ACUTE CHOLECYSTITIS

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ANATOMY

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.

ANATOMY

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 .

ANATOMY

Blood supply is from the cystic artery.

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

The cystic vein drain directly into portal vein.

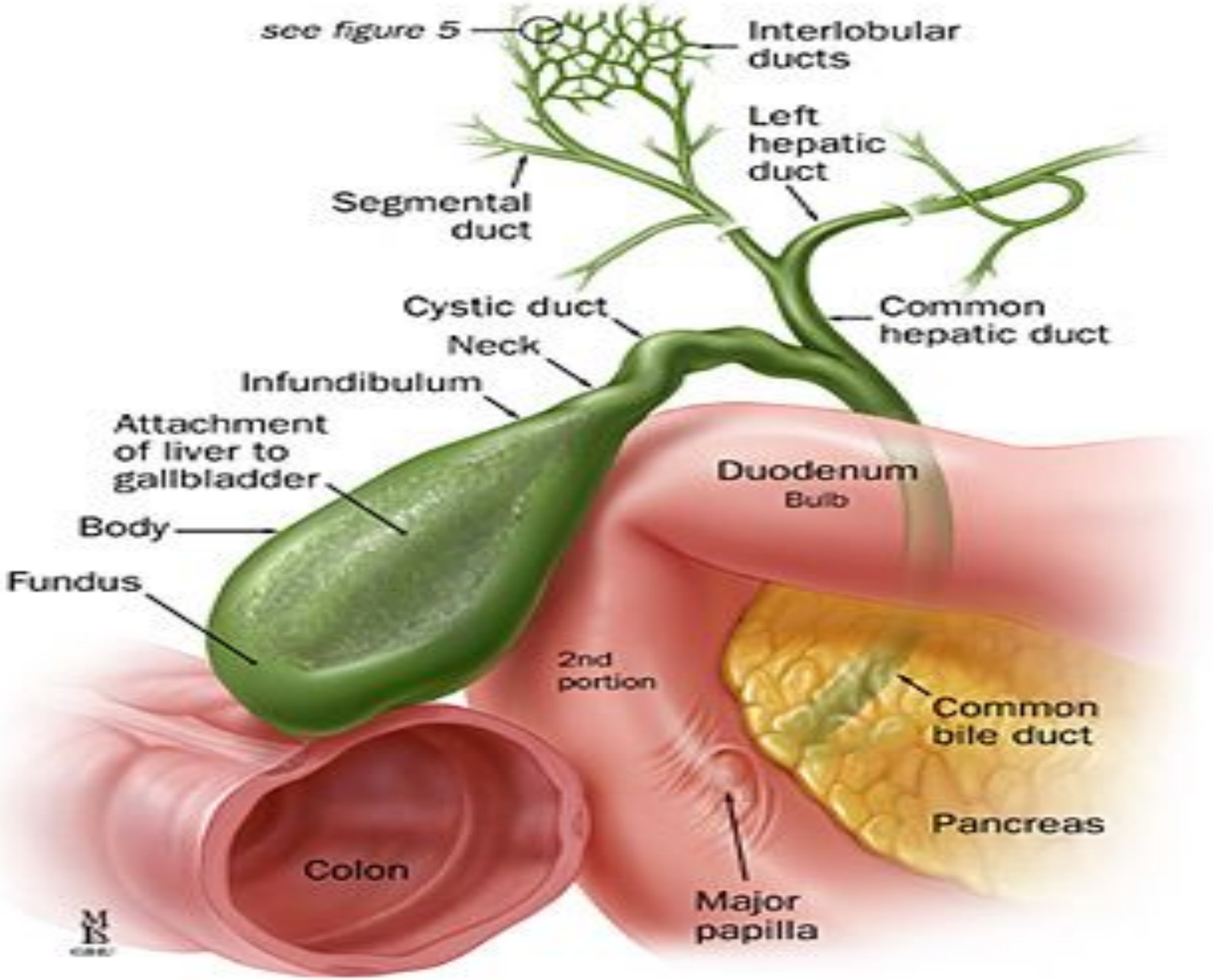
Nerve Supply :

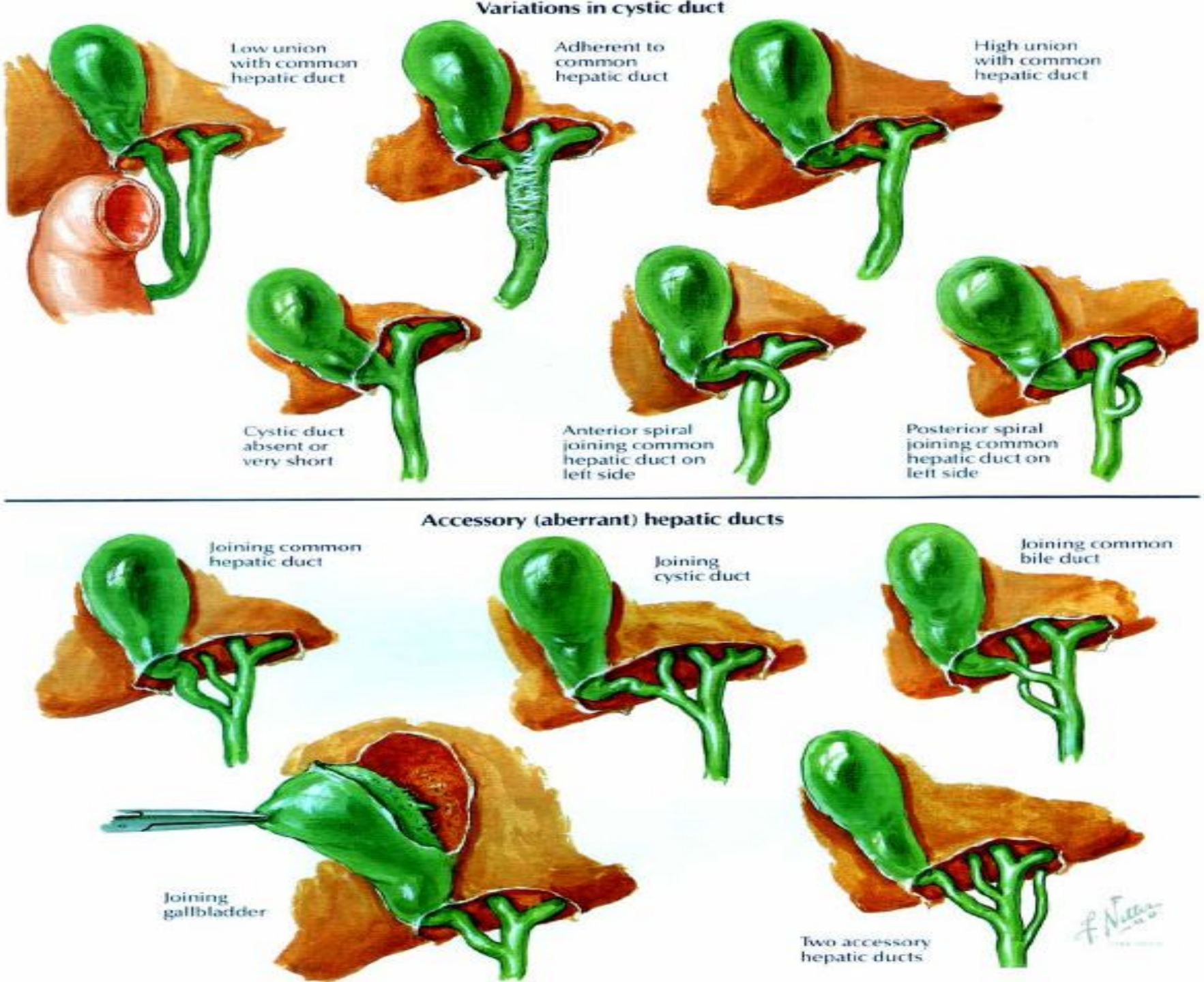
Sympathetic and parasympathetic vagal fibers

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.


see figure 5
Interlobular ducts
Left hepatic duct
Segmental duct
Cystic duct
Common hepatic duct
Neck
Infundibulum
Attachment of liver to gallbladder
Duodenum
Bulb
Body
Fundus
2nd portion
Common bile duct
Pancreas
Colon
Major papilla


Variations in cystic duct
Low union with common hepatic duct
Adherent to common hepatic duct
High union with common hepatic duct
Cystic duct absent or very short
Anterior spiral joining common hepatic duct on left side
Posterior spiral joining common hepatic duct on left side
Accessory (aberrant) hepatic ducts
Joining common hepatic duct
Joining cystic duct
Joining common bile duct
Joining gallbladder
Two accessory 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

Stones formation

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

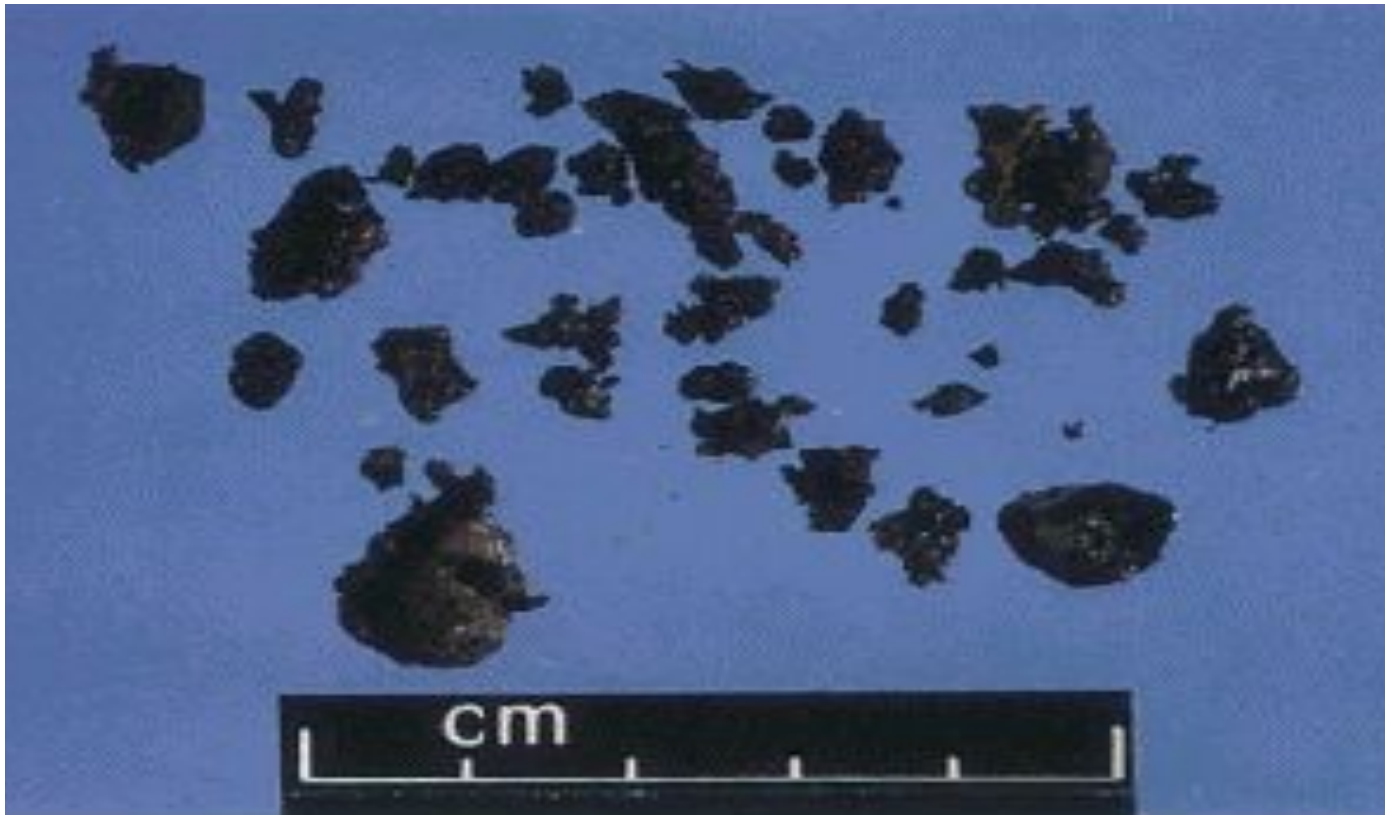
Cholesterol stones

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%)

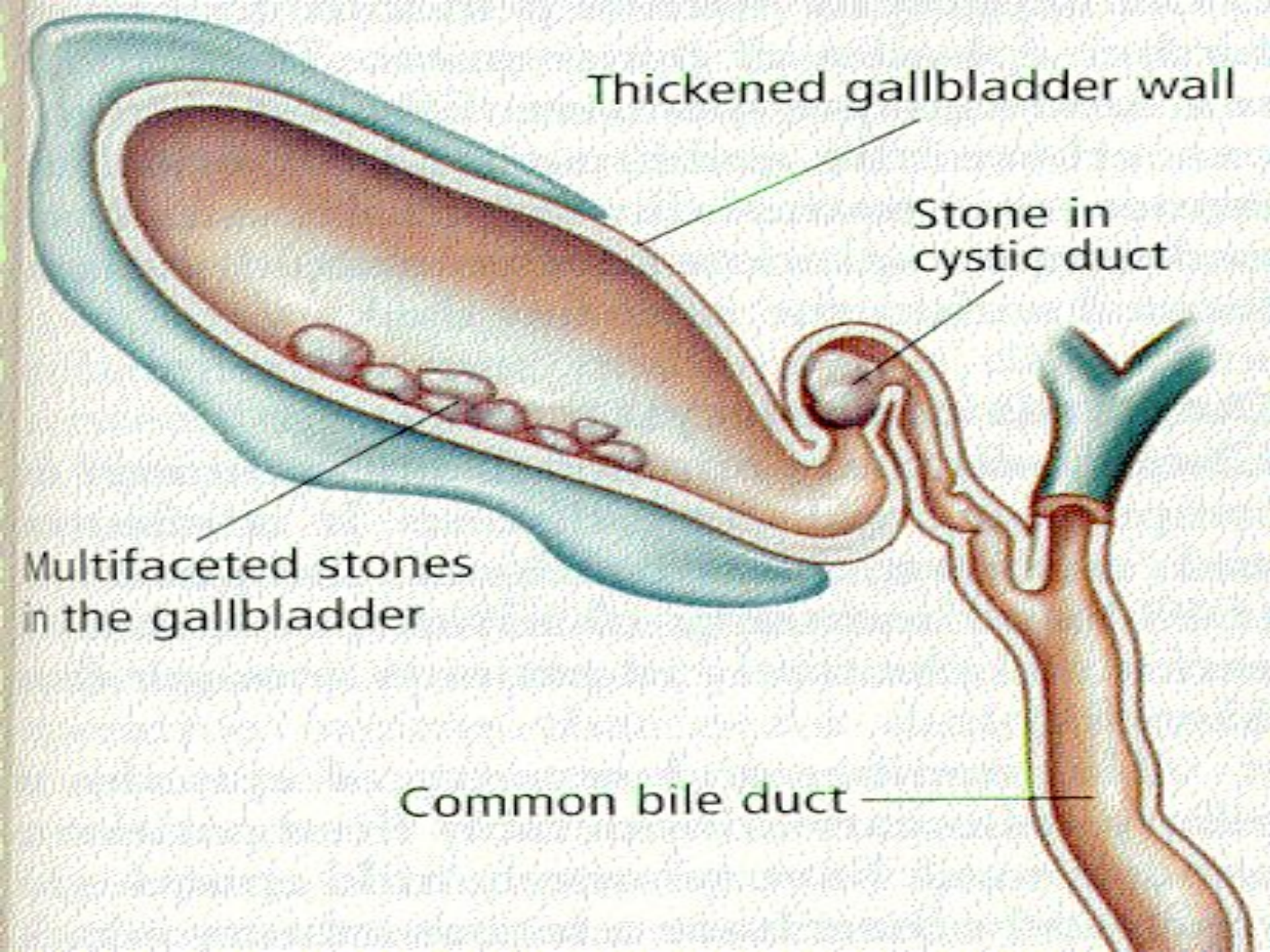
Acute Cholecystitis

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.

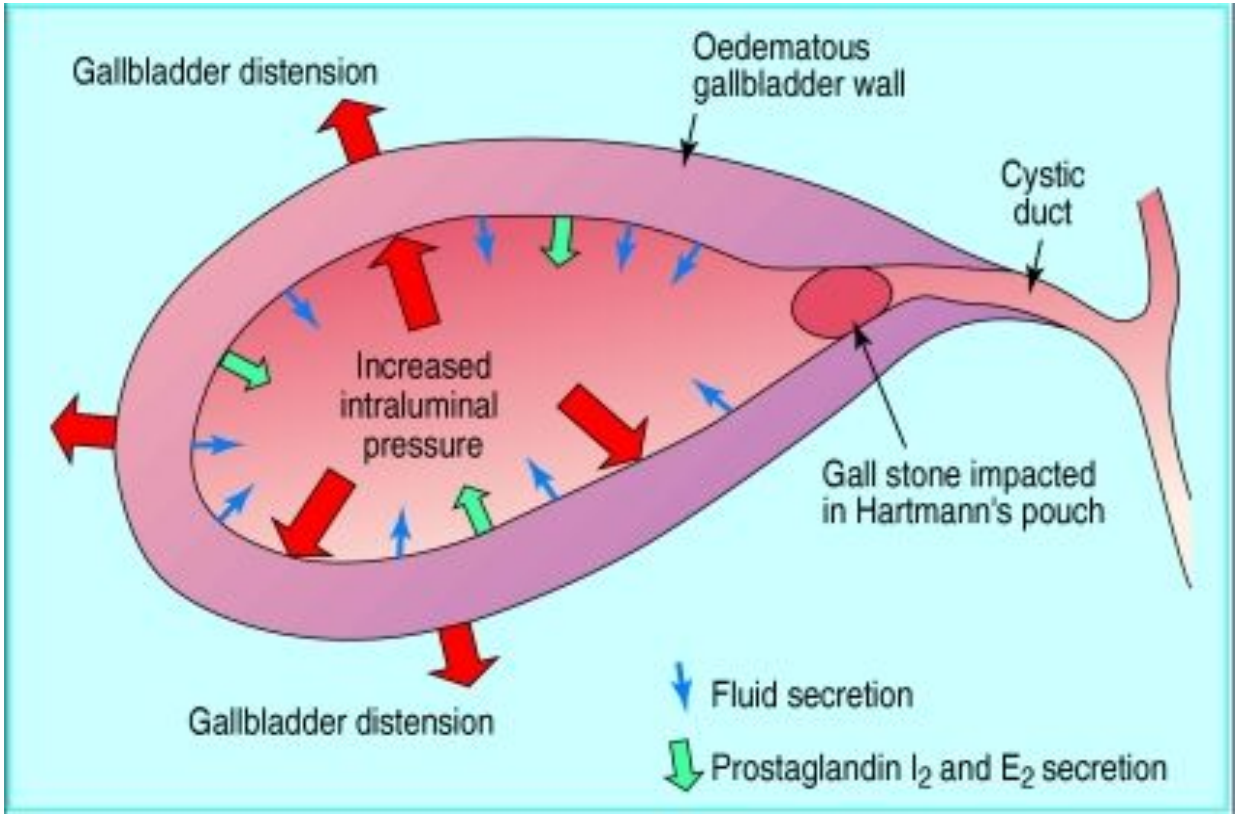
The most common organisms cultured during acute cholecystitis are Escherichia coli, Klebsiella, enterococci, Bacteroides fragilis, and Pseudomonas.

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

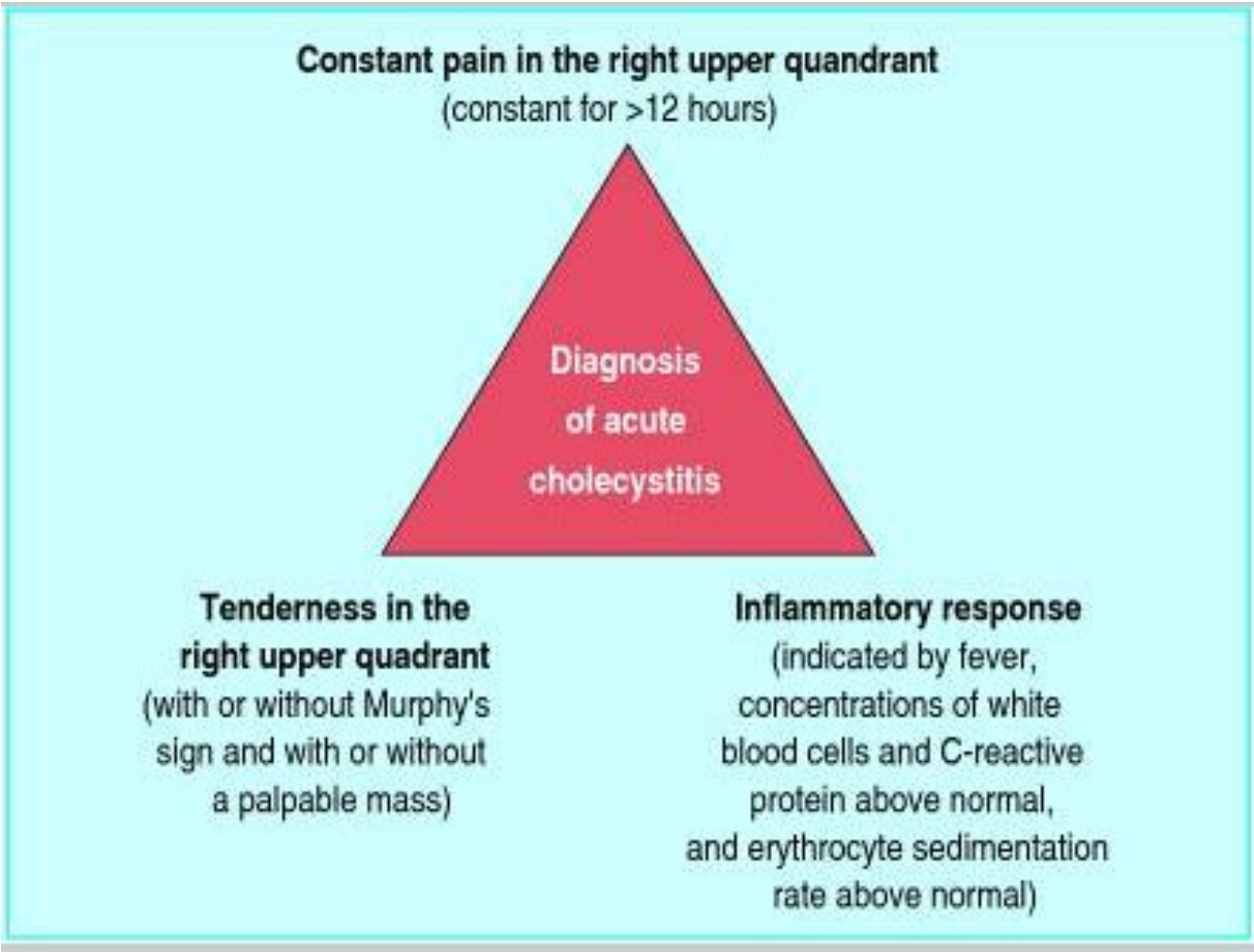
Acute cholecystitis without gallstone may occur in a variety of condition it may be due to :

- 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 quandrant
(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 quitely 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. 9^{th} 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

- Leukocystosis
- Mild Hyperbillirubinemia
- Mild ↑ AST, ALT, ALP
- Moderate ↑ Lipase & Amylase

US

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

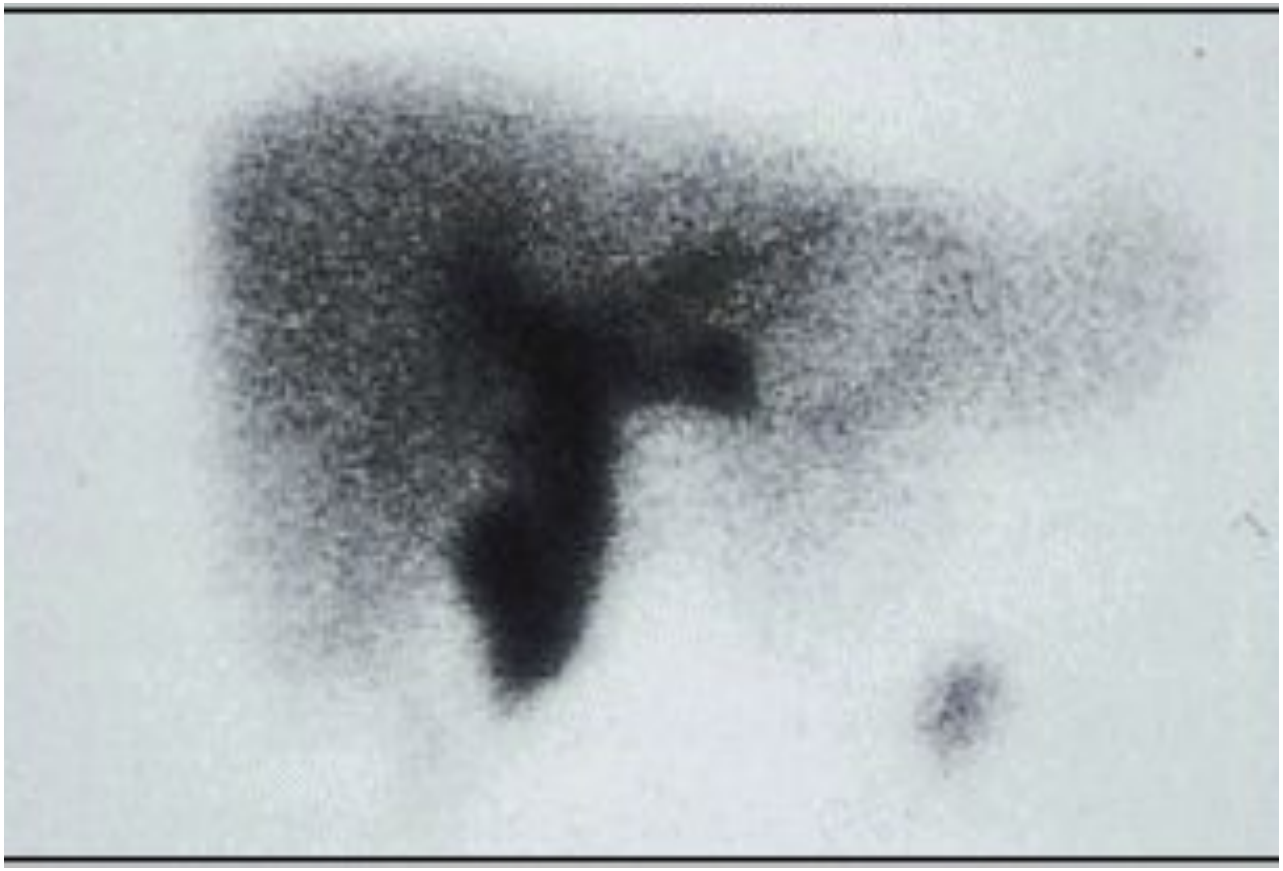
Biliary scintigraphy (hydroxyiminodiacetic acid) (HIDA) scan:

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

- Cholecystentiric fistula formation

- Gallstone illeus

- 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)

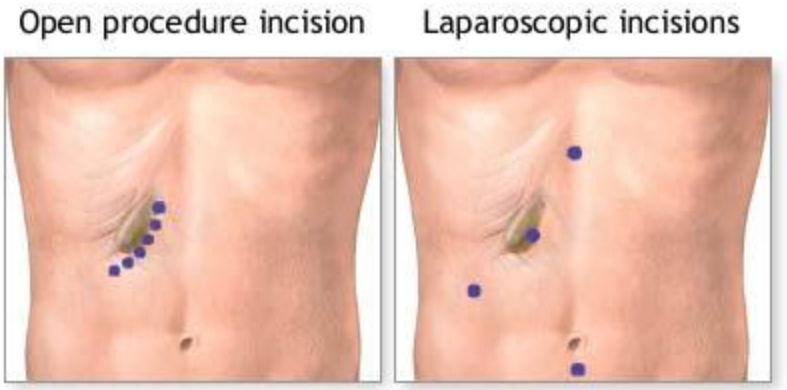
Calot's Triangle

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

Acute Cholecystits vs. Billiary Colic

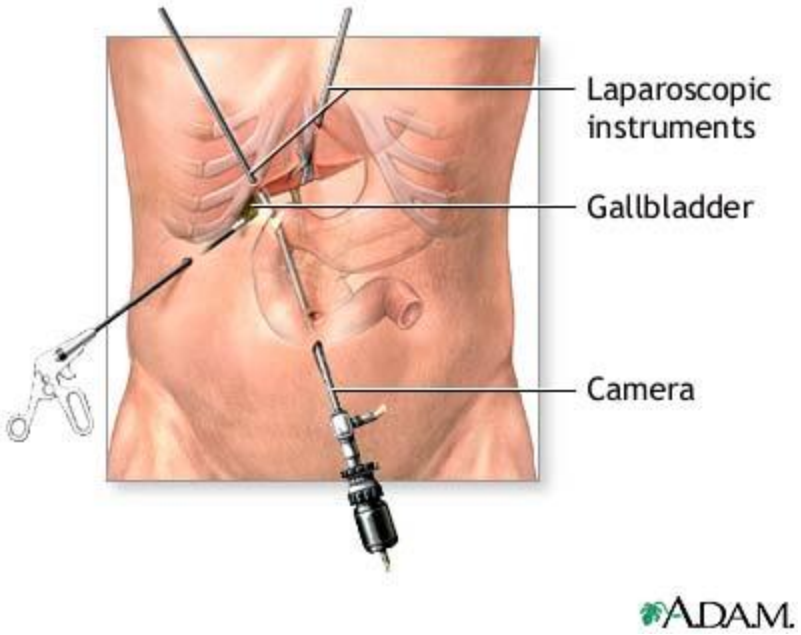
- Duration, Symptoms ?

Surgery



A.D.A.M.

Laproscopic



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