


DISORDERS OF THE GALLBLADDER

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- ▶ **Disorders of the gallbladder**
 - **Cholelithiasis**
 - **Cholecystitis**
 - **Tumors**

CHOLELITHIASIS

- **Common disease affecting 10-20% of adults**
- **>80% are asymptomatic**
- **Two main types of gall stones:**
 - **1) Cholesterol stones (80% in west)**
 - **2) Bilirubin calcium salts (pigment) stones**
- **Pathogenesis:**
 - **1) bile supersaturation with cholesterol**
 - **2) nucleation: promoted by gallbladder hypomotility (stasis)**
 - **3) Cholesterol crystals remaining long enough to aggregate**

Appearance

- **Cholesterol stones:** exclusively in GB, single or multiple, multi-faceted, most are radiolucent
 - Pure: pale yellow
 - Mixed: gray white to black, containing calcium carbonate, phosphates & bilirubin
- **Pigment stones:** anywhere in biliary tree, contain calcium salts of unconjugated bilirubin (calcium bilirubinate), mucin glycoproteins & cholesterol
 - Black: in sterile GB bile, small, numerous, friable, 50-75% are radioopaque
 - Brown in infected bile ducts, single or few, soft & greasy, radiolucent

Cholesterol gallstones



Pigmented gallstones



RISK FACTORS OF CHOLELITHIASIS

- ▶ Affects 80% of people
- ▶ No identifiable risk factors other than age and gender
- ▶ **Risk factors for cholesterol stones**
 - Age: elderly > young adults
 - Gender: females (2:1)
 - Oral contraceptives (OCPs), pregnancy
 - Demography: Western World;
 - Gallbladder stasis
 - Family history.
 - Inborn disorders of bile acid metabolism
 - Obesity
 - Hyperlipidemia
 - Rapid weight loss
 - Treatment with the hypocholesterolemic

▶ **Risk factors for pigment stones**

- ▶ Demography: Asians, rural areas
- ▶ Chronic hemolytic syndromes
- ▶ Biliary infection
- ▶ Gastrointestinal disorders:
 - ▶ Ileal disease, e.g. Crohn's disease
 - ▶ Ileal resection or bypass
 - ▶ Cystic fibrosis with pancreatic insufficiency

CLINICAL FEATURES OF CHOLELITHIASIS

▶ Clinical presentation:

- 70-80% are asymptomatic
- Biliary pain, constant or colicky from an obstructed gallbladder or biliary tree
- Associated with inflammation of gallbladder

▶ Complications:

- Empyema
- Perforation
- Fistulae
- Inflammation of biliary tree
- Obstructive cholestasis (jaundice)
- Pancreatitis
- Intestinal obstruction (“gallstone ileus”)

CHOLECYSTITIS

- Inflammation of the gallbladder
- **Almost always associated with gallstones**
- One of the most common indications for abdominal surgery
- Epidemiologic distribution similar to cholelithiasis
- Classification:
 - Acute calculous
 - Acute acalculous
 - Chronic
 - Acute on top of chronic

TYPES OF ACUTE CHOLECYSTITIS

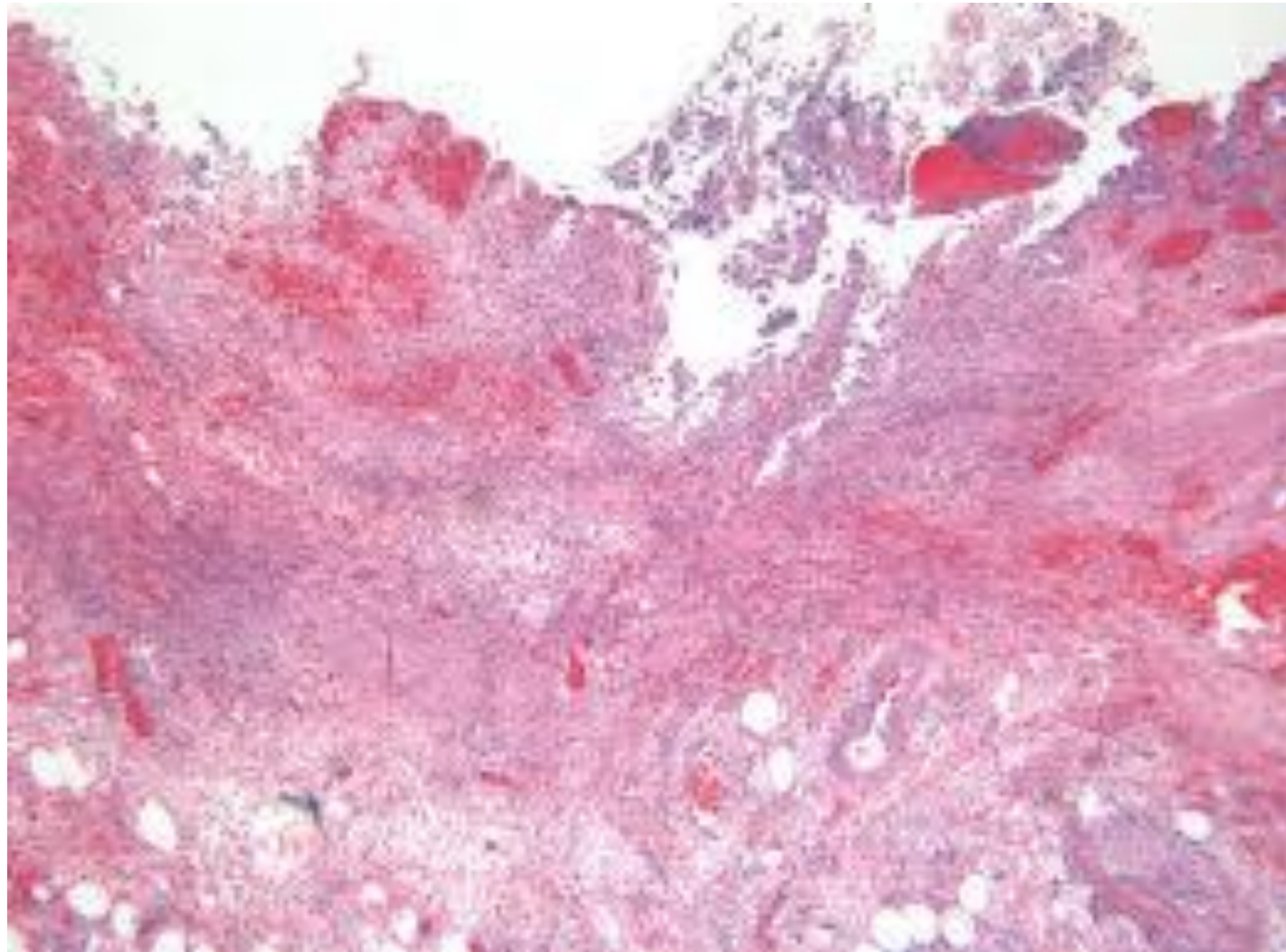
- **Acute calculous cholecystitis:** caused by obstruction of GB neck or cystic duct by stones
 - Chemical irritation & inflammation of GB wall
 - Blood flow compromise due to GB distension & pressure
 - Symptoms may be mild or sudden & severe
 - Most common reason for emergency cholecystectomy.
 - Mostly in absence of bacterial infection.
- **Acute acalculous cholecystitis:** 5-12% of cases
 - Seen in 1) post-operative states, 2) severe trauma, 3) severe burns, 4) sepsis & 5) postpartum
 - Factors: 1) dehydration, 2) GB stasis & sludging, 3) vascular compromise, 5) bacterial contamination

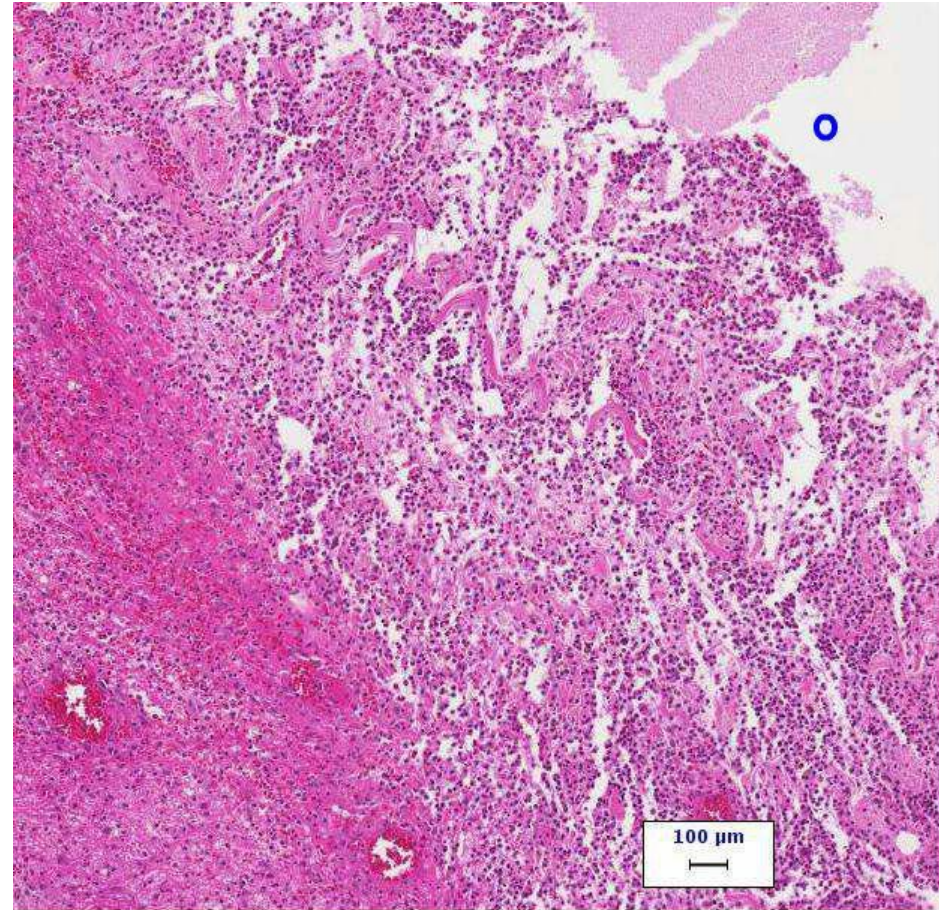


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PATHOLOGY OF ACUTE CHOLECYSTITIS

- Enlarged (2-3x), tense GB with discolorations due to subserosal hemorrhages.
- Serosal fibrinous or suppurative exudate
- Stones obstructing GB neck or cystic duct in 90%
- GB lumen filled with turbid bile, +/- fibrin, hemorrhage & pus
- Empyema of gallbladder: full of pus
- Thickened edematous hyperemic wall
- Gangrenous cholecystitis: black necrotic GB
- Histology: edema, WBC infiltration, congestion, abscess, hemorrhage & necrosis





100 μm

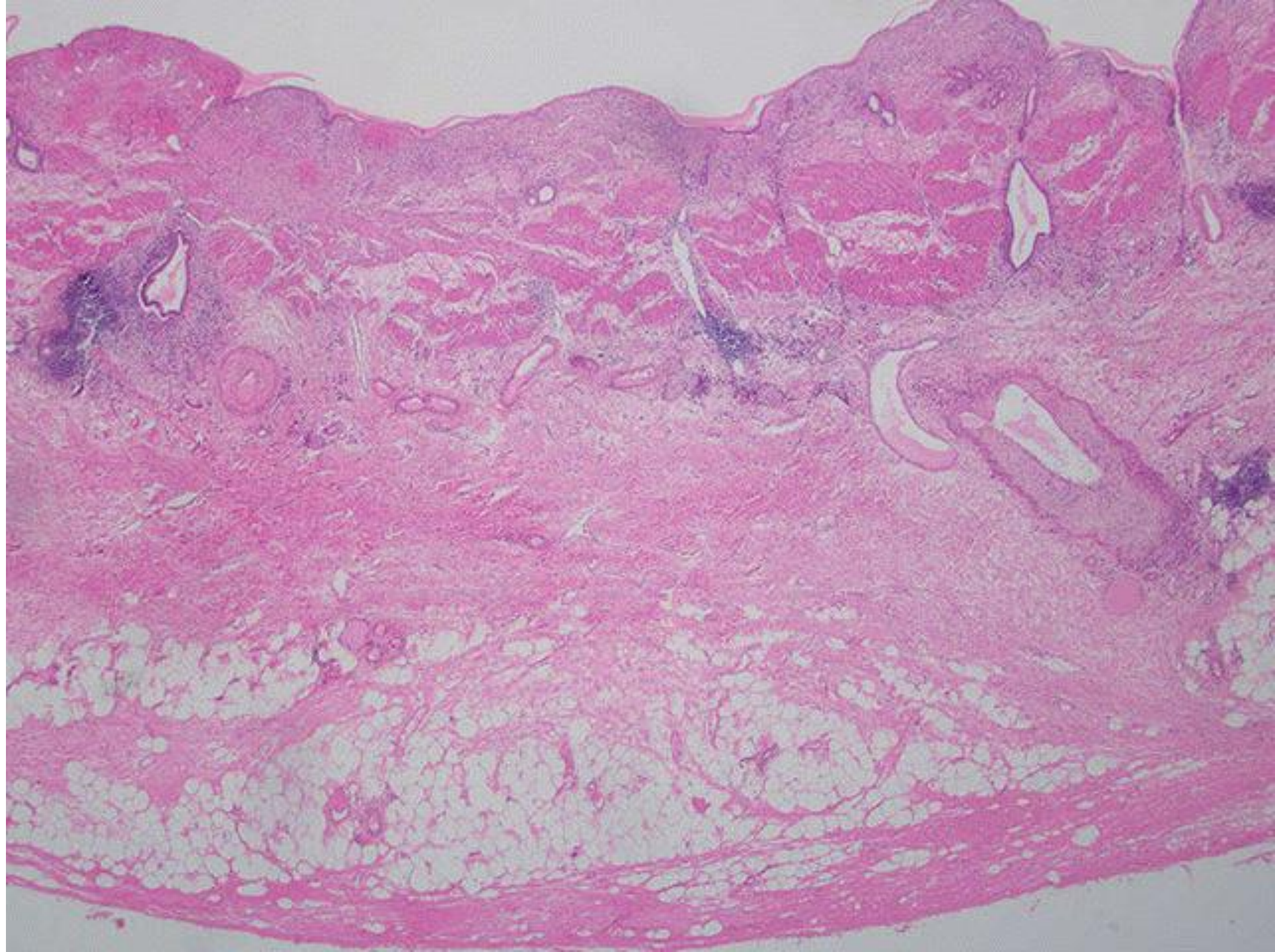
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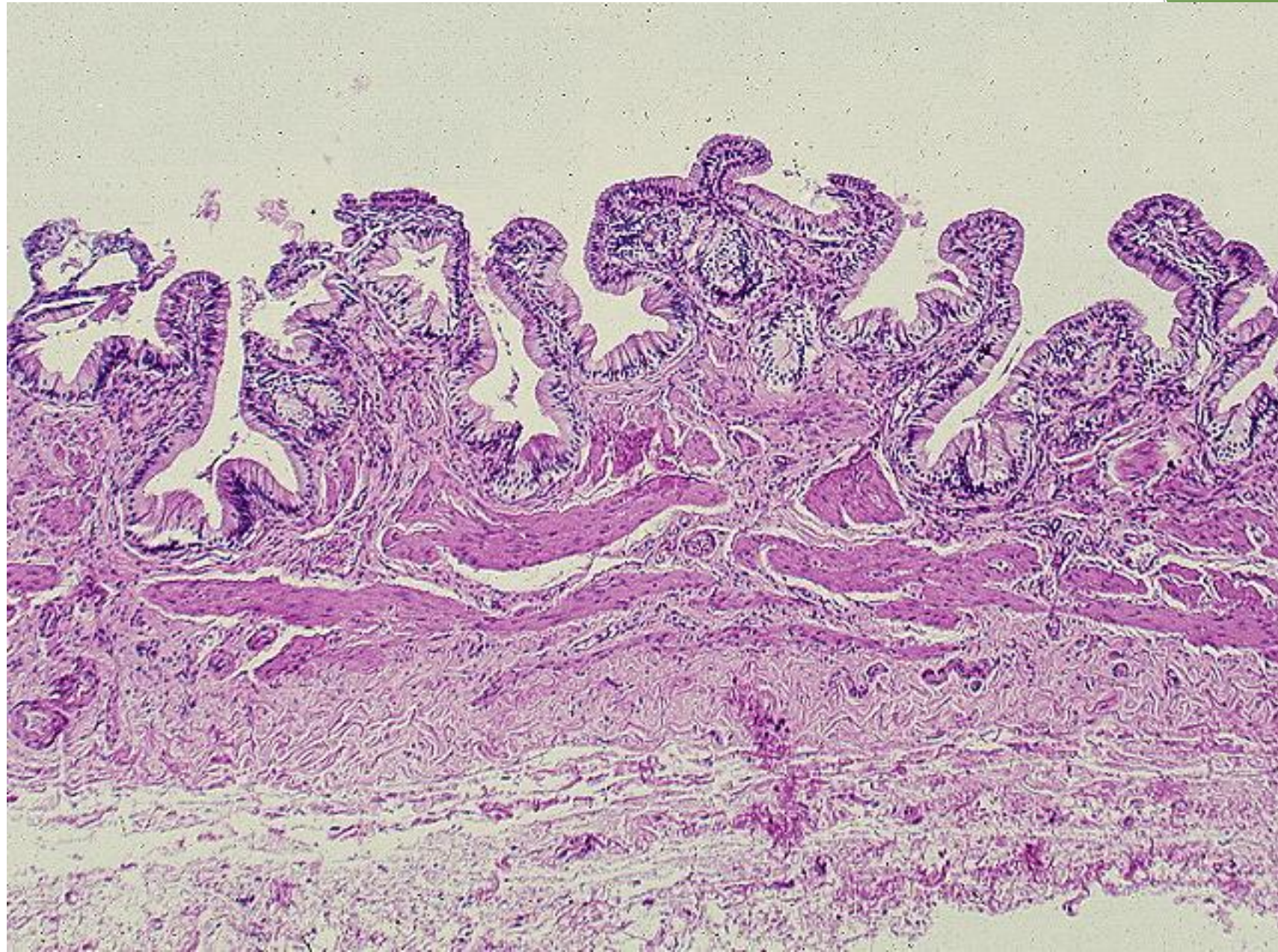
CHRONIC CHOLECYSTITIS

- ▶ +/- history of acute cholecystitis
- ▶ Gallstones almost always present,
- ▶ Supersaturation of bile predisposes to chronic inflammation & stone formation, NOT the obstruction.
- ▶ Variable morphologic appearance: minimal changes, contraction, enlargement, mucosal ulceration or wall thickening
- ▶ Histology: Mucosal ulcerations are infrequent; the submucosa and subserosa often are thickened from fibrosis, lymphocytes may be only clue of inflammation.



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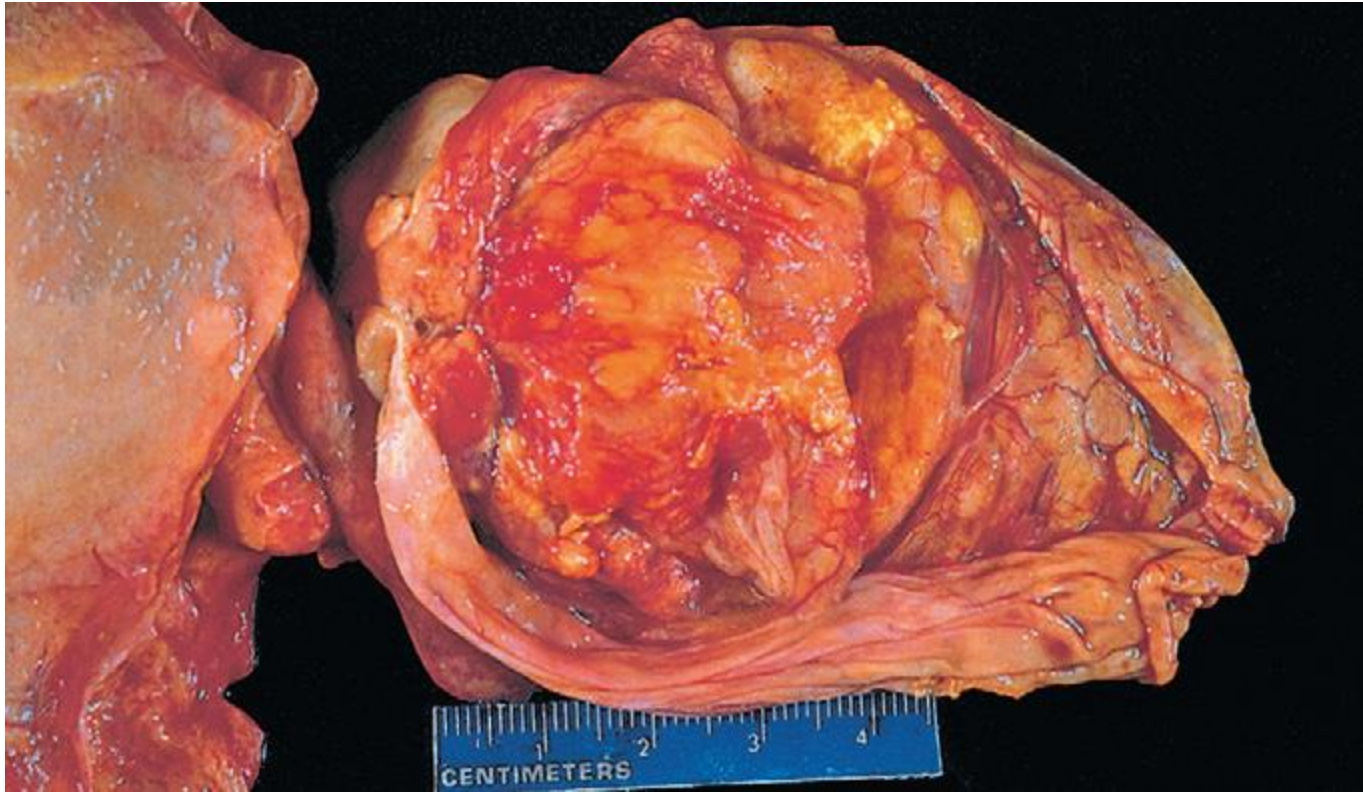
CLINICAL FEATURES OF CHOLECYSTITIS

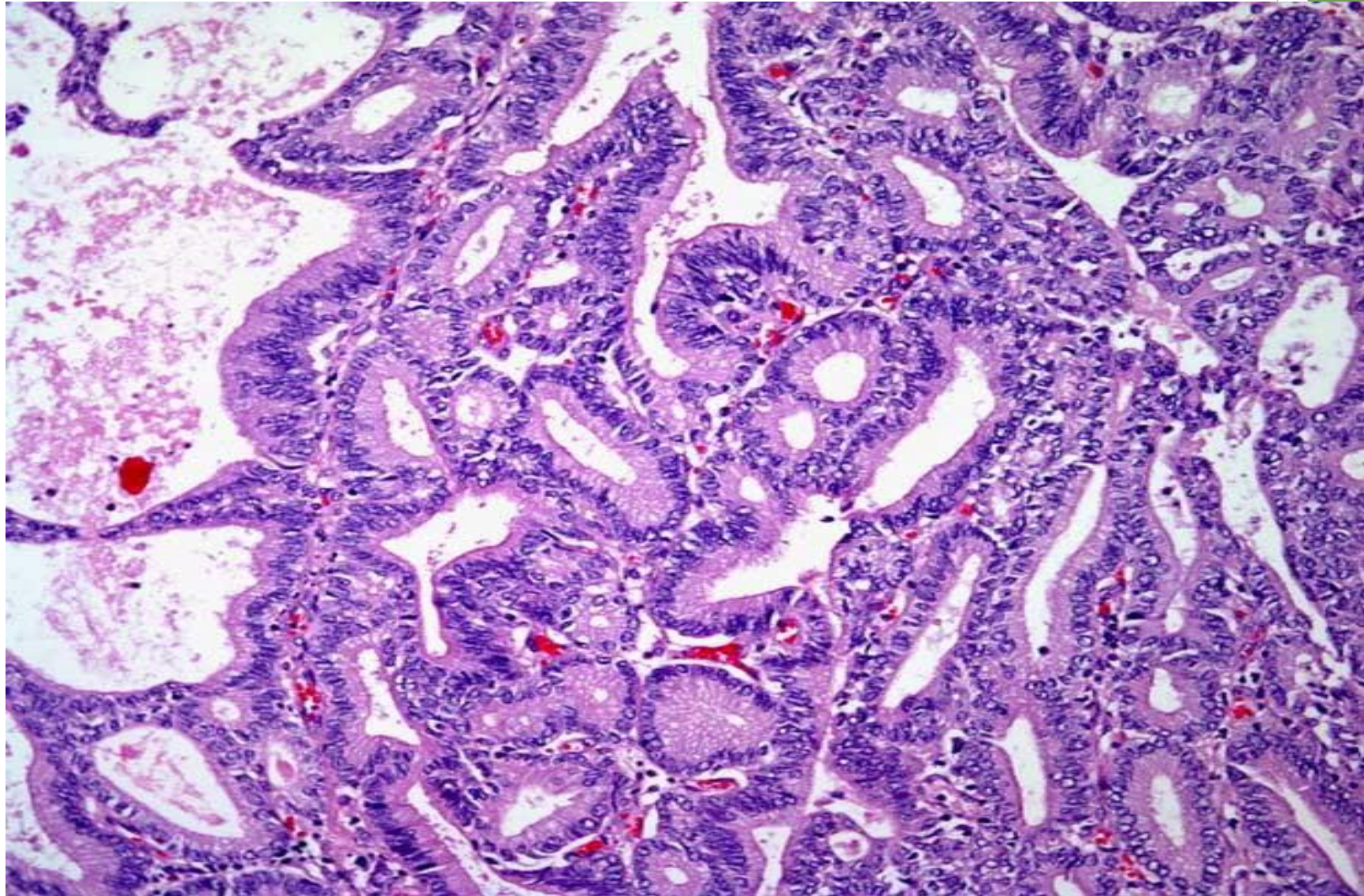
- Acute & chronic calculous cholecystitis have similar & variable symptoms: minimal nonspecific symptoms to biliary colics to severe RUQ pain
- Fever, nausea, leukocytosis.
- Acute acalculous cholecystitis: symptoms obscured by general condition
- **Dx: Ultrasonography**
- **Complications:** cholangitis, sepsis, GB perforation, abscess, rupture, cholecyst-enteric fistula, intestinal ileus, ...

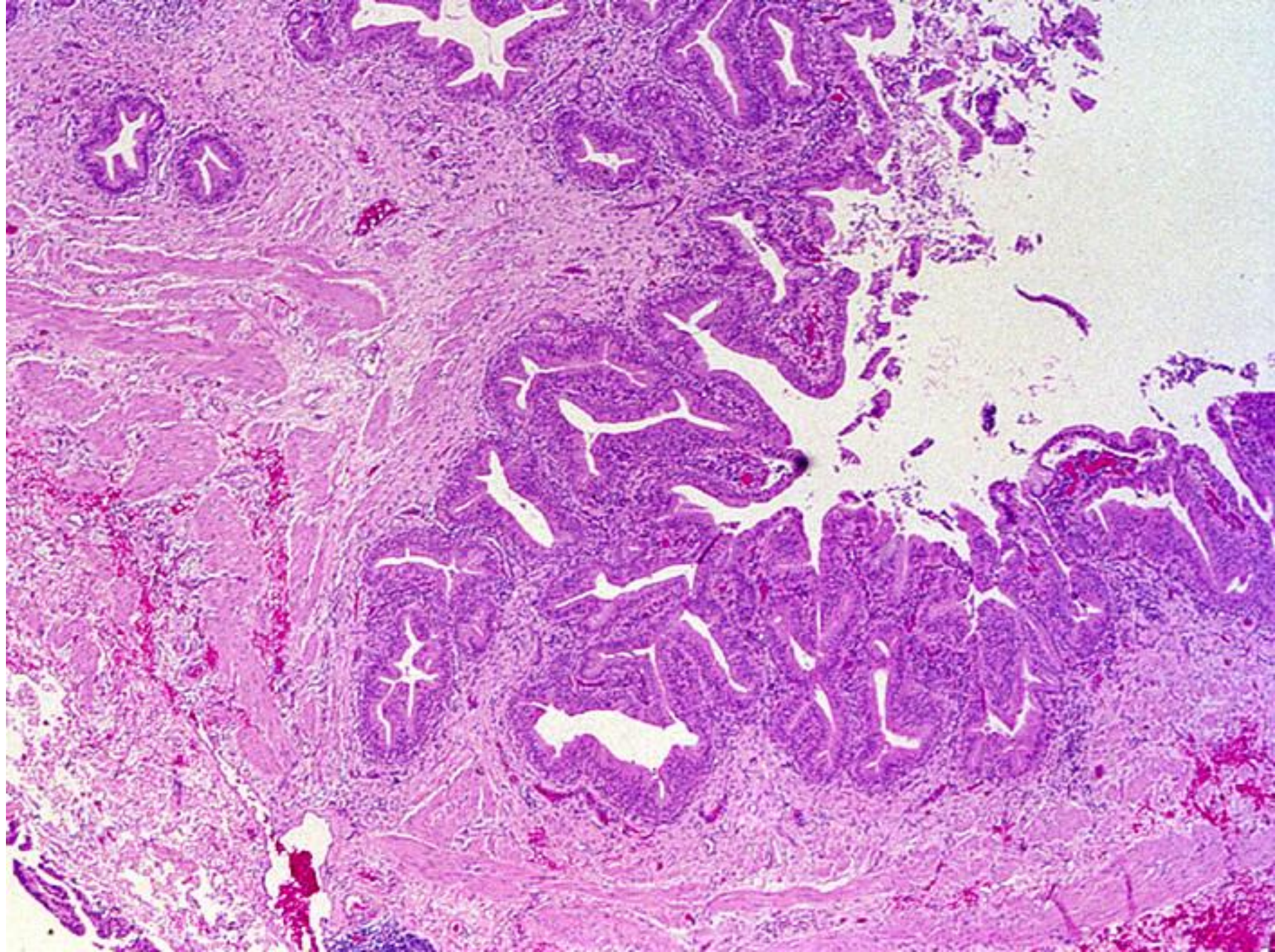
TUMORS OF THE GALLBLADDER

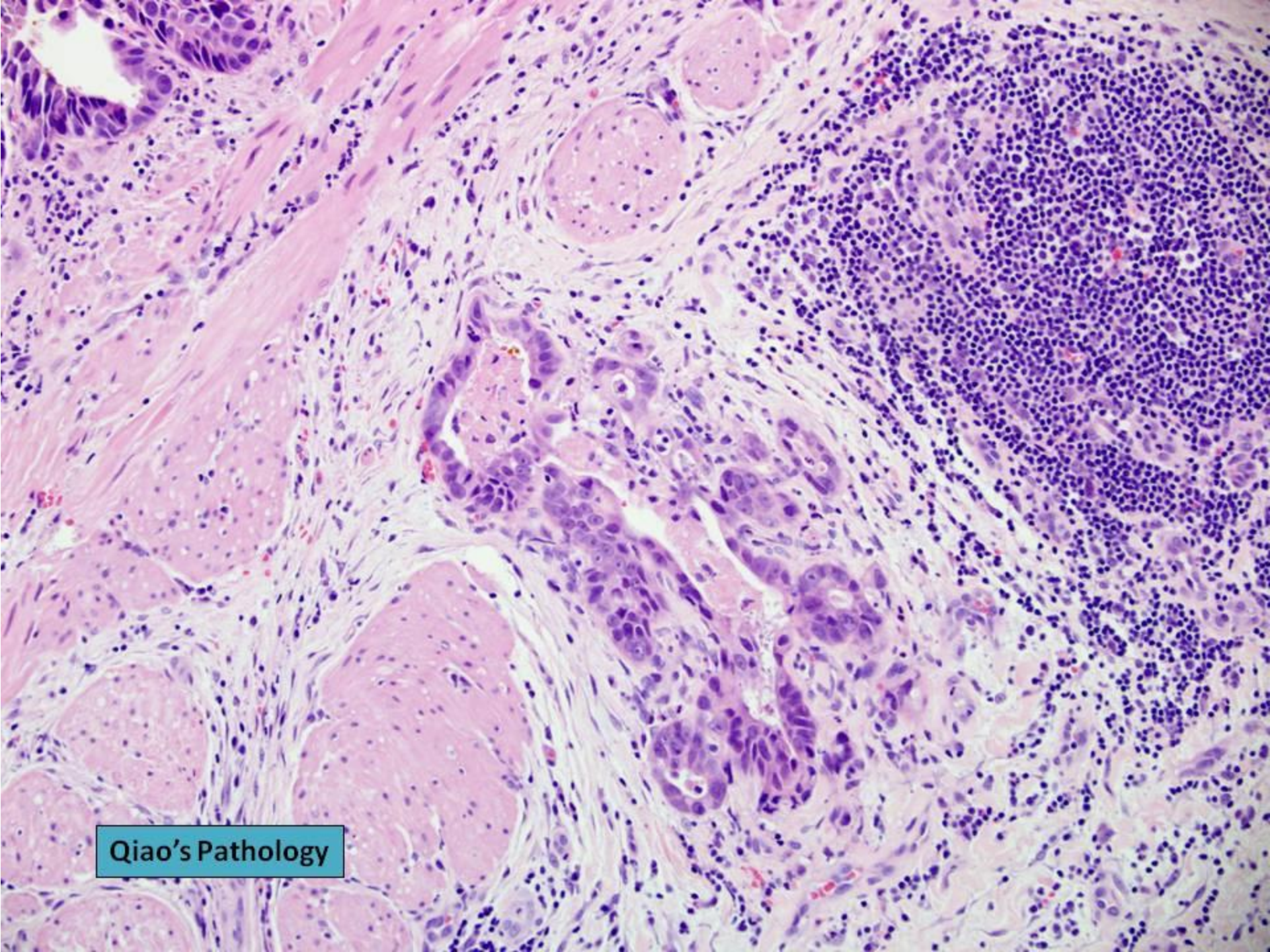
GALLBLADDER CARCINOMA

- Commonest extrahepatic biliary tract cancer
 - More common in women; peak 7th decade
 - Due to recurrent trauma and inflammation: usually associated with stones;
 - Morphology: Infiltrating or fungating growth pattern
 - Most are adenocarcinoma.
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- Insidious symptoms similar to cholelithiasis
 - If obstruction develops early: early diagnosis and treatment.
 - Advance stage at diagnosis (late)
 - Seeding to peritoneum, GIT, and lungs
 - **Prognosis: dismal, 5 year survival: 1%**









Qiao's Pathology

