operation. Let him or her know if you have allergies, neurologic disease (epilepsy or stroke), heart disease, stomach problems, lung disease (asthma, emphysema), endocrine disease (diabetes, thyroid conditions), loose teeth, or if you smoke, abuse alcohol or drugs, or take any herbs or vitamins.

Keeping you informed

Question you should ask:

- What medications should I stop taking before my operation?
- When should I stop taking them?
- Should I take any medicines on the day of my operation?
- What are the problems, risks and side effects of general anaesthesia?
- Do I need antibiotics before?
- If hair has to be removed on my abdomen, how it will be done?

The day of your operation

Don't eat or drink

Not eating for at least 6 hours before the operation reduces your risk of complications from anaesthesia. Nothing to drink for 2 or 3 hours beforehand.

What to bring

ID card identification, list of medicines, personal items such as eyeglasses and dentures, loose-fitting comfortable clothes. Leave jewellery and valuables at home.

What you can expect

A bracelet with your name and identification number will be placed on your wrist. Your wristband should be checked by all health care team members before providing any procedures or giving you medication. If you have any allergies, an allergy bracelet should also be placed on your wrist.

An intravenous line (IV) will be started to give your fluids and medication. The medication will make you feel sleepy.

A tube will be placed down your throat to help you breathe during the operation.

Your surgeon will perform your operation and then close your incisions. If you have an open operation, a drain may be placed from the inside of your incision out your abdomen. After your operation, you will be moved to a recovery room.

Your recovery and discharge

Going home

This depend on how fit you are, who is at home with you, and how comfortable you are after the operation. Many patients now undergo laparoscopic cholecystectomy as a day case procedure. After an open operation it is common to need to stay longer. In general, you can go home as soon as you feel able to do so.

Wound care

- You can bathe or shower, but keep the wounds dry for about 5-7 days. It is probably wise to avoid swimming until the wound is sound and dry – about 10-14 days after the operation.
- A small amount of drainage from the incision is normal. If the drainage is thick and yellow or the side is red, you may have an infection so call your surgeon or GP.
- Protect the new skin, especially from the sun. The sun can burn and cause darker scarring.
- Your scar will heal in about 4-6 weeks and will become softer and continue to fade over the next year. Keep the wound site out of the sun or use sunscreen. Normal sensation around your incision will return in a few weeks or month.

Nutrition

When you wake up, you will be able to drink small amounts of liquid. If you are not feeling sick, you can begin eating regular foods. Continue to drink plenty of fluids.

Activity

- Slowly increase any activities, and work your way back to full fitness. Violent or contact sports are best avoided for at least a month.
- Do not lift or participate in strenuous activity for 3-5 days after a laparoscopic and 6 weeks after an open procedure.
- Avoid driving until your pain is under control without narcotics (5-7 days).
- You can have sex when you feel ready, usually after your sutures or staples are removed.
- You can return to work as soon as you feel comfortable enough to manage your job. If you need to drive yourself, or spend all day on your feet, then you are unlikely to get back for about 2 weeks.

Bowel movements

After intestinal surgery, you may have loose watery stools for several days. If watery diarrhoea lasts longer than 3 days, contact your surgeon. Pain medication (narcotics) can cause constipation. Increase the fibre in your diet with high-fibre foods if you are constipated.

Pain control

Narcotics or opioids are used for severe pain. Some 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 codeine and tramadol.

Non-narcotic pain medications include Paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs). They are used to treat mild pain or combined with a narcotic to treat severe pain. Some side effects of NSAIDs are stomach upset, bleeding in the stomach or intestines, and fluid retention. Example of NSAIDs includes ibuprofen and naproxen. If you are able to take paracetamol and ibuprofen (or a related NSAID) normally without any problems then please make sure that you have some at home for the period after your operation. You will also be given some stronger pain relief from the hospital to take home.

What to do if there is a problem?

If there is an acute problem such as fever or an inflamed or discharging wound it is best to contact your own family doctor first. Your doctor may suggest that you see the surgeons at the hospital, and if this is necessary, he/she will make the arrangements.

Should you be unable to get urgent medical help from a General Practitioner, then come to the Emergency Department of the Royal Devon and Exeter Hospital.

Further information

Royal Devon and Exeter Hospital:	01392 411611
Day case unit:	01392 403532
Pre-assessment clinic:	01392 405300
Trainee Surgical Care Practitioner	07786 275119 (Roberto Presa)
Upper GI team secretaries	01392 406296 (Mr Wajed)
.....	01392 402689 (Mr Manzelli)
.....	01392 406296 (Mr Di Mauro)
.....	01392 402689 (Mr Reece-Smith)

Useful websites for further information

- **www.gastro.org/clinicalRes/brochures/gallstones.html**
The American Gastroenterology Association provides general information about gallstones.
- **www.nlm.nih.gov/medlineplus/tutorials/cholecystectomy.html**
The National Institutes of Health provide a colourful site that explains all you need to know about your operation.
- **www.nhsdirect.nhs.uk**
The NHSDirect encyclopaedia with information on all aspects of gallstones and their treatment.

The Trust cannot accept any responsibility for the accuracy of the information given if the leaflet is not used by RD&E staff undertaking procedures at the RD&E hospitals.

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