

# Cholelithiasis: A Clinical Appraisal

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Gall stones are a major cause of morbidity worldwide, cholecystectomies are the most common elective abdominal operations performed in the west including the United States. Cholelithiasis is generally commoner in women than in men with a ratio of 2 to 3 and the prevalence for women varies from 5-20% between ages 20 and 55 and from 25-30% after the age of 50 years.

Sub Sahara Africa and Asia are at lowest risk compared to Pima Indians in southern Arizona, Alaska, Canada, the U.S. Bolivia and Chile.

A simple classification is shown thus:-

- Predominantly cholesterol
- Pigment stones (Black and Brown)
- Mixed

Cholesterol stones consist of 75% cholesterol with calcium bilirubinate, carbonate, phosphate and palmitate as other constituents. Usually they are rare and solitary and their formation is affected by defective bile salt synthesis, gall bladder dysmotility, intestinal loss and excess cholesterol secretion.

Pigment stones on the other hand consist of bilirubin, phosphates and carbonates and they are common in the Far East and in sicklers. Certain risk factors can

be identified in favor of formation of these stones and these include:

- Black stones – cirrhosis, chronic haemolytic states [sickle cell disease, hereditary spherocytosis] and mechanical prosthesis
- Brown stones – sclerosing cholangitis, Caroli's disease, ascariasis and *Chlonorchis sinensis* infestation.

In general certain risk factors are implicated in the pathogenesis of gall stones and these include

- Age
- Gender – female > male
- Obesity
- Weight loss
- Total Parenteral nutrition [TPN]
- Pregnancy
- Drugs – Oral Contraceptive Pills [OCPs]
- Poverty
- Diet-hypertriglyceridemia
- Systemic disease e.g. Diabetes Mellitus

The pathogenesis of cholelithiasis can be explained by

- Cholesterol super saturation
- Nucleating and antinucleating factors
- Gall bladder hypermotility
- Biliary sludge.

The natural history of cholelithiasis may be missed because in 90% of cases, it is asymptomatic. There may be right hypochondrial pain in less than 10% of cases. Carcinoma of the gallbladder may produce a similar sign as Murphy's when the carcinoma has invaded through the gallbladder wall and involves the serosa or visceral peritoneum overlying the gallbladder. Similarly Courvoisier's sign is uncommon with choledocholithiasis because fibrosis and scarring would have rendered the organ nondistensible. Attention should be paid to special circumstances as found in:

- A young sicker with incidental cholelithiasis
- A young woman of Native American Indian ancestry
- A patient with incidental cholelithiasis waiting for organ transplantation
- Any patient with gall bladder wall calcification
- Any patient with incidental cholelithiasis planning prolonged space travel

The commonest presentation are however biliary colic and chronic cholecystitis with their respective individual clinical features. The differential diagnoses should therefore include Gastro-oesophageal reflux disorders [GORD], Peptic Ulcer Disease [PUD], pancreatitis, renal colic, colonic diverticulitis, colonic Carcinoma, radiculopathy and angina pectoris.

Possible complications include cholecystitis, obstructive jaundice and cholangitis, gall bladder perforation and gall bladder carcinoma. There are other uncommon complications including emphysematous cholecystitis, cholecystenteric fistula, Mirizzi's syndrome and porcelain gall bladder.

Certain investigations enhance the diagnosis and management of cholelithiasis, these include:

- Abdominal ultrasonography after 8 hours of fasting (fig. 1)
- Plain abdominal x-ray
- Abdominal CT and MRI
- Oral cholecystography
- Lipid profile
- Endoscopic ultrasound
- Cholescintigraphy
- Endoscopic Retrograde Cholangio-pancreaticocystography [ERCP].

The management of Cholelithiasis is a challenge to any clinician but most importantly it should be with caution

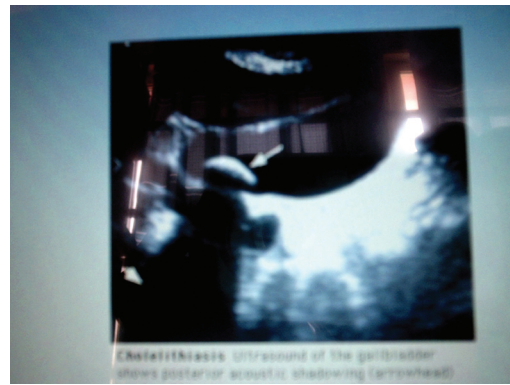


Fig. 1: Gallbladder stone (arrow) casting posterior shadow.

and possibly individualized. When Cholelithiasis is asymptomatic in a low or no risk person, no treatment is needed more than the regular routine follow up. However when Cholelithiasis becomes symptomatic, one should consider the following as a guide line for the management. Treatment includes the following options.

- Medical dissolution can be achieved with the use of
  - Ursodeoxycholic acid
  - Chenodeoxycholic acid
  - a mixture of both at low dose because of toxicity at individually prescribed high doses. One should however be sure that the stones are less than 1.5cm, that the patient is not obese, that the stones are not calcified and that the gall bladder is functional as demonstrated by oral cholecystography.
- Extracorporeal shock wave Lithotripsy and bile salt therapy



Fig. 2: Multiple gallbladder stone seen at surgery

- Surgery may be Open or laparoscopic [fig. 2]
- Endoscopic sphincterotomy.

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