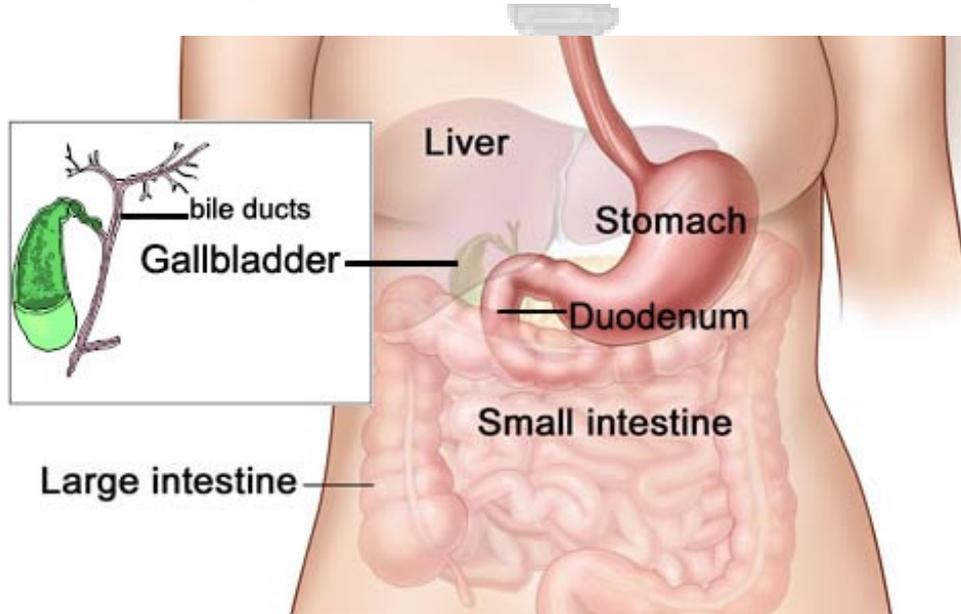


What are gallstones?

Gallstones are formed as crystals of cholesterol or pigments found in bile. They commonly occur in the gallbladder, where they can cause pain or lead to infection. Gallstones can escape from the gallbladder where they can block the ducts causing jaundice or pancreatitis.



About a third of the population have gallstones. Women are three times as likely to develop gallstones compared to men. Although the incidence of gallstones increases with age, a younger age group are now being affected. Gallstones are more common in patients who are overweight and following dieting.

What are the symptoms / signs?

Most patients who have gallstones have no symptoms and do not know they have them. If you are found to have gallstones that are not causing symptoms, your doctor will discuss whether you ought to have them removed.

Stones can block the exit of the gallbladder, causing muscle spasm known as **biliary colic**. This generally lasts for one to two hours, often associated with feeling sick, normally requiring strong pain killers. Sufferers often describe the pain as coming on after eating, particularly after a fatty meal. Patients are best advised to avoid any foods that bring on the pain.

Infection within the gallbladder may follow. This is called "cholecystitis". The pain is often severe enough to warrant admission to hospital for antibiotics and fluids.

Gallstones can escape into the bile ducts and cause problems. Smaller stones are more likely to cause problems than the larger solitary stones.

Stones can become lodged in the bile duct, causing jaundice or even pancreatitis.

The pain caused by gallstones does not always follow the classic pattern and can often be misdiagnosed or mistaken for other problems.

Acid reflux or stomach ulcers can both present with sudden upper abdominal pain after eating. They may also be exacerbated by fatty foods. Both are common conditions, as are gallstones. They can both occur separately or together and often the only way to tell if the gallstones are the true cause of the pain, is to remove the patient's gallbladder.

What investigations will be done?

Blood tests can help to confirm the presence of gallstones within the bile ducts by showing an effect on liver function.

If your symptoms are not typical of gallstones your surgeon may suggest looking for other causes before proceeding to surgery. Further investigation usually includes a telescopic examination of the stomach (endoscopy).

Ultrasound

The mainstay of diagnosis in gallstone disease is the **ultrasound** scan. Most people are familiar with its use during pregnancy. Its main advantages are that it is safe to use, does not involve radiation or injections and is completely painless.

The ultrasound scan is performed in the X-ray department. You will be asked to arrive starved. This will help to fill the gallbladder with bile and so help in the search for stones. The ultrasonographer will place some jelly over your abdomen and gently rub a probe over the area of interest. They will be able to tell if the gallbladder contains stones, whether it appears inflamed and whether the bile ducts are dilated. Dilated ducts would suggest the presence of stones within the bile ducts, which may require further investigation. As well as looking at the liver and gallbladder they will normally also look at the kidneys and spleen. The whole procedure takes about 10 minutes, but expect to stay for up to two hours.

If bile duct stones are suspected they can be confirmed using either an MRCP (magnetic resonance imaging) scan or an Endoscopic Ultrasound test (EUS). Your doctor will explain these options to you in detail, should the need arise.

If bile duct stones are confirmed the option is to remove them with an ERCP or surgically, usually at the same time as having your gallbladder removed.

Endoscopic Retrograde Cholangiopancreatography (ERCP)

Around 10% of people with gallstones will have stones in their bile ducts. If identified, these can be removed using **ERCP**. ERCP is a technique that combines the benefits of endoscopy with X-ray. The endoscope is a long video camera which is passed via your mouth, into your stomach and duodenum. If a stone is identified within the bile duct, the entrance can be widened and the stone removed.

What is the treatment?

Removal of the gallbladder

The treatment of choice for gallstones is removal of the gallbladder – **cholecystectomy**.

Traditionally cholecystectomy was performed through a large cut in the right side of the abdomen. This produced a large wound that was painful, restricted breathing and required a long recovery period. **Laparoscopic** or key-hole surgery has now been universally adopted as the technique of choice for gallbladder removal. Under general anaesthetic, four small cuts are made in the patient's abdominal wall (one at the naval and three below the ribs). A video camera is inserted through the naval to visualise the gallbladder. Long instruments are passed through the remaining holes to disconnect the gallbladder from the liver and bile ducts. The gallbladder can then be removed through one of the previously made holes. Around 2% of operations will have to be converted to an open operation, for reasons of safety. Reasons for this include excessive bleeding, very inflamed tissues or accidental damage to neighbouring structures. Previous upper abdominal surgery can increase the risk of conversion.

Patients can experience pain after the procedure. This is normally centred in the upper abdomen or even in the shoulder and should be relieved by simple pain killers. Most patients are able to leave hospital after 24 hours and will feel back to normal after one or two weeks. If the procedure has to be converted to an open operation, the pain is usually more severe, requiring intravenous pain killers. The average stay would then be four days and the period of convalescence may be extended to up to six weeks.

Potential operative complications include bleeding, infection, damage to bile ducts and leakage of bile. These are usually self limiting, may require an extended stay with antibiotics or occasionally lead to further surgery. Most centres quote a rate of bile duct injury of between 0.2 and 0.5%.

Removal of bile duct stones

Bile duct stones can be removed with ERCP (see above), or during key hole surgery. X-ray dye can be injected into the bile ducts during cholecystectomy to look for suspected stones in the bile ducts. If bile duct stones are identified, the bile duct can be opened and the stones extracted. A rubber tube is traditionally placed in the duct which comes out through the skin. This is left

for up to 28 days after which time X-ray dye is injected to ensure all stones have been removed. If successful, the tube can then be removed.

Occasionally, stones can be left in the bile ducts after gallbladder removal. These can usually be removed successfully by ERCP (see above).

What is the long term prognosis?

Although potentially debilitating, gallstones in themselves are not life threatening. It is only the more unusual complications of gallstones such as pancreatitis or bile duct infection that can rarely prove fatal.

Once the gallbladder had been removed, people are able to return to a normal life, without dietary restriction. While the body adjusts to life without a gallbladder, symptoms such as bloating, bile reflux or diarrhoea may be experienced. These should all settle after a few weeks.

Occasionally the original pain can persist after gallbladder surgery. This warrants further investigation but usually suggests that the pain has another cause other than gallstones.

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