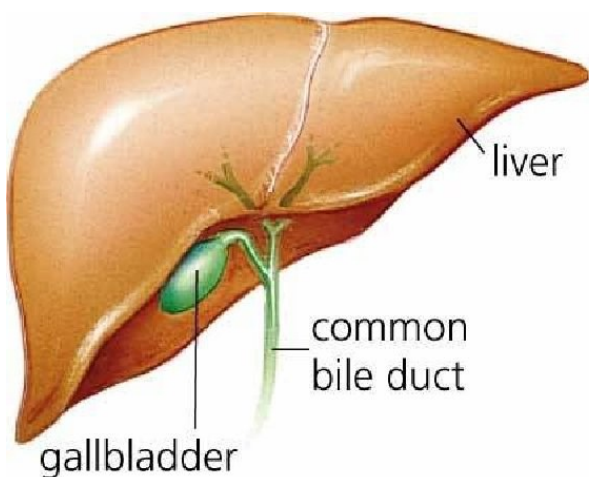


Laparoscopic Cholecystectomy

Gallstone Disease

Gallstones

- The gallbladder sits under the liver and acts as a storage vessel for some of the bile made by the liver
- It contracts at mealtimes to inject more bile into the bowel for digestion
- Due to chemical imbalances, stones can often form inside the gallbladder (“gallstones”). These can be primarily based on cholesterol or on bilirubin
- 10-30% of all people have gallstones, usually without symptoms
- Once formed, gallstones remain in place unless they pass through the bile ducts into the bowel to be excreted
- Gallstones can cause severe pain (biliary colic) when they block contraction of the gallbladder or may cause acute inflammation of the gallbladder (acute cholecystitis)
- They may also pass into the common bile duct causing jaundice or pancreatitis and other diseases



Gallstone Types

- Cholesterol stones
- Pigment stones
- Mixed Stones



Laparoscopic Cholecystectomy

Indications for Surgery

Indications for Gallbladder Surgery

- Biliary Colic (see below)*
- An attack of “cholecystitis”, or inflamed gallbladder
- Pancreatitis caused by gallstones
- Infection of the common bile duct, or “cholangitis”
- Stones dropping into the common bile duct causing pain or jaundice (yellow skin/eyes/urine)
- Gallbladder polyps (growths) over 1cm in size
- Gallbladder cancer in selected cases
- Sometimes the gallbladder is taken during other operations if full of stones, e.g. Colon resection
- Asymptomatic stones may occasionally warrant gallbladder resection in some patients, for example sickle cell disease where constant rupture of blood cells leads to severe gallstone formation
- Stones without symptoms can occasionally warrant cholecystectomy in well informed patients

*Biliary Colic

- Severe pain that comes in spasms, often brought on by a meal
- Felt in the upper abdomen, sometimes around the right side, even to the back
- Difficult to find relief in any position
- Resolves by itself after a period of time which could be several hours
- Once attacks occur, they are likely to re-occur

Laparoscopic Cholecystectomy

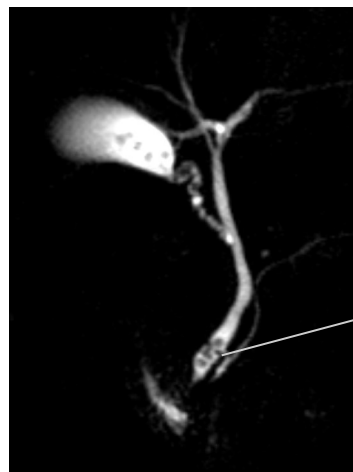
The Operation

Removal of the gallbladder entails...

- Safe dissection of the anatomy
- Securing the cystic duct carefully
- Securing the cystic artery carefully
- Removing the gallbladder without spillage of stones
 - Ensuring no further bleeding
 - Removing spilled blood or bile

Cholangiogram

- In addition to the above, a picture of the entire biliary system can be taken during the operation to help define the anatomy and look for stones in the common bile duct
- These pictures may pick up any inadvertent bile duct injury and allow prompt treatment
- Cholangiogram is performed routinely in our practice



Stones in Common
Bile Duct

After the operation

- One night in hospital is usual
- Occasionally a drain may be left inside, to be removed before discharge
- Back to most activities within a week
- Back to strenuous activities after a month

Laparoscopic Cholecystectomy

Common Bile Duct Stones

Gallstones in the Common Bile Duct

- These are sometimes known before gallbladder surgery but otherwise can be picked up at the time of surgery by use of a “cholangiogram”
- A cholangiogram is a picture of the bile ducts under the liver using dye injected from the gallbladder surgery
- There are two ways to remove stones in the common bile duct:
 - (1) ERCP procedure at a separate general anaesthetic
 - (2) Exploration of the duct with stone removal during the original gallbladder operation

Our preference is to explore the common bile duct laparoscopically at the same operation to deal with all stones at the one time. ERCP is as a last resort.



Stone in Common Bile Duct

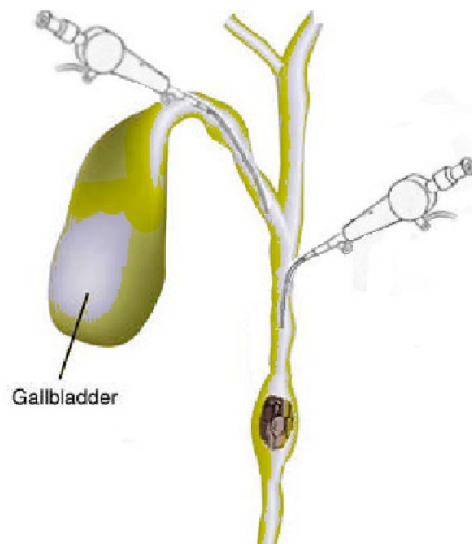
Laparoscopic Cholecystectomy

The Common Bile Duct

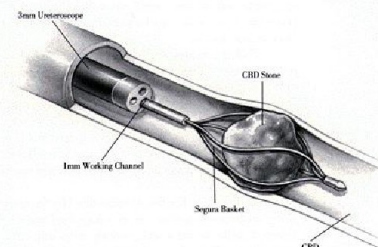
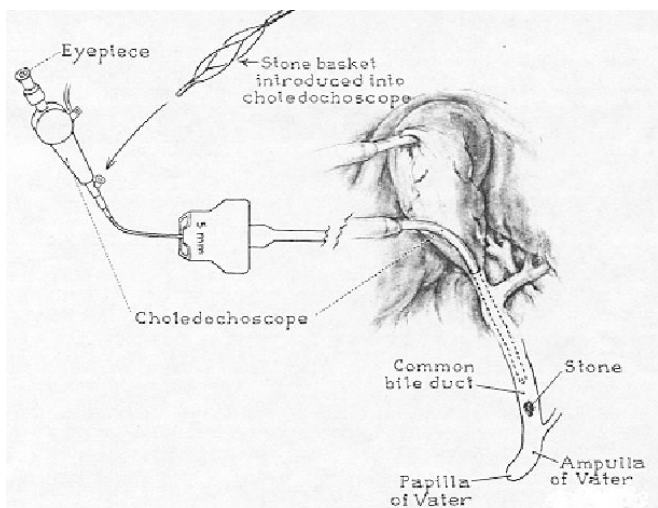
Laparoscopic Common Bile Duct Exploration

- Successful CBD exploration can prevent the need for a second operation (ERCP), avoiding potential complications from that procedure and further time in hospital
- The procedure is not always successful, however, and may increase the risks of the original surgery
- There are two ways to explore the CBD at operation:

Trans-cystic Approach



Choledochotomy Approach



Laparoscopic Cholecystectomy

Complications

Complication	Incidence
Around the time of the operation...	
Major Haemorrhage	1%
Intra-abdominal Abscess	<1%
Bile Leak	1%
Bile Duct Injury	0.3%
Major Medical Complication	1.5%
Bowel Damage or other organ	1%
Conversion to Open	2-3%
Wound Infection	1-2%
Retained Gallstones causing problems	<1%
Mortality	0.05%
Longer Term...	
Loose Stools	5-10%
Abdominal Discomfort	7-8%