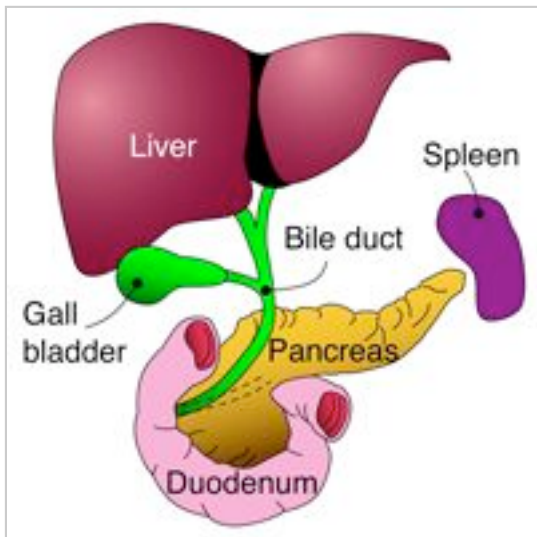


## Gallstones: Frequently asked questions

### What is the gallbladder and what does it do?



The gall bladder is a pear-shaped bag that lies under the liver, beneath the rib cage, on the right side of the abdomen. The bile ducts within the liver all come together like the tributaries of a river, to form a right-sided duct (draining all the bile from the right lobe) and a left-sided duct (draining the left lobe). These two then join to form what is called the common bile duct, which emerges from the under surface of the liver, and is roughly the thickness of a

drinking straw. The gall bladder hangs off the bile duct at this point, just after it has emerged from the liver. The bile duct then runs through the pancreas for a bit, and enters the duodenum (a part of the intestine) where the bile mixes with the food. The pancreatic duct, which drains the digestive juice from the pancreas, also empties into the duodenum at the same place.

The gall bladder stores bile produced by the liver. During meals, especially fatty meals, the gall bladder squeezes out the bile it has stored, into the bile duct, and from there into the gut.

Bile contains water, cholesterol, fats, bile salts, proteins, and a pigment called bilirubin. It helps in the digestion of fat.

### What are gallstones?



**All these stones were present in a single gall bladder**

If the bile contains too much cholesterol or bilirubin, or the gallbladder does not empty properly, the bile can harden to form gallstones.

Gallstones can be cholesterol stones, pigment stones or a

mixture of the two. Cholesterol stones are largely made of solidified cholesterol. Pigment stones are dark stones made of bilirubin. The gallbladder can develop just one or two large stones (some can be as large as a golf ball), or lots of tiny stones (as small as grains of sand).

### **Causes of gallstones**

Women, particularly between the ages of 20 and 60 years, are more likely to form gallstones than men.

In general, those over 60 (men and women), are at a higher risk of developing gallstones.

People who are overweight are more likely to form gallstones.

Excess estrogen from pregnancy, hormone replacement therapy, or birth control pills may increase cholesterol levels in bile, slow down gallbladder emptying, and lead to gallstones.

People who have biliary infections, and hereditary blood disorders such as sickle cell anemia (in which too much bilirubin is formed) are more likely to form pigment stones.

Going on a diet (with rapid weight loss) and certain cholesterol-reducing drugs can also increase the risk of gallstone formation.

### **Symptoms of gallstones**

Often, gallstones may remain “silent” and not cause any symptoms at all. Silent gallstones are usually discovered by accident during tests for other problems. These do not need treatment.

The milder symptoms of gallstones include abdominal bloating, belching, indigestion, and nausea, usually after a meal.

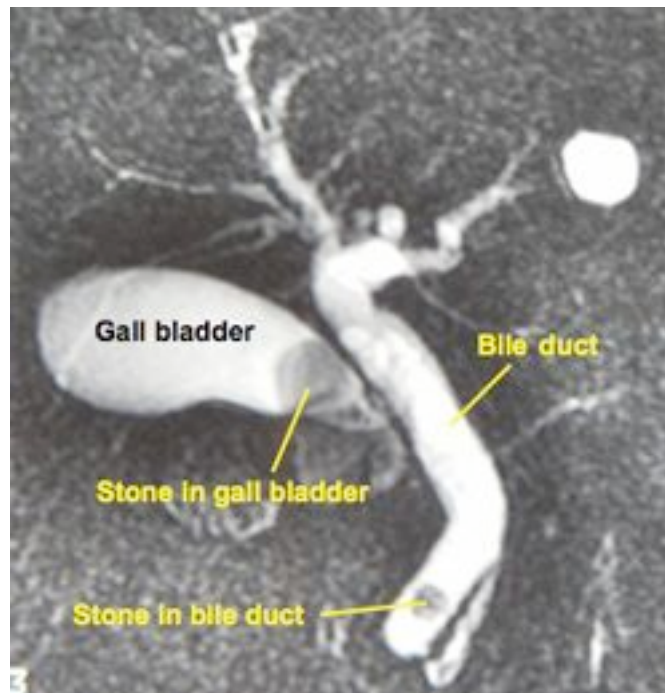
More severe symptoms include attacks of abdominal pain and vomiting. The pain is usually in the upper abdomen, often more to the right, and can move to the right shoulder blade or shoulder tip. It may come on after meals, especially with fatty foods. Attacks of such pain are called biliary colic.

Gallstones can cause inflammation of the gallbladder (cholecystitis). Gallstones slipping out of the gallbladder into the bile duct can block the flow of bile and cause jaundice, or they may cause acute inflammation of the pancreas (pancreatitis). If you have severe

abdominal pain, chills, fever, yellow discolouration of the eyes or skin, or pale stools, you should urgently consult a doctor.

Gallstone can cause symptoms similar to those of a heart attack, appendicitis, bowel obstruction, peptic ulcer, hiatus hernia, pancreatitis, hepatitis and occasionally biliary cancer. It is therefore very important that the correct diagnosis is made.

### Tests to diagnose gallstones



**MRCP scan picture showing a stone in the gall bladder and another in the bile duct**

When gallstones are suspected, the first test to be done is an abdominal ultrasound. This is a simple, fairly painless and straightforward test, and does not involve the use of x-rays. Ultrasound waves are used to create images of organs and if stones are present, the sound waves will bounce off them, and show them up.

Blood tests are usually done to check if the liver is functioning properly, and particularly look for evidence of biliary blockage or infection.

Occasionally, other tests may be required, such as CT scan, MR scan and MR Cholangiography, or radio-isotope tests such as HIDA scans.

If there is a suspicion that stones have slipped out of the gallbladder into the bile duct, Endoscopic retrograde cholangio-pancreatography (ERCP) may be required. The patient swallows a long, flexible, tube camera called an endoscope. The doctor guides the endoscope through the stomach into the bowel. The doctor then injects a special dye into the bile duct, and x-rays show up stones in the duct. The stones in the bile duct can then be removed. ERCP is usually done under sedation, without need for a full anaesthetic, and patients rarely need to stay in hospital for this. Stones in the gall bladder cannot be removed by this method.

An MRCP scan can also show up stones in the gall bladder and the bile duct (see illustration).

### **The treatment of gallstones**

Silent gallstones that have been detected by chance and have never caused any symptoms do not need treatment. But once they have started to cause symptoms it is likely that they will continue to do so.

Gallstones are best treated by an operation that removes the gallbladder . This is called a cholecystectomy. The traditional method of cholecystectomy was by open surgery through a long cut under the right edge of the rib cage. Today, most cholecystectomies can be performed by the laparoscopic method (also called 'key hole' surgery)

### **Is there an alternative to surgery?**

Not really. Non-surgical treatments usually do not work, and are offered only to patients who are unfit to undergo surgery. Stones usually recur after these treatments.

Some medicines do exist that may gradually dissolve gallstones, if taken over a period of time. But they only work for a small number of patients, and once the treatment is stopped the stones generally form again. The drugs, (called ursodeoxycholic acid and chenodeoxycholic acid) work only for small cholesterol stones, and if the gallbladder empties properly. Months or even years of treatment may be necessary before all the stones dissolve. The

drugs may cause mild diarrhea, and one of them may temporarily raise levels of blood cholesterol and certain liver enzymes.

Lithotripsy (using sound waves to break up the stones) can work very well for kidney stones and has been tried for gallstones too. But after they have broken up, the gallstones do not always flush out of the gallbladder.

Leaving the gallbladder behind and doing an operation to only remove the stones will mean that the stones can form again. So an operation to surgically remove the gallbladder is the best treatment for gallstones.

### **Does it affect one's digestion if the gallbladder is removed?**

Surprisingly, removal of the gallbladder seems to have no effect on the digestive process in the vast majority of patients who undergo this operation. The bile trickles steadily into the gut and helps digest the fatty foods. One should be able to continue eating normally after the operation.

### **How is the gallbladder removed?**

These days, cholecystectomy is usually by the laparoscopic ('key hole') method. Three or four small cuts are made in the abdomen, and the gall bladder is removed using a special laparoscopic camera and instruments. The operation usually takes 45 to 90 minutes.

Laparoscopic cholecystectomy is preferable to open surgery because the cuts made are much smaller, postoperative pain is less, hospital stay is shorter, and the return to normal activity much quicker.

However, in up to 5% of patients it may not be possible to remove the gallbladder laparoscopically because of inflammation and scarring around the gallbladder, or for other reasons. If laparoscopic cholecystectomy is not possible, the gallbladder is removed by traditional open surgery.

If the surgeon thinks that there is a stone in the bile duct, intra-operative cholangiography may be carried out. If this is planned, it will be discussed with the patient before the operation. It involves

putting a thin plastic tube (catheter) into the bile duct during keyhole surgery. Some contrast material (dye that shows up on x-rays) is then injected into the duct and x-rays are taken in the operating room to get a view of the inside of the duct. It adds about 15–20 minutes to the operation. If the x-ray shows stones in the bile duct, the surgeon may decide to leave them there to be removed later by endoscopy (ERCP), or try to remove them immediately either by keyhole or open surgery.

### **What are the risks of surgery?**

Every operation has risks, but the surgeon and anaesthetist will take great care to prevent complications. Complications that may occur include bleeding, infection, injury to the liver or to an adjacent loop of bowel and, very rarely, pancreatitis.

There are also risks associated with the general anaesthetic, including pneumonia, heart problems, and blood clots in the calf veins and lungs.

The bile duct runs close to the gallbladder and there is a small risk of injury to the bile duct. The gallbladder is like a pear, hanging off a branch (the bile duct). The surgeon has to cut the stalk of the pear and remove it, without damaging the branch. Injury to the bile duct is a very rare but serious complication (2 to 3 in a thousand or less than 0.3%). This may lead to a bile leak, or to jaundice due to a narrowing or blockage of the bile duct. It may need a major operation to repair it.

Occasionally, a stone may slip into the bile duct during the operation, and later cause pain or jaundice or abnormal blood tests. If that happens, it can usually be removed later by doing an ERCP.

The vast majority of patients who have a laparoscopic cholecystectomy experience few or no complications and quickly return to normal activity.

There can, however, be no “one hundred percent guarantee” that a laparoscopic cholecystectomy will get rid of all the symptoms. A small minority of patients continue to suffer from their symptoms even though they have had their gall bladder removed, and then

need further tests to see if they have some other disease condition that may be causing their pain.

### **What can one expect before the operation?**

The surgeon or the anaesthetist will organise blood tests and, if needed, a chest X-ray and ECG.

The patient must not eat or drink anything for at least 6 hours before the operation. Morning doses of regular medications (if any) may be taken with a sip of water, unless advised not to by a doctor or nurse.

An injection may be given to make the blood less sticky and so prevent blood clots on the day of the surgery.

### **What can one expect after the operation?**

One wakes up feeling drowsy in the operating theatre's recovery area before being taken back to the ward.

There will be some pain and sickness for 12 to 24 hours but medications will be given for this.

Some bruising and slight oozing of blood around the cuts is normal.

The patient is generally encouraged to walk around and drink fluids, and then eat something light a few hours later.

### **What happens after leaving the hospital?**

Following keyhole surgery, most patients are well enough to go home in 12–24 hours and very few stay longer than 36 hours. If there is open surgery, the bigger cut will mean a longer recovery period (usually three to seven days).

On getting home, the patient will get better quickly and should only need pain killers for another 2–3 days.

It is reasonable to shower and remove the wound dressings around 48 hours after the operation. If the cuts are stitched with dissolving

sutures, stitch removal is not necessary –this will need to be checked with the surgeon.

One should be able to return to normal activities within a few days and get back to work within 1–2 weeks. Some people recover more quickly than others, so each person should take things at his/her own pace. If doing something hurts, then one should stop doing it. It is important to avoid heavy lifting, and not drive until one feels comfortable about making an emergency stop. After an open cholecystectomy, a longer recovery period, around four to six weeks, may be needed.

The patient will usually have a routine outpatient appointment to see the surgeon. However, if one notices fever, yellow discoloration of the skin and eyes, abdominal pain, nausea, vomiting, abdominal swelling, or discharge from the wound, a doctor should be contacted immediately. These may be the symptoms of a complication and should not be ignored.

**Please remember, the information provided here is not a substitute for professional medical advice. It is indicative of what happens in a general sense, and may not be applicable to every patient. If you need further information, please ask your doctor or nurse.**