Gall stones

Classification. - Composition.

→ Cholesterol stones
- pure CS
- mixed CS

→ pigment stones
- Black pigment stones
- Brown PS.

Location based

1. Intrahepatic stones.
2. gall bladder stones.
3. Chole docholithiasis / bile duct stones

Risk factors

Cholesterol st

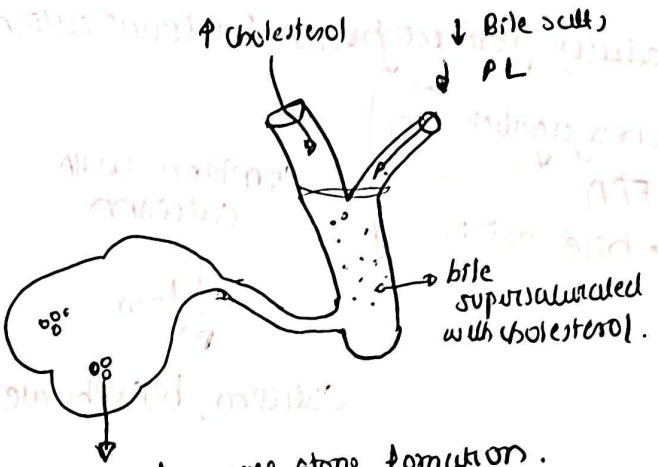
- age
- female sx hormone.
- Hereditary factors.
- diabetes.
- rapid weight reduction

Pigment stone.

- age.
- chronic hemolysis sickle cell.
- chronic biliary tract infections.
- alcoholic cirrhosis

Pathogenesis

Cholesterol stone →



Nidus for gall stone formation.

(SC).

Pathogenesis of pigment stones.

Black pigment stones

Increased production of unconjugated Bilirubin

↓

ppt as calcium bilirubinate around a nidus of mucinous gp to form black pigment stones.

Brown pigment stones

- develop Secondary to stasis & infection.
- Conjugated Bb —(Bacterial enzyme β glucuronidase)→ unconjugated Bb
- phospholipids —(Bacterial phospholipases)→ FFA.
- bile salts —(Hydrolases)→ bile acids

Products formed from bacterial actions

- unconjugated Bb
- FFA
- bile acids

combine with calcium → forms calcium bilirubinate.

MORPHOLOGY

Cholesterol stones

site - GB.

Comp - 50-100% cholesterol.

pure cholesterol stones	Mixed cholesterol stones
• Single, yellow, round, nodular.	• multiple, gray-wht to black
• cut surface: • glistening bluish-white color, with crystalline or laminated cut surface	CS • laminated CS black core.
• long, radiating monohydrate crystals.	• If sufficient $CaCO_3$ - radiopaque.
• radiolucent	

pigment gall stones

- < 25-30% cholesterol.
- calcium bilirubinate, phosphate carbonate.
- Black Ps → sterile GB (formed in)
- Brown Ps → injected intra/extra hepatic duct

Black pigment stones.

- contain salts of unconjugated bilirubin.

+

$CaCO_3$ + $CaPO_4$ + mucin glycoprotein

+ cholestrol monohydrate crystals.

appearance

- multiple.
- shiny - black
- irregular, spiculated, molded, friable
- sterile gallbladder.

Brown pigment stones

- Calcium bilirubinate + palmitate + stearate + cholesterol.

appearance

- soap like consistency.
- multiple.
- dull brown.
- soft.
- radiolucent.
- associated with injection of biliary tract + found in injected bile duct.