



Gallstones form in the gallbladder when compounds which are usually found in dissolved form in normal bile come out of solution. They coalesce and form crystals which progressively increase in size, form grit or stones and may start to give symptoms. Stones are formed from cholesterol and the breakdown products of red blood cells. If gallstones remain in the gallbladder they can give rise to (biliary) colic when the gall bladder contracts or cholecystitis when it distends and becomes inflamed, often infection intervenes as a result.

### Symptoms

#### Biliary Colic

During an attack abdominal pain is experienced usually in the upper right side of the abdomen under the ribs. This may radiate round into the back under the scapula. The pain usually takes the form of often severe colicky discomfort that may wax and wane over several hours but remains present at least in the background throughout. It may be associated nausea and vomiting; patients often report an inability to get comfortable in any position despite a variety of attempts. Attacks are often precipitated by ingestion of a fatty meal.

#### Cholecystitis

Pain is experienced in the upper right side of the abdomen under the ribs. This may radiate round into the back under the scapula. The pain is usually constant in nature and worse with movement or deep breathing. It is accompanied by fever and occasionally chills or uncontrolled shakes.

### Treatment

In both clinical scenarios above the treatment is with hospital admission and adequate provision of pain relief. This usually requires the intravenous administration of strong morphine like drugs and fluids. In the case of cholecystitis antibiotics are given in a similar way. In each case optimum treatment is by early operation and removal of the gallbladder (cholecystectomy) usually performed laparoscopically.

### Complications of gallstones

When gallstones are squeezed out of the gallbladder into the cystic, then common bile duct a variety of more complicated clinical scenarios may emerge.

#### Jaundice

Blockage of the narrow duct system from the liver by a gallstone results in the blockage of bile secretion from the liver into the gut. Patients become jaundiced and may notice paler stools, darker urine and severe generalised itching. Cholangitis may occur if the static stream of bile becomes infected.

#### Pancreatitis

If a gallstone impacts at the lower end of the common bile duct where it joins the pancreatic duct, pancreatic secretion may be impaired and inflammation within the pancreatic duct and pancreas results.

### Treatment of complex cases

When gallstones have left the gallbladder but not safely reached the gut, they become stuck in the biliary duct system; treatment is directed towards their destruction or extraction before removal of the gallbladder is undertaken. These impacted stones may be identified by blood tests, ultrasound or by MRI of the duct system. Endoscopic Retrograde Cholangio- Pancreatography (ERCP) is the treatment of choice. Under sedation an endoscope is inserted through the mouth to the duodenum and then the biliary duct system is accessed and cleared using a balloon or snare device.