

Minimally Invasive
Abdominal and Bariatric Surgery

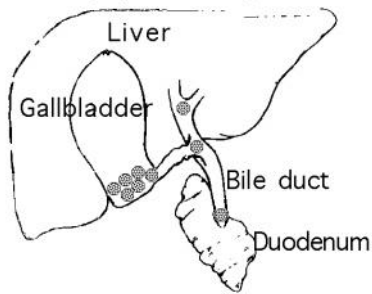
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Laparoscopic Cholecystectomy
and
Bile Duct Exploration

BILE, DUCT AND GALLBLADDER

Bile is a green fluid that has a detergent like effect in the intestine that is essential to the digestion of fats and certain vitamins. Bile is made in the liver and flows through the bile duct to enter the duodenum at the sphincter of Oddi. The gallbladder is a blind pouch connected to the bile duct that acts as a reservoir where bile is concentrated between meals. During this process deposits can form in the gallbladder that may become sludge or slowly grow into one or more stones. The presence of stones in the gallbladder irritates its wall, which eventually becomes chronically inflamed. By this stage the gallbladder is diseased. Stones will form again if they alone are removed. For this reason it is best that the entire gallbladder and the stones in it be removed if symptoms develop.



Symptoms often result from a gallstone becoming stuck in the outlet of the gallbladder, or by passing into the bile duct and blocking the flow of bile into the duodenum (see the picture). Although these two situations usually cause different types of symptoms it can be difficult to tell them apart.

PREOPERATIVE TESTS

The most important test in the diagnosis of gallbladder disorders is the sonogram (or ultrasound), a non-invasive method identical to that used to show the baby during pregnancy. This shows whether stones or sludge are present in the gallbladder. Knowing the size of the stones, the thickness of the gallbladder wall, the presence of fluid nearby and the diameter of the bile duct helps the surgeon in evaluating the symptoms.

Blood tests of liver function can show if the bile duct is, or has recently been, blocked by stones but can be normal even if stones are present in the bile duct. ERCP is an endoscopic procedure to X-ray the bile duct. Occasionally this may be needed before surgery, or after surgery if residual stones in the bile duct are known or suspected to be present. Most patients will not require this.

ADMISSION AND DISCHARGE

Admission takes place two hours before the planned procedure unless you are already in hospital. The surgery takes about an hour, or more in difficult cases. In addition, the time necessary for anesthesia before and after the surgery may be 30-60 minutes. We will speak with your waiting relatives/friends as soon as the surgery is finished.

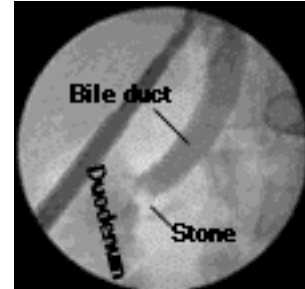
You will be allowed to drink as soon as you wake up and will start on a regular low fat diet the next day. When you are comfortable and you do not require intravenous fluids or other treatment you can go home. Otherwise you will usually go home the next day.

DO I NEED MY GALLBLADDER?

Humans can live a perfectly normal life without the gallbladder. However it is common to experience an increase in intestinal gas and minor changes in bowel habit after surgery. It is best to avoid fatty food until the intestine adapts to the absence of the gallbladder, usually about a month. Some patients have discomfort near their right shoulder blade for a few days. If the gallbladder is so diseased that it does not work at all, after it is removed patients frequently feel much better than they have for many years.

THE OPERATION

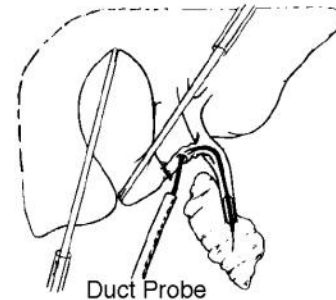
Four or five tiny incisions are made in the abdominal wall for the video equipment and instruments to dissect, insert clips or tie knots, and remove the gallbladder from its attachment to the liver. An X-ray is usually performed to outline the bile duct. The gallbladder is quite small and once emptied of stones can be extracted from the abdomen through one of the small incisions. A narrow tube drain may be left in one of the incisions and is usually removed the next day.



An X-ray showing a stone partly blocking the bile duct

WHAT IF STONES ARE IN THE BILE DUCT?

If stones are found in the duct, it can be explored to remove them during the laparoscopic procedure. In our hands the success rate of this is better than 90%. However if the duct cannot be cleared of stones then an ERCP may be necessary after surgery.



A scope or probe is used to explore the bile duct.

BENEFITS AND RISKS

Large series of laparoscopic cholecystectomy have shown that it is safer than regular surgery. By avoiding a long incision, pain after the surgery is nearly eliminated. Nonetheless the wounds are sore for a day or two. Wound complications such as persistent pain, infection and incisional hernia, thrombosis and pulmonary embolism appear to be much less frequent.

Other than the need for general anesthesia, the most important risk of surgery is the potential for injury to the bile duct. For uncomplicated cases the chance of conversion to conventional surgery, for all practical purposes, is negligible. This increases to about 5% if the gallbladder is very infected, or if the problem of stones in the bile duct is a complex one.

COMPLICATIONS

Injury to the bile duct is a rare but serious complication of laparoscopic or conventional surgery, reported in the United States to be around 0.2-0.5%. Leakage of bile from a tiny duct in the edge of the liver is also rare. Rest assured that we take meticulous care to prevent this type of problem.

Infection of a skin puncture is unusual but is easily treated by opening the wound to allow it to drain.

Bleeding during or after surgery is also rare and is usually related to some form of blood clotting abnormality caused by drugs (anticoagulants, anti-inflammatory agents such as Motrin i.e. ibuprofen, or aspirin) or less commonly a bleeding disorder. Updated 11/2000

