

# Gallstones



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**Jersey 2024**

## **gallstones**

In some ways, gallstones are like pearls in an oyster! They probably develop from a tiny 'nidus', a seed crystal of calcium or bile pigment or cholesterol and over time, layer after layer of crystals are laid down over this to form a defined 'stone' made up from a mixture of chemicals. We don't know for sure why this happens but it's very common with around 2 adults in every 10 in the UK having them. They are more common in women than men, more common as you get older (it probably takes 15-20 years to develop stones) or have a family history of gallstones, in patients with high cholesterol, diabetes or obesity or conversely if you lose weight rapidly. There are also several blood cell breakdown disorders (called haemolytic anaemias) that are specifically associated with a particular mix of gallstone. They are also more likely if you have had part of your bowel removed or have Crohn's disease.

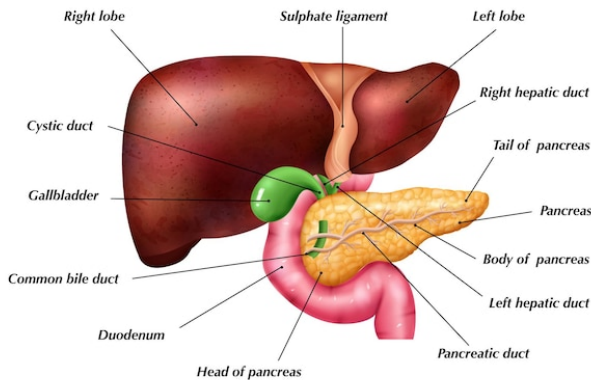
Many people have gallstones and don't know about them. But some get vague feelings of nausea or bloating, and some get recurrent discomfort or pain especially after eating a meal. Occasionally, patients have attacks of severe pain, needing hospitalisation for treatment.

Some people develop one gallstone, and others develop lots of them. They can vary in size from grit like a grain of sugar or salt to larger than an avocado stone. Often the larger stones cause inflammation in the gallbladder wall whereas the smaller stones are more likely to block the gallbladder or escape into the bile duct causing blockage or pancreatitis.

We use blood tests and abdominal ultrasound (a jelly scan) to diagnose gallstones. But sometimes you may need a magnetic scan (MRCP) if there is concern that one of your stones has escaped into the bile duct.

In patients with gallstone related problems, prompt treatment is important, and surgery is the usual option. This is now done by a safe, daycase, 'keyhole' operation (laparoscopic surgery). Four or five little cuts are made on the abdominal wall and surgical chopsticks use to remove the gallbladder containing the stones (laparoscopic cholecystectomy).

## ANATOMY OF THE PANCREAS, LIVER AND GALLBLADDER



### what is a gallbladder?

The gallbladder is a small storage organ under the liver in the upper, right-hand side of the abdomen. It's the size of a satsuma but the shape of a pear. It stores then releases bile which is a liquid that helps digest fatty foods. It is made by the liver. When we eat, the gallbladder squeezes the bile out of the gallbladder, down the cystic duct (the channel out of the gallbladder), then down through the common bile duct (the main bile channel out of the liver) and into the duodenum (the next bit of the gut after the stomach) through the ampulla of Vater (a gateway or sphincter from the common bile duct into the duodenum) and then mixes with food.

Gallstones are usually a mixture of solid chemicals including cholesterol and bile 'salts'. They form in the gallbladder over many years usually never causing symptoms or pain. Most people with gallstones don't know they have them.

If stones in the gallbladder block the flow out at the cystic duct area, this causes pain when the gallbladder squeezes (biliary colic) until the stone falls out of the way – this needs treatment just with painkillers. Sometimes, the gallbladder gets completely blocked and the stone does not fall away. Infection and inflammation then occur (acute cholecystitis). This needs treatment with antibiotics.

Alternatively, stones can escape into the common bile duct causing jaundice or pancreatitis.

Many ways to deal with gallstones have been devised – there are medications that can shrink the stones, but they have side-effects, and you cannot stop taking them or the stones will re-grow. In the past, stones have been ‘blasted’ by extra-corporeal shockwave therapy (like kidney stones are sometimes dealt with) but if the fragments pass out of the gallbladder and into the common bile duct then they are more dangerous and can cause pancreatitis or completely block the flow of bile out of the liver. We can’t just remove the stones; the gallbladder has a poor blood supply so making a hole to take them out would never heal up and the gallstones would re-form anyway. Often a gallbladder full of stones isn’t working properly so we surgically remove the gallbladder with the stones inside it.

After removal, the liver still produces the right amount of bile, it still flows into the small intestine and still does what it needs to do. You just lose the ability to store bile, but, unless you eat a large amount of fat in your diet then this is of no consequence. After surgery, it is best to stick to a lower fat diet though as this means that your liver won’t upregulate your bile production. Too much bile in the bowel and you could get diarrhoea or biliary gastritis (inflammation of your stomach).

### **Can gallstones re-form after the gallbladder is removed?**

I think of the gallbladder and the liver’s biliary system like a lake and rivers. The stagnant bile in the gallbladder can form stones in the same way a stagnant lake forms algae. But a fast-flowing river is unlikely to do the same.

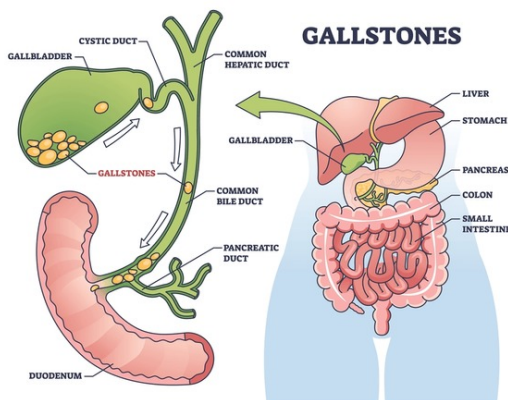
## Investigations

If we suspect that gallstones may be causing your symptoms then the first step is to do blood tests to see how healthy your liver is. We call these tests 'liver function' tests. We then use an ultrasound or 'jelly' scan to see if you have gallstones, where they are, how big they are, and how many there are. It's like 'sonar' – sound waves are used to bounce off your tissues (and the stones) and we can create an image of this. It's a non-invasive, simple, non-harmful and painless test that only takes about 10 – 15 minutes. The radiology department will ask you not to eat beforehand so that the gallbladder is as full of bile as possible.

Sometimes MRI (or even CT) will be used to get further information about your liver, pancreas and gallbladder.

## **gallbladder polyps**

You can also develop polyps in the gallbladder and like many other polyps these can turn cancerous. Although gallbladder cancer is extremely rare it is very dangerous, so we recommend removing the gallbladder as a preventative action. We get most concerned when they are fast growing or reach >10mm in size. These patients need their gallbladder removed at any age, as well as those with 6-9mm polyps if over 50 years old.



## **what are the symptoms of gallstones?**

*Asymptomatic (no symptoms):* Since they do not always cause pain, gallstones may be found incidentally when you are having an ultrasound scan for something else. There is usually no need to treat these stones.

*Niggles:* Sometimes gallstones cause vague, mild symptoms such as a bit of right sided discomfort or heaviness after eating fatty foods. Bloating or passing more wind (flatus) after eating.

*Attacks or episodes (biliary colic):* Around 10-15% of patients with gallstones experience attacks or episodes of pain. This is called biliary colic. Classically, this is a sudden onset, severe and sharp pain, usually felt in the right-hand side of the abdomen but it can be more central and 'radiate' through to the back or up to the shoulder area. It is a constant pain that lasts for anything from 20 minutes to a couple of hours and is sometimes relieved after being sick.

*Serious symptoms:* Sometimes gallstones cause serious conditions that need urgent treatment in the hospital. This may be if the blockage isn't relieved, and the gallbladder becomes inflamed or infected (cholecystitis). Stones can escape and block the common bile duct causing jaundice, infection (cholangitis) or even inflammation of the pancreas gland (pancreatitis).

If you have 10/10 pain or pain that does not go away or if you feel unwell with a high temperature, shaking and/or jaundice (the whites of your eyes and skin look yellow) then **seek urgent medical help**.

## **what are the treatments for gallstones?**

Which treatment is best for you will depend on your situation and how your symptoms are affecting your life.

1. *Do nothing:* If you have no symptoms but have been discovered to have gallstones, then it may be reasonable to do nothing about them.
2. *Lifestyle changes:* Changing your diet will not get rid of gallstones but it might prevent new gallstones forming and it might reduce the risk of having a gallstone attack. Classically, gallstone attacks are set off by eating fatty or spicy foods, however everyone is different so keeping a food and symptoms diary could help identify the specific foods that

trigger pain for you. Healthier fats tend to be less likely to trigger episodes such as oily fish (sardines), olives and olive oil, nuts, and avocado. As always, maintain a high intake of fruits, vegetables and wholegrains.

3. *Medicines*: If you have an attack of pain then rest, drink plenty of fluids and take some painkillers, such as ibuprofen or paracetamol. Your family doctor can prescribe stronger pain relief if you need this. There are medications that can shrink the stones, but they are not very effective, have side-effects and you cannot stop taking them or the stones will re-grow.
4. *Surgery/ERCP*: If your gallstones are in the gallbladder and causing troublesome symptoms (severe or frequent) or if your gallbladder becomes inflamed (cholecystitis) then you will be offered surgery to remove the gallbladder and gallstones.

This is usually a daycase, keyhole operation at the hospital and is called a **laparoscopic cholecystectomy**. Sometimes keyhole surgery is not possible, and you may be offered open surgery with a single larger cut. Rarely, you may need an operation, but surgery may not be possible due to major internal scarring from previous abdominal surgeries – I will discuss your options if this is the case.

If some of your gallstones have escaped out of the gallbladder and are in the common bile duct, then have two options. Either a more complicated (and longer) operation that I can do to remove these stones as well as your gallbladder (**laparoscopic bile duct exploration**) or an **ERCP** (endoscopic retrograde cholangio-pancreatography). The former is done in Jersey and the latter would entail a trip to Portsmouth Hospital. ERCP is a procedure to remove stones in the bile duct using endoscopy. You have sedation to make you sleepy and you should not feel any pain. You usually still need to have your gallbladder removed with surgery following an ERCP.

## **mr shenfine's assessment**



In addition to the story of your gallstones, I will need to discuss any previous and current health issues that you have had. All this information is confidential and is recorded only in medical records. I will review your blood tests and your scan.

I will need to know about illnesses, medications and allergies. If you have had any surgery before and if you had any issues with surgery or anaesthetics. Smoking increases the risk of complications, even stopping for two weeks before surgery can reverse these risks.

Please bring a list of your medications and tell me if you are taking any blood thinning medications such as aspirin, clopidogrel or a DOAC such as apixaban. These may need to be stopped before surgery.

We will then discuss your options, the risks and benefits and how you wish to proceed.

## **laparoscopic cholecystectomy**

You will be asked to come to a pre-admission clinic check at Enid Quenault Centre prior to surgery.

Most patients will have their surgery as a daycase but regardless, you will be admitted on the day of surgery. You can continue to drink water up to two hours before surgery, but you must not eat or drink other fluids for 6 hours prior to surgery.

You will need to have a full general anaesthetic to remove your gallbladder, there are no alternatives.

A thin telescope – the laparoscope – is introduced into your abdominal cavity using a small incision and CO<sub>2</sub> gas is used to gently expand your abdomen so that there is room to look around. The laparoscope has a video camera on the end which transfers the images to a monitor screen that I watch in the operating room. This technology means that the whole surgery can be done using four small



incisions: one or two are 1cm in length and two or three are 1/2cm in length (one in your umbilicus, one at the top of your tummy and two under your ribs on the right-hand side). The benefits of doing surgery in this fashion rather than a single, large incision (open surgery) means less discomfort after surgery, less time in hospital, a quicker recovery and ultimately, small scars. The gallbladder is dissected from its attachments to the liver. I will clip and divide its blood supply and its attachment to the bile duct: the cystic duct. The clips are small and made from titanium so that they do not interact with MRI machines but do stay there forever inside your body. The mobilised gallbladder is placed in a sterile plastic bag and removed from your abdomen. The whole operation takes about an hour.

Sometimes I need to do an X-ray dye test halfway through the operation to make sure that no gallstones have escaped into your bile duct. This is called an **intraoperative cholangiogram**. If I find stones have escaped, then I may be able to remove them there and then by exploring your bile duct laparoscopically or it may require another procedure called an ERCP on the mainland afterwards.

Rarely, I will have to 'convert' your surgery to an open procedure, making that bigger incision. This is nearly always done for safety reasons. If it's not safe to continue with laparoscopic surgery, then I will not hesitate to do this. Open surgery is safe and effective – this is not a complication of the surgery; it will only ever be done to protect you and it is uncommon. In fact, I have never had to do this conversion to an open operation for a patient having their surgery in a routine, elective situation. However, I have had to do this sometimes for emergency cases and that is not to say that this cannot happen. The official rate for this to occur is in up to 5% of elective laparoscopic cholecystectomies and would generally require a longer length of hospital recovery and recovery at home.

## **risk**

Laparoscopic cholecystectomy is generally a very safe operation, but all surgery and anaesthesia carry some risk. Complications occur in around 5% of patients and most are mild and resolve easily but major complications can happen and can turn life-threatening. I will send you an eConsent form that runs through these risks, because it is important that you have enough time and information to weigh up the benefits, risks and limitations of surgery. Risks are higher if you are

overweight, smoke or have had recent attacks of pain. These are some of the important risks:

### *General Risks*

Bleeding is always possible from any surgery. Uncommonly you may need to return to theatre to stop this or to clear out blood clots. Nausea and discomfort are common. Cardiovascular complications such as heart attack, pulmonary embolism or stroke can occur and threaten your life.

Deep vein thrombosis (DVT) can occur. For most patients, I use calf compressors during your surgery and anti-embolic stockings but if your risk is higher for clots then you may be given a dose of a blood thinning medication or a course of these post-operatively to prevent them. Mobilising as soon as possible after surgery is good for you. As soon as you can, move around your house and go for some short walks.

Chest infections: deep breathing after surgery can prevent this.

Wound problems, such as infections – I give you antibiotics during surgery to reduce this risk but if you develop pain, swelling or redness of a wound then this may need antibiotic treatment.

Scars: cutting the skin is always associated with scarring and this can be very variable between patients – some patients develop tiny scars and other have raised, itchy and red scars. But most scars heal well over time.

### *Specific Risks*

The most important specific risk is a 'bile duct injury' - you don't need your gallbladder, but you do need your common bile duct. I come close to this duct during your operation. It's possible that this gets damaged and can make you seriously ill. This is rare but can lead to a prolonged hospital stay and major surgery in a mainland UK specialist centre to repair the duct. This is the INDEX complication for gallbladder surgery and the risk is frequently quoted at 1-2% but I have never damaged a bile duct in my career during elective routine uncomplicated surgery.

Similarly, the clips used to tie off the cystic duct can slip off, causing bile to leak out afterwards into your abdomen which can make you unwell. This usually can be fixed by a short return to theatre.

Injuries to other surrounding structures (we call these 'iatrogenic' injuries) are always possible with any surgery especially if there is active inflammation of your gallbladder. The duodenum and colon lie right beside the gallbladder and can be caught up in the inflammation.

CO<sub>2</sub> can get into your blood system and travel to your heart. This is dangerous but extremely rare.

### *Re-operation*

Sometimes returning to theatre for a re-operation is necessary for your safety, and to control the situation and stop this progressing into a more major situation. This may be as a laparoscopic operation again or require open surgery.



### **after surgery**

I want to minimise your stay in hospital. It's better for you and it also means that you can recover in the comfort of your own home away from the hustle and bustle of a busy hospital ward. So, we try to do these surgeries as day cases with no nights spent in hospital. But sometimes keeping you in overnight is safer. This means getting you moving as soon as possible after surgery – this reduces your pain, reduces the risk of chest infections and blood clots. You will be discharged with simple painkillers.

When you wake after surgery, you will be monitored for a short period of time in 'recovery' and then when safe to do so transfer back to your ward. You will have some mild pain in your wounds and in your shoulders (due to the gas). These both settle rapidly. The discomfort goes after a day or two and the abdominal wounds will take a week to ten days to be completely comfortable. Essentially, by the end of a week you should have minimal discomfort. You may feel nauseated and have a sore throat. I advise that you take simple painkillers, such as paracetamol, regularly over the first few days. You will be given a light meal on the ward once fully awake and if your observations are all fine then you will be discharged after four or so hours with painkillers and dressings.

You will have dressings over your wounds. Please leave these in place for as long as you can – you will get better wound healing if you do. You can shower and pat these dry. It's preferable that you take a shower, rather than a bath as this prevents the wounds becoming 'soggy'. If you need to replace a dressing or have a problem with a wound, then please let me know. All your stitches are under the skin and will dissolve – there is no need to have these removed. Sometimes after your dressings come off, you can feel the end of a stitch – if it irritates you then you can cut this flush to the skin. There is no need to apply further plasters unless you feel it would be more comfortable to do so.

The incisions will probably be red and itchy for 1-2 weeks and bruising around them is common. Once healed there will be a small, pink scar. Over the next few months, they will become less and less noticeable. There may be some persistent bumpiness and bruising around the wounds, but again this gradually improves. It is common to be numb around wounds due to tiny skin nerves that we cannot see being cut. In most people this sensation will return, but some wounds stay permanently numb.

Wound infections are not uncommon so if you have increasing tenderness, pus-like discharge, swelling or increasing redness of the wounds then visit your GP as you may need some antibiotics to resolve the infection and discomfort.

Make sure someone can pick you up from the hospital and that you have adequate support in place for when you get home. Make sure that you have enough supplies of your regular medications.

Once home it is important to both rest when you can and mobilise safely and gently when you can. Most activities can be resumed after 3-5 days but I would avoid vigorous exercise, heavy lifting until completely comfortable. It is normal to feel tired after surgery, so listen to your body, rest up and take it easy for those few days. You can feel groggy after an anaesthetic so don't sign any documents or make any major decisions for a couple of days! Basically, you should be able to resume most of your normal daily activities when you feel comfortable to do so but avoid lifting heavy stuff at least two weeks as even though the wounds are small, you can still give yourself a hernia.

You cannot drive for a week after surgery as you have to be able to do an emergency stop without discomfort – if you drive for work, then you will need to be signed off by a doctor to resume this. Please be aware that driving whilst unfit may invalidate your insurance.

You can gradually resume normal eating over time but avoid heavily fatty foods long-term as this can cause your liver to produce more bile than required and this can upset your stomach or your bowels. Most people prefer to have smaller, more frequent meals to begin with as it can take a few days before your appetite returns. When you feel hungry start with light frequent meals and then increase at your own pace.

You may find that you have a brief episode of constipation due to the fasting, anaesthetic and painkillers. This will settle over time – maximise your fluid intake and get back your normal fibre intake. Sometimes a mild laxative can help. Alternatively, some patients experience diarrhoea after surgery. Similarly, this should settle within 3-4 weeks. Drink plenty of fluids so that you don't get dehydrated.

Once the gallbladder and stones are removed, your symptoms should resolve, either immediately or after a short time. Sometimes, the pain was not due to the gallbladder but another condition – if you have ongoing pain for >3 months then please let me know.

You can return to work as soon as you feel well enough. This will depend on how you are feeling and the type of work that you do. If you have a desk job you may feel ready to return in a week or so. If you are involved in manual labour or heavy

lifting, you may require a bit more time. Typically, you will need between two and three weeks off work. If you need a sick certificate, then let me know and I will write this for you.

I generally see you again two weeks after your surgery but do not hesitate to get in touch with me via hospital switchboard if you or your family are concerned about your condition. If you do have a complication, then the earlier this is picked up the easier it is to deal with it and stop any long-term consequences.

*This leaflet for general information purposes. It is not a substitute for a face-to-face discussion and nor does it contain every fact about gallbladder surgery, it's risk or benefits. I cannot guarantee that treatment will meet all your expectations or that surgery carries no risks.*

*If you have any concerns or questions, then please write them down and ask me about them.*

**Let someone know if you have any of the following.**

This can be your GP, the A&E department or me.

You can get hold of me through the hospital switchboard:

1. *Fever >38C*
2. *Redness, swelling, pain, bleeding or discharge from your wounds*
3. *Jaundice – yellow eyes/skin or dark tea-stained urine.*
4. *Cough, shortness of breath, chest pain or severe nausea and vomiting*
5. *Pain or swelling in your legs/feet/calves*
6. *Feeling weak, dizzy or faint*



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