

ACUTE CHOLECYSTITIS

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The gallbladder is located in the right upper quadrant of the abdomen beneath the liver.

The cystic duct exits at the neck of the gallbladder and joins the common hepatic duct to form the common bile duct.

CBD empty into the duodenum at the ampulla of Vater. This is surrounded by the sphincter of Oddi, which regulates bile flow into the duodenum .

Blood supply is from the cystic artery.

Celiac A. → Hepatic A. → Rt. Hepatic A. → Cystic A.

The cystic vein drain directly into portal vein.

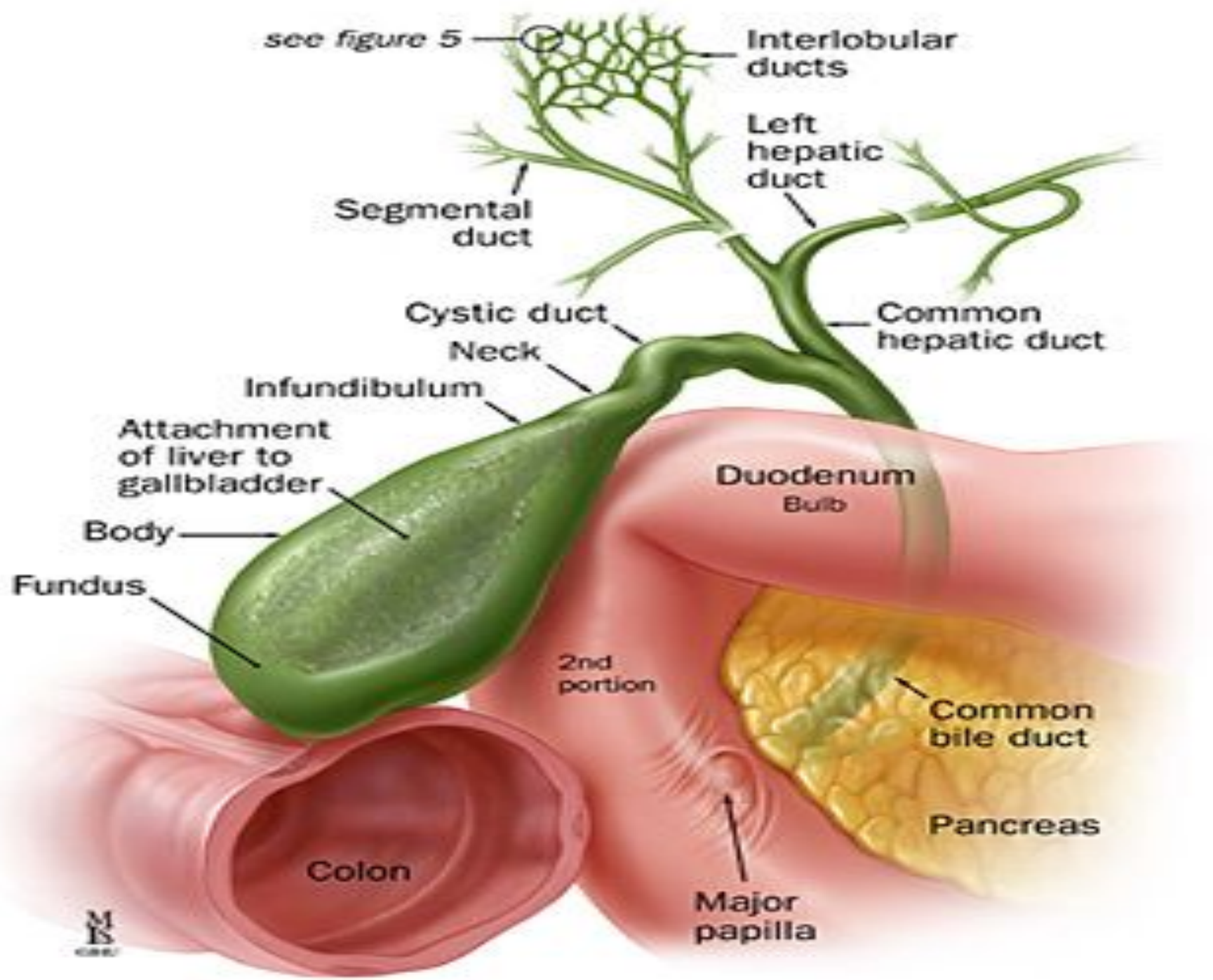


Nerve Supply :

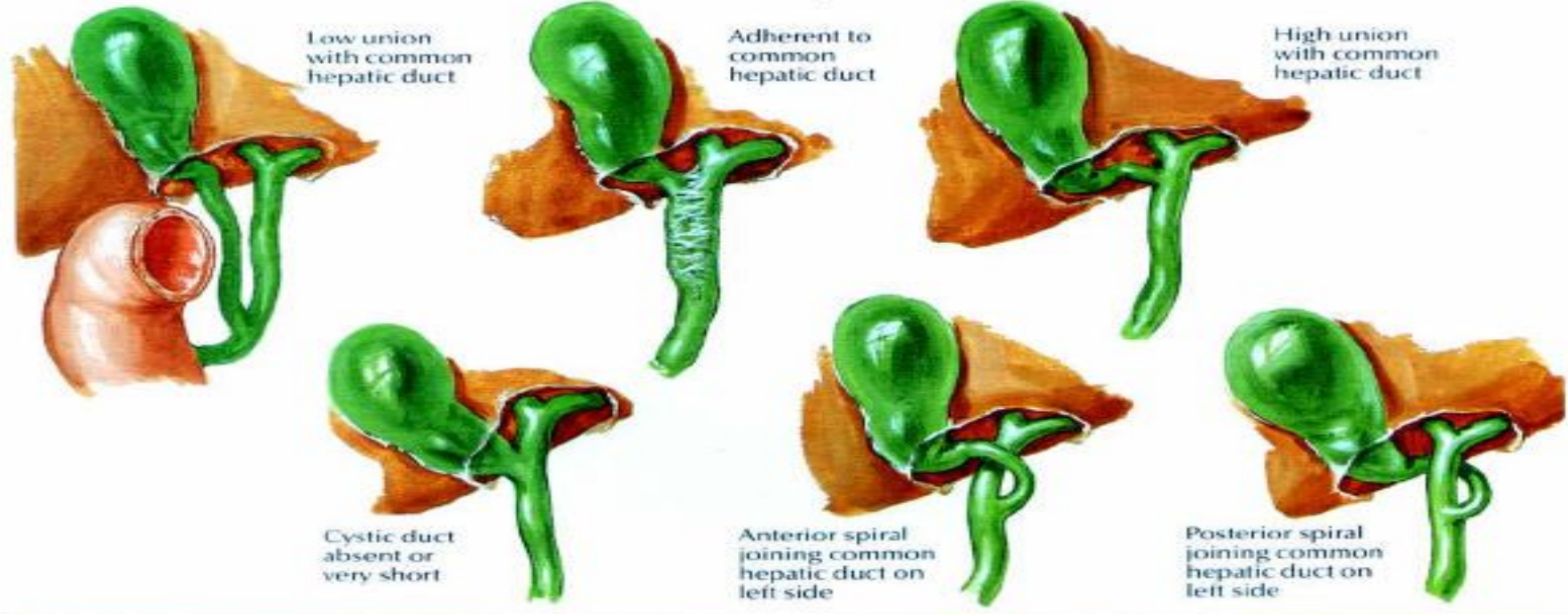
Sympathetic and parasympathetic vagal fibers
the celiac plexus.

Lymph Drainage:

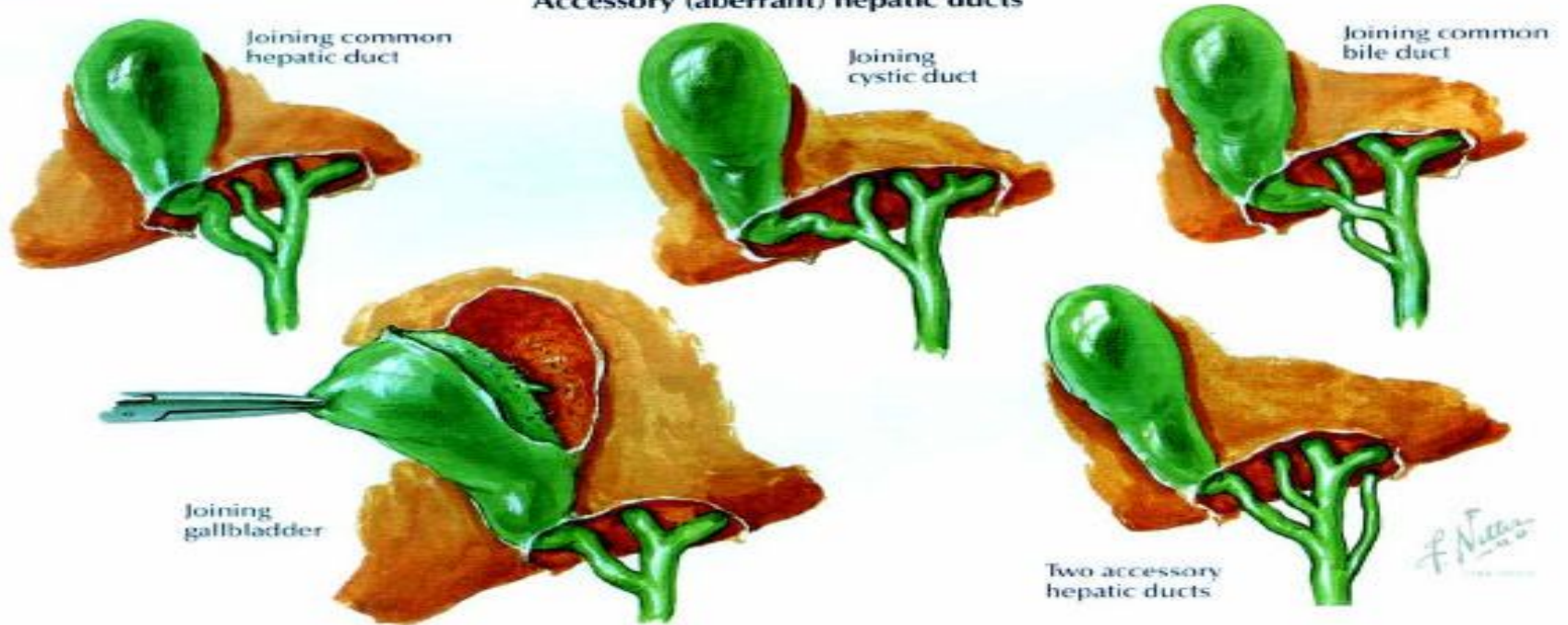
The lymph drains into a cystic lymph node situated near the neck of the gallbladder. From here, the lymph vessels pass to the hepatic nodes along the course of the hepatic artery and then to the celiac artery.



Variations in cystic duct



Accessory (aberrant) hepatic ducts



Bile

Bile produced in the liver is stored in the gallbladder.

The function of bile is emulsify FAT

Cholecystokinin stimulates gallbladder contraction and release of bile into the duodenum.

Bile

The *spiral valves of Heister* in the cystic duct prevent bile reflux into the gallbladder.

Bile composed of

- Cholesterol
- Lecithin (phospholipid)
- Bile acid
- Bilirubin

Imbalance of cholesterol and its solubilizing agents, bile salts and lecithin concentrations

If hepatic cholesterol secretion is excessive then bile salts and lecithin are “overloaded”, supersaturated cholesterol precipitates and can form gallstones

Types of Stones

Cholesterol stones

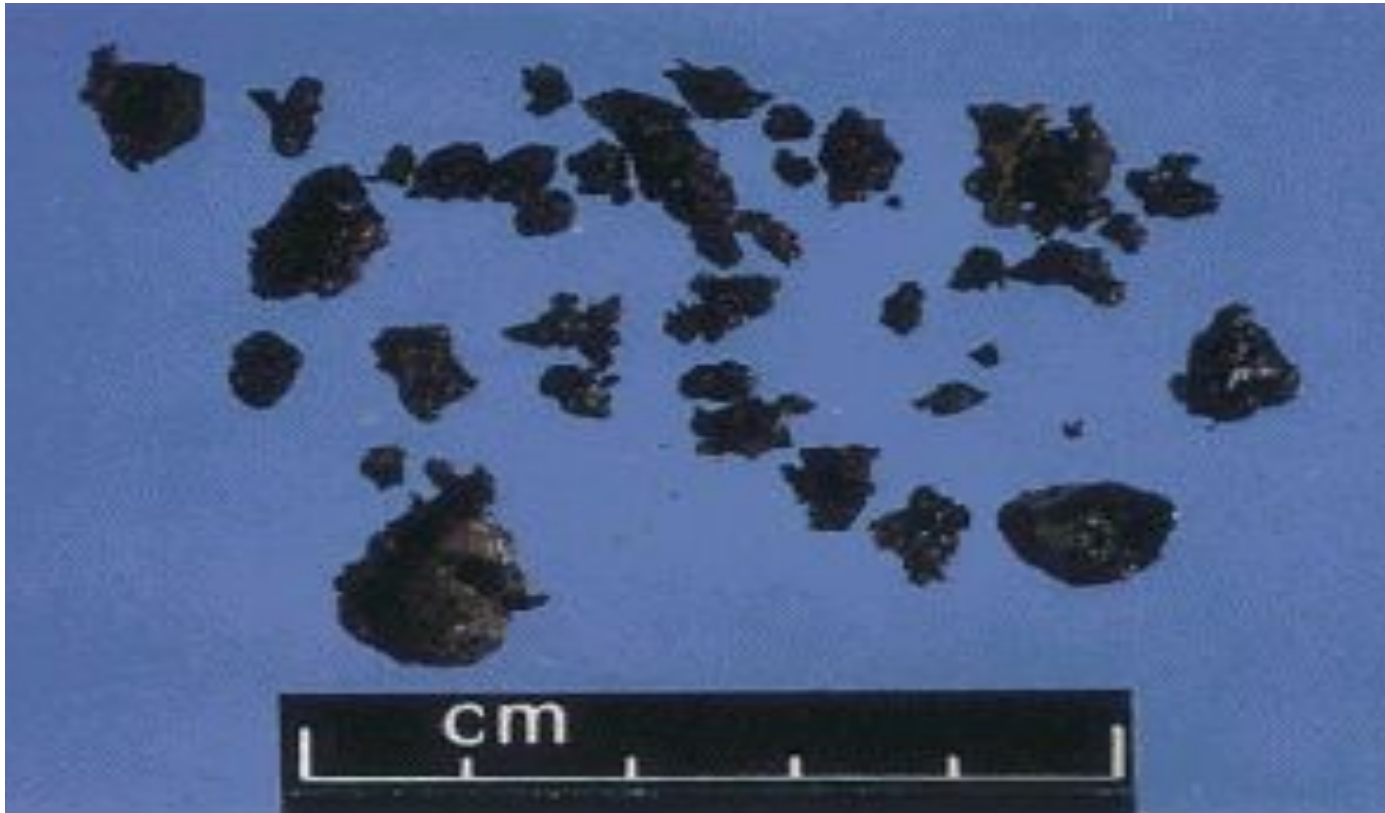
Pigment stones

Mixed stones

Cholesterol Stones



Pigment stones



Mixed stones:





Acute Cholecystitis

Acute Cholecystitis

Inflammation of the gallbladder, resulting from :

1. Obstruction of cystic duct by gallstone(80%)
2. Acalculous (20%)

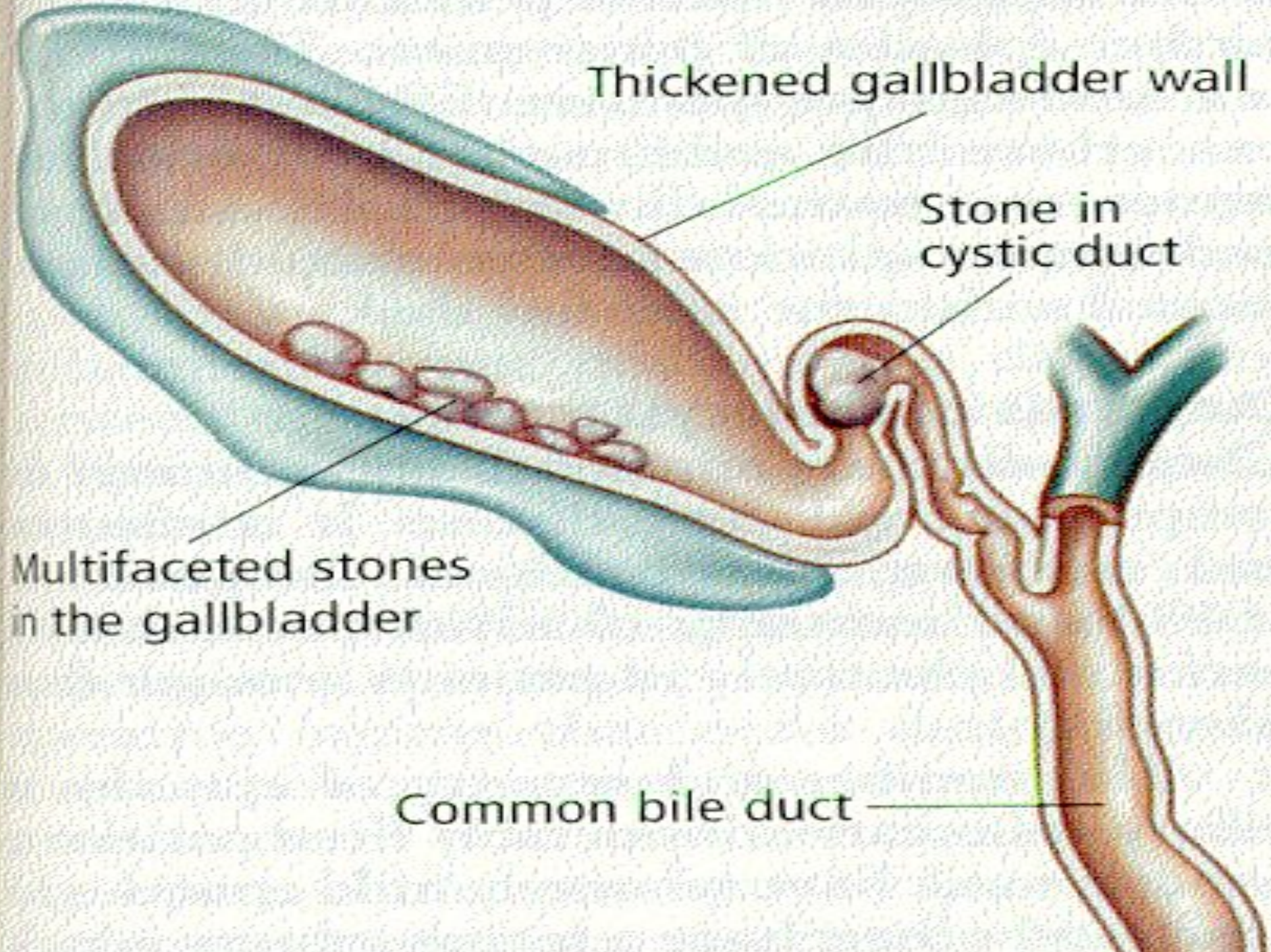
Acute Cholecystitis

Cholecystitis with stones most commonly blocking the cystic duct directly. This leads to inspissation (thickening) of bile, bile stasis, and secondary infection by gut organisms.

The most common organisms cultured during acute cholecystitis are *Escherichia coli*, *Klebsiella*, enterococci, *Bacteroides fragilis*, and *Pseudomonas*.

Acute Cholecystitis

The gallbladder shows congestion, thickening of the wall by edema and mucosal ulceration.



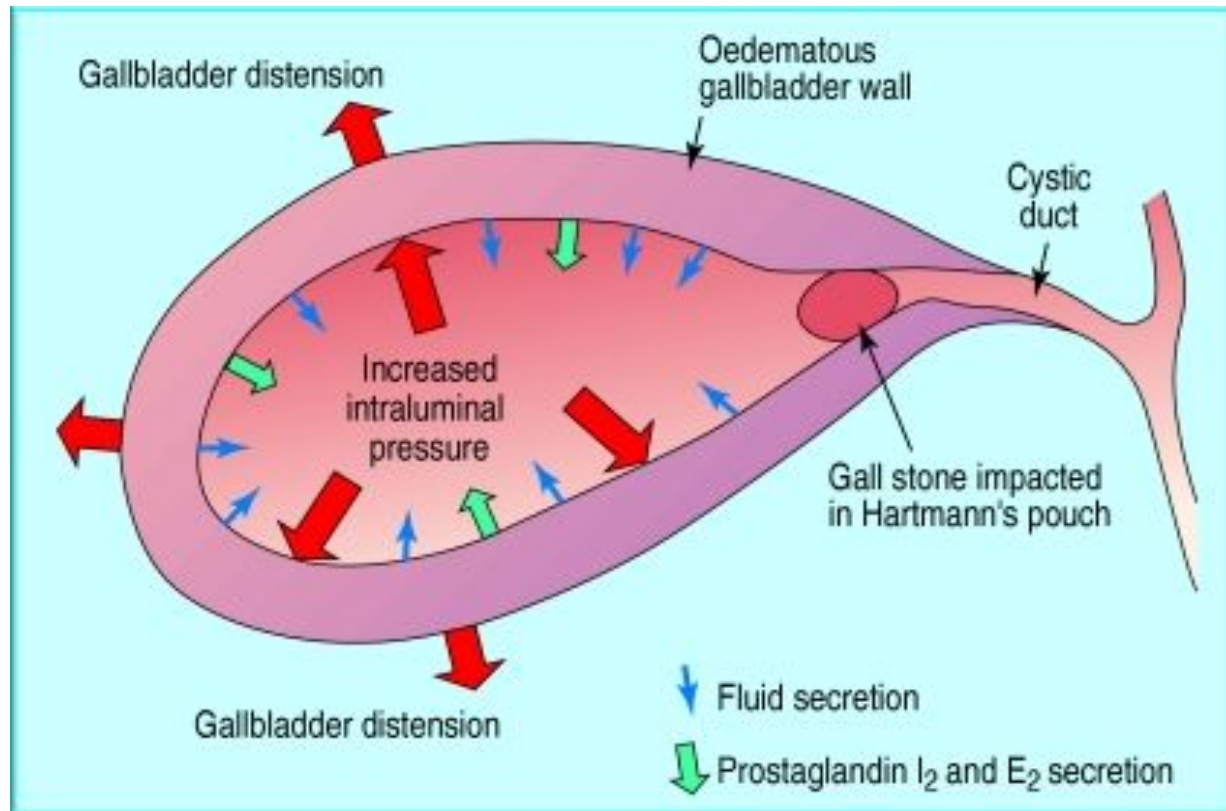
Thickened gallbladder wall

Stone in cystic duct

Multifaceted stones in the gallbladder

Common bile duct

Pathogenesis:



ACALCULOUS CHOLECYSTITIS

Acute cholecystitis without gallstone may occur in a variety of condition it may be due to :

- Dehydration, prolonged fasting, TPN
- Systemic disease
- Generalized sepsis, trauma
- Kinking or fibrosis of the gallbladder
- Thrombosis of the cystic artery
- Sphincter spasm with obstruction of the biliary and pancreatic ducts
- Collagen vascular disease, DM, immunosuppressed

Hx

- Age 30-60 yrs
- mostly ♀
- Sudden pain in RUQ, often radiate through the back to the tip of Rt. Scapula
- Pain is **continuous**, last >6 hrs
- Exacerbated by moving and breathing
- N/V
- Dark urine, pale stools, itchy skin in case of obstructive jaundice.

Hx:

Constant pain in the right upper quadrant
(constant for >12 hours)



**Diagnosis
of acute
cholecystitis**

**Tenderness in the
right upper quadrant**
(with or without Murphy's
sign and with or without
a palpable mass)

Inflammatory response
(indicated by fever,
concentrations of white
blood cells and C-reactive
protein above normal,
and erythrocyte sedimentation
rate above normal)

Signs & Symptoms

Anorexia.

Low grade fever (< 38.5 C)

Tachycardia

Positive Murphy's sign

Palpable gallbladder (in 1/3 of patients)

P/E

- Pt distressed by pain and lies quietly breathing shallowly.
- Tachycardia and Pyrexia
- Tenderness & guarding in Rt. Hypochondrium
- Boas' sign
- Murphy sign
- ± jaundice
- Rebound

Physical features of enlarged GB

- It appears from beneath the tip of the Rt. 9th rib
- Smooth & hemi-ovoid
- Moves with respiration
- There is no space between the lump and the edge of the liver
- Dull to percussion

Differential diagnosis

- Perforating or penetrating peptic ulcer.
- Myocardial infraction
- Pancreatitis
- Hiatus hernia
- RLL pneumonia
- Appendicitis
- Hepatitis

Lab Investigations

- Leukocytosis
- Mild Hyperbilirubinemia
- Mild ↑ AST, ALT, ALP
- Moderate ↑ Lipase & Amylase

US

- Distended gallbladder
- Thickened gallbladder wall
- Pericholecystic fluid collection
- US Murphy's sign (+ in 98% of pts)



Biliary scintigraphy (hydroxyiminodiacetic acid) (HIDA) scan:

Is the gold standard investigation when the diagnosis remains in doubt after ultrasound scanning.

(HIDA) scan:

- The patient is given an intravenous injection of radiolabelled hydroxyiminodiacetic acid and then the abdomen is scanned; in patients with acute cholecystitis, the gallbladder lumen will not take up any radioactive isotope one to two hours after injection and therefore the gall bladder will not be visible on the scan.

(HIDA) scan:



Complication

- Cholecystenteric fistula formation
- Gallstone ileus
- Perforation (may cause localized abscess or generalized peritonitis [after 3 days of onset])
- Empyema of gallbladder.
- Gangrene

Mx

- NPO
- IVF
- IV Analgesia (pethidine)
- IV Abx (cefuroxime)
- NGT
- Parental Analgesics
- Optimal Rx is cholecystectomy within 3 days of the onset of symptoms.
- Pts who are poor candidates for surgery can undergo cholecystostomy (drainage of gallbladder contents)

Calot's Triangle

- Superiorly: Lower edge of the liver
- Laterally: Cystic Duct
- Medially: Common Hepatic Duct

Acute Cholecystitis vs. Biliary Colic

- Duration, Symptoms ?

Surgery

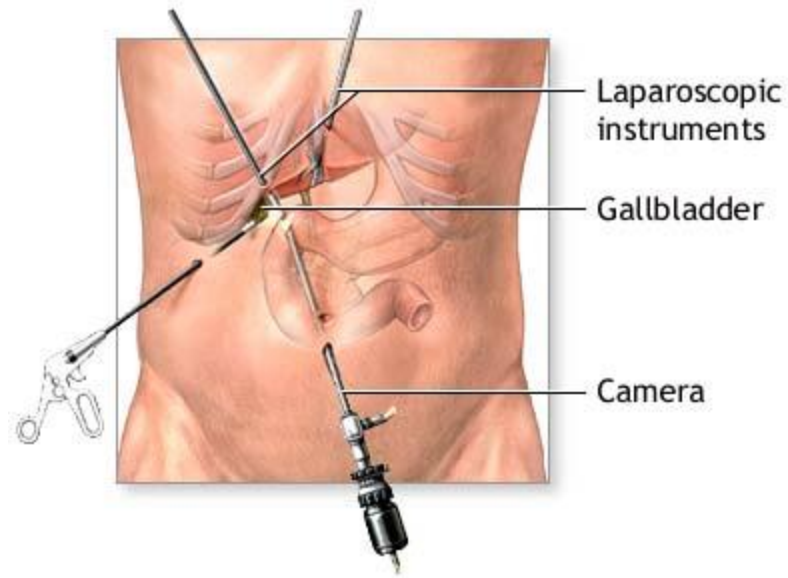
Open procedure incision



Laparoscopic incisions



Laparoscopic





Questions

Reference:

- 1- Browse's Introduction to The Symptoms and Signs of Surgical Diseases, Fourth Edition.
- 2- Essentials of General Surgery, Lawrence, 4th Edition.
- 3- Surgical Recall