

# Intestinal pathology, part 2

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# Diseases of the intestines

- ▶ Intestinal obstruction
- ▶ Vascular disorders
- ▶ Malabsorptive diseases and infections
- ▶ **Inflammatory intestinal disease.**
- ▶ Polyps and neoplastic diseases

# INFLAMMATORY INTESTINAL DISEASE

- ▶ **Sigmoid Diverticulitis**
- ▶ **Chronic Inflammatory bowel diseases (CIBD)**
  - Crohn disease
  - Ulcerative colitis

# Sigmoid Diverticulitis

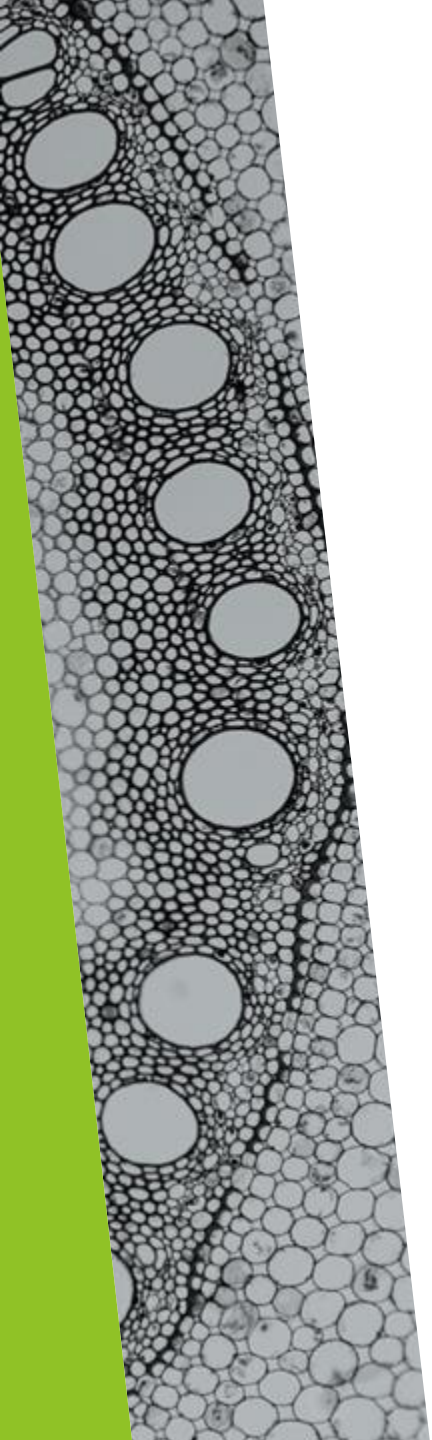
Acquired  
Pseudodiverticula

Rare <30 years,  
common >60  
years.

Multiple  
(diverticulosis)

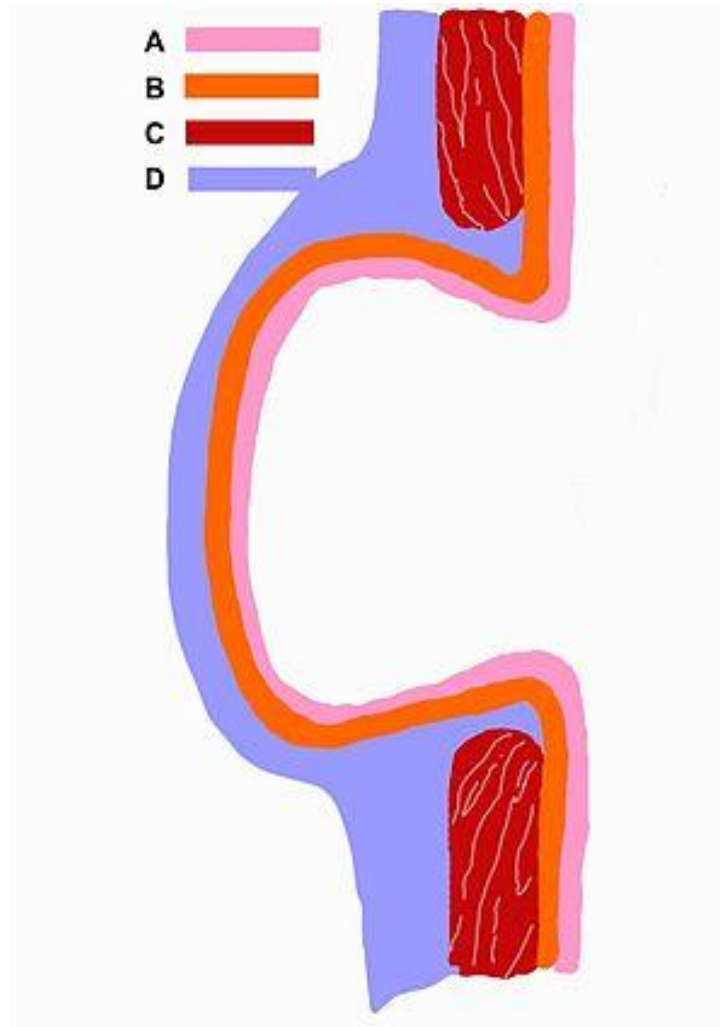
# Pathogenesis:

- ▶ **Elevated intraluminal pressure.**
- ▶ Unique location (discontinuous muscle layer at points of nerve and vessels entry).
- ▶ Longitudinal muscle layer is discontinuous in colon (taeniae coli)
- ▶ Area of weakness: outward herniation of mucosa and submucosa .
- ▶ Most common in sigmoid (narrowest part)
- ▶ Exaggerated peristaltic contractions.
- ▶ Low fiber diet, constipation, sedentary lifestyle, obesity, and smoking.

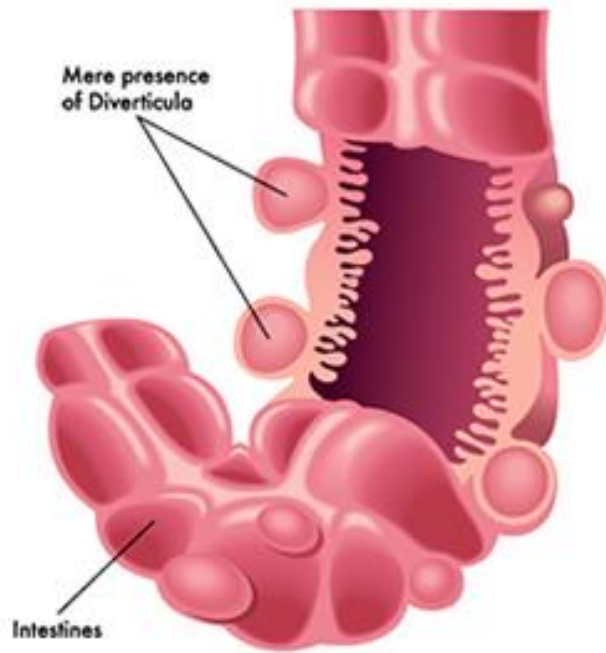


# MORPHOLOGY

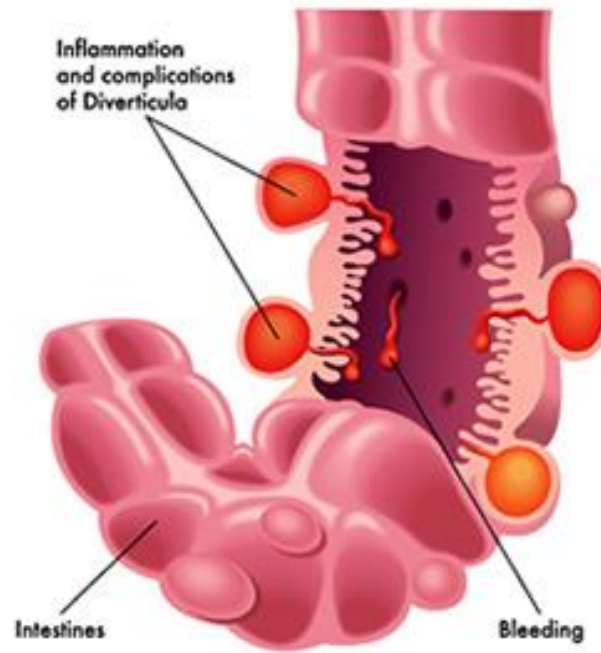
- ▶ Flasklike outpouchings
- ▶ Between taeniae coli.
- ▶ Thin wall (atrophic mucosa, compressed submucosa)
- ▶ Attenuated or absent muscularis propria.
- ▶ Obstruction leads to diverticulitis.
- ▶ Risk of perforation.
- ▶ Recurrent diverticulitis leads to fibrosis (strictures).

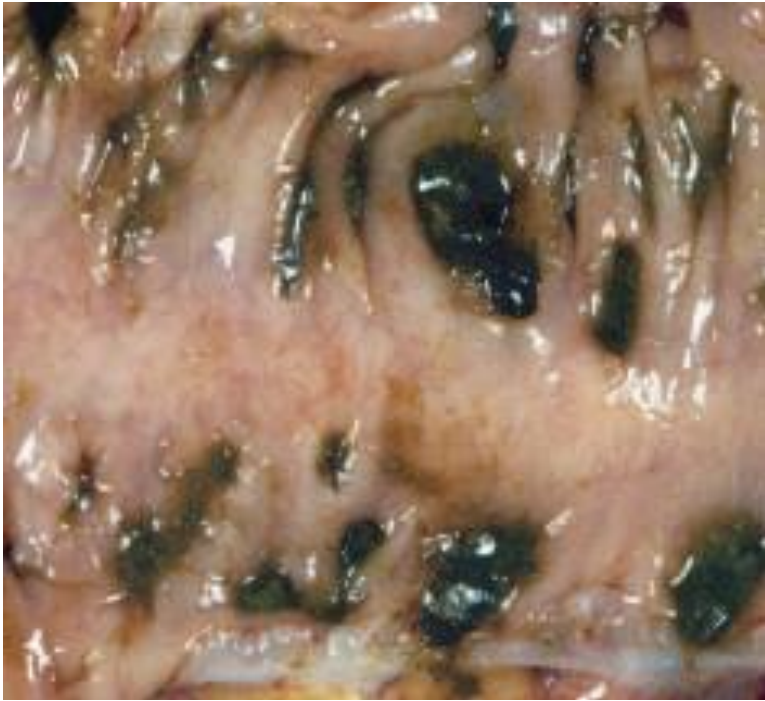


## Diverticulosis



## Diverticulitis









# Clinical Features

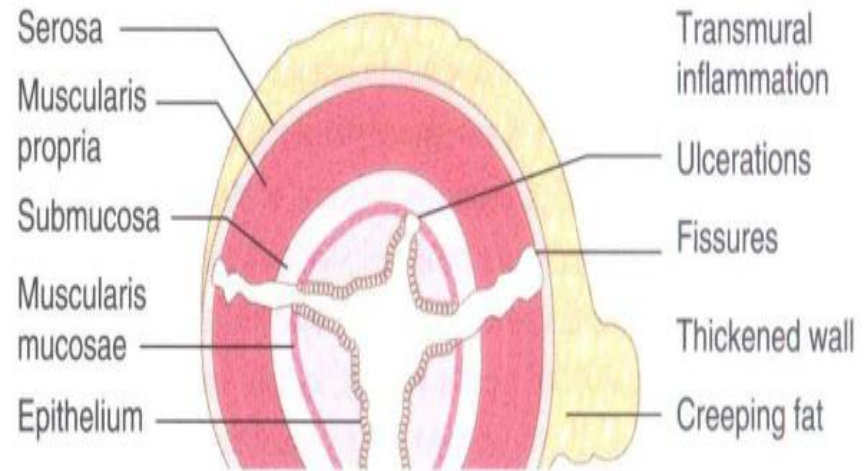
- ▶ Mostly asymptomatic.
- ▶ Intermittent lower abdominal pain
- ▶ Constipation or diarrhea.
  
- ▶ Tx
- ▶ High fiber diet.
- ▶ Antibiotics in diverticulitis.
- ▶ Surgery.

A petri dish containing a bacterial culture on a yellow agar. The surface is covered with numerous small, circular, yellowish colonies. The dish is tilted, and the background is a blurred laboratory setting.

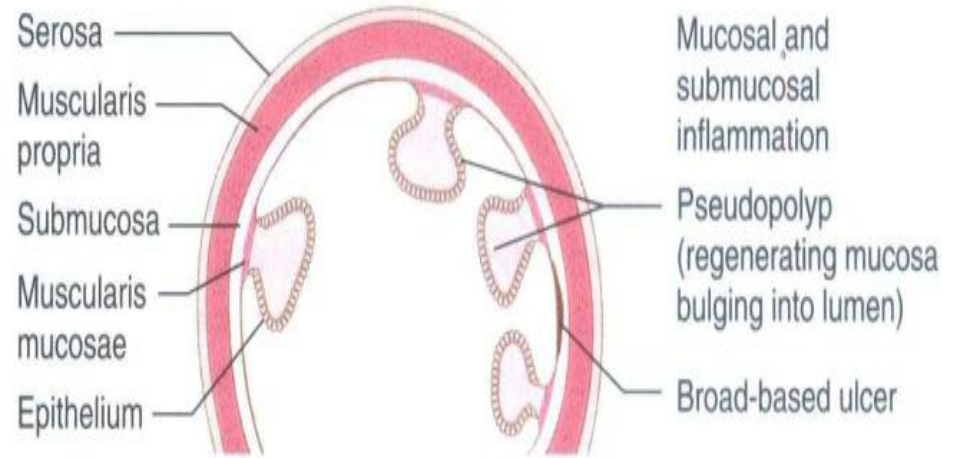
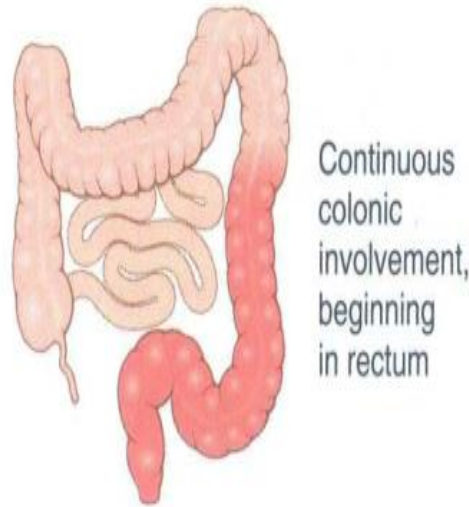
# Chronic Inflammatory Bowel Disease

- ▶ Genetic predisposition
- ▶ Immune response to intestinal microbes.
- ▶ Inappropriate mucosal damage.
  
- ▶ **Ulcerative colitis:** limited to the colon and rectum, extends only into mucosa and submucosa.
  
- ▶ **Crohn disease:** regional enteritis, frequent ileal involvement, affect any area in GIT, frequently transmural.

## CROHN DISEASE



## ULCERATIVE COLITIS



# Epidemiology

- ▶ Adolescence & young adults
- ▶ 2<sup>nd</sup> peak in fifth decade.
- ▶ Geographic variation.
- ▶ Proposed explanation:
- ▶ *Hygiene hypothesis: childhood exposure to environmental microbes prevents excessive immune system reactions. Firm evidence is lacking!!!.*

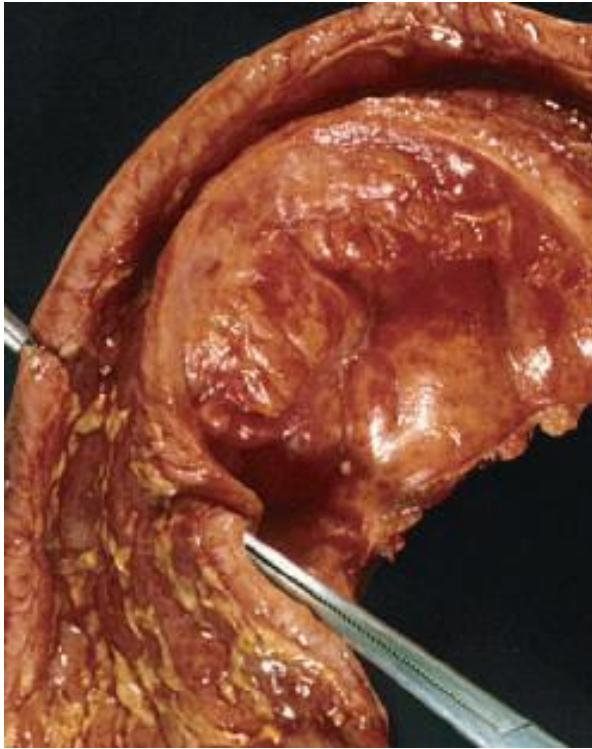
# Pathogenesis:

- ▶ Combined effect of:
- ▶ Altered host interaction with intestinal microbiota.
- ▶ Intestinal Epithelial dysfunction
- ▶ Aberrant mucosal immune responses.



# Crohn Disease Morphology

- ▶ Macroscopic:
- ▶ Regional enteritis.
- ▶ Any area of GIT.
- ▶ Most common sites: terminal ileum, ileocecal valve, and cecum.
- ▶ Small intestine alone 40%
- ▶ Small intestine and colon 30%
- ▶ Colon only 30%
- ▶ Skip lesions
- ▶ Strictures common



Small  
bowel  
stricture.

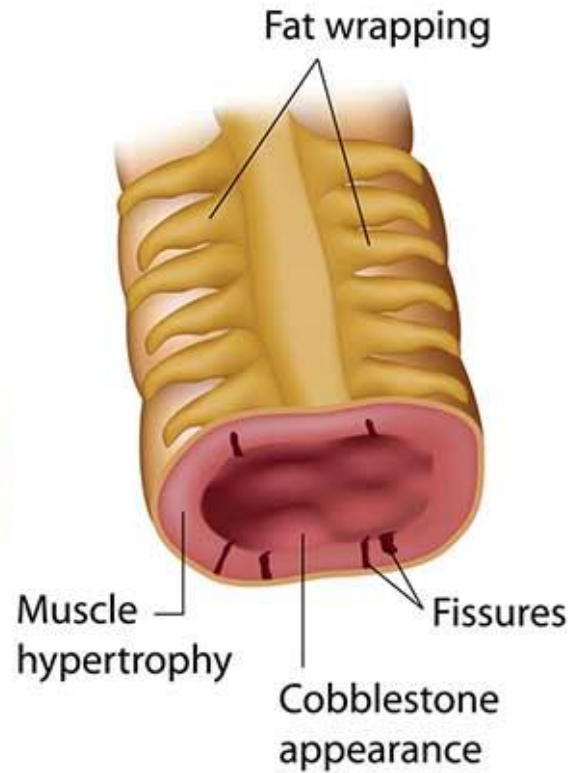
- ▶ Earliest lesion: aphthous ulcer
- ▶ Elongated, serpentine ulcers.
- ▶ Edema , loss of bowel folds.
- ▶ Cobblestone appearance
- ▶ Toxic megacolon (before fibrosis)
- ▶ Fissures (fistulas, perforations).
- ▶ Thick bowel wall (transmural inflammation, edema, fibrosis, hypertrophic MP) >>strictures.
- ▶ Creeping fat



Healthy



Crohn's disease

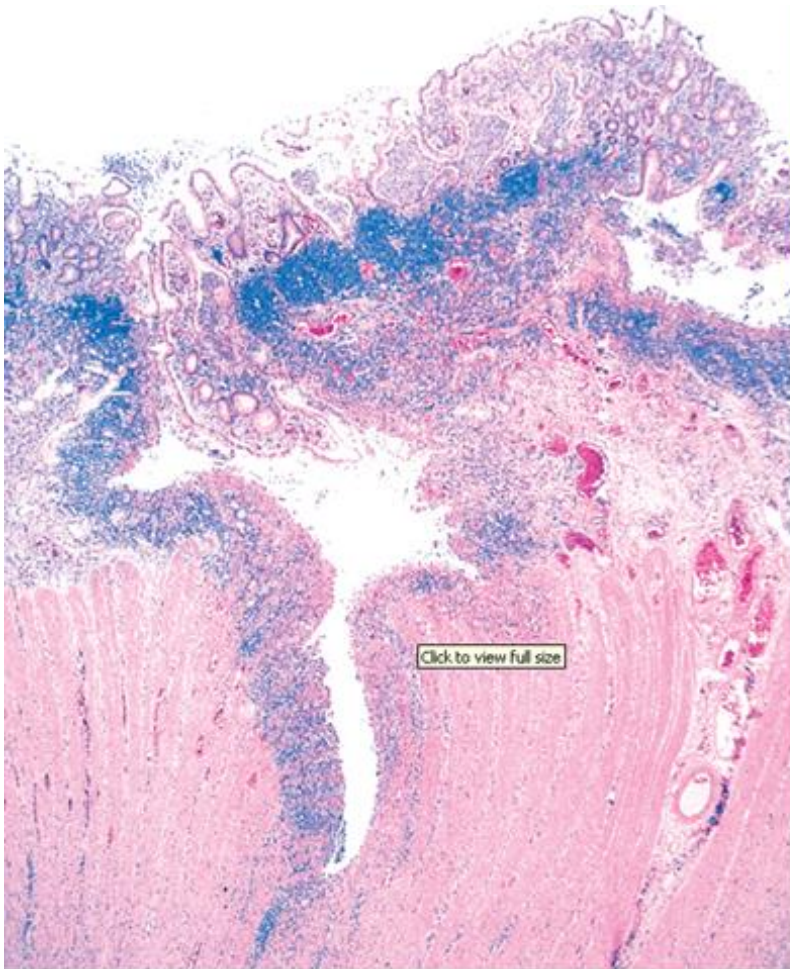


Ulcerative colitis

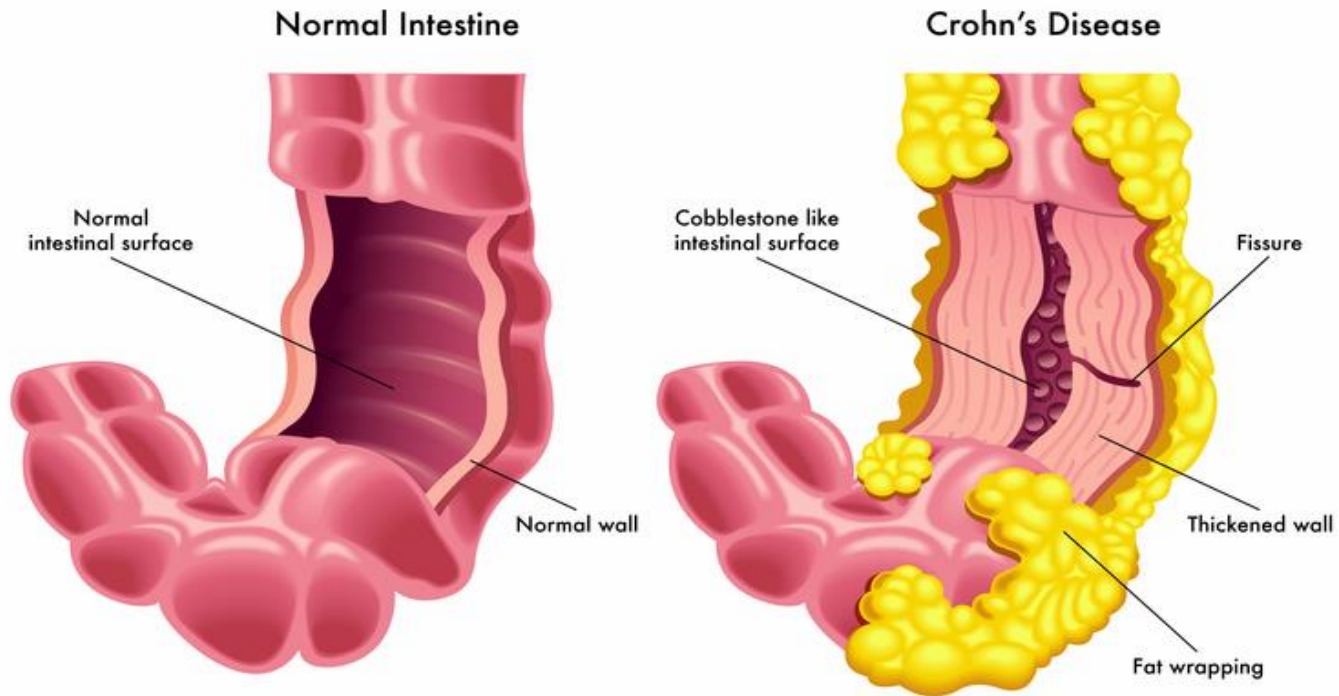


Ulceration within the mucosa

# fissure



Crohn disease of the colon showing a deep fissure extending into the muscle wall, a second, shallow ulcer (upper right), and relative preservation of the intervening mucosa. Abundant lymphocyte aggregates are present, evident as dense blue patches of cells at the interface between mucosa and submucosa



Creeping fat



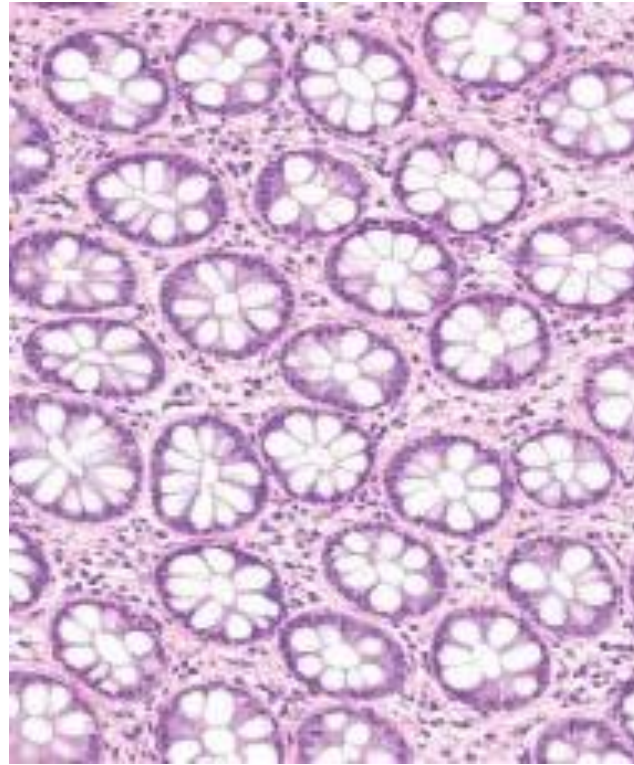
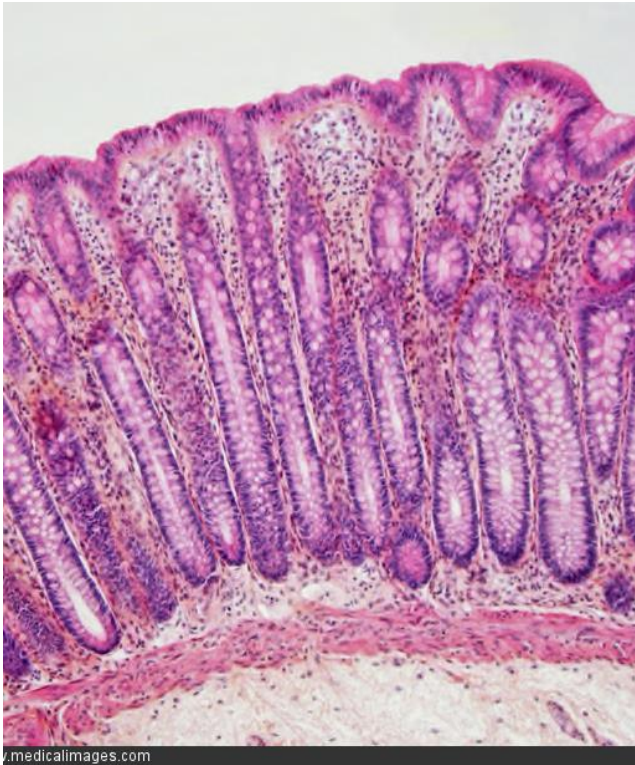
Cobblestone appearance



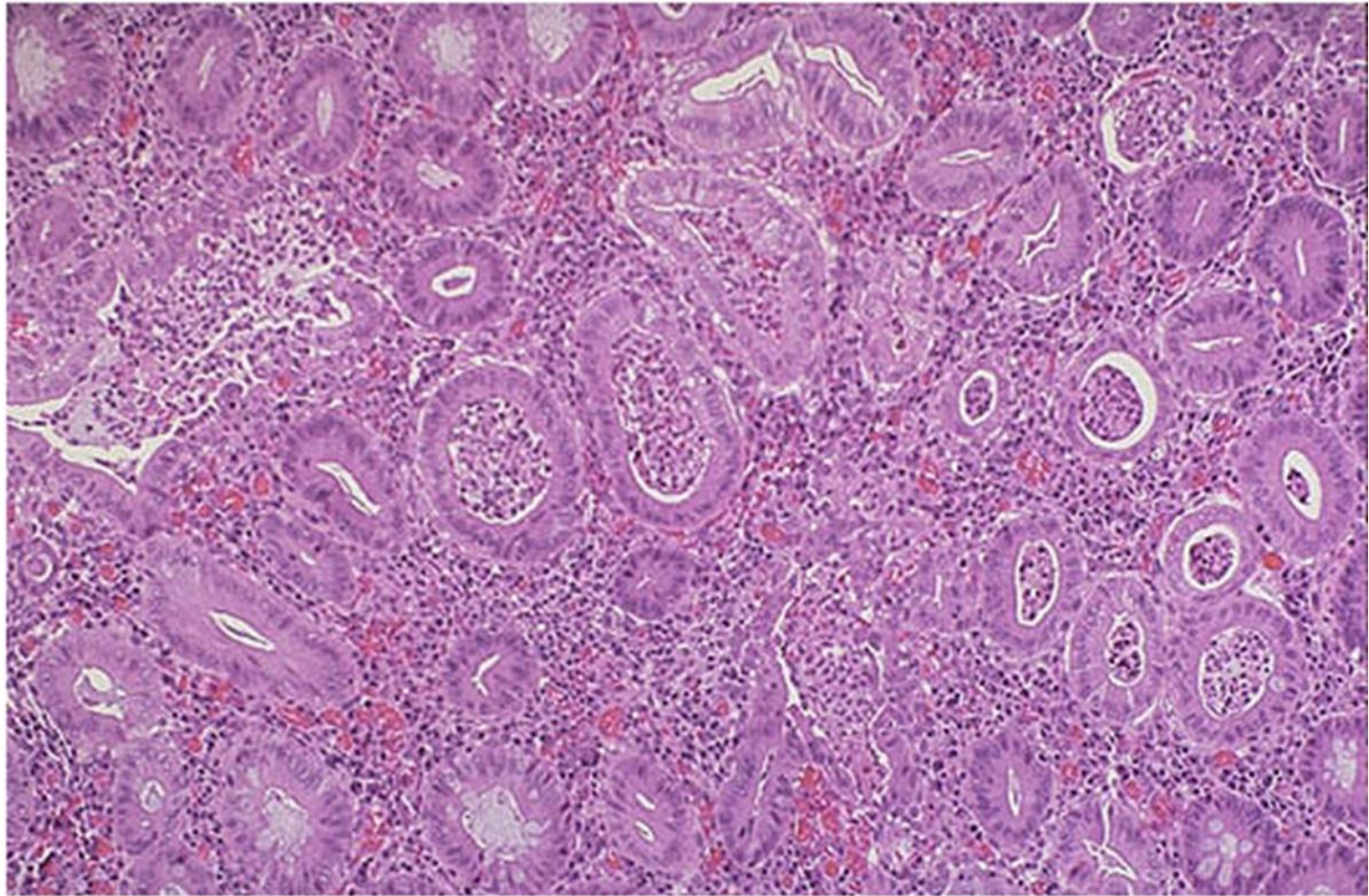
[ResearchGate](#)

## ▶ Microscopic:

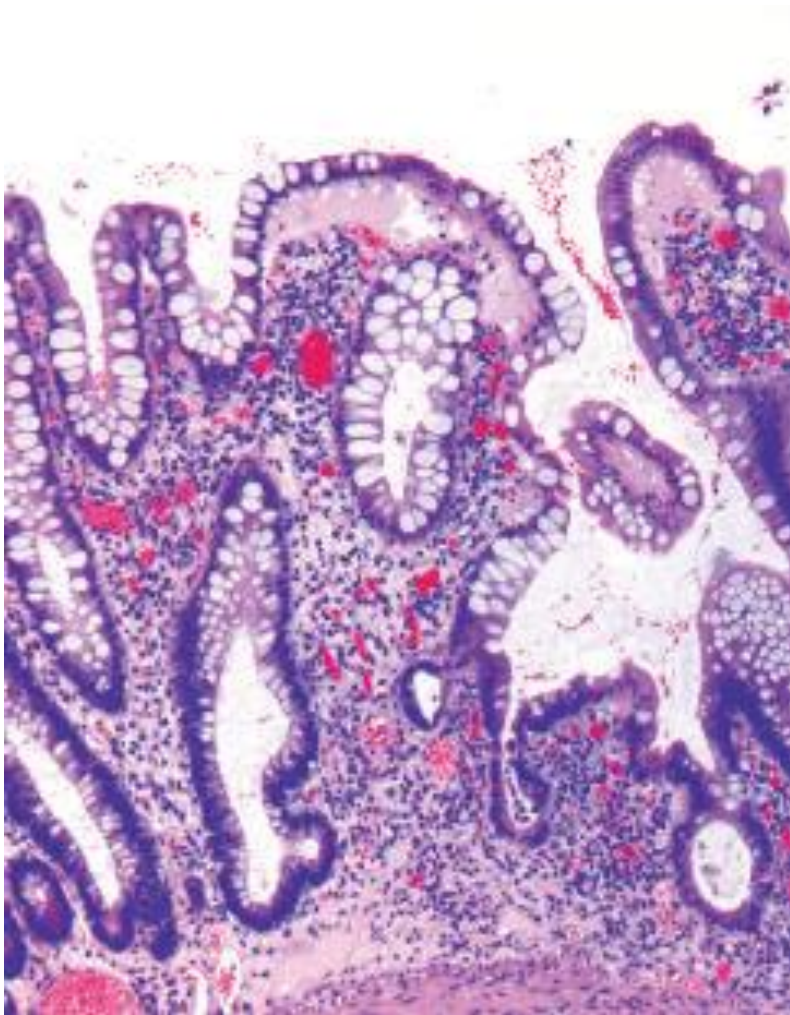
- ▶ Neutrophils in active disease.
- ▶ Crypt abscesses.
- ▶ Ulceration.
- ▶ Distortion of mucosal architecture (repeated cycles)
- ▶ Paneth cell metaplasia in left colon
- ▶ Mucosal atrophy.
- ▶ **Noncaseating granulomas (hallmark) only in 35% of cases. Anywhere!!**



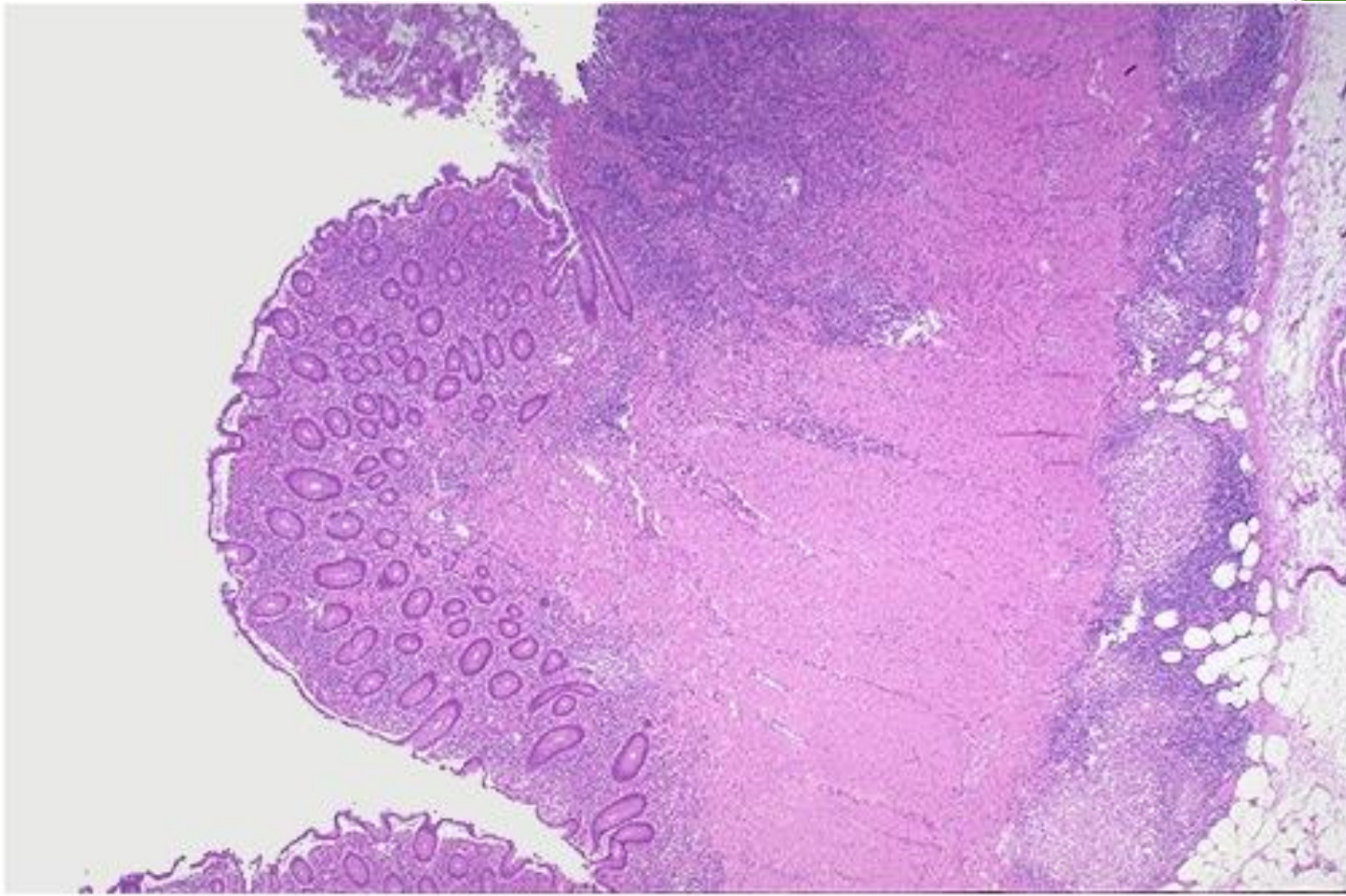
Normal colon



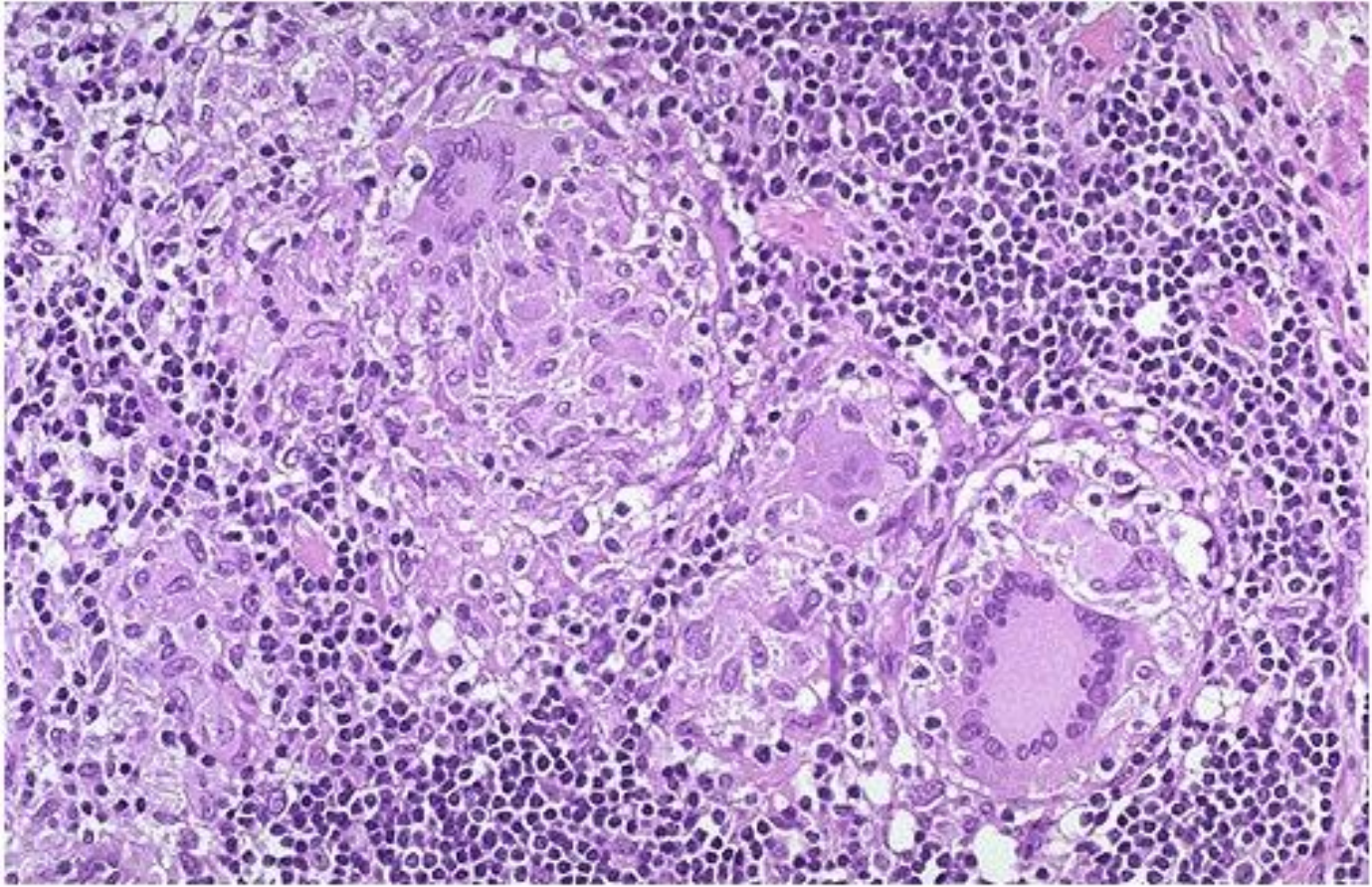




Haphazardly  
arranged  
crypts



Transmural inflammation.



Non-caseating granuloma.

# Clinical Features

- ▶ Intermittent attacks of mild diarrhea, fever, and abdominal pain.
- ▶ Acute right lower-quadrant pain and fever (20%)
- ▶ Bloody diarrhea and abdominal pain (colonic disease)
- ▶ Asymptomatic intervals (weeks to months)
- ▶ Triggers: physical or emotional stress, specific dietary items, NSAID use, and cigarette smoking.



▶ **Complications:**

- ▶ Colonic: Iron-deficiency anemia
- ▶ Small bowel: Hypoproteinemia and hypoalbuminemia, malabsorption of nutrients, vitamin B12 and bile salts
- ▶ Fistulas, peritoneal abscesses, strictures
- ▶ Risk of colonic and small intestinal adenocarcinoma .....



# *Extra intestinal manifestations*

- ▶ Uveitis
- ▶ Migratory polyarthritis,
- ▶ Sacroiliitis,
- ▶ Ankylosing spondylitis,
- ▶ Erythema nodosum
- ▶ Clubbing of the fingertips
- ▶ Primary sclerosing cholangitis (more with UC)

# Erythema nodosum



# Clubbing



[Wikipedia](#)



# Ulcerative Colitis

## Morphology

- ▶ Always involves the rectum
- ▶ Extends proximally in continuous pattern.
- ▶ Pan colitis.
- ▶ No skip lesions
- ▶ Occasionally focal appendiceal or cecal inflammation.
- ▶ Limited diseases: Ulcerative proctitis or ulcerative proctosigmoiditis
- ▶ Small intestine is normal (except mild backwash ileitis)

- ▶ Macroscopic:
- ▶ Broad-based ulcers.
- ▶ Pseudo polyps (regenerating mucosa)
- ▶ Mucosal atrophy in long standing
- ▶ Mural thickening absent
- ▶ Serosal surface normal
- ▶ No strictures
- ▶ Toxic megacolon (damage of MP, disturbed neuromuscular function)

Pseudopolyp

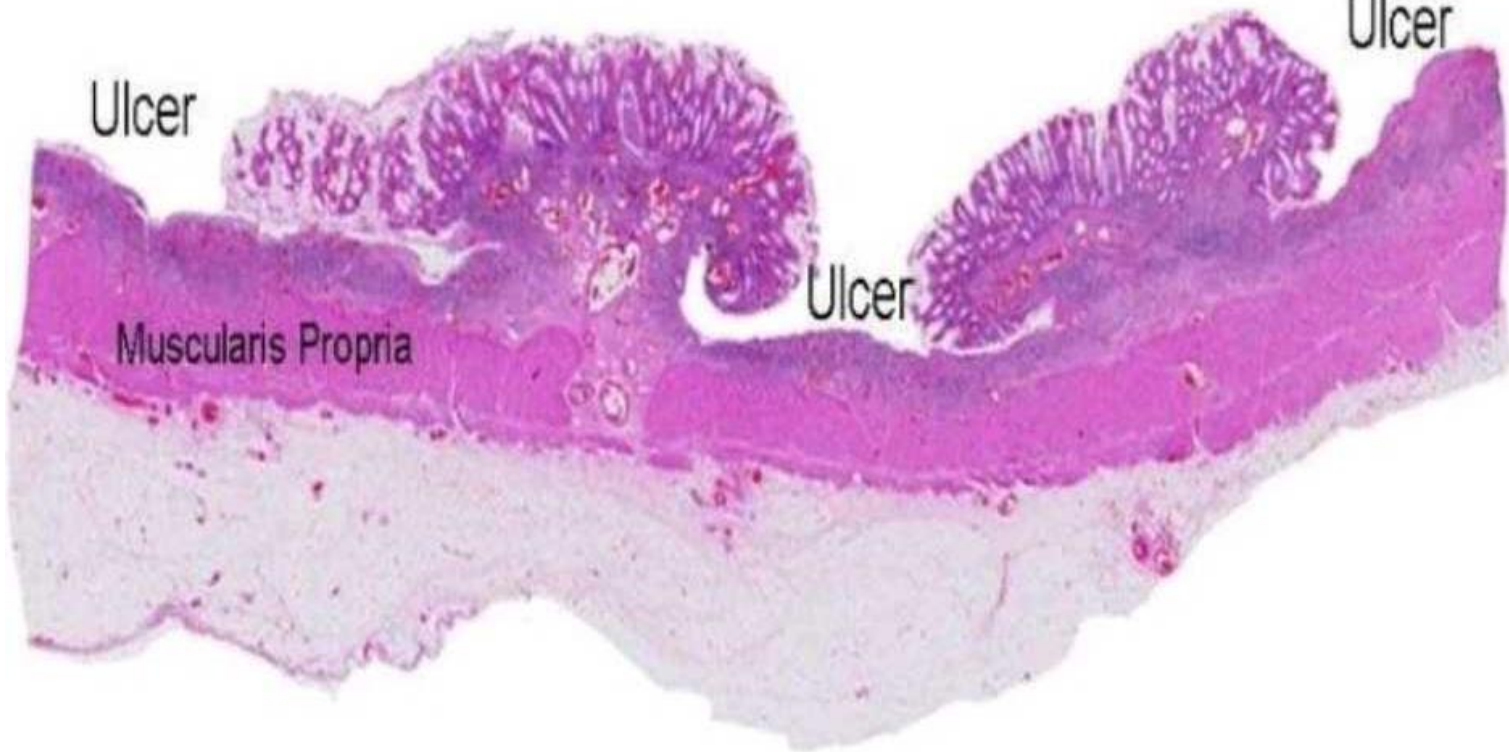
Pseudopolyp

Ulcer

Ulcer

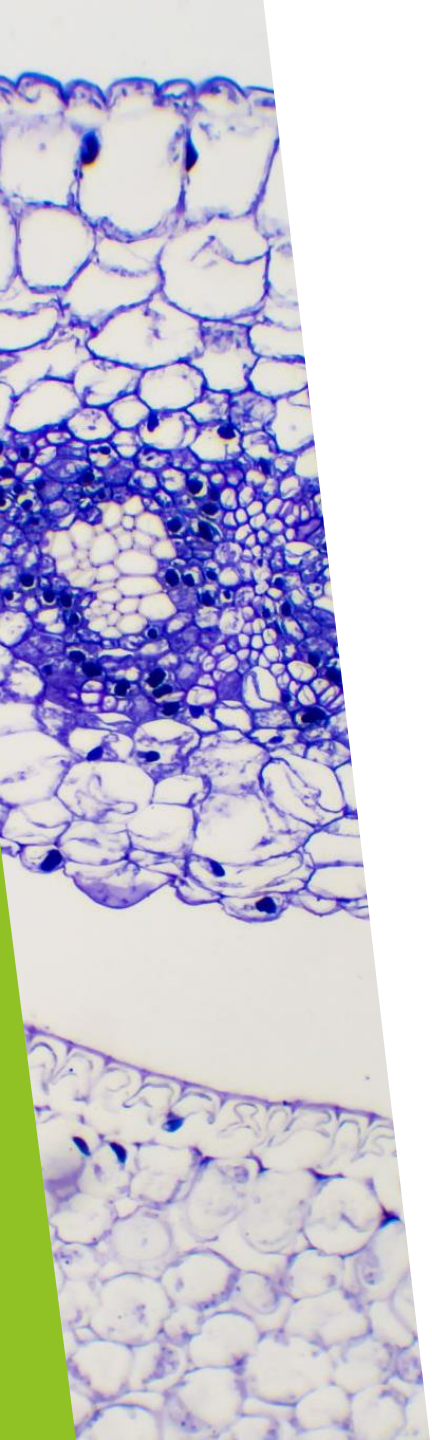
Ulcer

Muscularis Propria



# Toxic megacolon





- ▶ Microscopic:
- ▶ Inflammatory infiltrates
- ▶ Crypt abscesses
- ▶ Crypt architecture distortion
- ▶ Epithelial metaplasia
- ▶ Submucosal fibrosis
- ▶ Inflammation limited to mucosa and submucosa.
- ▶ No skip lesions
- ▶ No granulomas.

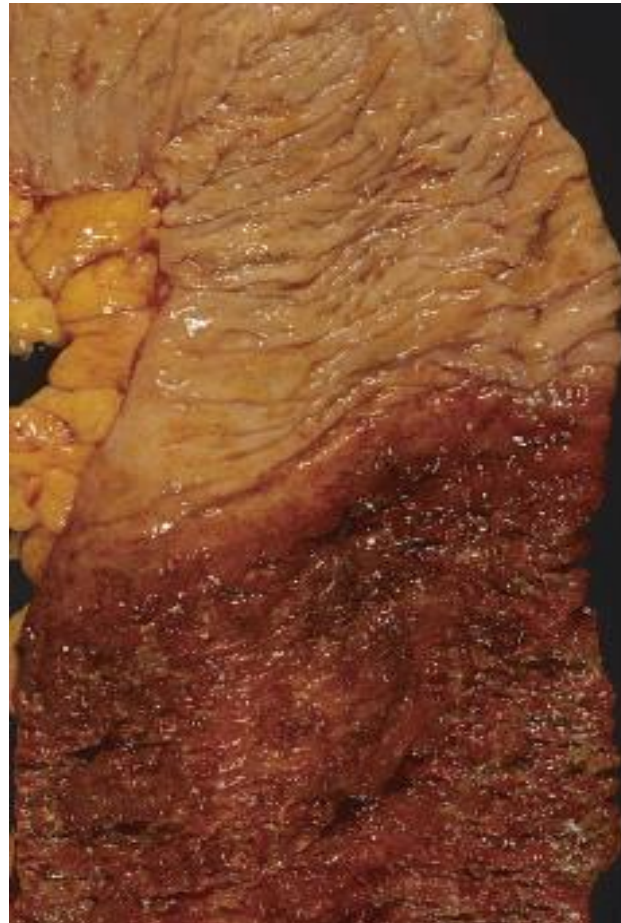
# Mucopurulent material and ulcers.



# Pancolitis.



Abrupt transition b/w normal  
and disease segment.





# Clinical Features

- ▶ Relapsing remitting disorder
- ▶ Attacks of bloody mucoid diarrhea +lower abdominal cramps
- ▶ Temporarily relieved by defecation
- ▶ Attacks last for days, weeks, or months.
- ▶ Asymptomatic intervals.
- ▶ Infectious enteritis may trigger disease onset, or cessation of smoking.
  
- ▶ Colectomy cures intestinal disease only
- ▶ Anti-inflammatory and biologic agents.

# Colitis-Associated Neoplasia

- ▶ Long standing UC and CD.
- ▶ Begins as dysplasia >>>> carcinoma.
- ▶ Colonoscopy surveillance programs.
  
- ▶ **Risk depends on**
- ▶ **Duration of disease:** increase after 8-10 years .
- ▶ **Extent of involvement:** more with pancolitis.
- ▶ **Inflammation:** frequency & severity of active disease with neutrophils.