

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)

■ **Dysmotility**

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

Risk factors

■ **Black pigment stones**

- Hemolytic anemias
- Cirrhosis

■ **Brown pigment stones**

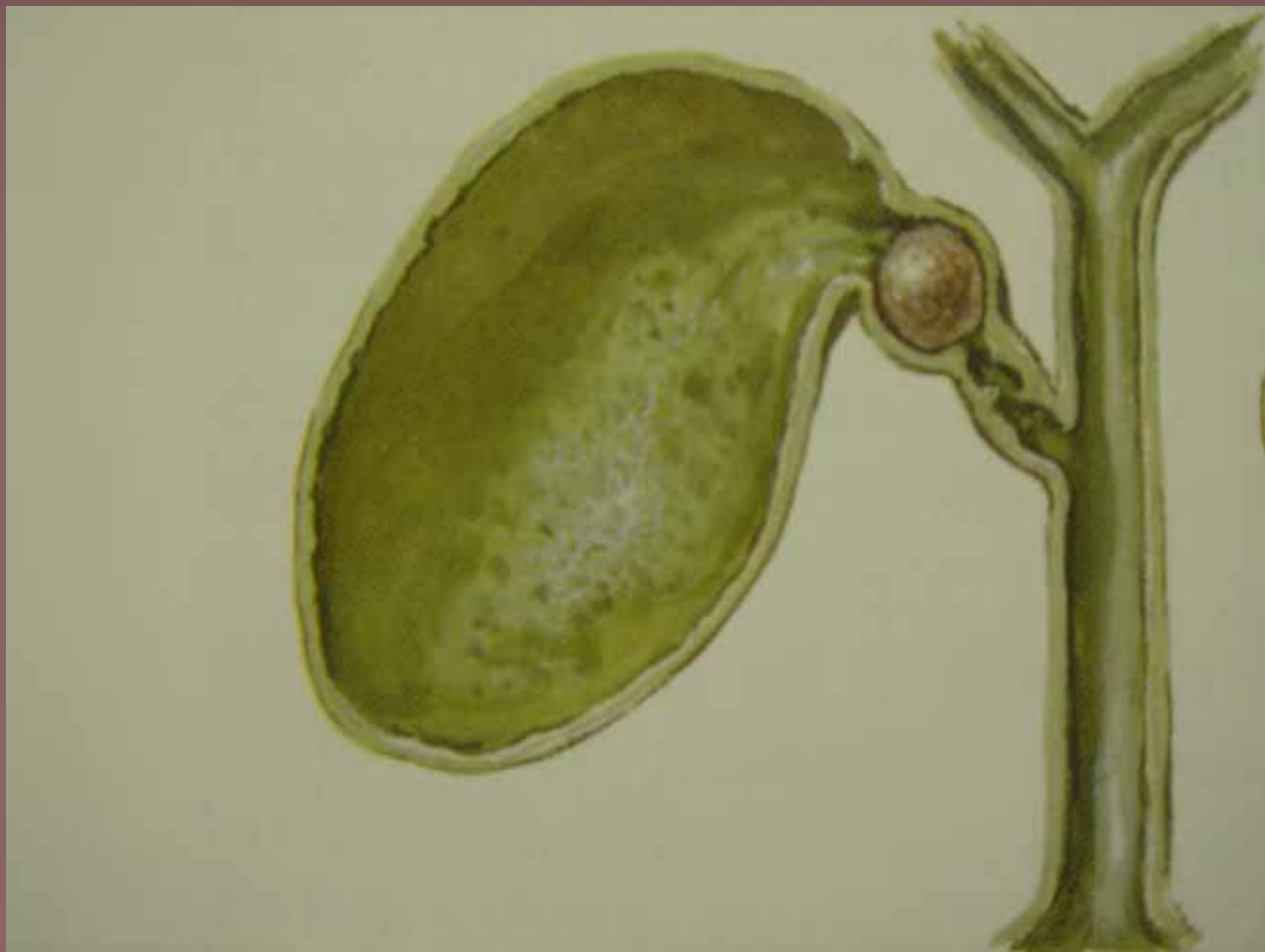
- Bacterial infection

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



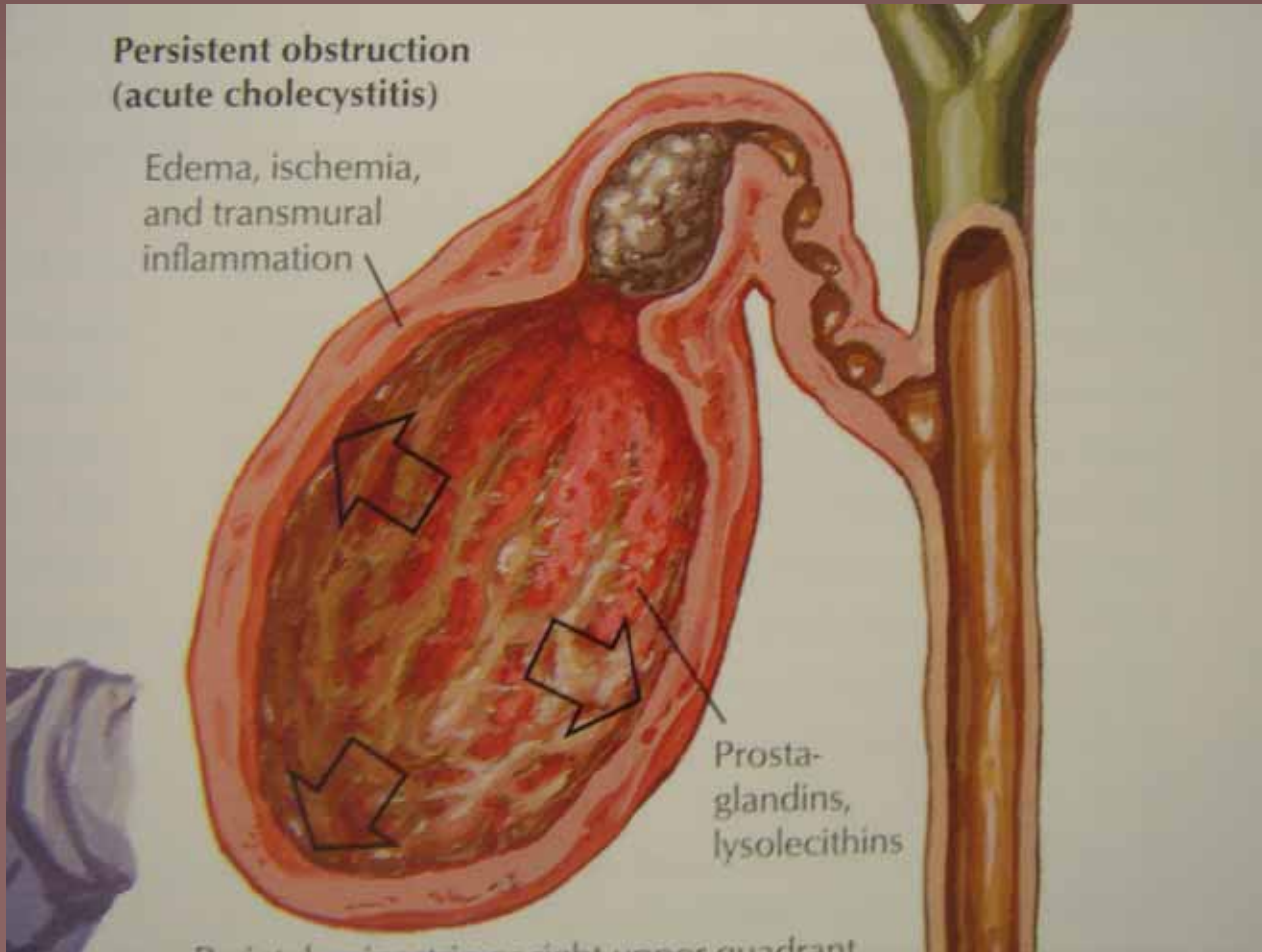
Acute Cholecystitis

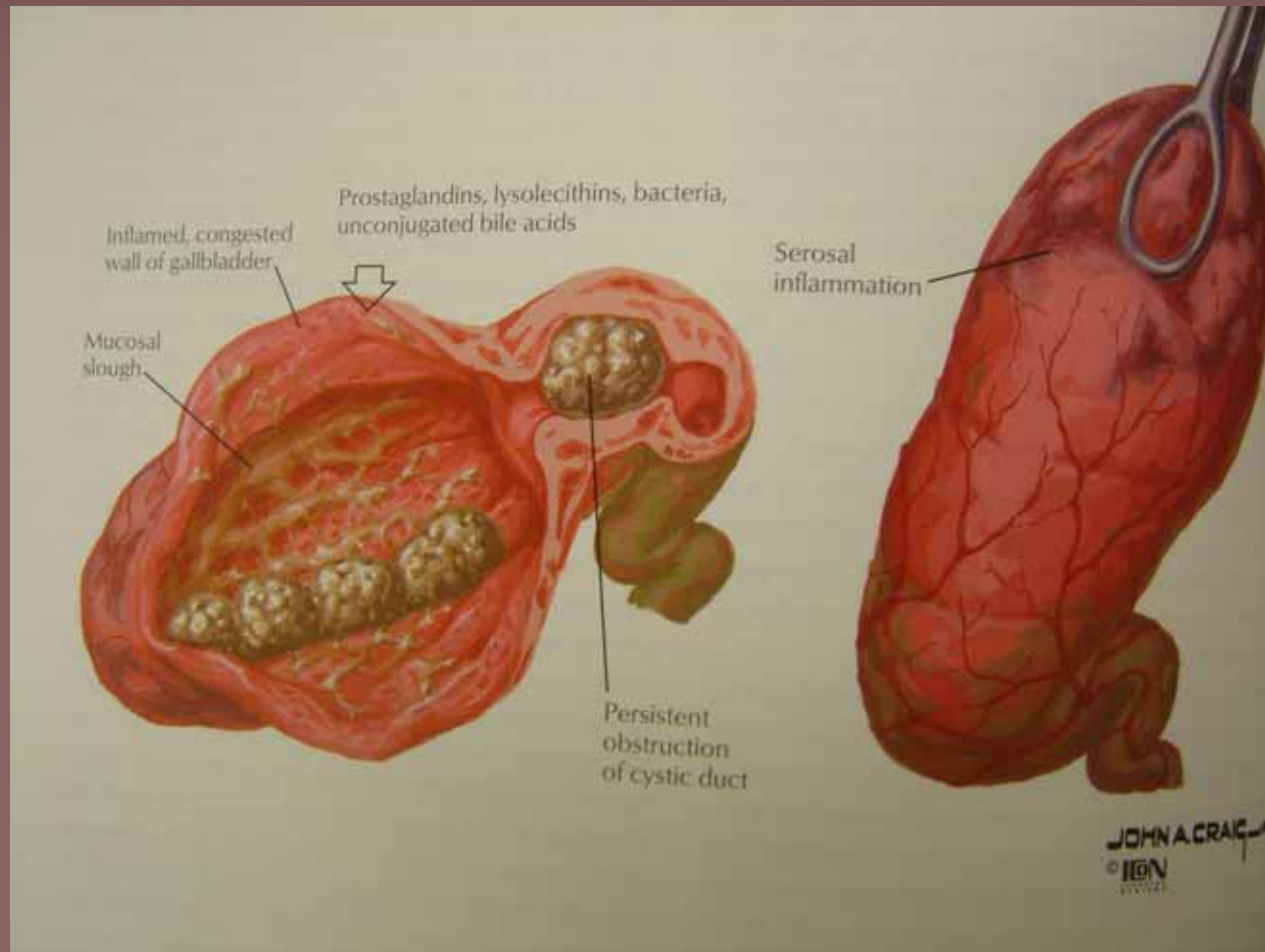
- Severe RUQ pain
- Constant
- Fever
- Murphy's sign
- ↑ WBC
- Minor elevation of LFT
- US
- HIDA scan

**Persistent obstruction
(acute cholecystitis)**

Edema, ischemia,
and transmural
inflammation

Prosta-
glandins,
lysolecithins

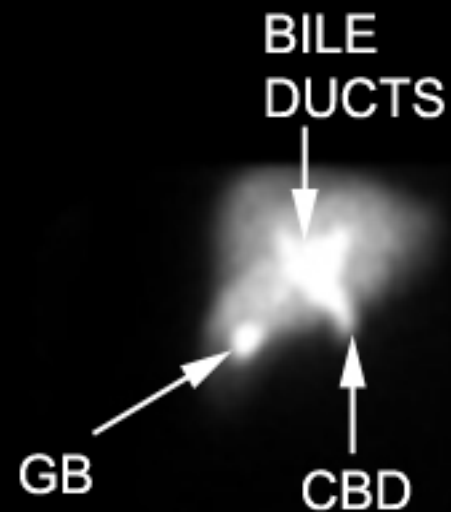








NORMAL HIDA SCAN



Acute Cholecystitis

Treatment

- NPO
- IVF
- Analgesia
- Abx
- Surgery

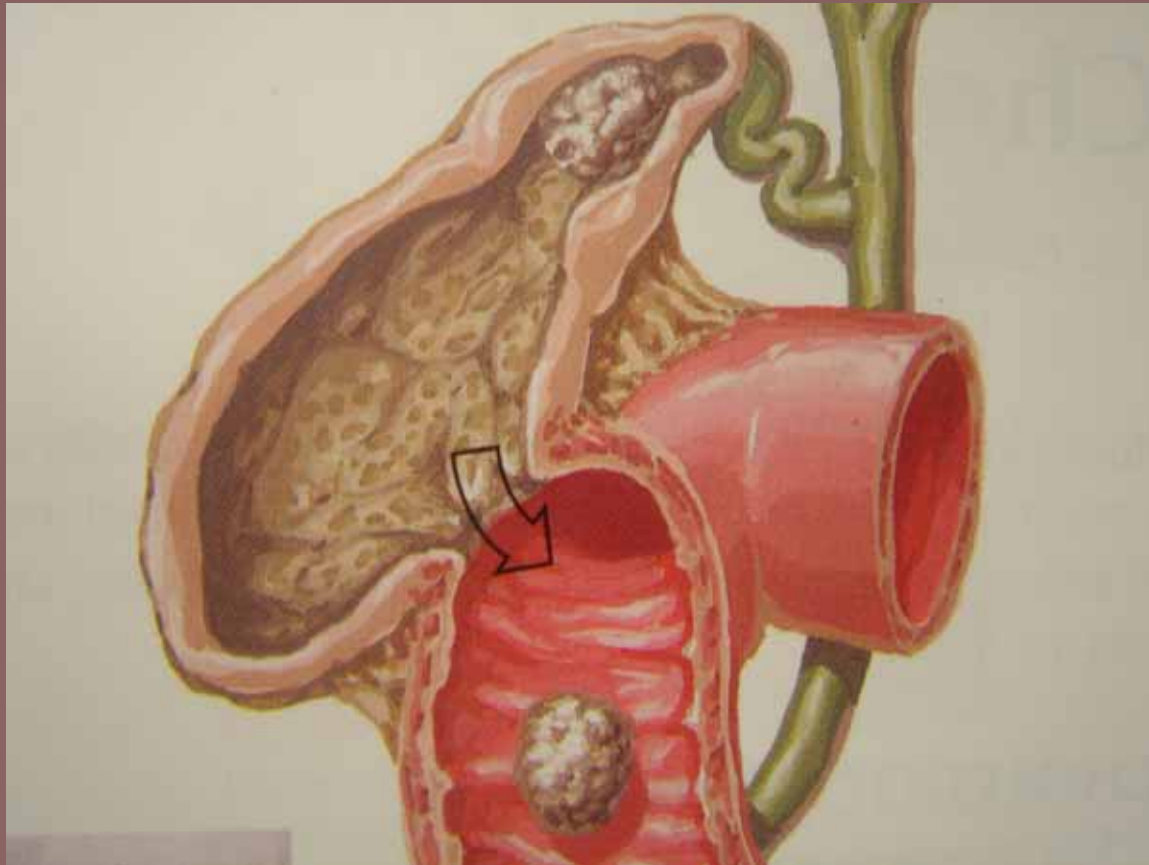
Complications of Acute Cholecystitis

- Empyema
- Perforation



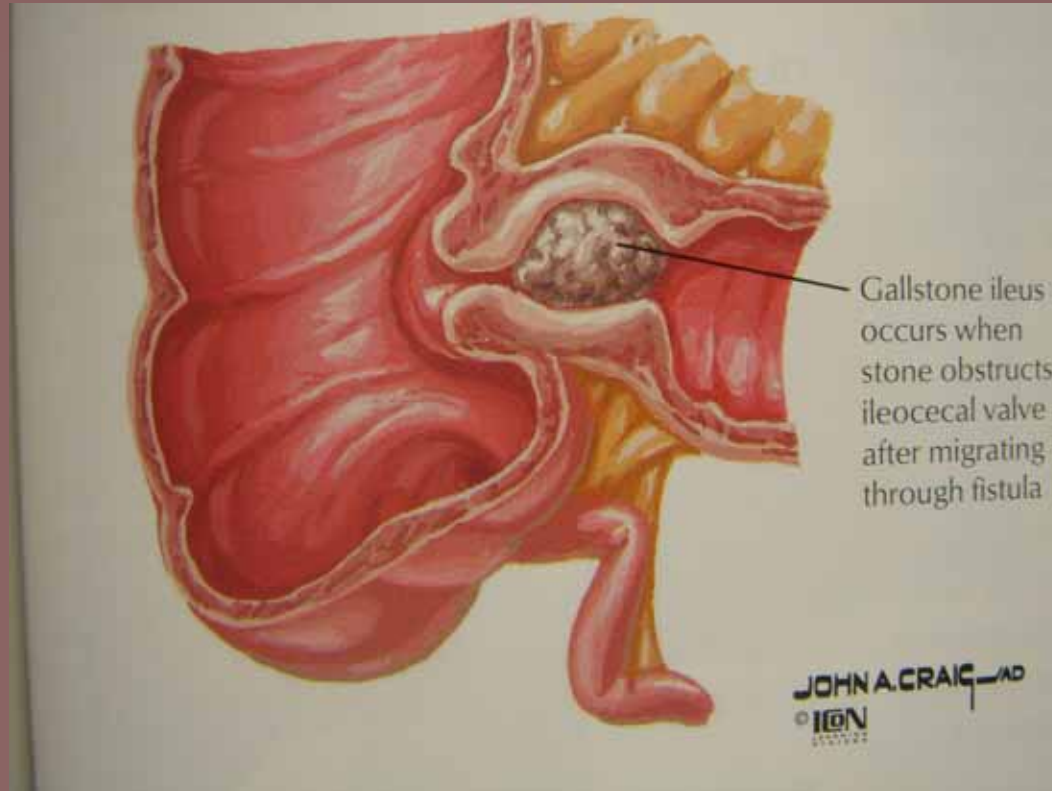
Complications of Acute Cholecystitis

- Choledocho-enteric fistula



Complications of Acute Cholecystitis

- Gall-stone ileus



Complications of Acute Cholecystitis

- Mirizzi syndrome

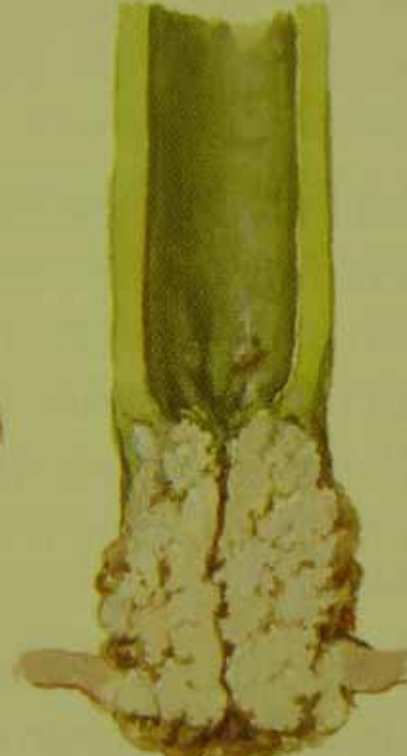


Biliary Obstruction

- Intraluminal
- Luminal
- Extraluminal



Extrinsic cancer
fixing and
compressing duct



Intrinsic
cancer



Impacted stone
with edema

Biliary Obstruction

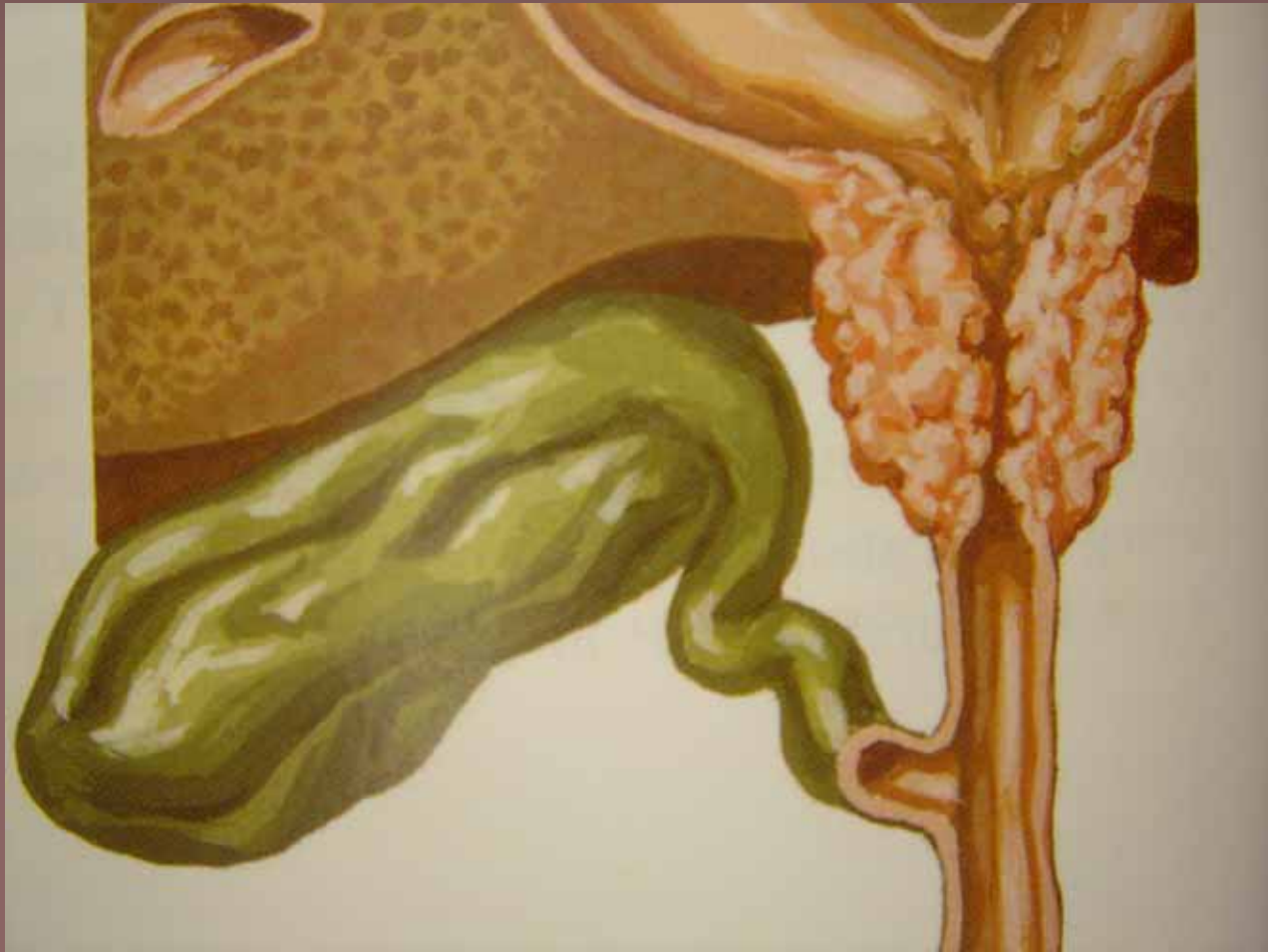
■ Choledocholithiasis

- Primary CBD stones
- Secondary CBD stones

Biliary Obstruction

■ CBD stricture

- Benign
- Malignant



Chronic cholecystitis

Gallstones

Obstruction (resulting symptoms may dominate)

Diagram illustrating the anatomy of the gallbladder and biliary ducts. The gallbladder is shown on the left, containing gallstones. The biliary ducts are shown on the right, with a label indicating obstruction. The diagram also shows the common ducts and the location of carcinoma involving the cystic ducts superimposed on chronic cholecystitis.

Chronic cholecystitis

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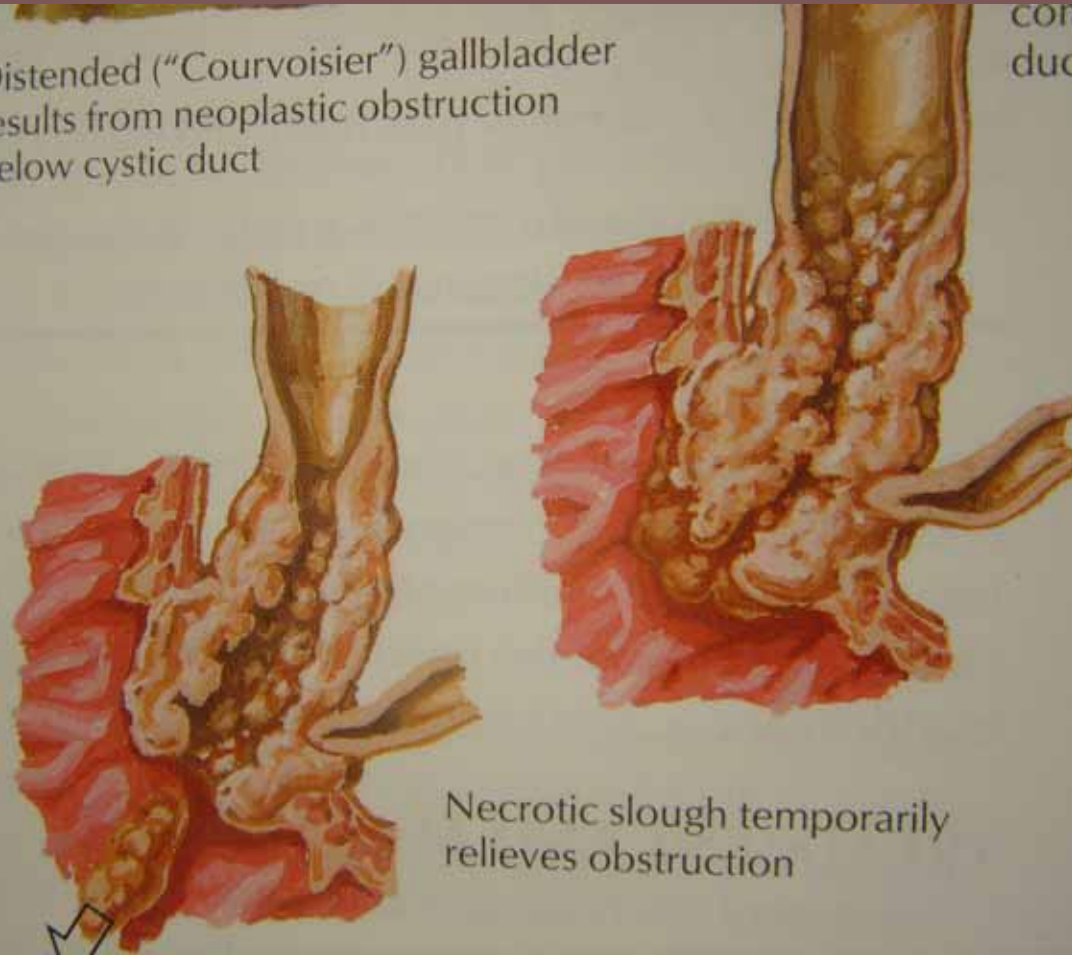
Chronic cholecystitis

Gallstones

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

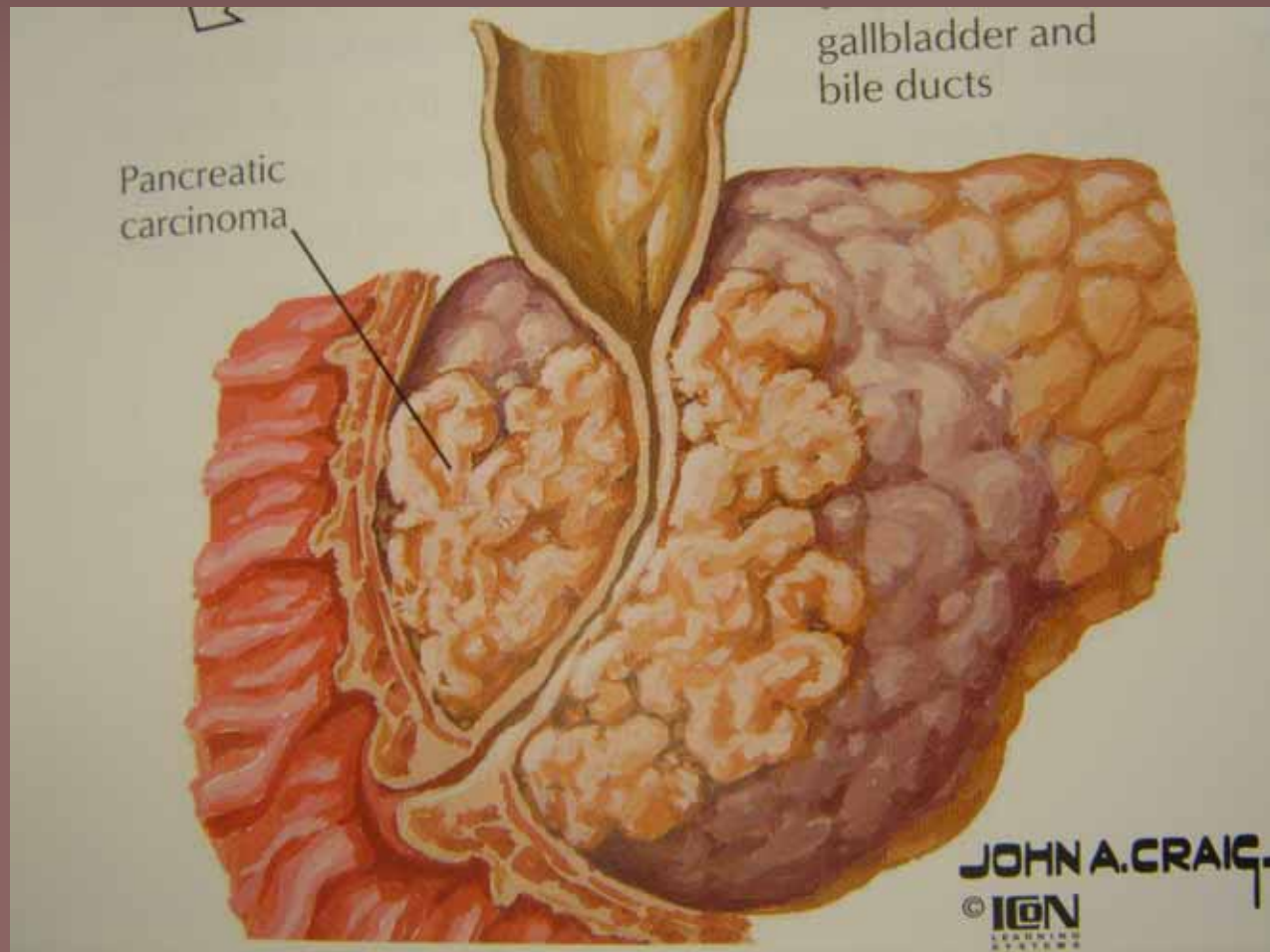


Necrotic slough temporarily
relieves obstruction

Biliary Obstruction

■ Extraluminal pathology

- Pancreas
- LNs
- Liver



Biliary Obstruction

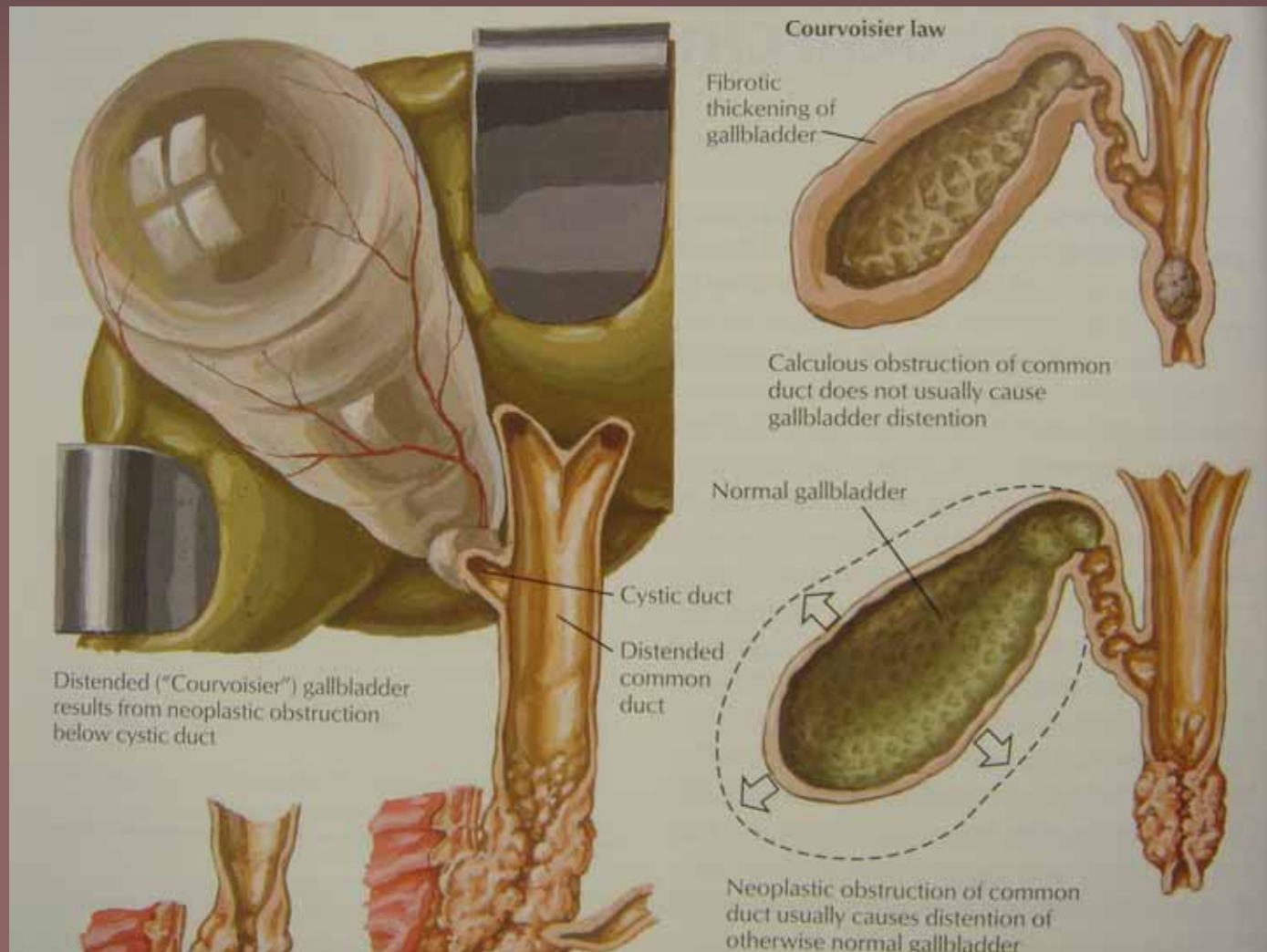
■ Presentation

- Jaundice
- Pain
- Weight loss
- Fever

Biliary Obstruction

■ Examination

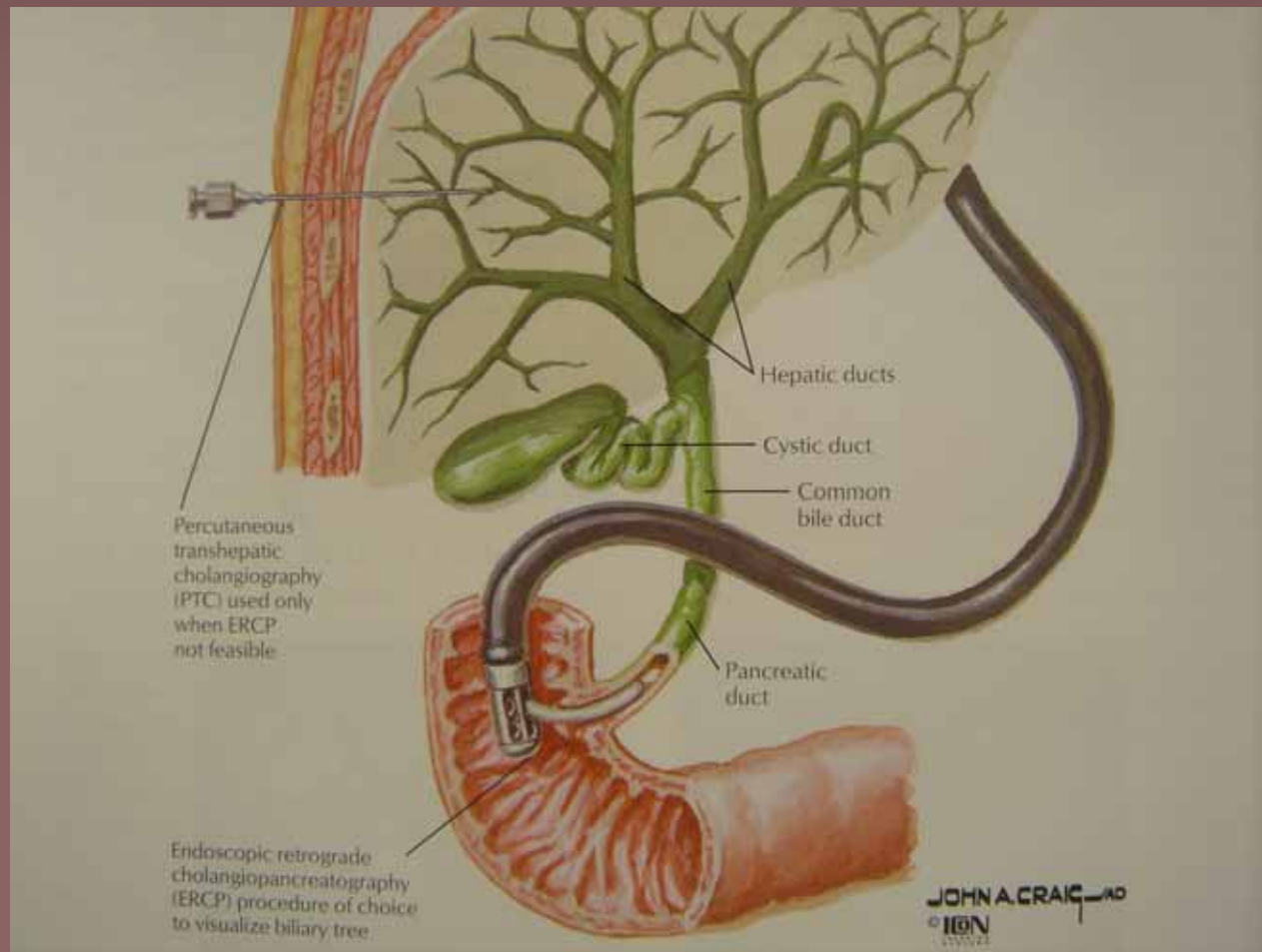
- Fever
- Septic shock
- Jaundice
- Cachexia
- Enlarged gall bladder



Biliary Obstruction

■ Investigations

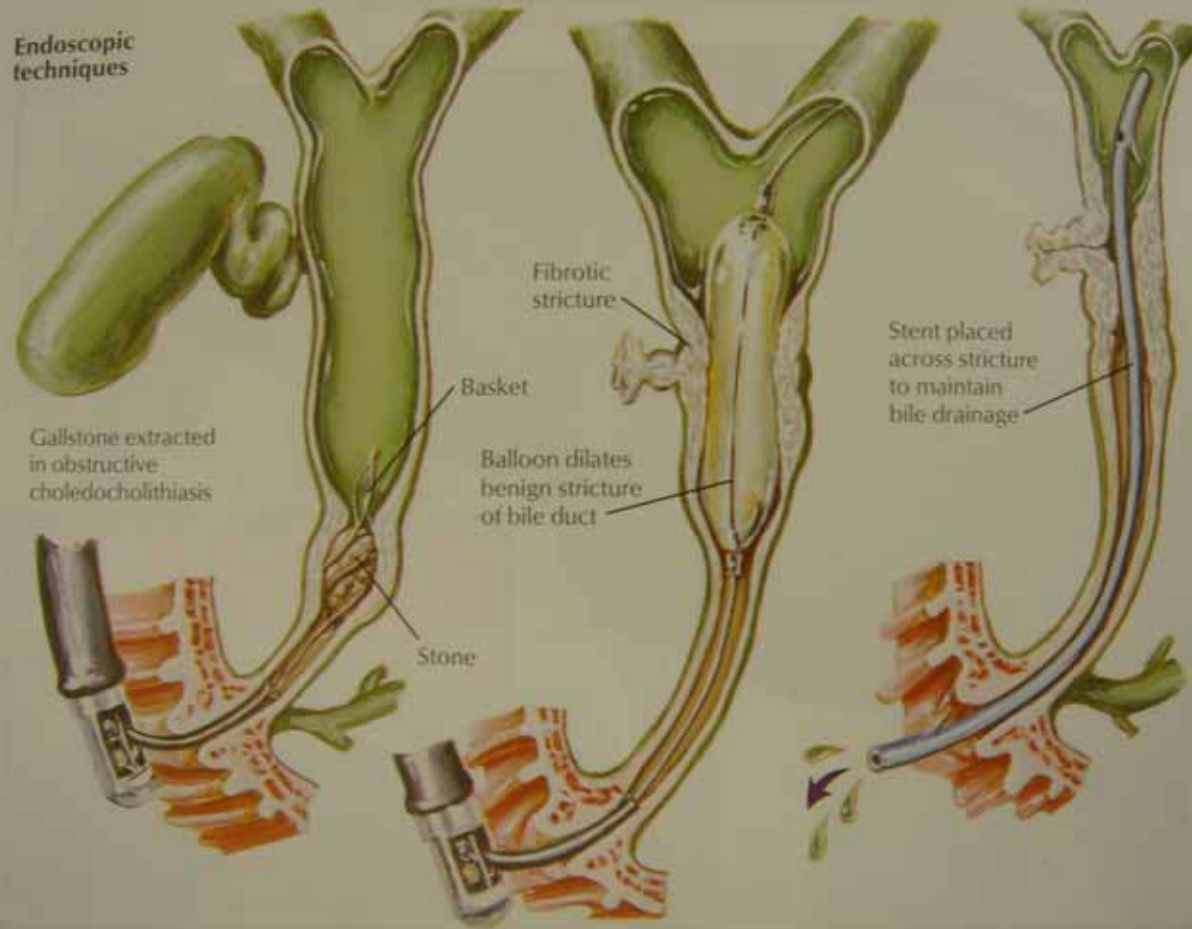
- CBC
- LFT
- PTT, INR
- US
- CT
- ERCP
- PTC

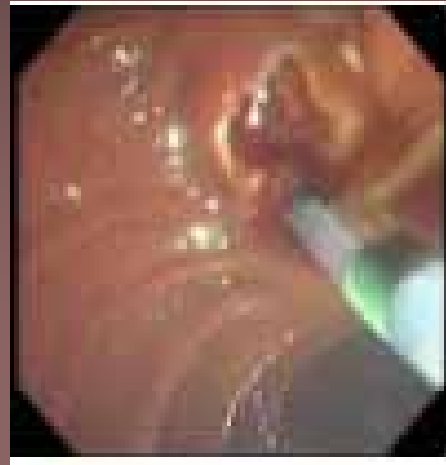




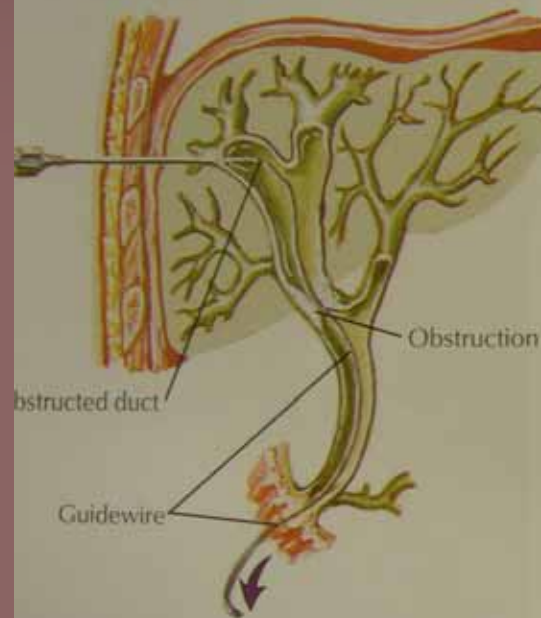


Endoscopic techniques





percutaneous (transhepatic) techniques



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

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



Percutaneous Transhepatic Cholangiogram

Area of Enlargement



Scan



Hepatic ducts

Liver

Contrast injected into biliary duct system

Narrowing of common bile duct

Duodenum

Pancreas

Stomach

