DISORDERS OF THE GALLBLADDER

- **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

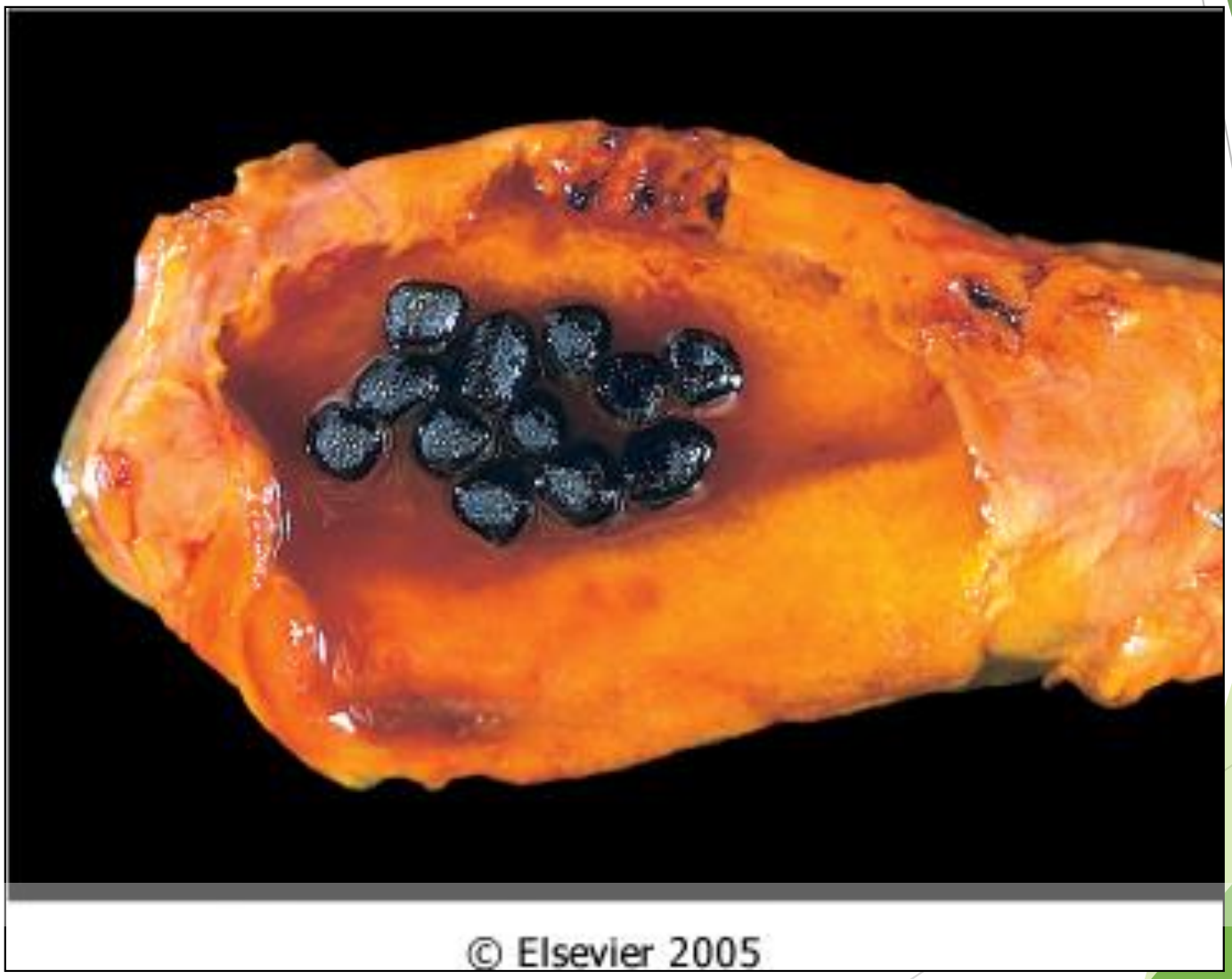
- Pathogenesis:
  - 1) bile supersaturation with cholesterol
  - 2) nucleation: promoted by gallbladder hypomotility (stasis)
  - 3) Cholesterol crystals remaining long enough to aggregate

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

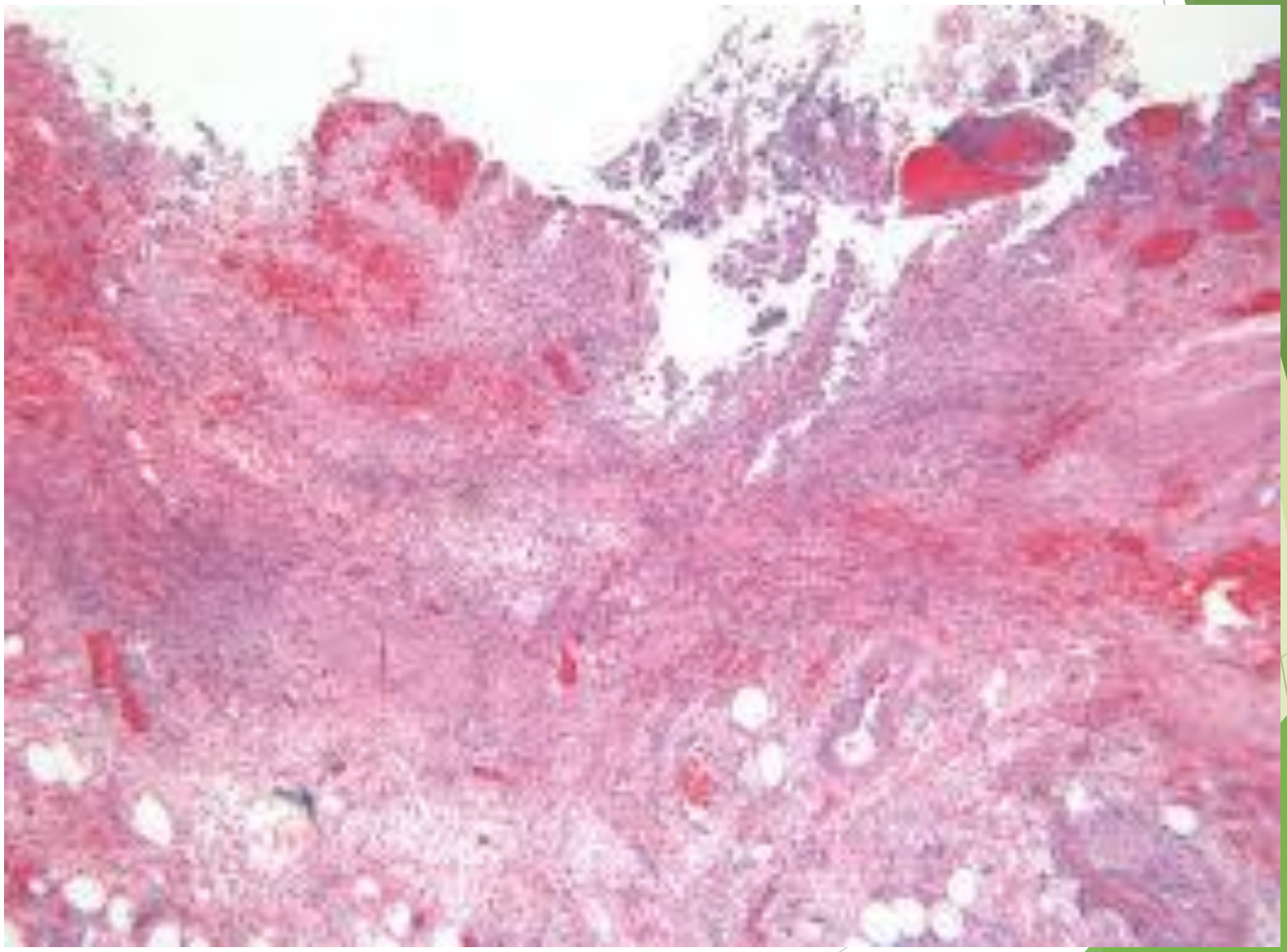
TYPES OF ACUTE CHOLECYSTITIS

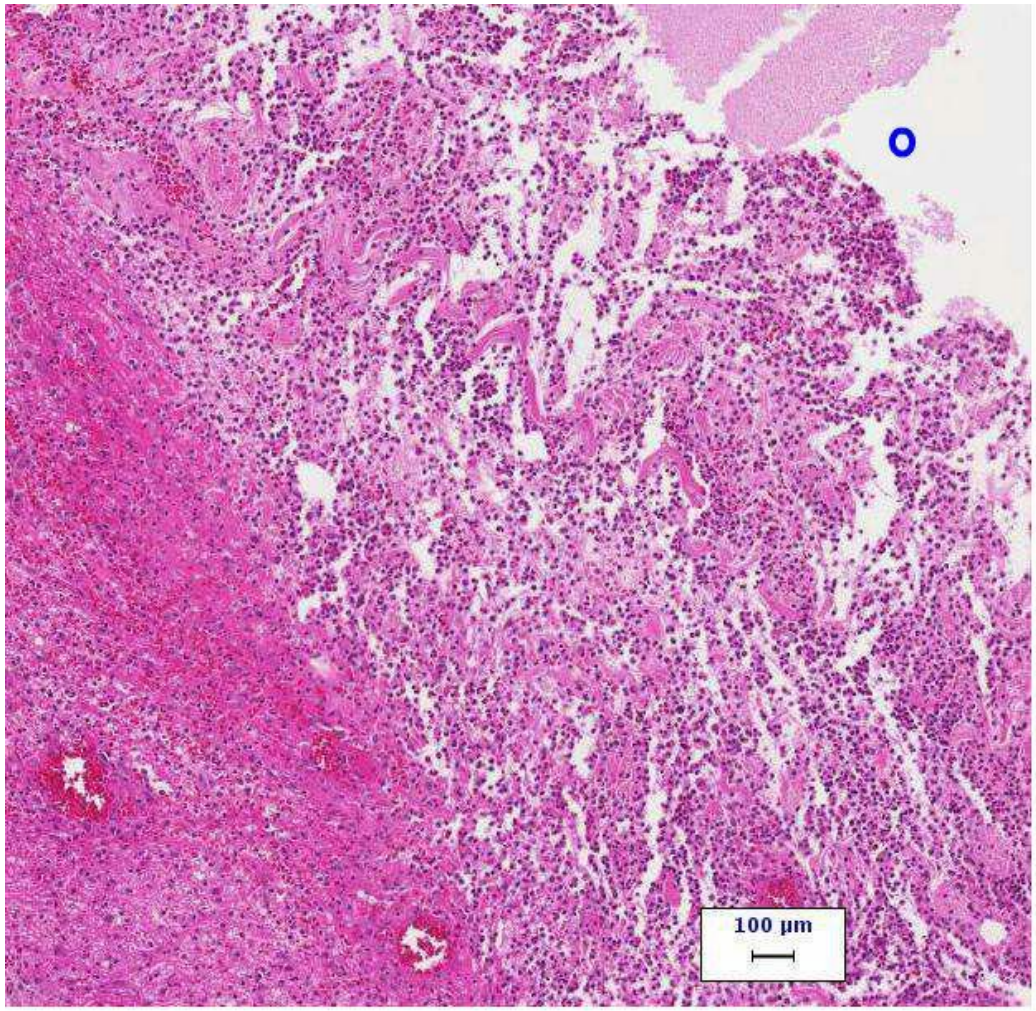
- **Acute calculous cholecystitis:** caused by obstruction of GB neck or cystic duct by stones
  - Chemical irritation & inflammation of GB wall
    - Blood flow compromise due to GB distension & pressure
  - Symptoms may be mild or sudden & severe
- Most common reason for emergency cholecystectomy.
- 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

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

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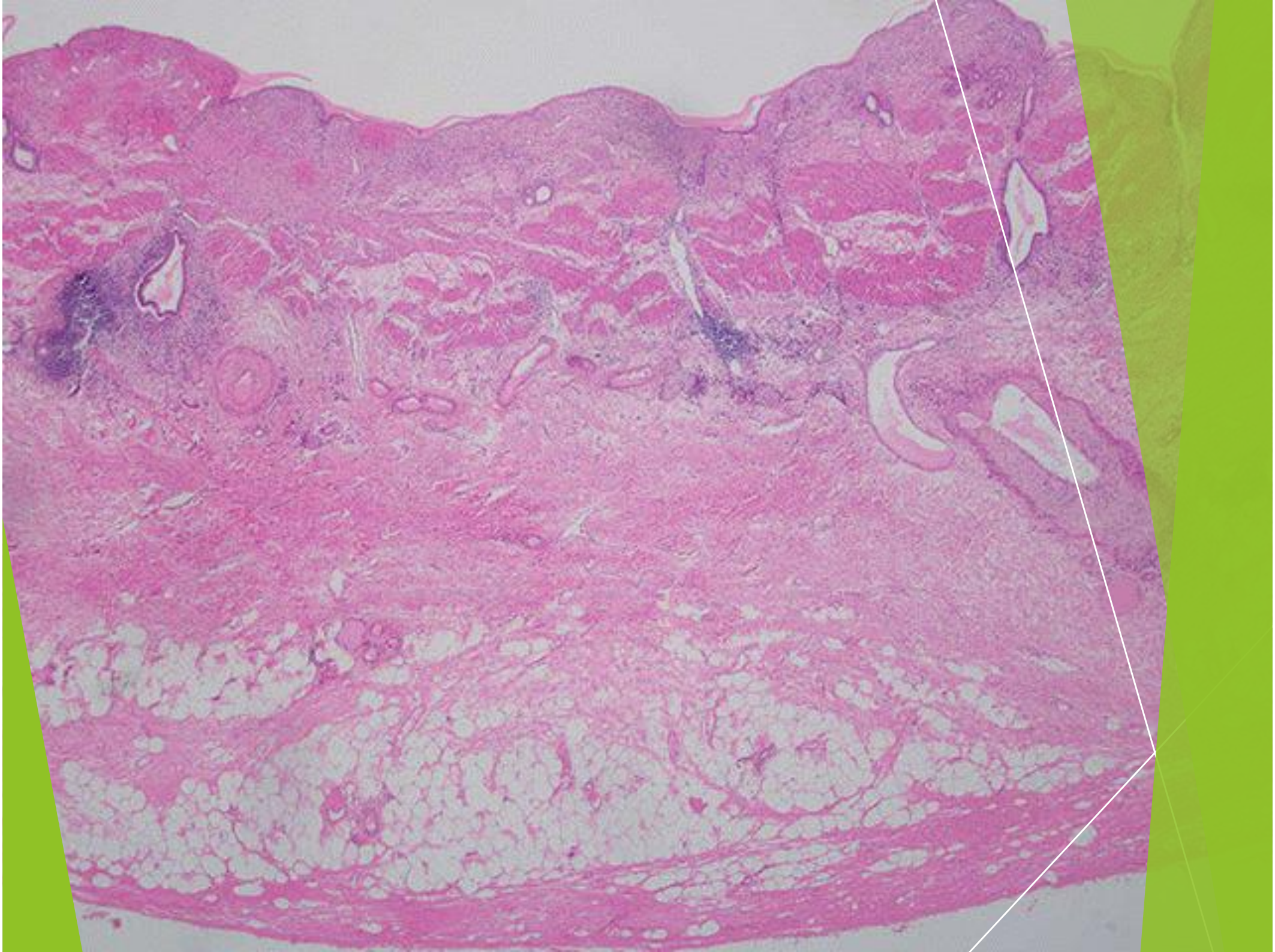
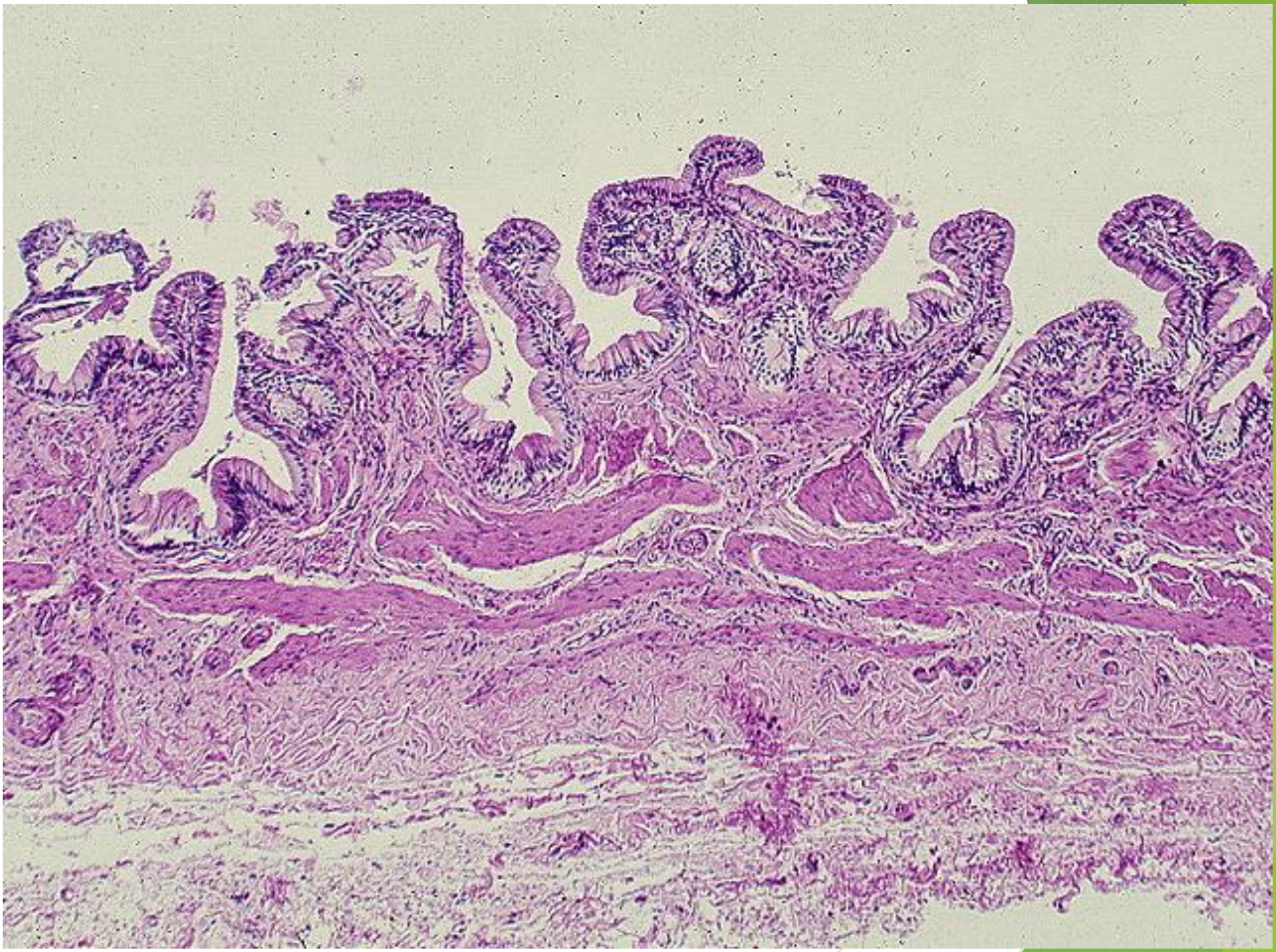
CHRONIC CHOLECYSTITIS

- +/- 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, enlargment, mucosal ulceration or wall thickeninig

- Histology: Mucosal ulcerations are infrequent; the submucosa and subserosa often are thickened from fibrosis, lymphocytes may be only clue of inflammation.





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.

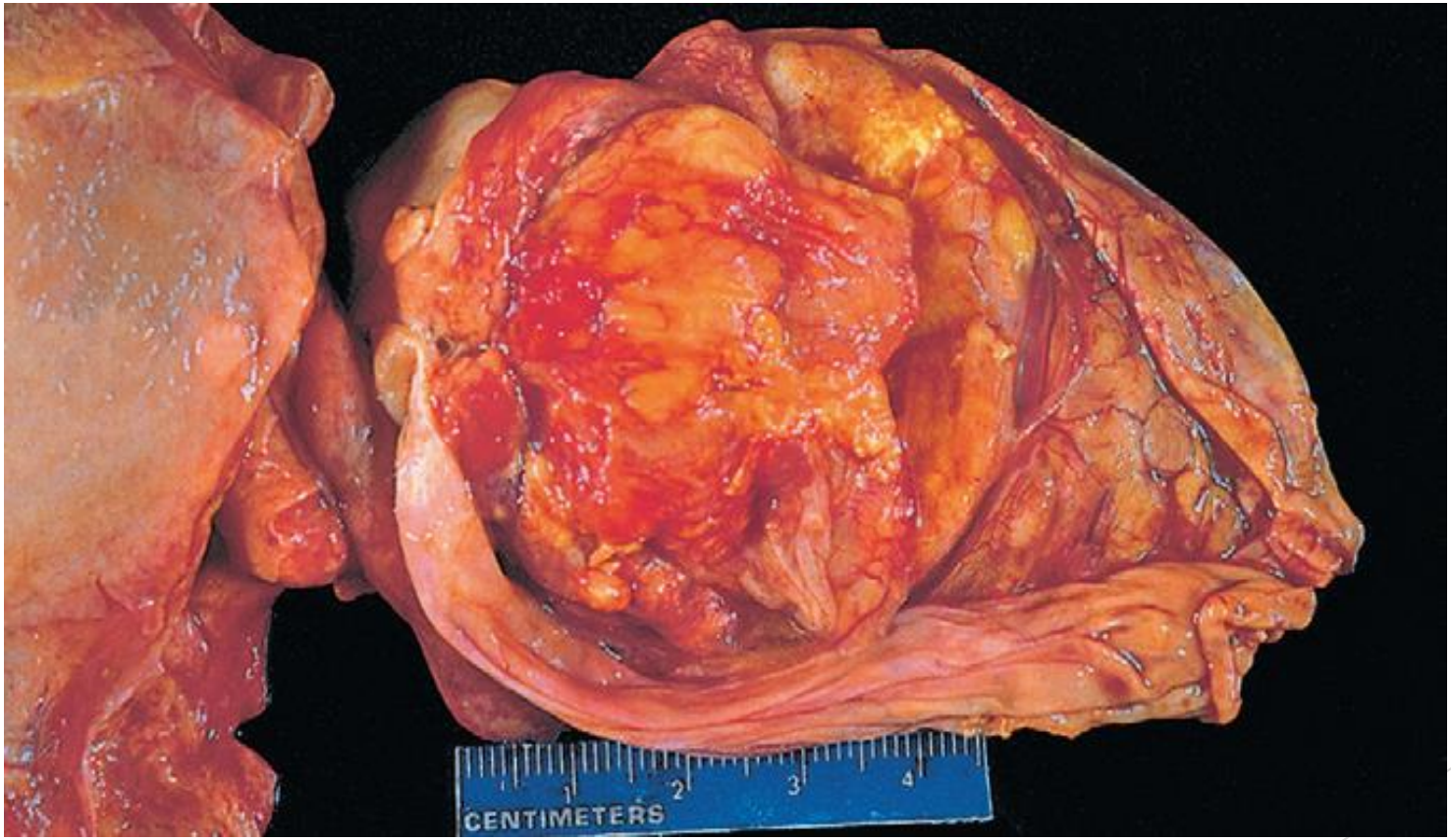
- Acute acalculous cholecystitis: symptoms obscured by general condition
- **Dx: Ultrasonography**

- **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.

- 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%**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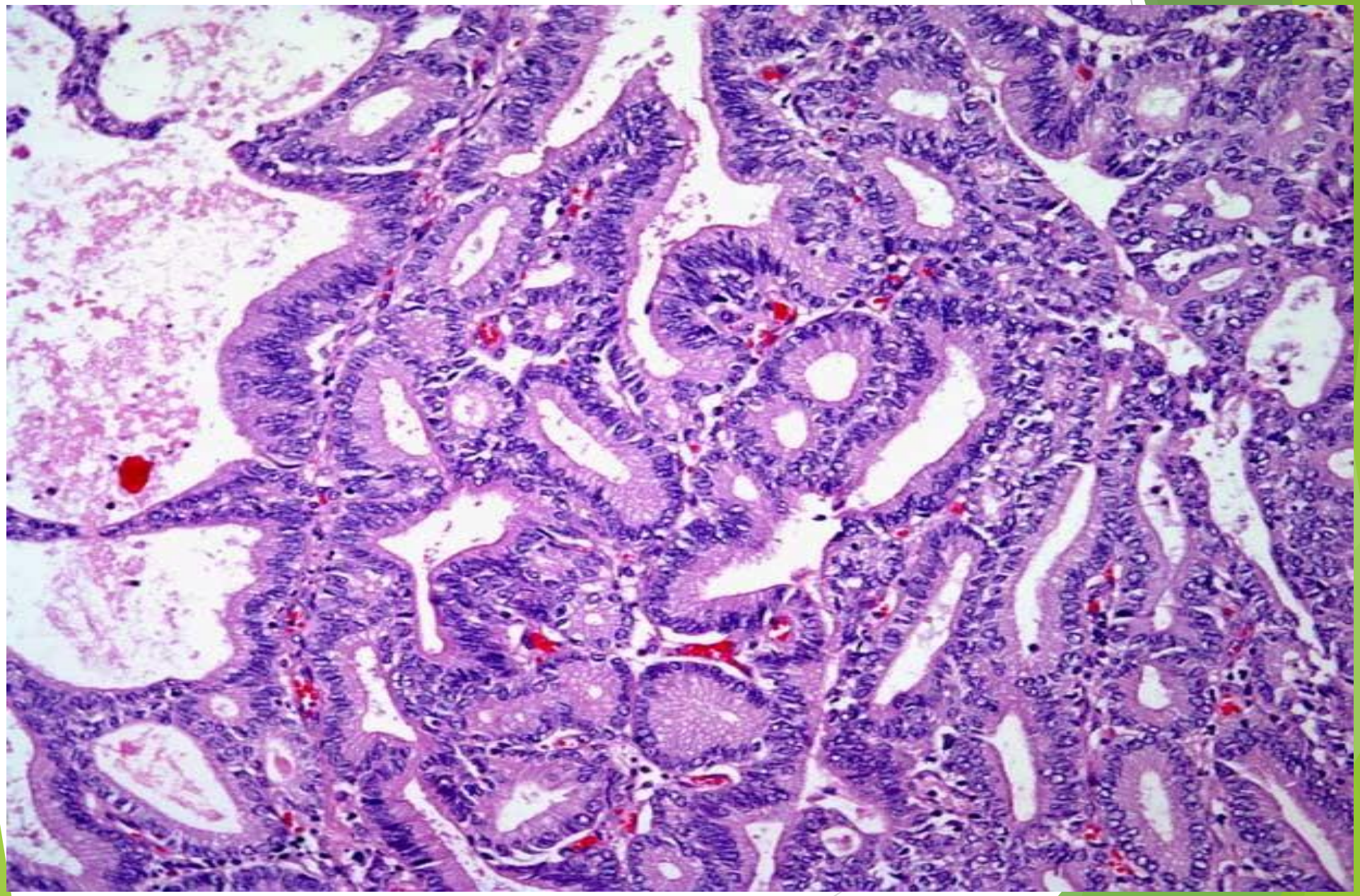
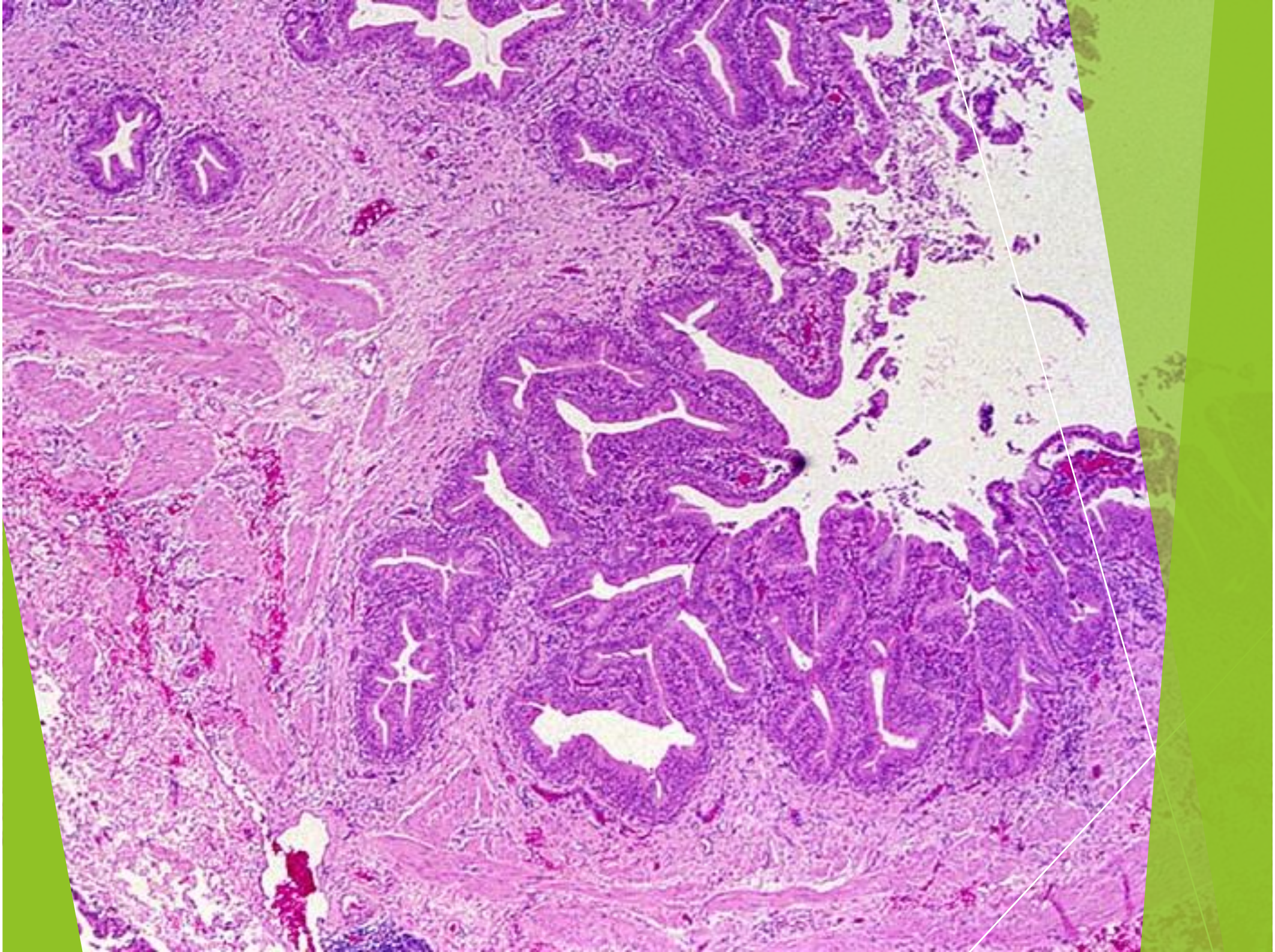
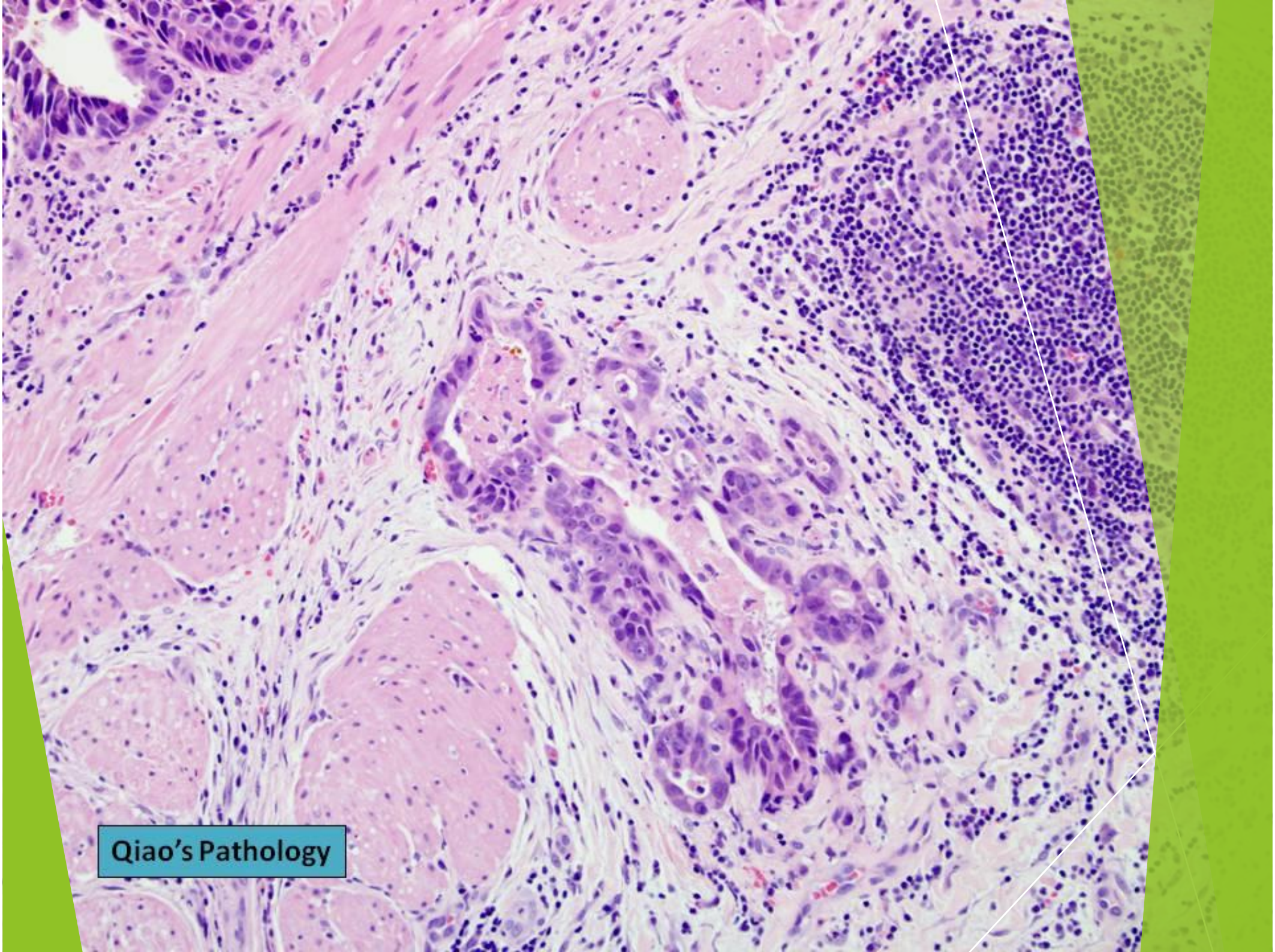
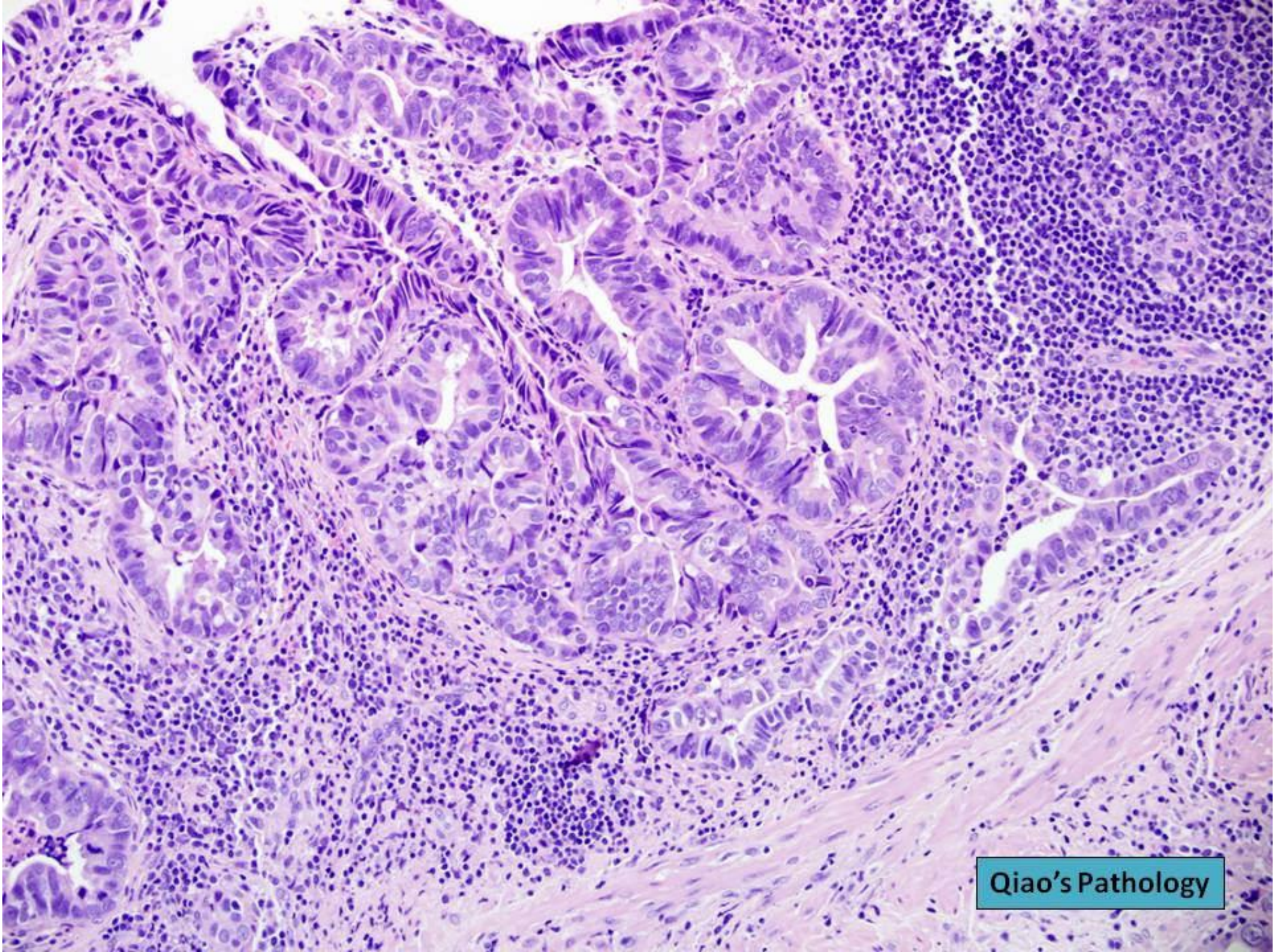





Qiao's Pathology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