Surgery Of Biliary system (1)

By

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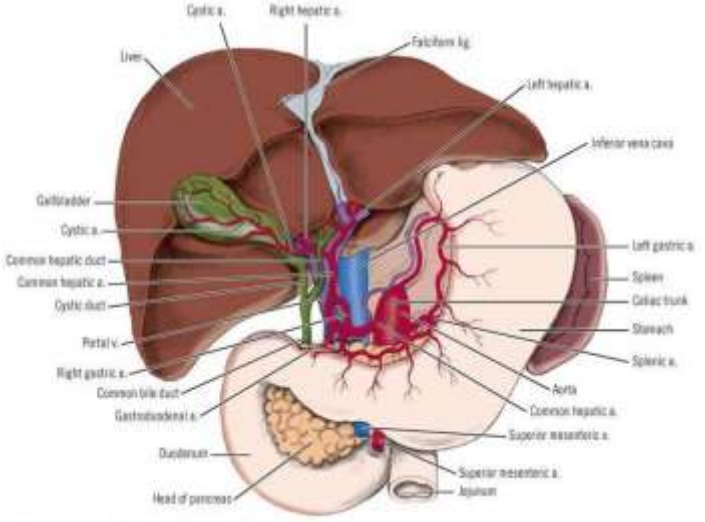
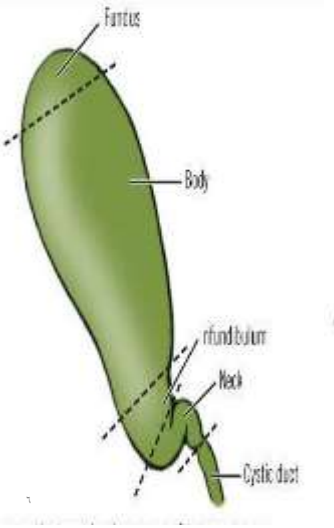
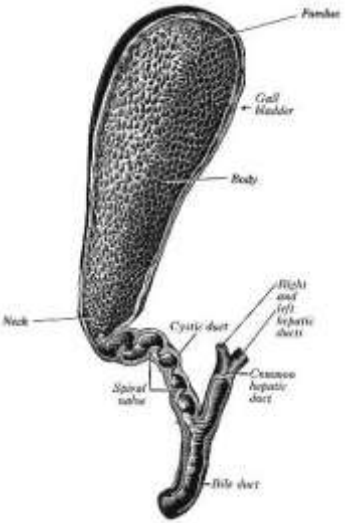
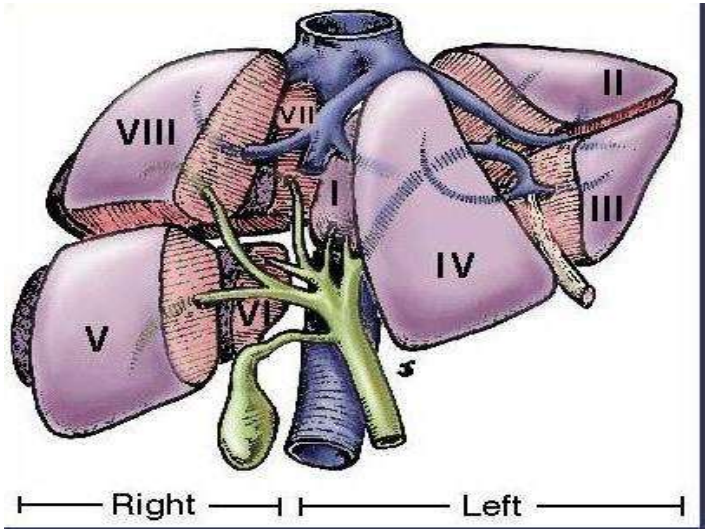
Prof. of Surgery & Laparoendoscopy

- Surgical anatomy
- Surgical physiology
- Imaging investigations
- Congenital anomalies
- Gall stones
- Acute cholecystitis
- Common bile duct stones
- Strictures of the bile ducts
- Carcinoma & the gall bladder
- Jaundice
- Cholecystectorny









Extrahepatic biliary tract

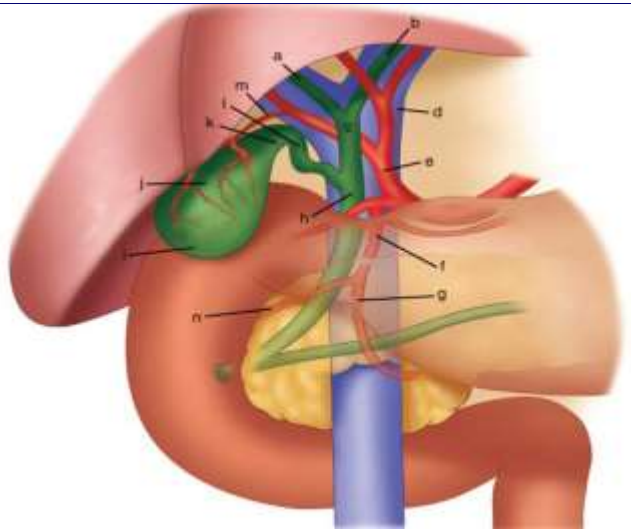
Common hepatic duct (CBD)

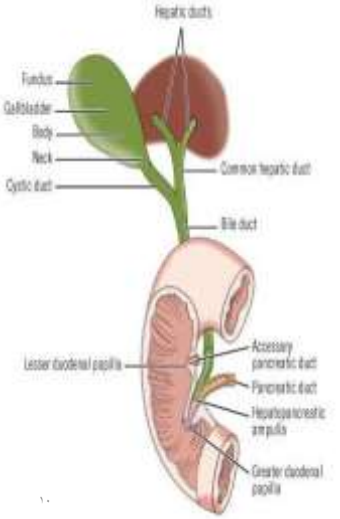
The common hepatic duct is formed by the union of the right and left hepatic ducts in the porta hepatis.

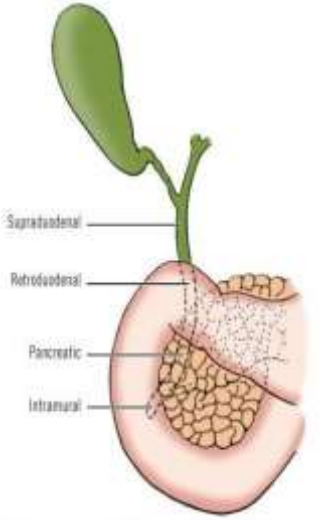
The cystic duct is 2-3 cm long and 2-3 mm in diameter. Its mucosa is thrown into crescent-like folds called spiral valve of Heister.

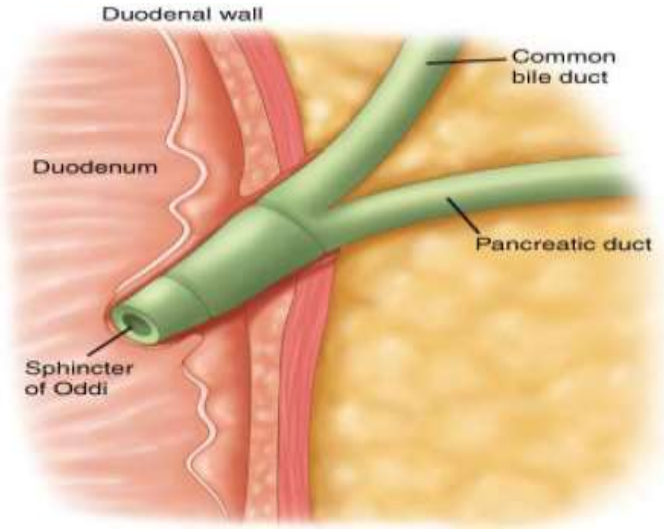
Common bile duct

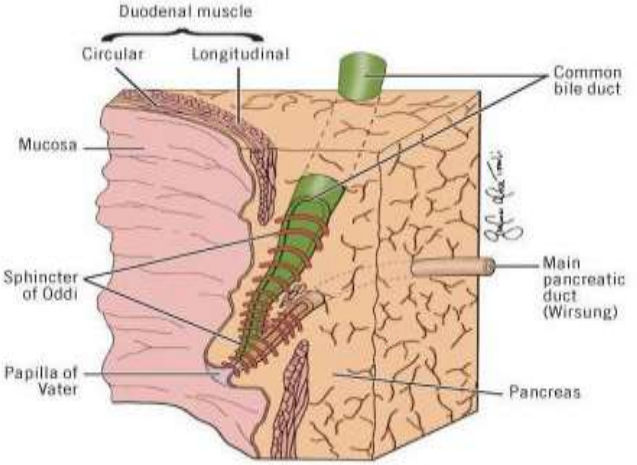
The common bile duct begins at the union of the cystic duct and common hepatic duct and ends at the ampulla of Vater in the second part of the duodenum. It varies in length from 8 to 10 cm and the average diameter is about 6 mm. The common bile duct can be divided into four parts; supraduodenal, retroduodenal, intrapancreatic and intra-duodenal.



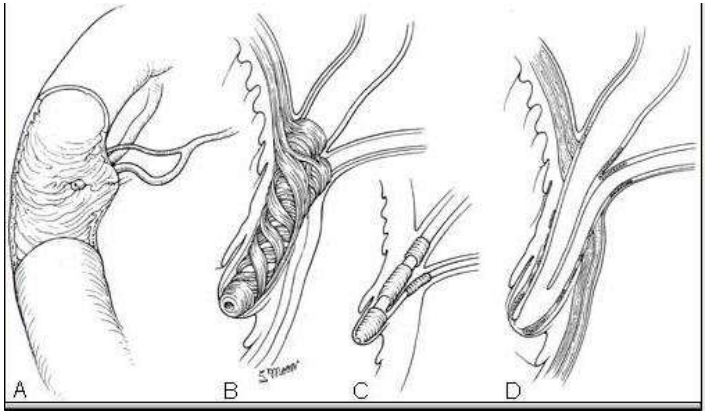




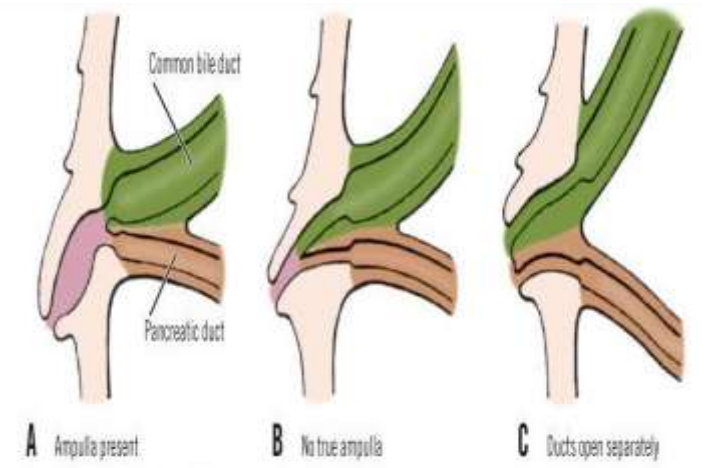




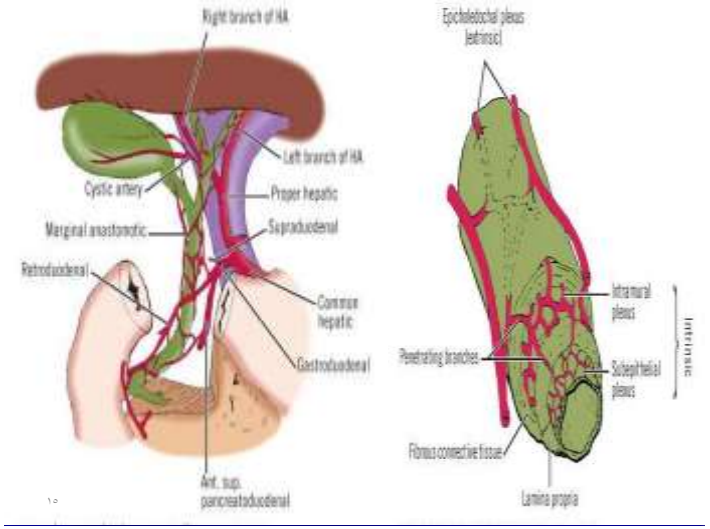
Choledocho-duodenal junction

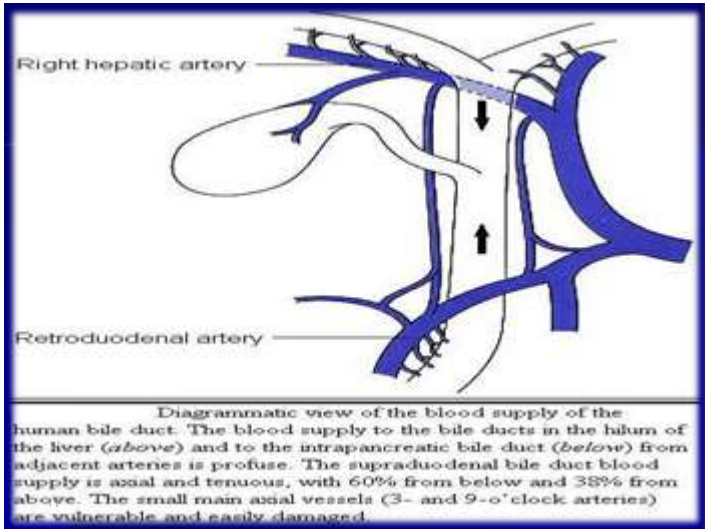


Anatomy of the distal common bile duct and pancreatic duct. A. Parallel relationship between bile duct and pancreatic duct as they enter the duodenum. B. The sphincteric mechanism. C. The four components of the sphincteric mechanism. D. Cross-sectional view of the sphincter of Oddi.

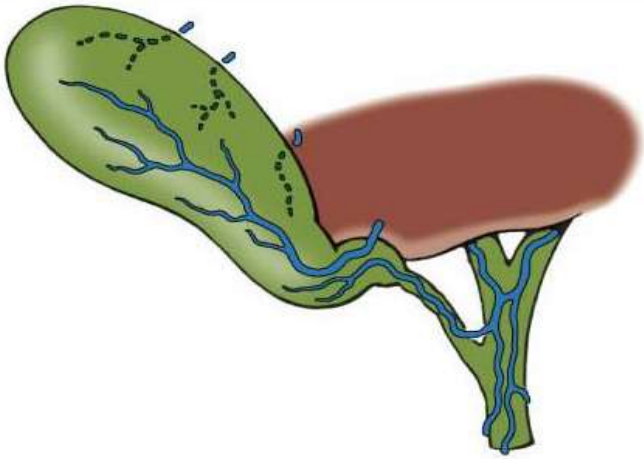


Anatomical variation of the ampullary opening

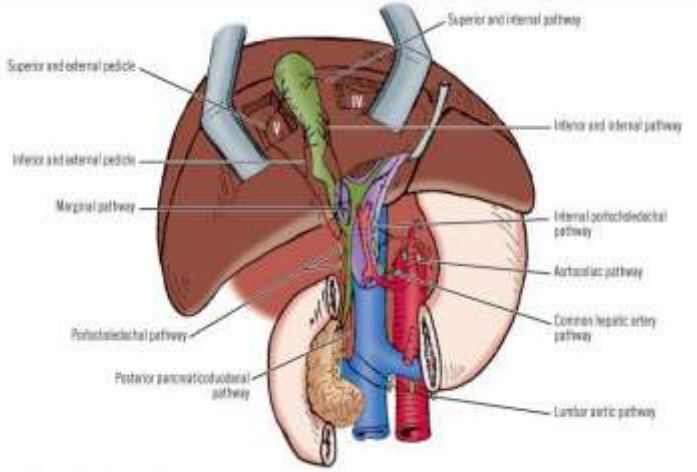




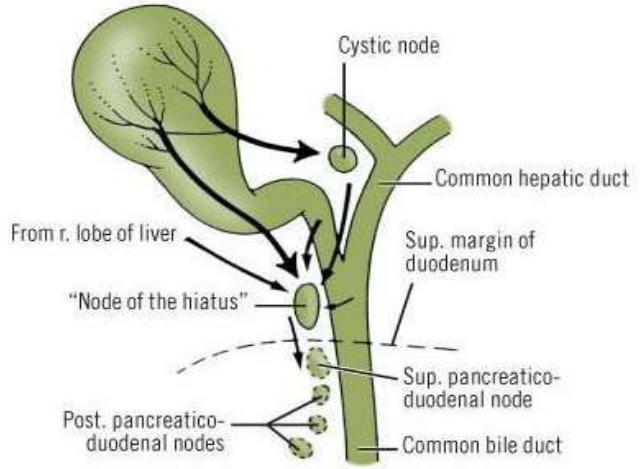
Diagrammatic view of the blood supply of the human bile duct. The blood supply to the bile ducts in the hilum of the liver (*above*) and to the intrapancreatic bile duct (*below*) from adjacent arteries is profuse. The supraduodenal bile duct blood supply is axial and tenuous, with 60% from below and 38% from above. The small main axial vessels (3- and 9-o'clock arteries) are vulnerable and easily damaged.



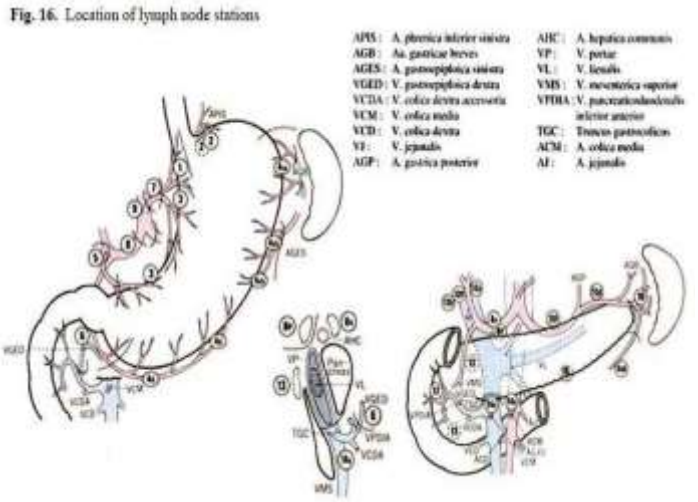
Venous drainage of the GB



Lymphatic drainage of the GB



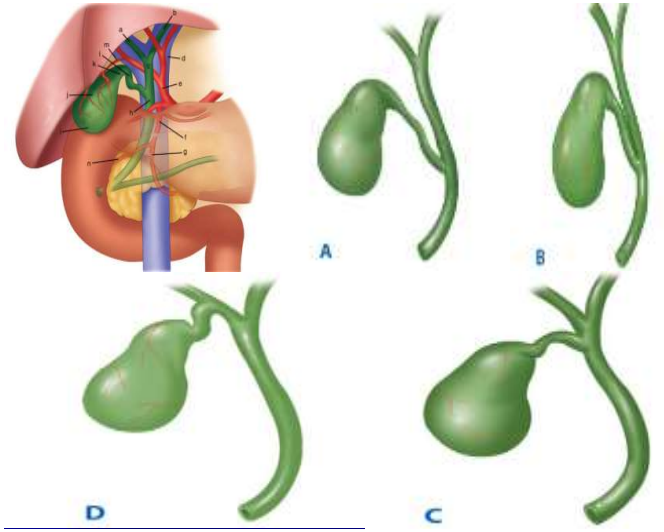
Lymph nodes draining the GB and biliary channels

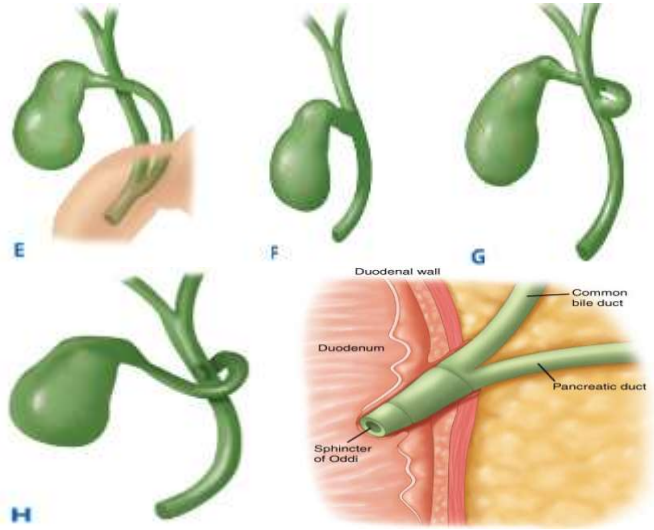


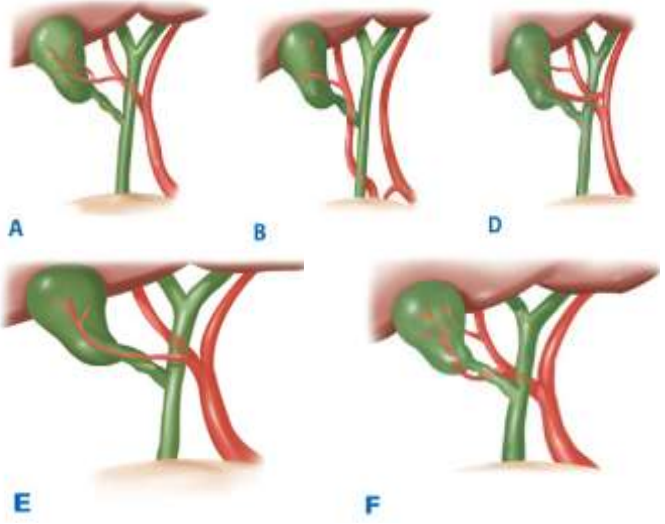
Anatomy and congenital malformation

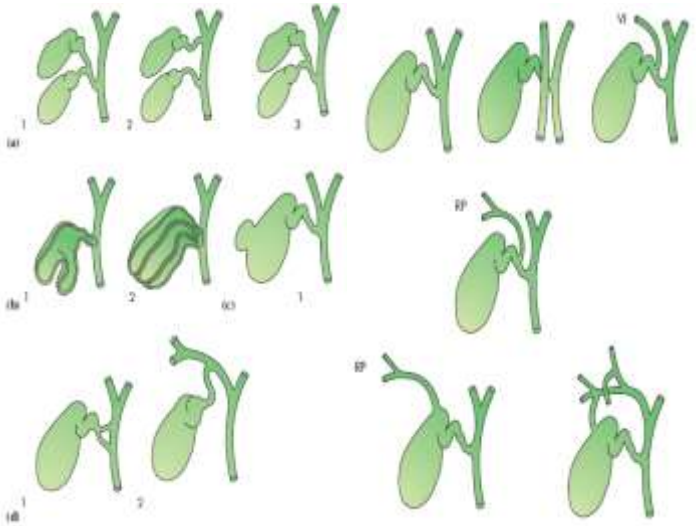
The classic description of the extra hepatic biliary tree and its arteries applies only in about one third of patients.

Molmenti EP, Pinto PA, Klein J, et al: Normal and variant arterial supply of the liver and gallbladder. *Pediatr Transplant* 7:80, 2003. [PubMed: 12581334]
Chen TH, Shyu JF, Chen CH, et al: Variations of the cystic artery in Chinese adults. *Surg Laparosc Endosc Percutan Tech* 10:154, 2000. [PubMed: 10872977]
(Schwartz's Principles of Surgery , Ninth edition)









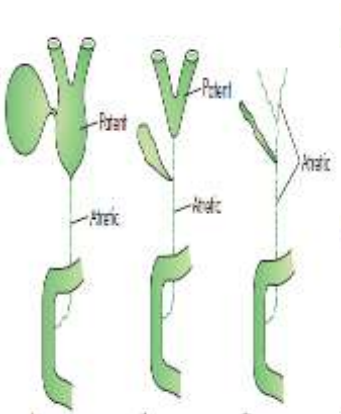


Figure 63.24 Classification of biliary atresia. Gall bladder filling provides a clue to the type of atresia.

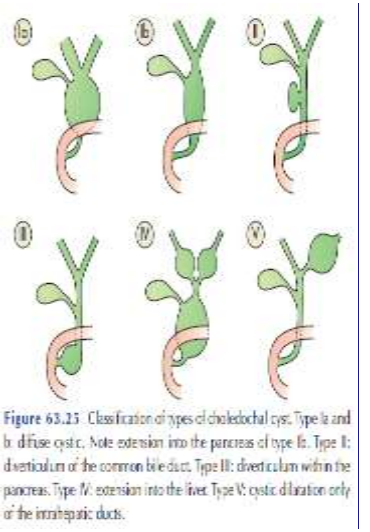
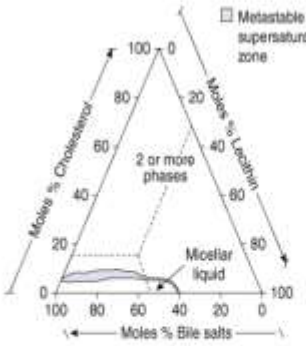


Figure 63.23 Classification of types of choledochal cyst. Type Ia and Ib diffuse cystic. Note extension into the pancreas of type Ib. Type II: diverticulum of the common bile duct. Type III: diverticulum within the pancreas. Type IV: extension into the liver. Type V: cystic dilatation only of the intrahepatic ducts.



Source: Brunicardi FC, Andersen DK, Billiar TR, Dunn DL, Hunter JG, Matthews JB, Pollock RE: Schwartz's Principles of Surgery, 9th Edition: http://www.accessmedicine.com
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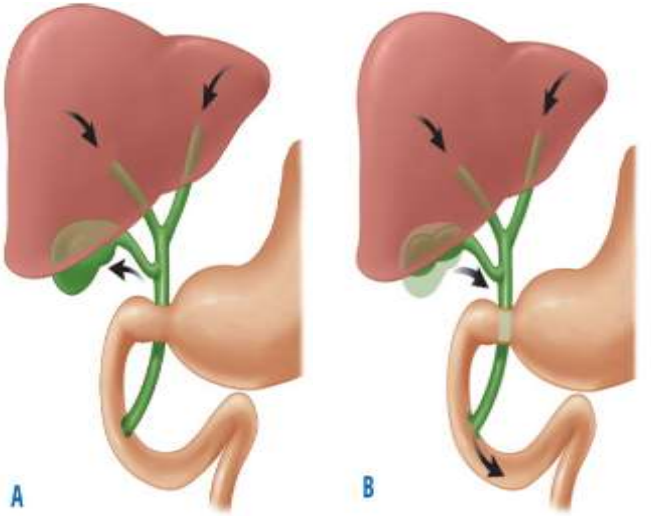
The three major components of bile plotted on triangular coordinates. A given point represents the relative molar ratios of bile salts, lecithin, and cholesterol. The area labeled "micellar liquid" shows the range of concentrations found consistent with a clear micellar solution (single phase), where cholesterol is fully solubilized. The shaded area directly above this region corresponds to a metastable zone, supersaturated with cholesterol. Bile with a composition that falls above the shaded area has exceeded the solubilization capacity of cholesterol and precipitation of cholesterol crystals occurs.



Gall bladder function

1. The gall bladder **stores and concentrates bile**. Sodium, chloride, and water are selectively absorbed, resulting in 10-fold increase in concentration of bile salts, bile pigments and cholesterol.
2. **Mucus secretion** protects the mucosa from the lytic action of bile and facilitates passage of bile through the cystic duct.
3. Gall bladder contracts and emptiies its content when bile is needed for digestion. Its emptying is mediated by both humoral and nervous stimulation. Cholecystokinin is released from intestinal mucosa in response to food and is responsible for contraction of the gall bladder and relaxation of the sphincter of Oddi. It leads to evacuation of 70% of the gall bladder contents within 30 minutes. Vagal innervation stimulates contraction, whereas sympathetic stimulation inhibits motor activity.

Fig. 32.3: Plain X-ray showing multiple opaque gall stones.