

Biliary Stones & Biliary Obstruction

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Objectives

- Pathophysiology of gallstones
- Risk factors for gallstones
- Biliary colic vs. Acute cholecystitis
- Management
- Causes of biliary obstruction
- Management

Physiology

- Bile flow 1 L / Day
- Gall bladder capacity 50 cc
- Components
 - 1- Bile salts (Cholesterol + Glycine/Taurine)
 - 2- Bile Pigments (Bilirubin)
 - 3- Cholesterol
 - 4- Phospholipids

Physiology

- Increased secretion by
 - Vagus
 - CCK
- Decreased by
 - VIP
 - Sympathetic
- Enterohepatic circulation

Gall Stones

Types of stones

- 1- Cholesterol stones 75%
- 2- Pigment stones (brown & black) 25%

Gall Stones

Risk factors (cholesterol stones)

- Female, fertile, fat, forty ...
- Family history
- Race

Risk factors (cholesterol stones)

■ ↑ **cholesterol ratio**

- Ileal disease
- Diet
- rapid weight loss

Risk factors (cholesterol stones)

■ **Dismotility**

- Drugs (Estrogen, OCP, Octreotide)
- TPN
- Spinal cord injury
- Vagotomy
- DM ?

Risk factors

■ **Black pigment stones**

- Hemolytic anemias
- Cirrhosis

■ **Brown pigment stones**

- Bacterial infection

Asymptomatic gall stones

- 10-20% of population
- 1-2% will develop symptoms annually
- Remove in
 - 1- Large stone >2 cm
 - 2- DM
 - 3- Hemolytic anemias
 - 4- During surgery

Symptomatic cholelithiasis

- Recurrent attacks of RUQ pain
- Colicky
- Nausea +/- vomiting
- Related to food
- Short duration
- No fever, tenderness or ↑ WBC



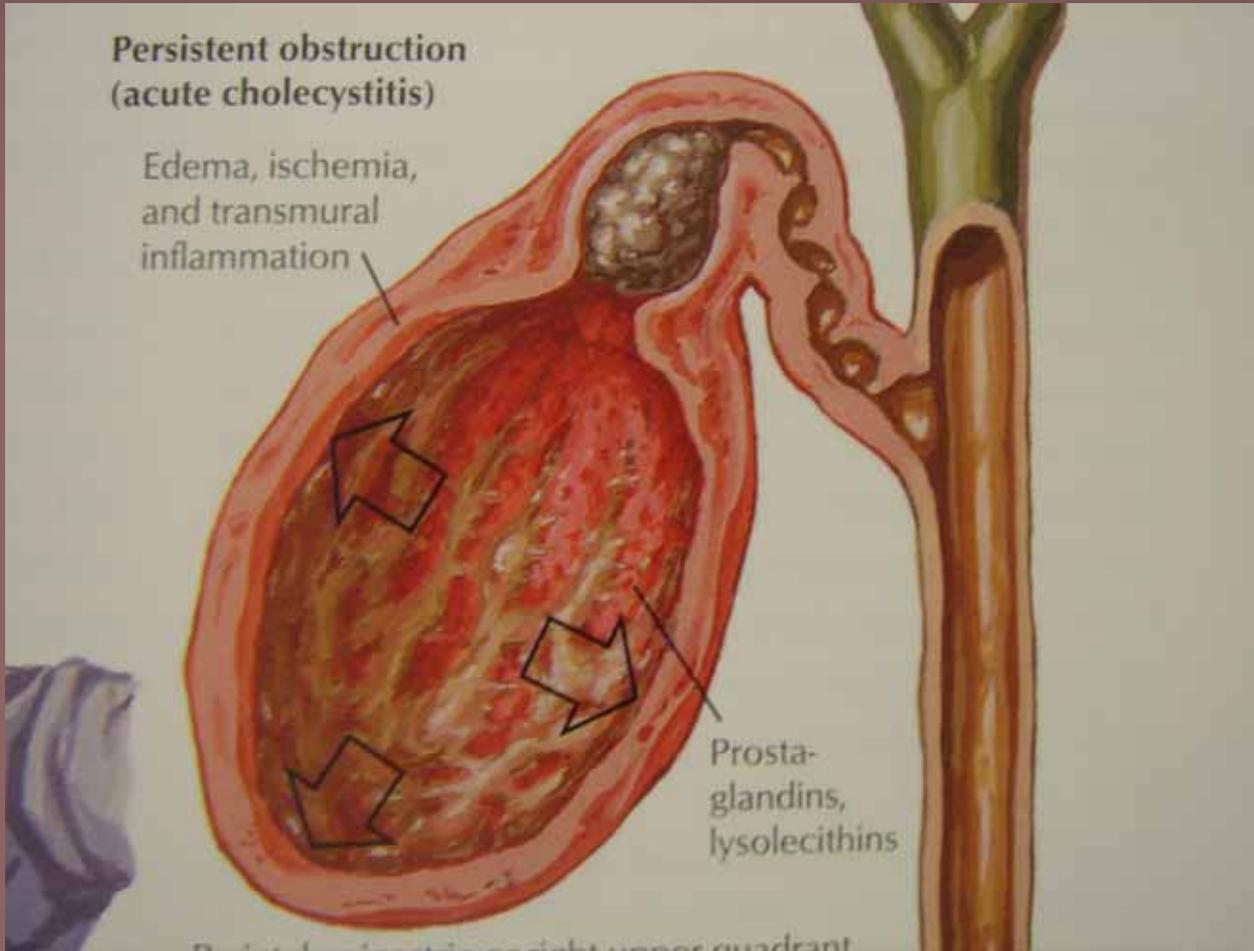
Acute Cholecystitis

- Severe RUQ pain
- Constant
- Fever
- Murphy's sign
- ↑ WBC
- Minor elevation of LFT
- US
- HIDA scan

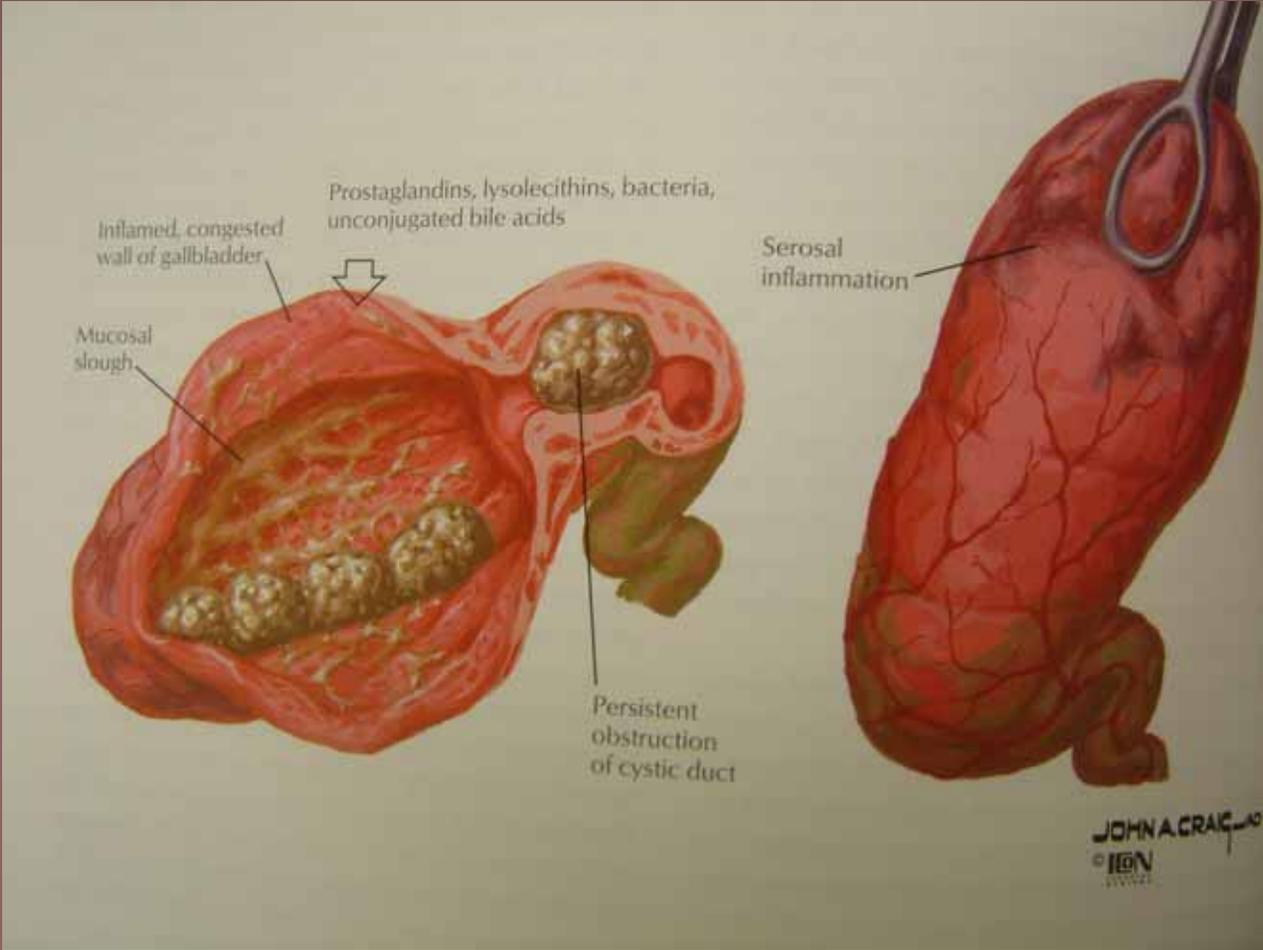
**Persistent obstruction
(acute cholecystitis)**

Edema, ischemia,
and transmural
inflammation

Prosta-
glandins,
lysolecithins



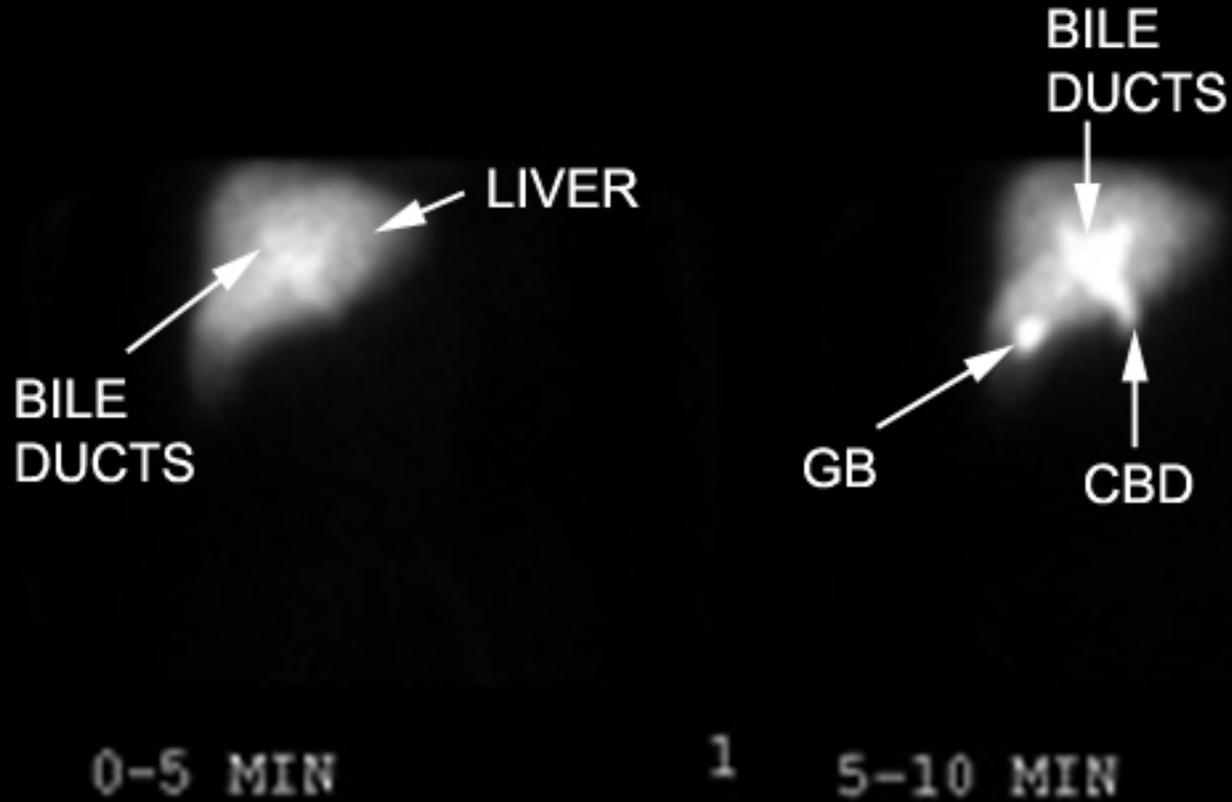
Point of tenderness in right upper quadrant







NORMAL HIDA SCAN



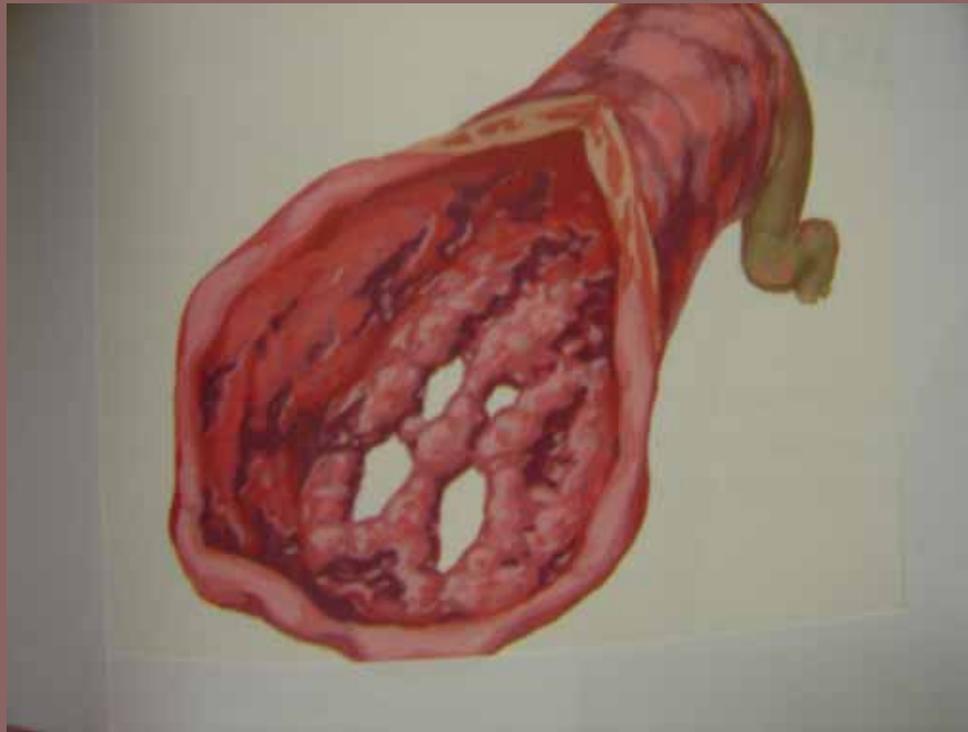
Acute Cholecystitis

Treatment

- NPO
- IVF
- Analgesia
- Abx
- Surgery

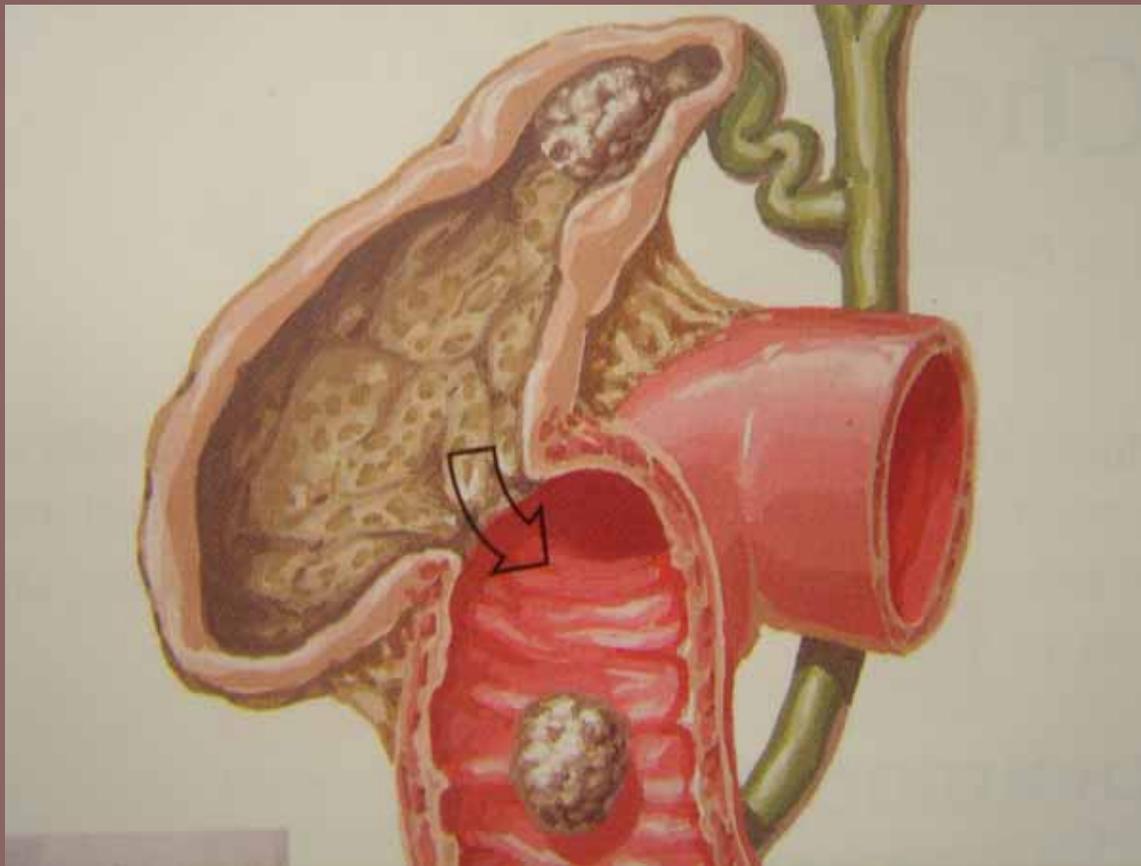
Complications of Acute Cholecystitis

- Empyema
- Perforation



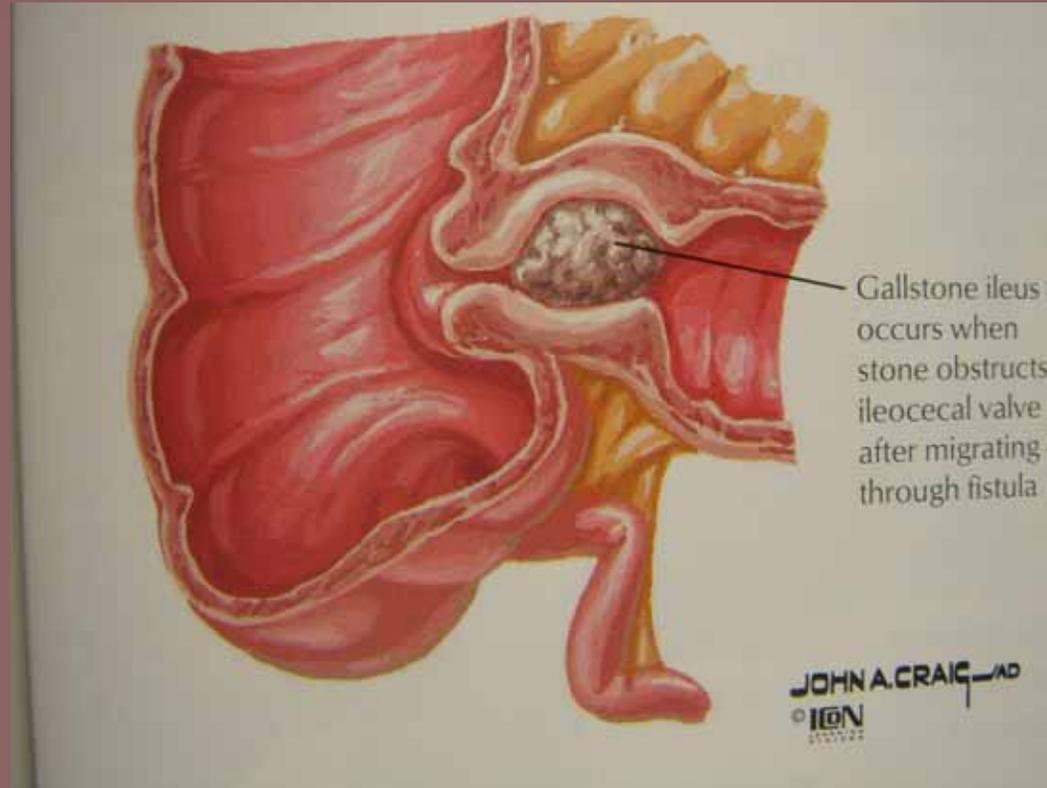
Complications of Acute Cholecystitis

- Choledocho-enteric fistula



Complications of Acute Cholecystitis

- Gall-stone ileus



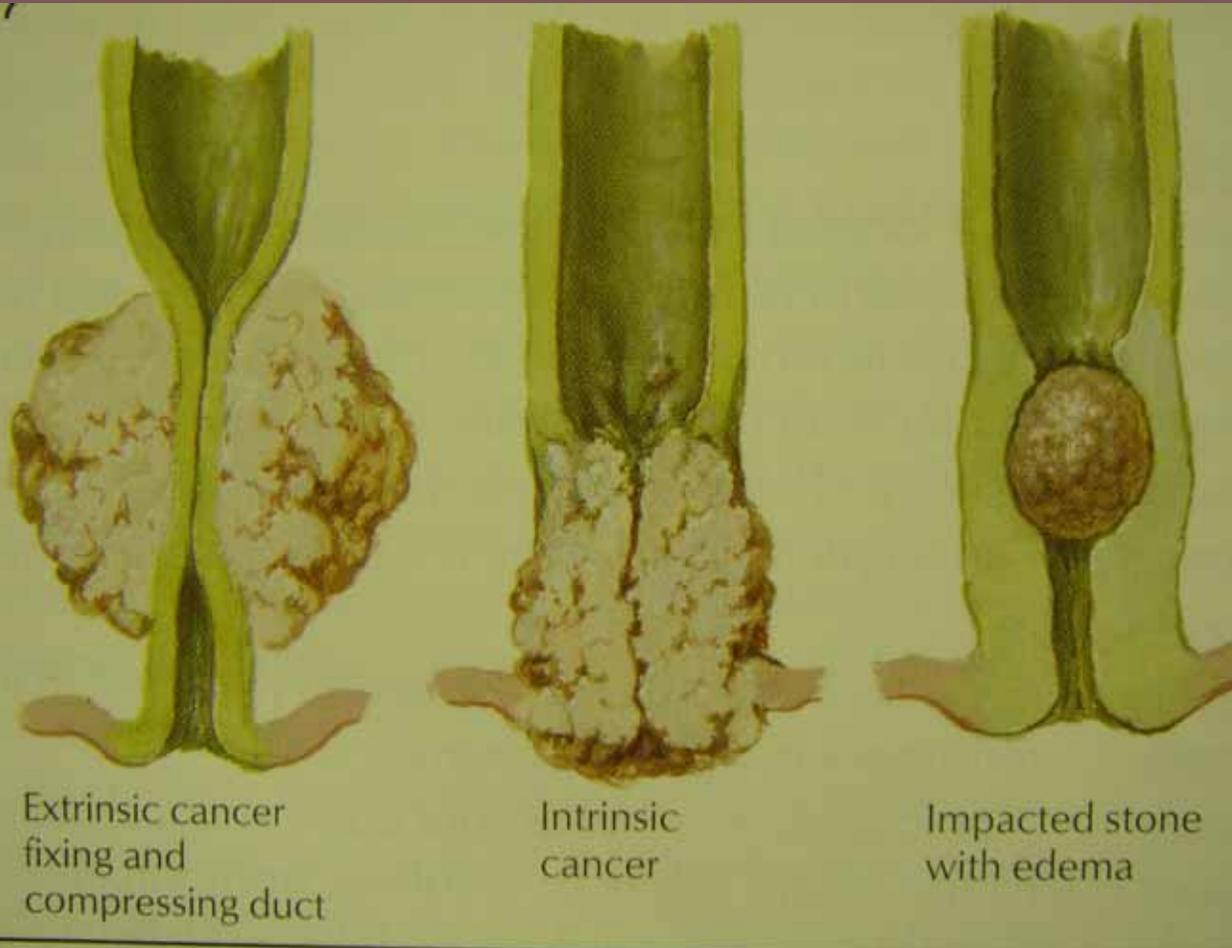
Complications of Acute Cholecystitis

- Mirizzi syndrome



Biliary Obstruction

- Intraluminal
- Luminal
- Extraluminal



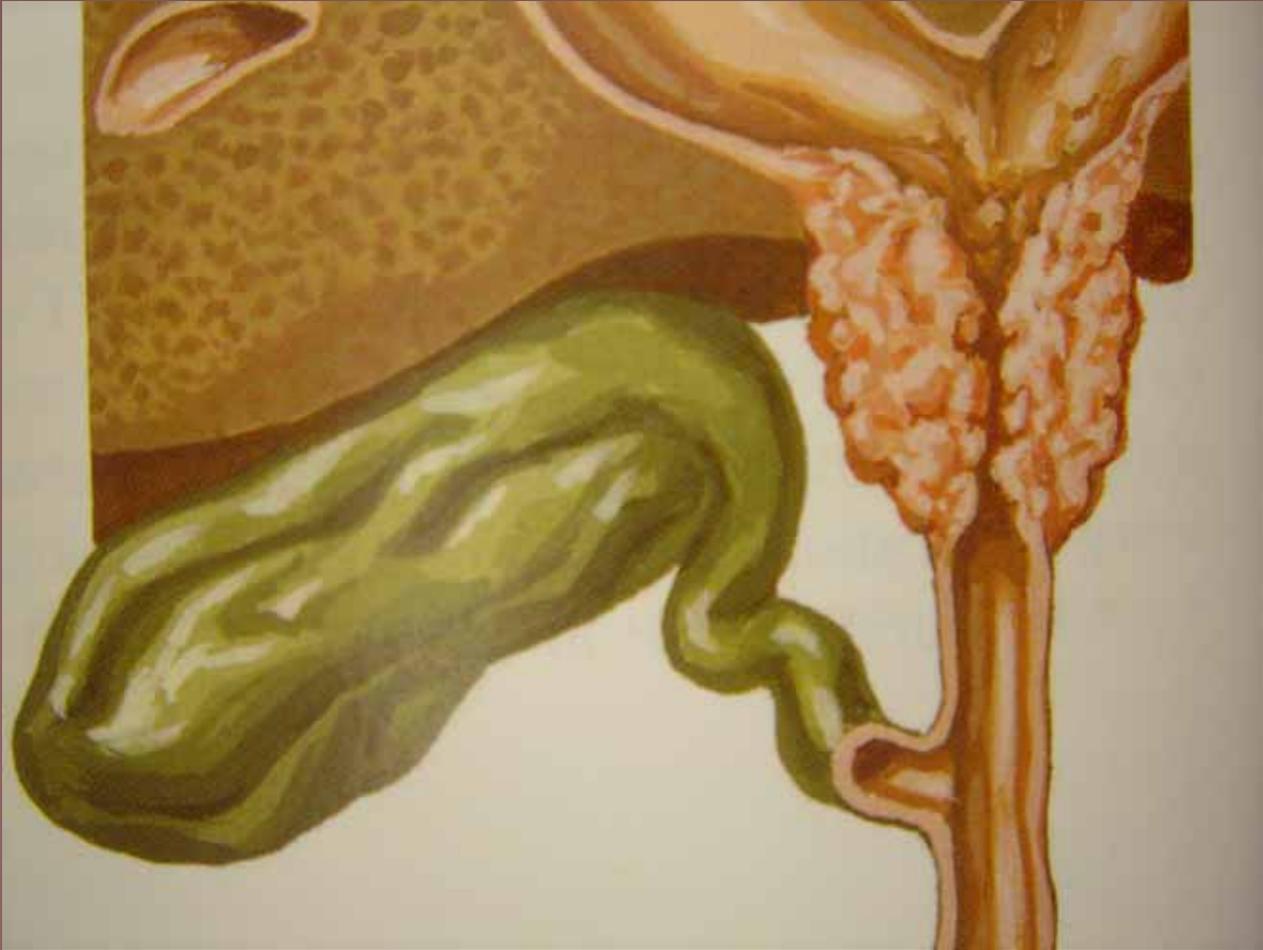
Biliary Obstruction

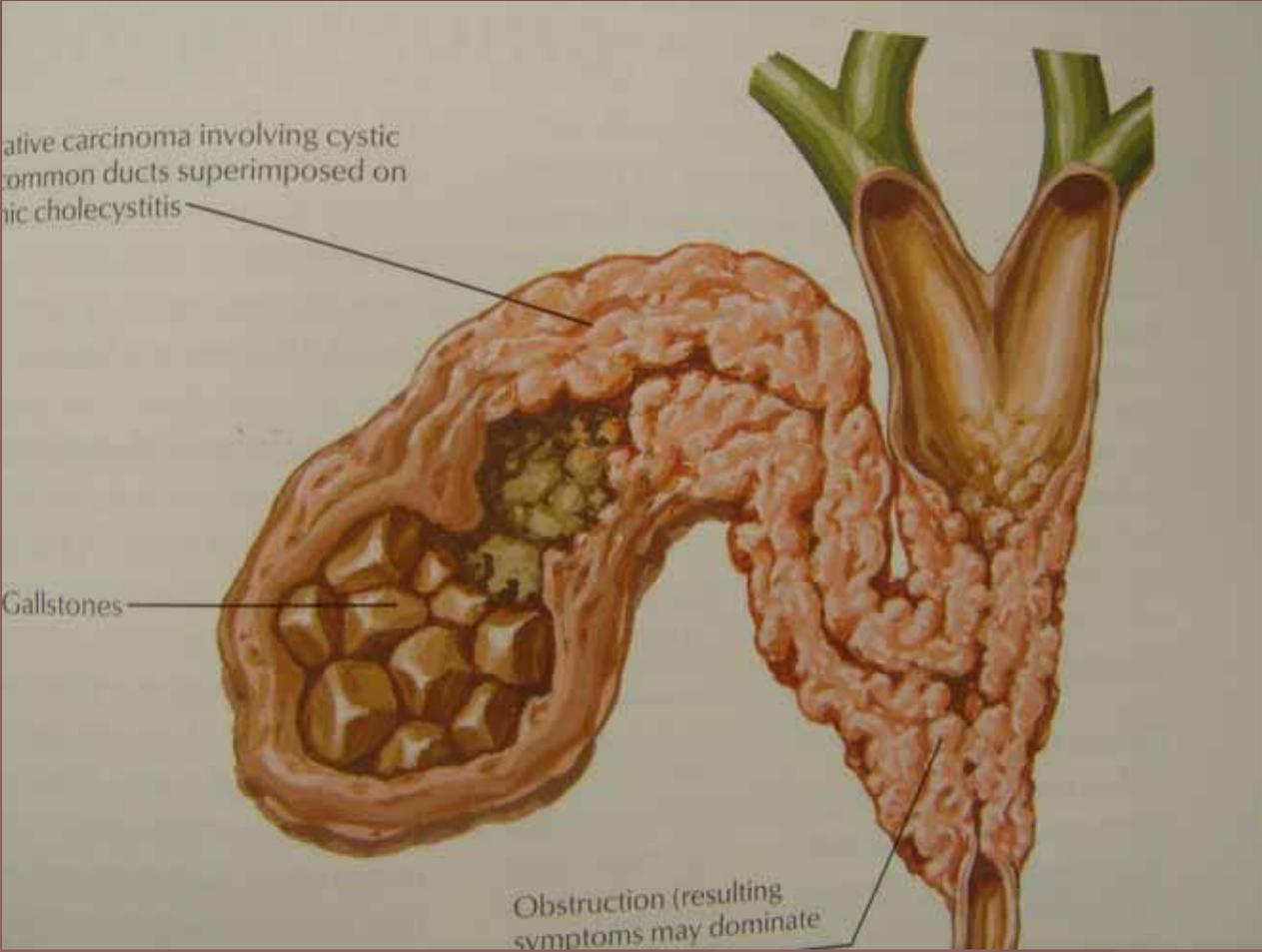
- Choledocholithiasis
 - Primary CBD stones
 - Secondary CBD stones

Biliary Obstruction

- CBD stricture

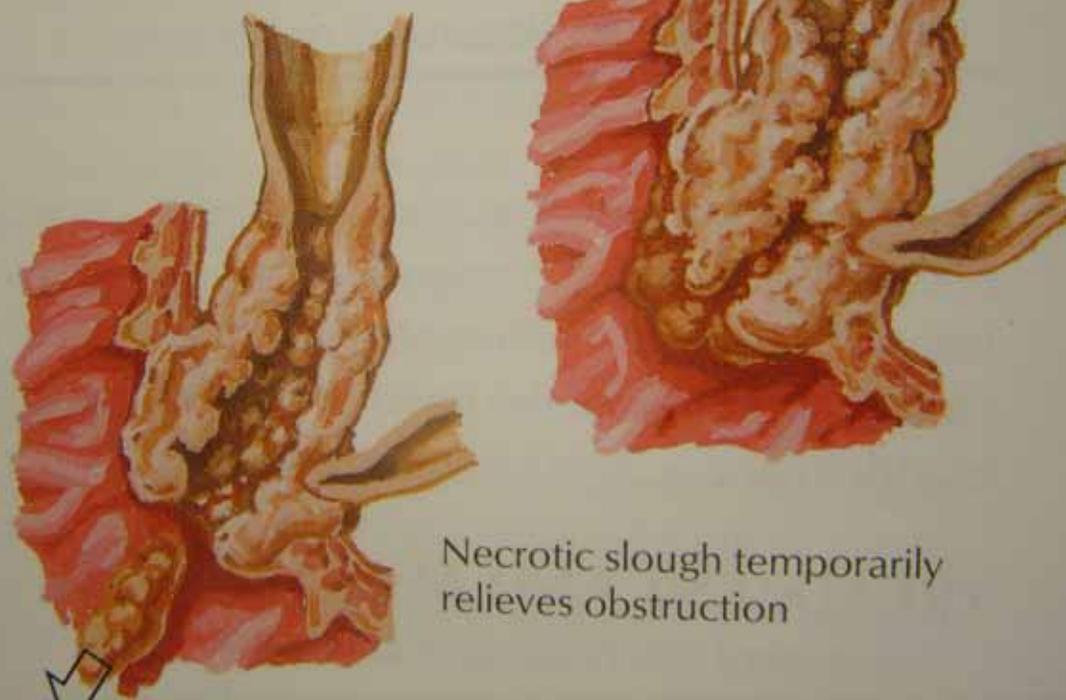
- Benign
- Malignant





Distended ("Courvoisier") gallbladder results from neoplastic obstruction below cystic duct

con
duc



Necrotic slough temporarily relieves obstruction

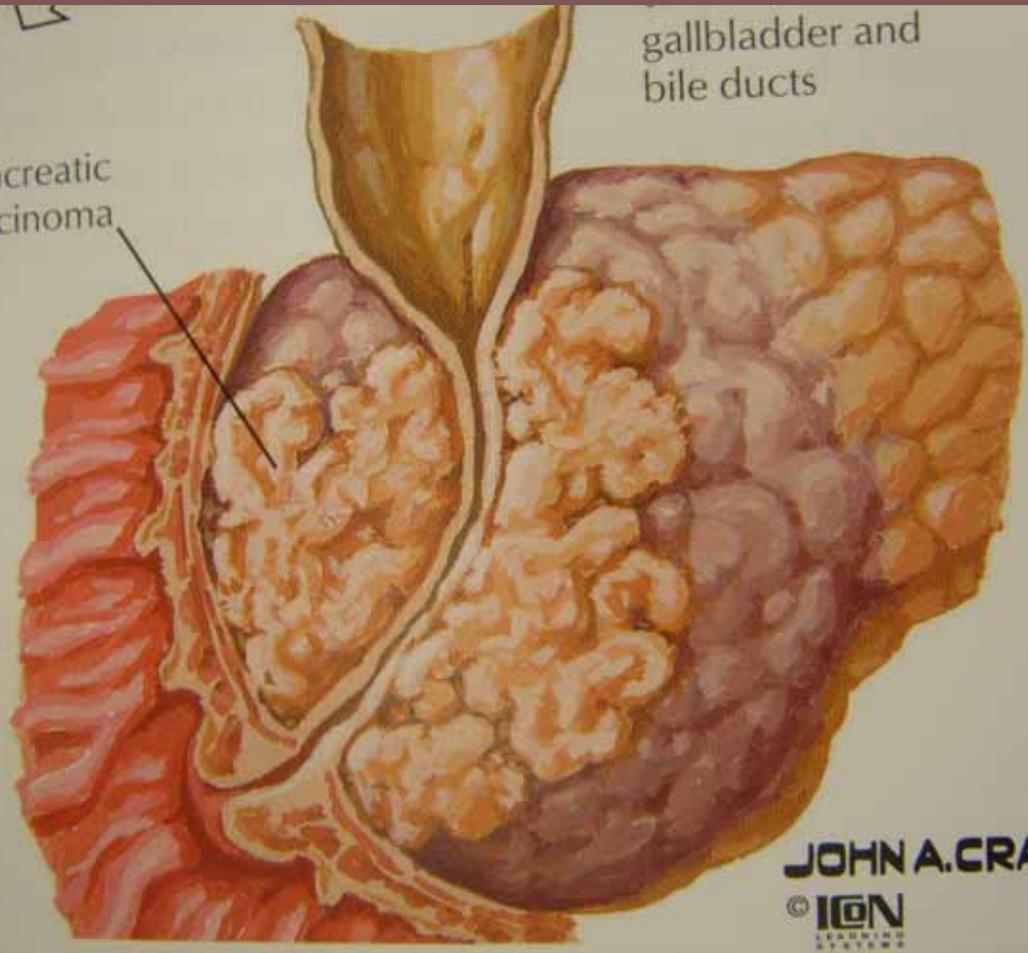
Biliary Obstruction

■ Extraluminal pathology

- Pancreas
- LNs
- Liver

Pancreatic carcinoma

gallbladder and
bile ducts



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LEARNING
SYSTEMS

Biliary Obstruction

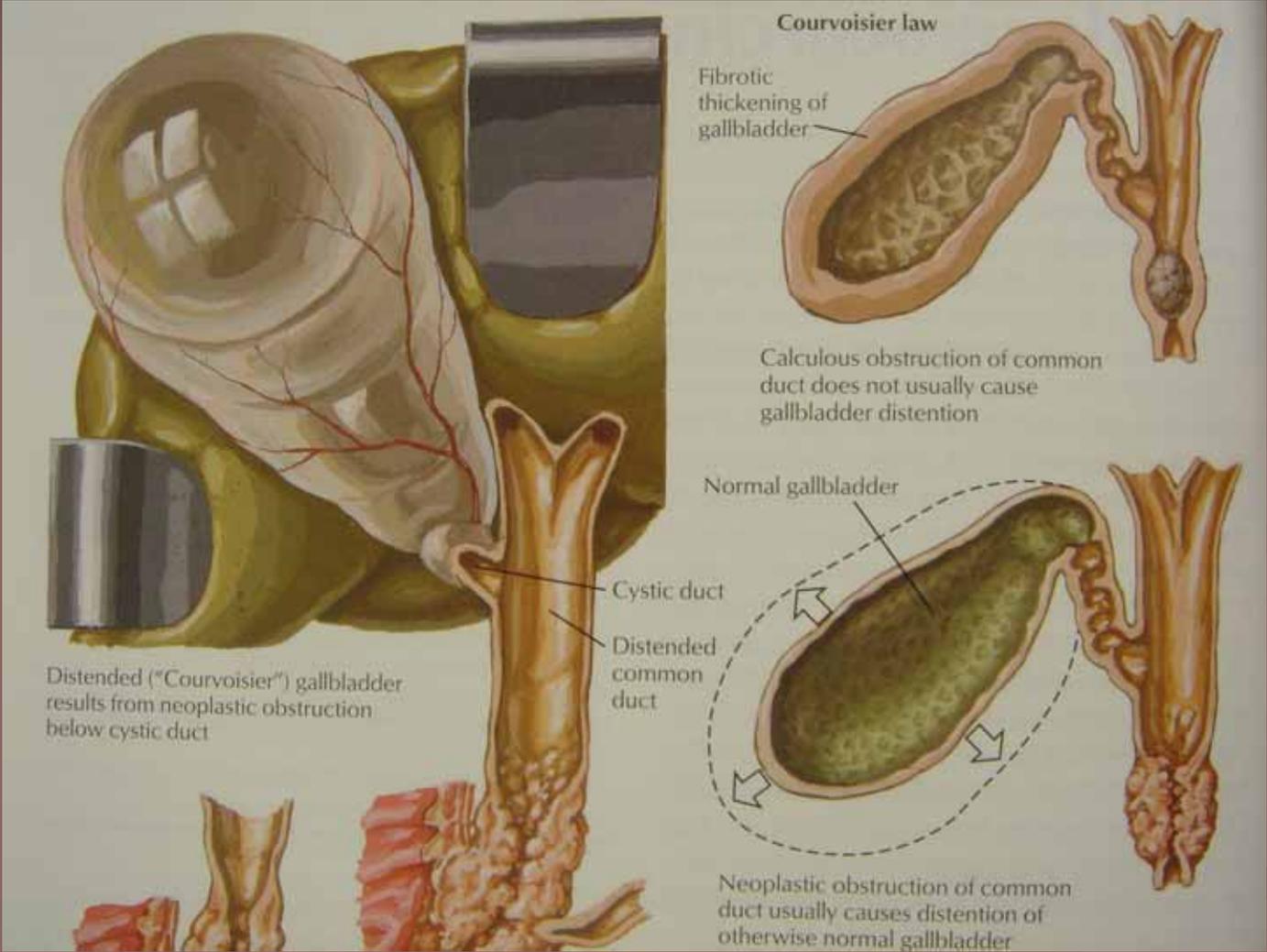
■ Presentation

- Jaundice
- Pain
- Weight loss
- Fever

Biliary Obstruction

■ Examination

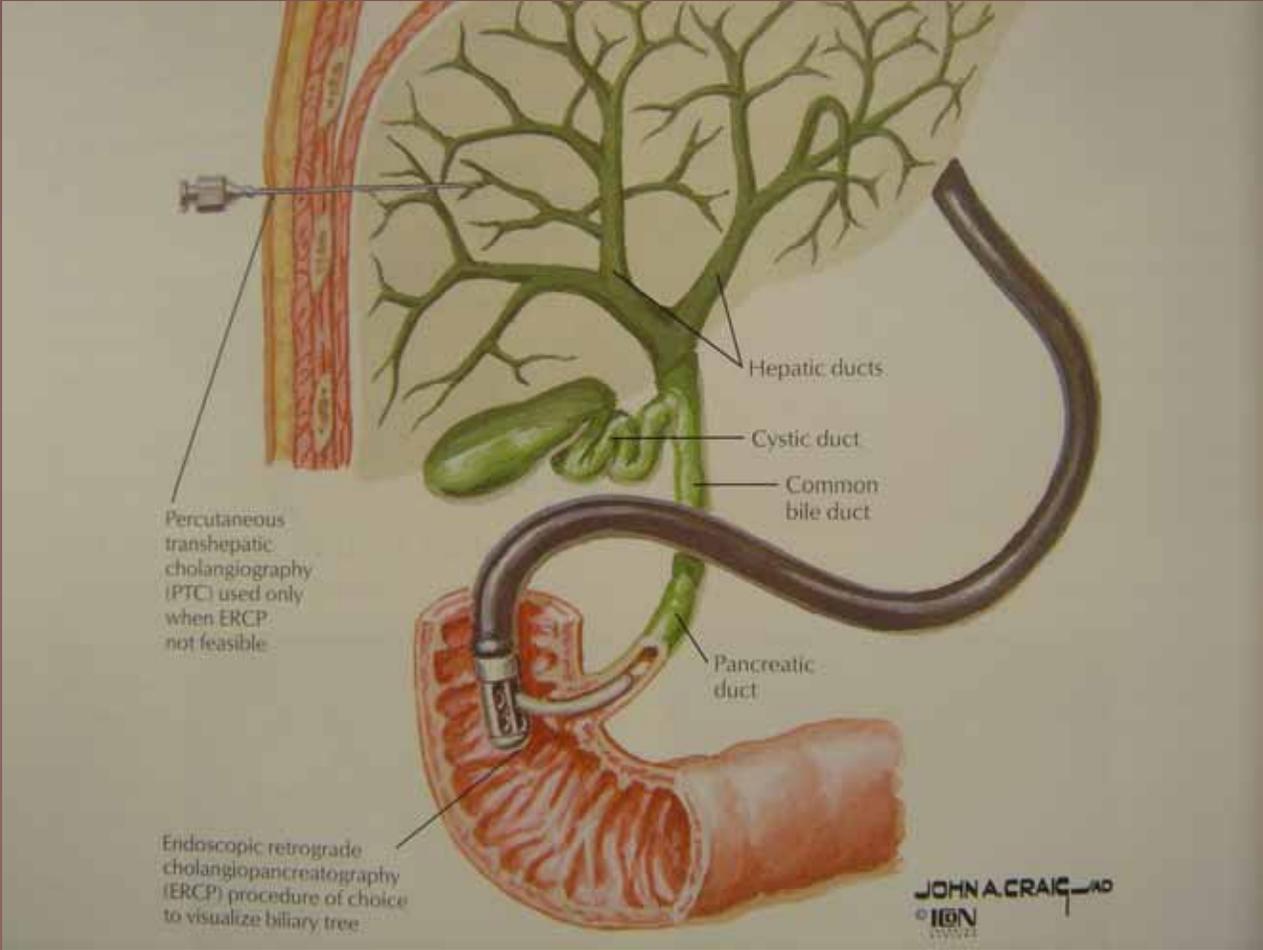
- Fever
- Septic shock
- Jaundice
- Cachexia
- Enlarged gall bladder



Biliary Obstruction

■ Investigations

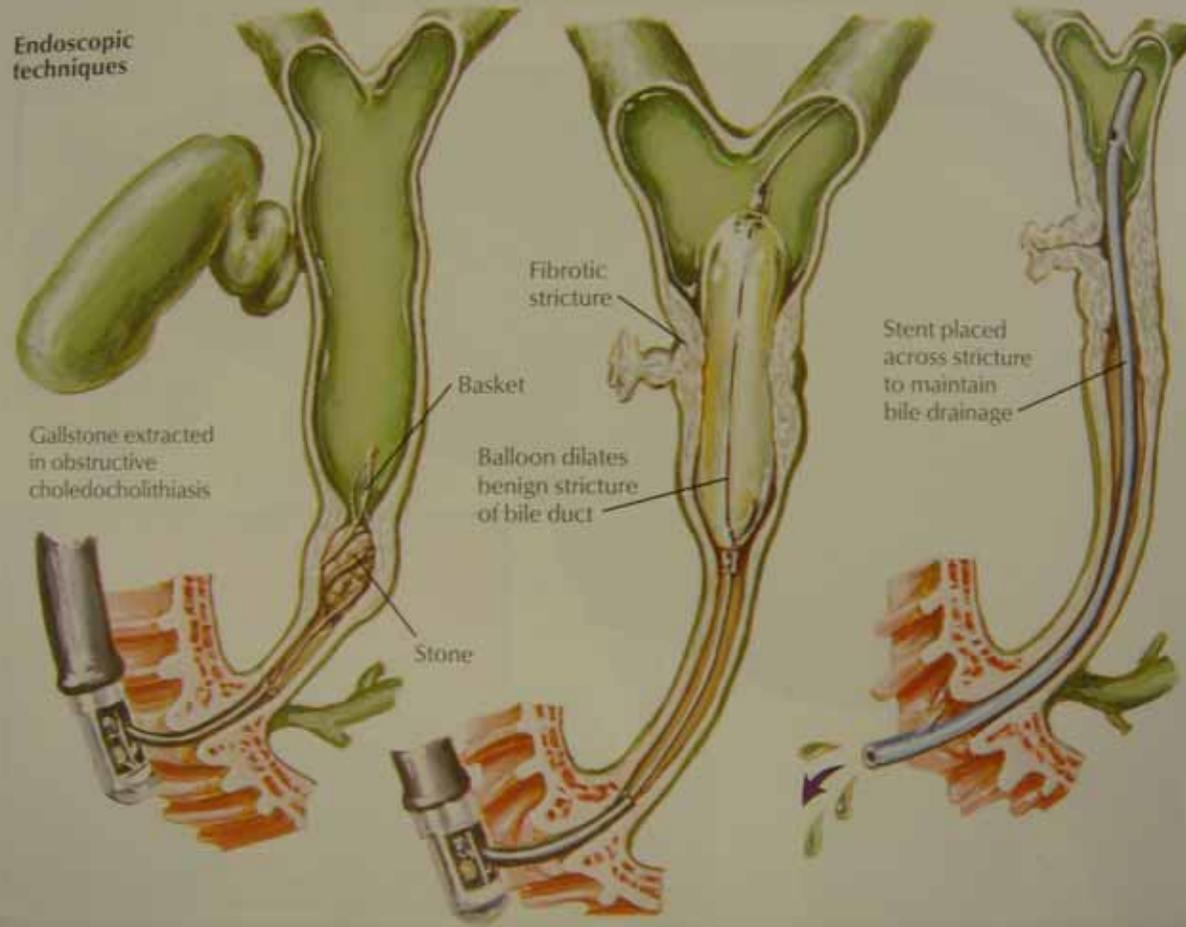
- CBC
- LFT
- PTT, INR
- US
- CT
- ERCP
- PTC

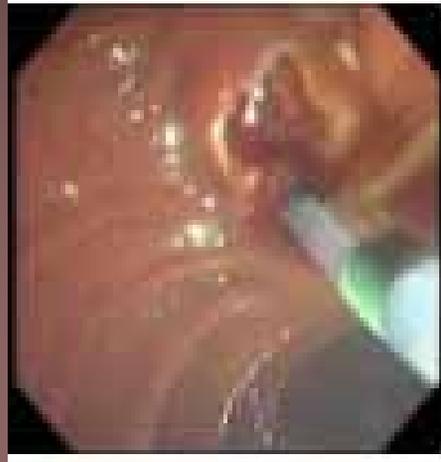




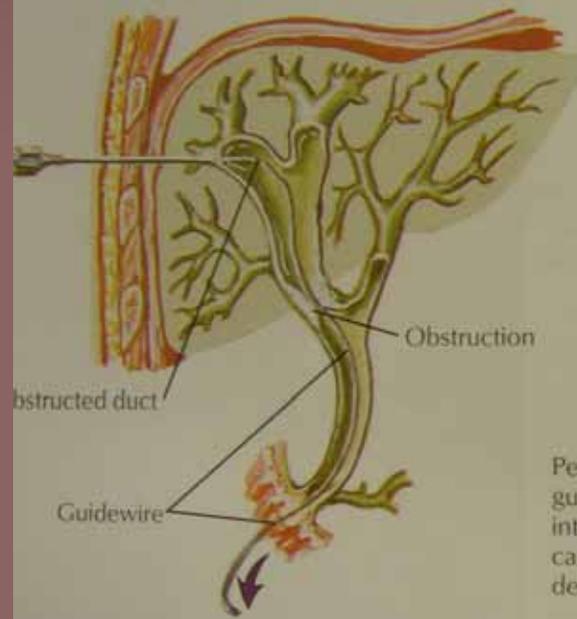


Endoscopic techniques



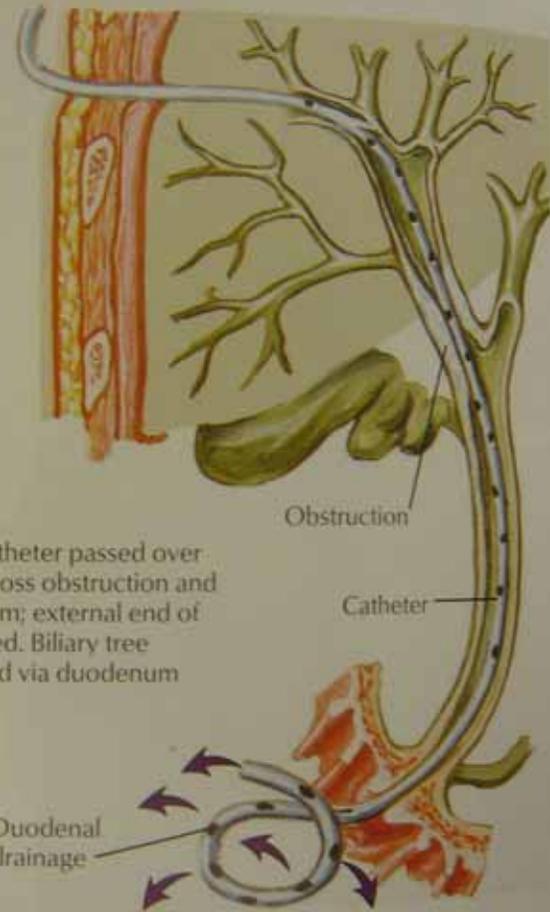


percutaneous (transhepatic) techniques



Thin needle passed into dilated, obstructed bile duct. Guidewire passed through needle, across obstruction, and into duodenum

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Perforated catheter passed over guidewire across obstruction and into duodenum; external end of catheter closed. Biliary tree decompressed via duodenum

Duodenal drainage

Percutaneous Transhepatic Cholangiogram

Area of Enlargement



Scan



Hepatic ducts

Liver

Contrast injected into biliary duct system

Narrowing of common bile duct

Duodenum

Pancreas

Stomach

Narrowing of common bile duct

