From Bile to Stones: Gallbladder Silent Rebellion

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Key points:

- Introduction
- Types of gallbladder stone
- Factors
- Symptoms of gallstones
- Diagnoses and clinical presentation
- Treatment

Introduction

Gallstones, also known as cholelithiasis, are hardened deposits that develop within the gallbladder due to an imbalance in the composition of bile. They are primarily formed from cholesterol, bilirubin, or a mixture of both. Although many individuals remain asymptomatic, gallstones can cause biliary colic and lead to complications such as acute cholecystitis, pancreatitis, and biliary obstruction. The development of gallstones is influenced by multiple factors, including obesity, unhealthy dietary habits, metabolic disorders, genetics, and advancing age.[1,2]

Types of Gallstones

Gallstones are classified into three main types:

- **Cholesterol gallstones:** The most common type, composed mainly of cholesterol crystals.
- **Pigment (bilirubin) gallstones:** Formed primarily from excess bilirubin and are often associated with liver disease or hemolytic disorders.
- **Mixed gallstones:** Contain varying amounts of cholesterol, calcium salts, and bilirubin.[1]

Risk Factors

Several metabolic and dietary factors increase the risk of gallstone formation.

Metabolic factors

i. Obesity, particularly central obesity
ii. Physical inactivity
iii. Insulin resistance and type 2 diabetes mellitus

Dietary factors

i. High-calorie diet
ii. High intake of refined carbohydrates
iii. High-glycemic-index foods
iv. Low dietary fiber intake[2]

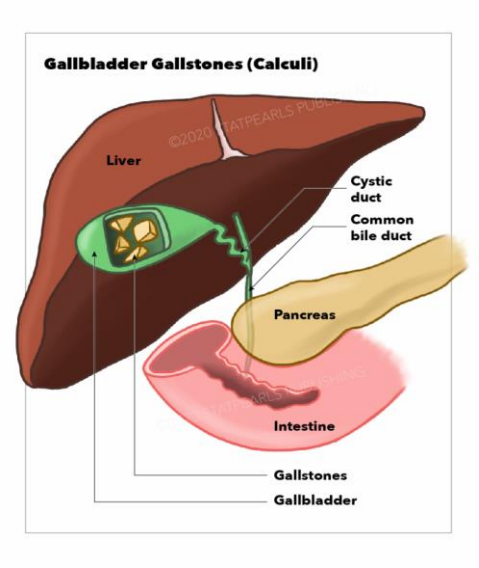


Figure 1- *Gallstones.*[6]

Symptoms of Gallstones

Many individuals with gallstones remain asymptomatic. When symptoms occur, they may include:

i. Severe pain in the upper right abdomen (biliary colic)
ii. Pain that radiates to the back, between the shoulder blades, or to the right shoulder
iii. Nausea, vomiting, bloating, and indigestion
iv. Changes in stool or urine color, including clay-colored stools or dark urine
v. Jaundice (yellowing of the skin and eyes)
vi. Fever and chills, which may indicate an associated infection or inflammation[4]

Clinical Presentation and Diagnosis

Gallstones are often detected incidentally during imaging, as many individuals remain asymptomatic throughout their lives. Symptomatic patients typically present with **biliary colic**, characterized by sudden, severe pain in the right upper abdomen or epigastric region that may radiate to the back or right shoulder, especially after consuming a fatty meal. The pain is commonly accompanied by nausea and vomiting and usually resolves once the obstruction is relieved. Gallstones may also lead to complications such as **acute cholecystitis**, **choledocholithiasis**, and **cholangitis**, presenting with fever, jaundice, and persistent abdominal pain. Diagnosis is primarily based on clinical findings and is confirmed using abdominal ultrasonography, with additional imaging such as magnetic resonance cholangiopancreatography (MRCP) or computed tomography (CT) when indicated.[1]

Treatment

The treatment of gallstones depends on the presence of symptoms and associated complications. Asymptomatic gallstones generally do not require treatment, whereas symptomatic disease is usually managed with **laparoscopic cholecystectomy**, the current gold-standard procedure. Patients with stones in the common bile duct (choledocholithiasis) may be treated with **laparoscopic common bile duct exploration (LCBDE)** or **endoscopic retrograde cholangiopancreatography (ERCP)**. For patients who are not suitable surgical candidates, minimally invasive procedures such as **endoscopic ultrasound (EUS)-guided gallbladder drainage** or **percutaneous cholecystostomy** may be considered. Recent advances, including **indocyanine green (ICG) fluorescence cholangiography**, have improved visualization of the biliary anatomy during surgery, helping to reduce the risk of operative complications.[5]

References

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