

ROCKY MOUNTAIN PEDIATRIC SURGERY

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Gallbladder

What is the Gallbladder?

The gallbladder is a sac that concentrates and store bile. Bile is a liquid that essentially acts as a detergent, allowing fat to be dissolved and absorbed. Bile is produced by the liver and is transported to the gallbladder through a duct (tube) called the common hepatic duct. When food enters the intestine, a signal is sent to the gallbladder causing it to squeeze and release the bile into the intestine through a channel called the common bile duct. The bile mixes with and breaks down the food for absorption by the intestine.

Cause and Pathology

The chemicals within the gallbladder are in a fine balance. This balance can be upset by a number of things including dietary changes, chemical imbalance, infection, hereditary factors, etc.

- **Cholelithiasis:** this occurs when particles precipitate out of the bile in the form of sludge and stones. As long as the sludge or stones are small and pass through the neck of the gallbladder (cystic duct) and through the common bile duct into the intestine, there is no problem. However, when the stone reaches sufficient size to block the cystic duct or common bile duct then obstruction to bile flow occurs and symptoms (biliary colic) develop.
- **Cholecystitis:** this is inflammation of the gallbladder. An obstruction of the gallbladder may in itself cause inflammation of the gallbladder wall. If bacteria are entrapped within the gallbladder, the inflammation worsens and a serious infection may occur. Inflammation can also occur without the presence of stones.
- **Biliary Dyskinesia:** this is when the function of the gallbladder is abnormal and there are no stones. Rather than releasing the bile, the gallbladder squeezes but stays filled. The tense, distended gallbladder causes pain in the right upper part of the abdomen which is worsened any time the gallbladder is stimulated to squeeze (like after a fatty meal-pizza, fast food, etc. The root cause of this disease is unknown.

Symptoms and Signs

- Abdominal pain
- Fever
- Vomiting
- loss of appetite
- Worsening pain with fatty foods.
- Jaundice (yellow discoloration of the eyes and skin).



Laboratory and Diagnostic Workup

- Blood may be taken to determine
 - white blood cell count (which may reflect an infection)
 - red blood count (to assure safety of anesthesia and surgery)
 - Blood electrolytes will be determined and corrected if necessary.
 - An elevated bilirubin indicates obstruction.
 - An elevated amylase level may indicate the presence of pancreatitis (inflammation of the pancreas) which may occur if the stone also blocks the entrance of the pancreatic duct.
- Ultrasound: to look for stones and the gallbladder size and wall thickening.
- Endoscopic retrograde cholangiopancreatography (ERCP) may be performed by the Gastroenterologist if jaundice is present.
- Upper gastrointestinal contrast study and or an upper endoscopy may be performed as many GI problems have similar symptoms.
- If symptoms are suggestive of biliary dyskinesia and other workups have not revealed an answer, a HIDA Scan may be obtained to gauge the function of the gallbladder.

Treatment

- Cholecystitis, symptomatic cholelithiasis, and biliary dyskinesia are all cured by removal of the gallbladder. Simple removal of stones from the gallbladder was tried long ago and found to be ineffective: stones and symptoms always returned. There are no medications that effectively treat these problems.
 - In the pediatric age group, removal of the gallbladder is nearly always by laparoscopy (laparoscopic cholecystectomy) rather than by "open" surgery.
 - Laparoscopy involves one - four small incisions depending on the case. Your surgeon will discuss the anticipated procedure with you the morning of surgery.
 - The very detailed anatomy is viewed by the surgeon with a fiberoptic camera and the operation performed with thin long instruments.
 - If there is suspicion of a stone in the common hepatic or common bile duct then a catheter is placed into the cystic duct, dye is instilled, and an x-ray is taken, known as an "intraoperative cholangiogram".
 - If an unsuspected stone is found during laparoscopy and cannot be simply flushed out, then an endoscopic retrograde cholangiopancreatography (ERCP) is performed after recovery from the laparoscopy but usually during the same hospitalization.
 - In the rare instance that a common hepatic or bile duct stone cannot be removed by ERCP, an open procedure may have to be performed.
 - When a patient presents with jaundice or a history of jaundice, an ERCP may be performed by a pediatric gastroenterologist. The gastroenterologist will remove any stones in the common hepatic or common bile ducts. Then a laparoscopic cholecystectomy is performed, usually 1-2 days later.
 - Patients who have an uncomplicated laparoscopic cholecystectomy usually require only an overnight hospitalization. The length of hospitalization is determined by pain control, mobilization, and adequate oral intake. In other words, as soon as the patient can eat, walk, pass gas, and control pain with pills, she may go home.
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Complications and Long Term Problems

- Any patient undergoing general anesthesia and surgery has a small risk of reaction to the anesthetic or medications, bleeding, and infection.
- Serious bleeding or unusual anatomy may result in an "open" operation rather than a laparoscopic one. There is a small (1 in 5000) risk of injury to the common bile duct which may result in further surgery.
- Once the gallbladder is removed, the bile is no longer concentrated and bile flows continuously from the liver into the intestine. This decreases the effectiveness of digestion of fatty foods, and many meals "don't sit well." This does not mean that one cannot eat fatty foods but it should be done in moderation.
 - Many people eat well without their gallbladders. Most patients start with a low fat diet, and gradually increase to a normal proportion of fat over 2-3 months.
- Occasionally, a patient has more than one cause for upper abdominal pain. If after an adequate recovery time (4-6 weeks), your symptoms continue or recur, our office should be notified.

Disclaimer: *Your child's condition is unique. The information contained on this web site is not intended to substitute for advice from a doctor or nurse. If you are unsure about any aspect of your patient's care, please contact us at 303-839-6001, or talk to your pediatrician.*

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