CONDITION

Choledocholithiasis

Learn how stones in the common bile duct cause pain, jaundice, infection, or pancreatitis, and how doctors diagnose, remove, and monitor them.

WHAT IT IS
Gallstones in the common bile duct

BODY SYSTEM
Digestive

MAIN SYMPTOMS
Upper abdominal pain, jaundice, nausea or vomiting, dark urine

WHAT CAUSES IT
Gallstones, usually from the gallbladder

HOW IT IS DIAGNOSED
MRCP, endoscopic ultrasound, or ERCP

MAIN TREATMENT
Endoscopic or surgical stone removal

CAN IT BE CURED?
Yes, duct stones can be removed

IS IT AN EMERGENCY?
Sometimes, fever or chills with pain or jaundice

LONG-TERM OUTLOOK
Complications are less common with prompt treatment, but stones can recur

Overview

Choledocholithiasis means that one or more gallstones are present in the common bile duct. This duct is a small tube that carries bile from the liver and gallbladder into the first part of the small intestine. Bile is a digestive fluid that helps the body break down fats.

Most common bile duct stones form in the gallbladder and then move into the duct. Less often, stones form within the bile ducts themselves. A stone may pass into the intestine without causing lasting trouble, or it may become stuck and block bile flow.

A blockage can cause abdominal pain, yellowing of the skin or eyes, and abnormal liver blood tests. It can also lead to serious complications, including infection of the bile ducts or inflammation of the pancreas. For this reason, confirmed common bile duct stones are usually removed in people who are well enough to undergo treatment, even if symptoms are mild or

absent.[1,2]

Choledocholithiasis is different from uncomplicated gallstones in the gallbladder. Gallbladder stones may not require treatment when they cause no symptoms. Stones in the common bile duct have a greater chance of causing obstruction and related complications.

Symptoms

Some people have no symptoms when a common bile duct stone is first found. Others develop symptoms that come and go as a stone shifts position or partly blocks the duct.

Possible symptoms include:

Pain from a blocked bile duct may be steady and can last longer than typical gallbladder pain. However, symptoms alone cannot show whether a stone is in the gallbladder, the common bile duct, or another part of the digestive system.

Contact a clinician promptly for new jaundice, persistent upper abdominal pain, dark urine, pale stools, or repeated vomiting. These symptoms need medical assessment but do not always mean there is an emergency.

Seek urgent or emergency care for abdominal pain or jaundice accompanied by fever or shaking chills. This combination may signal acute cholangitis, which is an infection in an obstructed bile duct. Confusion, fainting, very low blood pressure, severe weakness, or trouble staying awake can indicate severe infection and require immediate emergency care.[3]

Severe, persistent upper abdominal pain that may spread to the back, especially with repeated vomiting, can be a sign of acute pancreatitis. This also needs urgent medical evaluation.

- Pain in the upper right or upper middle abdomen
- Pain that spreads to the back or right shoulder
- Nausea or vomiting
- Yellow skin or eyes, called jaundice
- Dark urine
- Pale or clay-colored stools
- Itching related to reduced bile flow
- Fever or chills if an infection develops

Causes and risk factors

Most common bile duct stones begin as gallstones in the gallbladder. They enter the cystic duct, which drains the gallbladder, and then move into the common bile duct.

Gallstones may be made mainly of cholesterol or of pigment compounds. Cholesterol stones develop when the balance of substances in bile changes and crystals form. Pigment stones contain bilirubin, a substance produced when the body breaks down red blood cells.

Factors associated with gallstone formation include:

These factors can raise risk, but they do not prove that a person has a bile duct stone.

Some stones form directly inside the bile ducts. This may be more likely when bile flow is slowed, a duct is narrowed, or there has been a previous infection or procedure involving the bile ducts. Stones can also remain or recur after gallbladder removal because removing the gallbladder does not remove the common bile duct.

- Increasing age
- A personal or family history of gallstones
- Female sex
- Pregnancy
- Obesity
- Rapid weight loss, including after some weight-loss procedures
- Diabetes
- Certain blood disorders that cause increased breakdown of red blood cells
- Cirrhosis or some other liver diseases
- Conditions that affect the end of the small intestine, such as Crohn's disease or prior intestinal surgery

Diagnosis

Diagnosis begins with a review of symptoms, medical history, previous gallbladder problems, and any past abdominal procedures. A clinician may check for abdominal tenderness, fever, or jaundice.

Blood tests can look for evidence of blocked bile flow or complications. These may include bilirubin, alkaline phosphatase, gamma-glutamyl transferase, and liver enzymes such as ALT and AST. A complete blood count may show signs of infection. Lipase is commonly checked

when pancreatitis is possible.

Abnormal results can support the diagnosis but are not specific to choledocholithiasis. Liver tests may improve if a stone passes, and normal results do not always exclude a stone.

An abdominal ultrasound is often the first imaging test. It can identify gallbladder stones and may show widening of the common bile duct. However, bowel gas and the duct's location can make common bile duct stones difficult to see directly.

Further testing depends on the estimated likelihood that a stone is present:

MRCP and EUS are mainly diagnostic. ERCP can diagnose and treat a blockage during the same procedure, but it has risks. These include pancreatitis, bleeding, infection, and a tear in the digestive tract. For that reason, clinicians generally avoid using ERCP only as a screening test when the chance of finding a stone is low or uncertain.[1,2]

- Magnetic resonance cholangiopancreatography, or MRCP: A specialized MRI scan that creates images of the bile and pancreatic ducts without placing an instrument into them.
- Endoscopic ultrasound, or EUS: An ultrasound probe on the end of a flexible tube is passed through the mouth into the stomach and small intestine. It can detect small stones near the duct.
- Endoscopic retrograde cholangiopancreatography, or ERCP: A flexible tube is passed through the mouth to the small intestine. Dye and X-rays outline the ducts, and instruments can remove stones.

Treatment and management

The main treatment is to clear stones from the common bile duct and restore bile flow. The approach depends on symptoms, test results, anatomy, other health conditions, and whether complications are present.

ERCP is the most common treatment. During the procedure, the clinician may enlarge the duct opening with a small cut called a sphincterotomy. A balloon or basket can then be used to pull the stone into the intestine. Larger or difficult stones may need to be broken into smaller pieces before removal.

If the duct cannot be completely cleared, a temporary plastic or metal tube called a stent may be placed to keep bile flowing. A stent does not necessarily provide permanent treatment. Follow-up is important because some stents need planned removal or replacement.

Surgery may be an alternative when ERCP is unsuccessful, unavailable, or not suitable. A surgeon may explore the common bile duct during gallbladder surgery and remove the stones.

Treatment may involve small incisions with laparoscopic instruments or, less often, open surgery.

If the gallbladder is still present and contains stones, gallbladder removal is often recommended after the common bile duct has been cleared. This operation is called cholecystectomy. Its purpose is to reduce the chance that additional gallbladder stones will move into the duct. The timing depends on the person's condition and whether cholangitis, pancreatitis, or another complication is present.[1,2,4]

Antibiotics like amoxicillin or doxycycline are used when a bile duct infection is suspected or confirmed. They do not remove the obstruction, so urgent drainage of the bile duct may also be necessary. Antibiotics are not routinely needed for every uncomplicated duct stone.

Pain medicine, fluids, and treatment for nausea may provide support, but they do not clear a retained stone. Dietary changes also cannot dissolve or remove most common bile duct stones. A lower-fat diet may reduce digestive symptoms for some people while awaiting treatment, but it is not a substitute for medical care.

Complications

A stone that blocks the common bile duct can lead to several complications.

Acute cholangitis occurs when bacteria infect an obstructed bile duct. It may cause fever, chills, abdominal pain, and jaundice. Severe infection can spread into the bloodstream and affect blood pressure, alertness, kidneys, or breathing. Treatment usually includes antibiotics and prompt drainage of the blocked duct.[3]

Acute pancreatitis can occur when a stone blocks the shared opening of the bile duct and pancreatic duct. Digestive enzymes then irritate the pancreas. Symptoms often include severe upper abdominal pain, pain spreading to the back, nausea, and vomiting. Severity varies, and hospital care may be needed.[4]

Long-lasting or repeated obstruction can damage the liver or bile ducts. This is less common when the condition is recognized and treated promptly.

ERCP and surgery also have potential complications. ERCP can cause pancreatitis, bleeding, infection, or perforation. Sedation has its own risks. Gallbladder or bile duct surgery may cause bleeding, infection, bile leakage, or injury to nearby structures. A clinician can explain how these risks apply to the planned procedure without assuming that every person has the same level of risk.

Follow up

Follow-up depends on how the stone was treated and whether the gallbladder remains in place. A clinician may repeat liver blood tests to confirm that bile flow has returned to normal. Further imaging may be needed if symptoms continue or blood tests remain abnormal.

People who receive a temporary bile duct stent need a clear plan for removal, exchange, or reassessment. Missing this follow-up can allow the stent to become blocked or contribute to infection.

After ERCP or surgery, follow the care team's instructions about eating, activity, wound care, and medicines. Mild throat irritation or temporary bloating can occur after an endoscopic procedure. Symptoms that are worsening rather than improving should be reported.

Seek prompt medical advice after treatment for new jaundice, dark urine, pale stools, persistent abdominal pain, fever, or repeated vomiting. Seek emergency care for severe pain, difficulty breathing, fainting, confusion, vomiting blood, black stools, or fever and chills with jaundice.

Gallstones can occasionally recur in the bile ducts even after gallbladder removal. New symptoms should therefore be assessed rather than assumed to be unrelated to the prior condition.

Sources

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