Diseases of the gastrointestinal tract

Dr. Nesreen Bataineh MD, FRCPath

Crohn disease

"Terminal ileitis" or "Regional enteritis"

- CD is a systemic inflammatory disease with predominant GI involvement.
- May affect any level of the alimentary tract (*from mouth to anus*) → esp. in the **terminal ileum**, ileocecal valve & cecum.
- Can involve:
  - Small intestine alone in **40%**
  - Small intestine and colon in **30%**
  - Colon alone in about **30%**

Anus is involved in 75%.

- Smoking **increases** its risk ??.

Specific morphological features of CD

Gross

1. *Skip lesions** leading to **cobble stone appearance**.
2. *Transmural bowel involvement*:

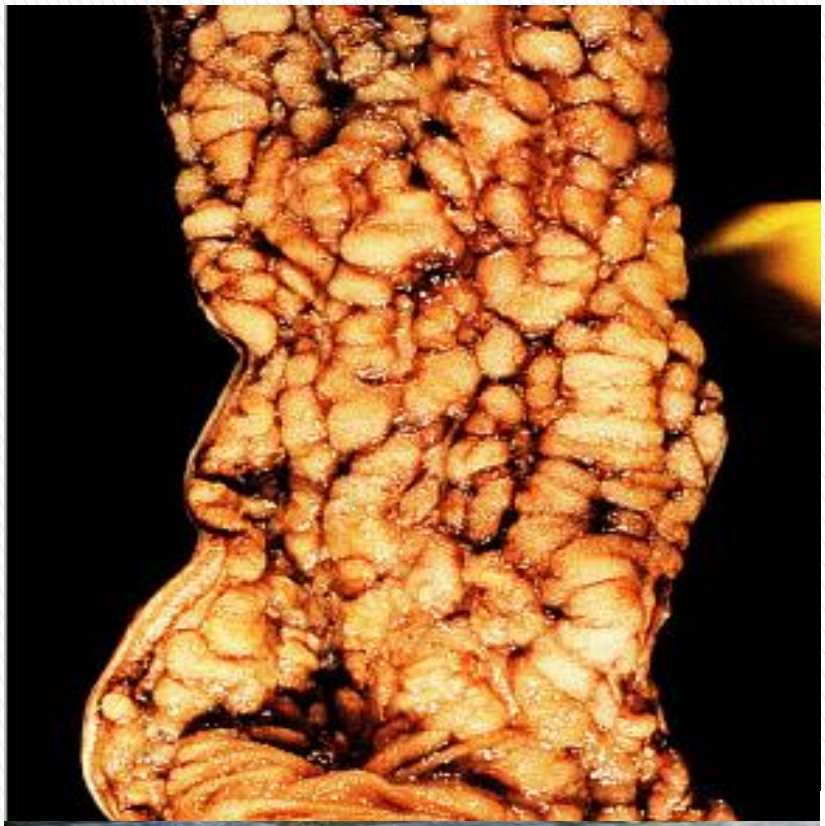
- Starts as **aphthoid ulcers** → followed by long, serpentine **linear ulcers.**
- The wall is **thick**** wich may lead to stenosis (*STRING SIGN* on X-ray).
- **Fissures** penetrate through the wall leading to:
  - ❑ Serositis → Adhesions & *CREEPING FAT*.
  - ❑ Abdominal abscesses or peritonitis.
  - ❑ Fistula or sinus tract formation

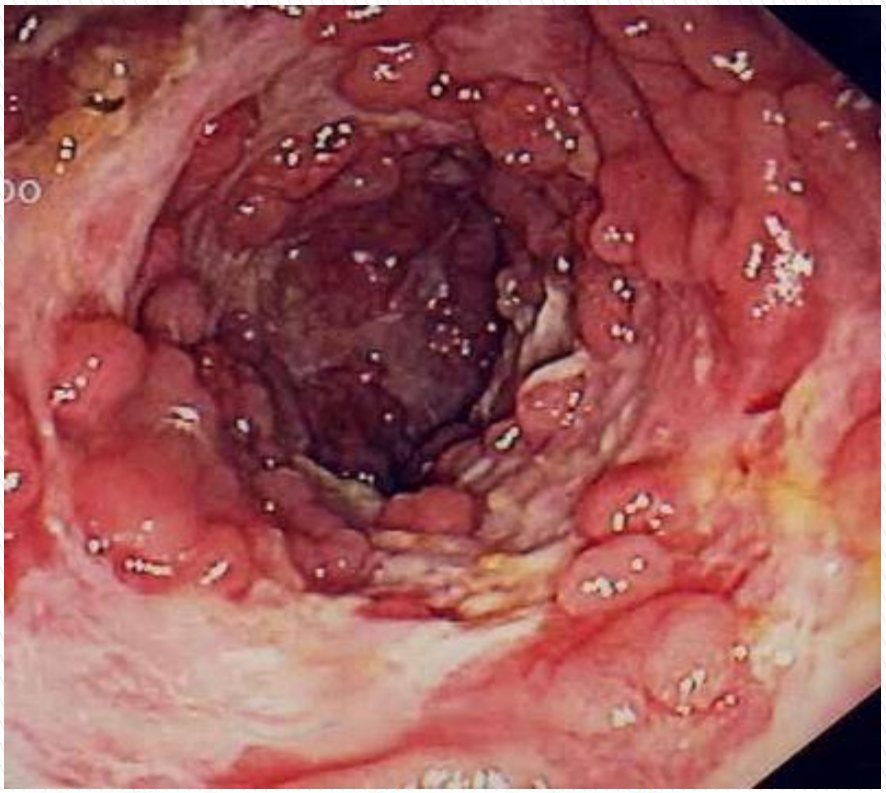
Microscopic

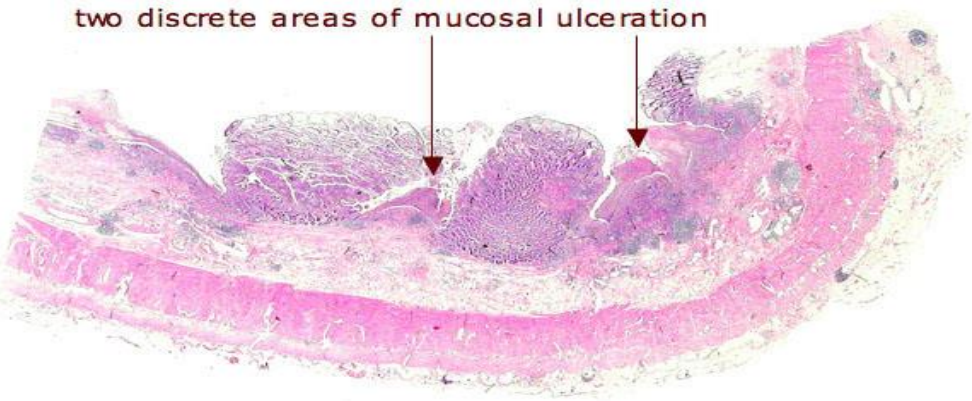
Previous features of IBD in addition to:

- Inflammation is focal & patchy with prominent lymphoid aggregates involving *all* the layers.
- **Non-caseating granulomas^** is een n ~35% → *PATHOGNOMIC*
- Fissures, serositis, abscesses, fistulae …
- ± Dysplasia

Cobble stone appearance

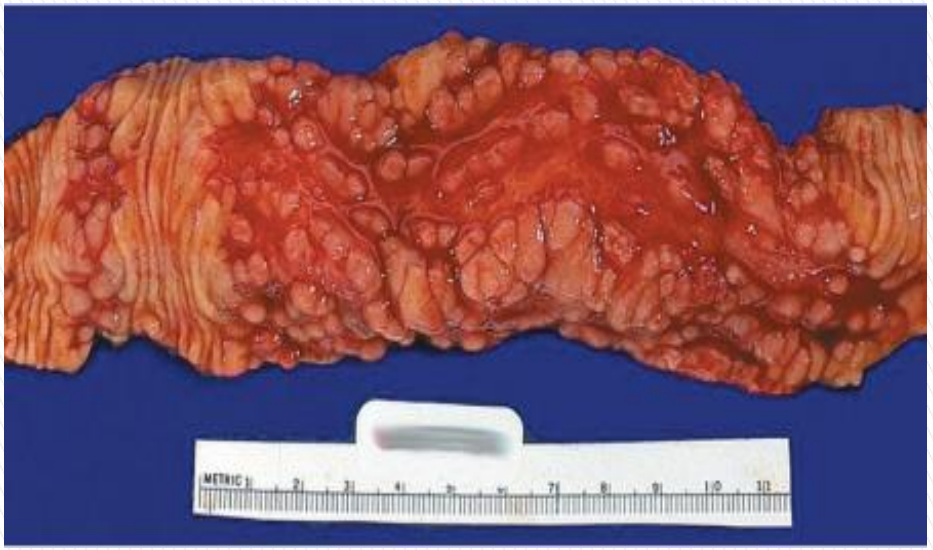




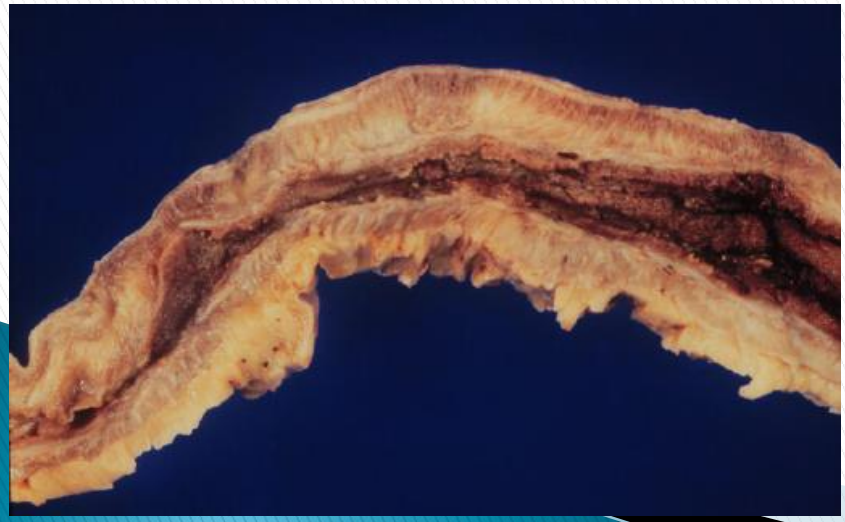


Aphthoid ulcers

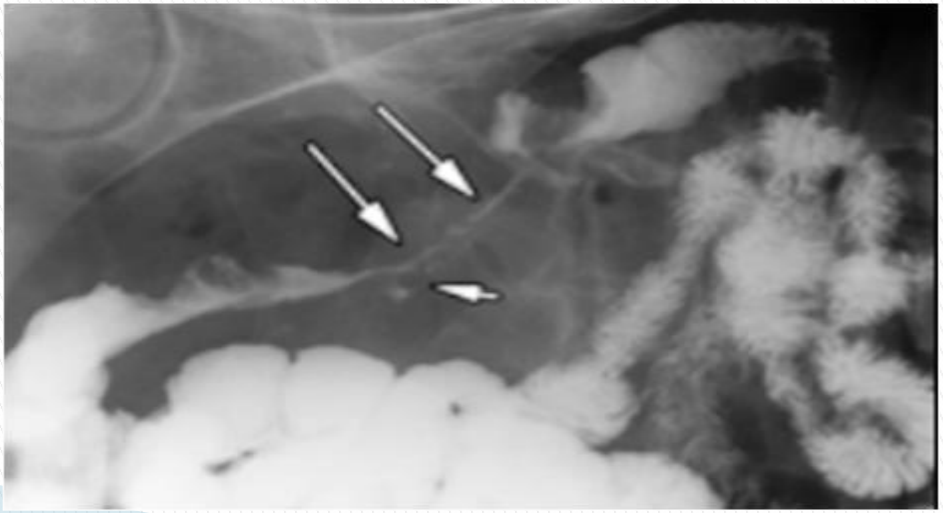
Serpentine linear ulcers



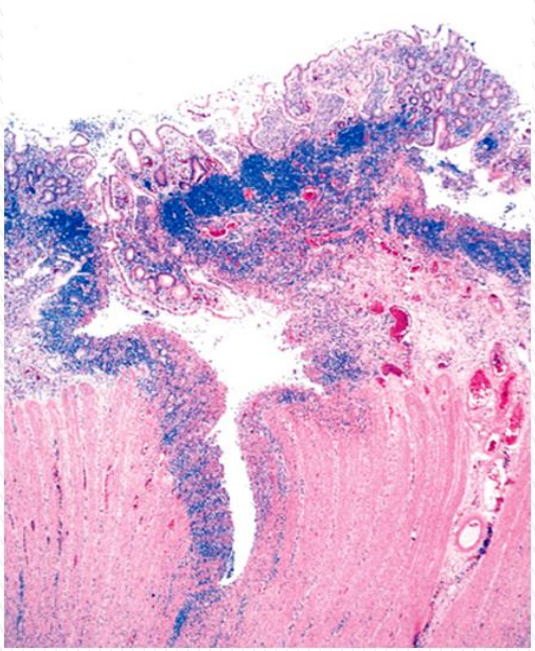
Thick wall / stenosis



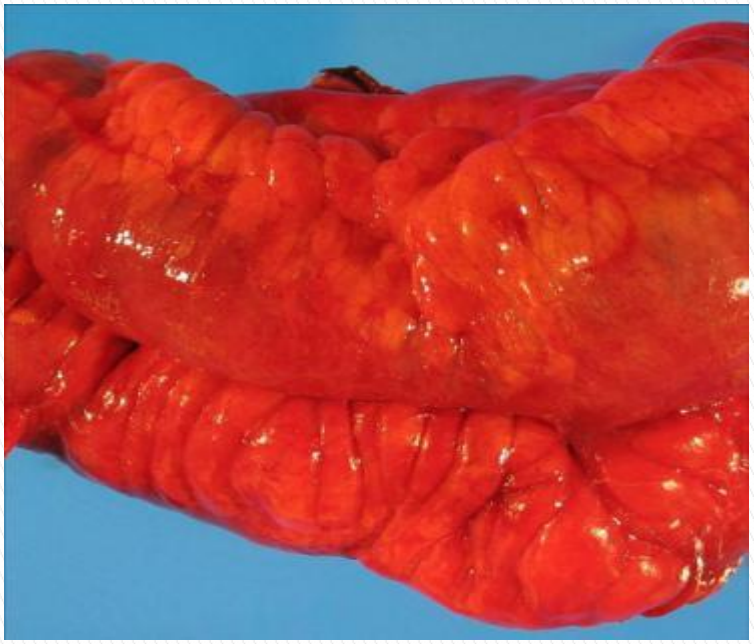
String sign



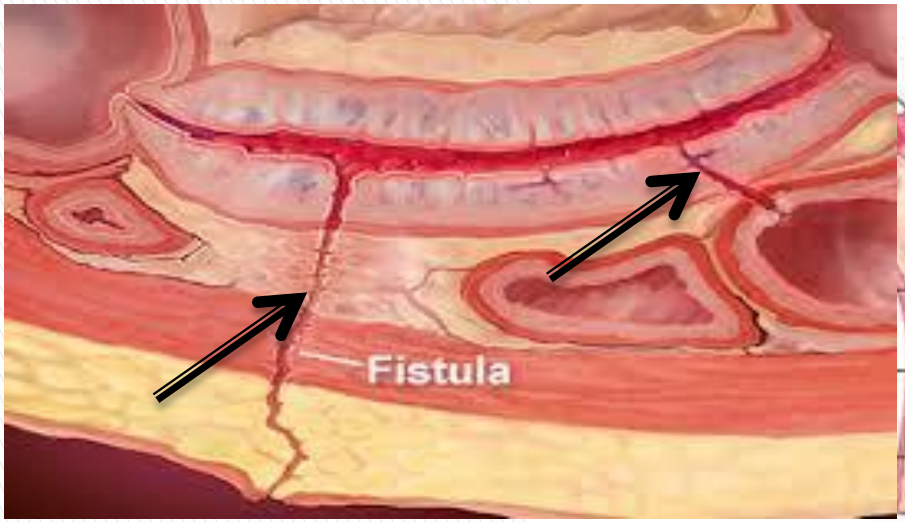
Fissure

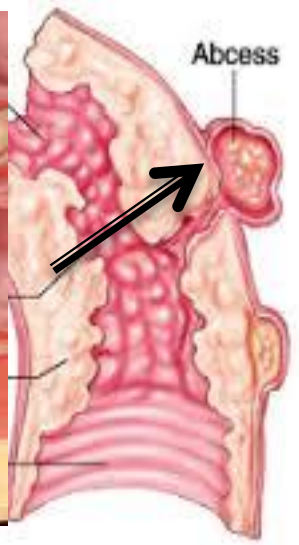


Creeping fat

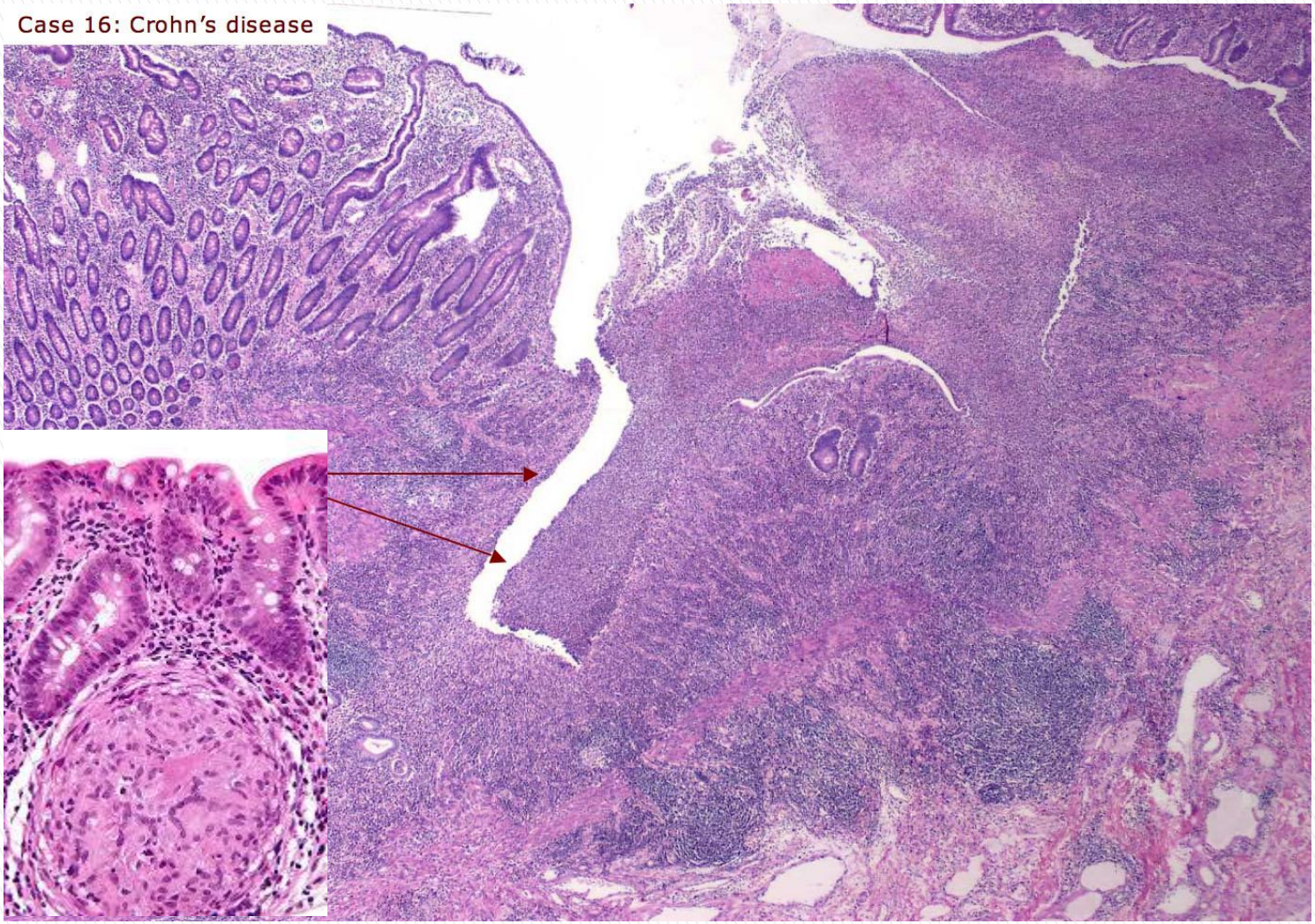


Abscess, fistula …





Crohn disease



-Patchy and transmural inflammation with lymphoid aggregates + ***Non-caseating granuloma***

Clinical Features

- **The presentation of CD is variable**:
- Recurrent course (remissions & relapses) with episodes of **diarrhea, crampy abdominal pain & fever** lasting days to weeks → Continuous in **20%.**
- Appendicitis like picture*
- Malabsorption syndrome (or B12 def. & bile salts).
- Melena & iron def. if colon is involved.
- Stricture & intestinal obstruction (esp. with small bowel involvement).
- Perforations, abscesses, fistulas formation.

Extra-intestinal manifestations

- **Complications of immune origin:**
- Migratory polyarthritis
- Sacroiliitis
- Ankylosing spondylitis
- Uveitis
- Erythema nodosum
- Clubbing of fingertips
- Pericholangitis and primary sclerosing cholangitis (more than CD)
- Obstructive uropathy

Ulcerative colitis

- A systemic inflammatory disease affecting the **colon** (esp. rectum and sigmoid*) and limited to the mucosa & submucosa.

- Smoking **decreases** its risk ??.

Specific morphological features of CD

Gross

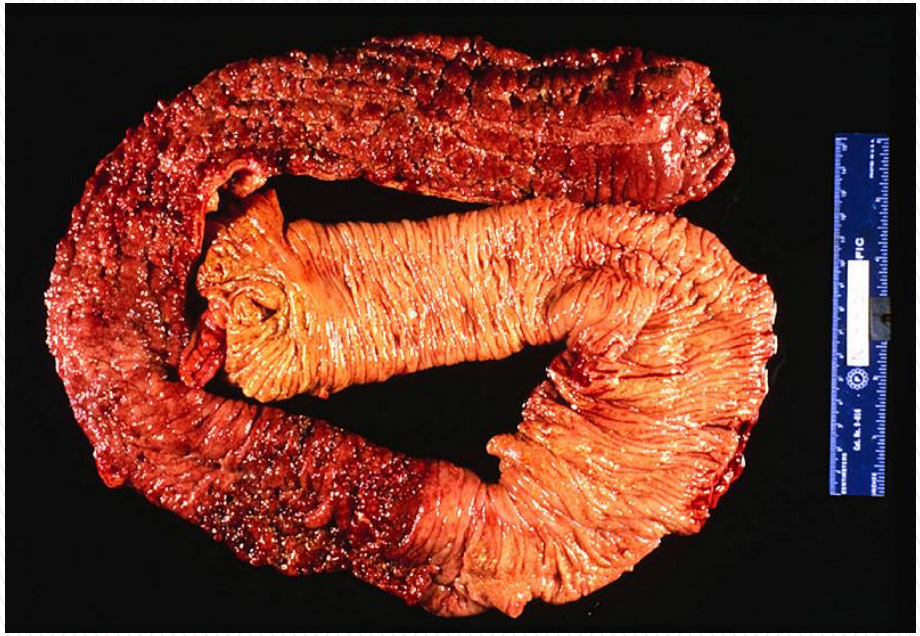
- UC begins in the **rectum** and extends **proximally** in a **continuous** fashion (may involve the entire colon → *Pancolitis*)*.
- **Superficial bowel involvement** (only mucosa and submucosa).
  - At beginning it shows hypremic mucosa, edema & hemorrhage.
  - Active disease shows **broad-based ulcers** ± Isolated islands of regenerating mucosa bulge upward to create **pseudopolyps.**
  - Later on → Mucosal atrophy lead to **flat mucosa .**
  - **+ Toxic megacolon.**

Microscopic

Previous features of IBD in addition to:

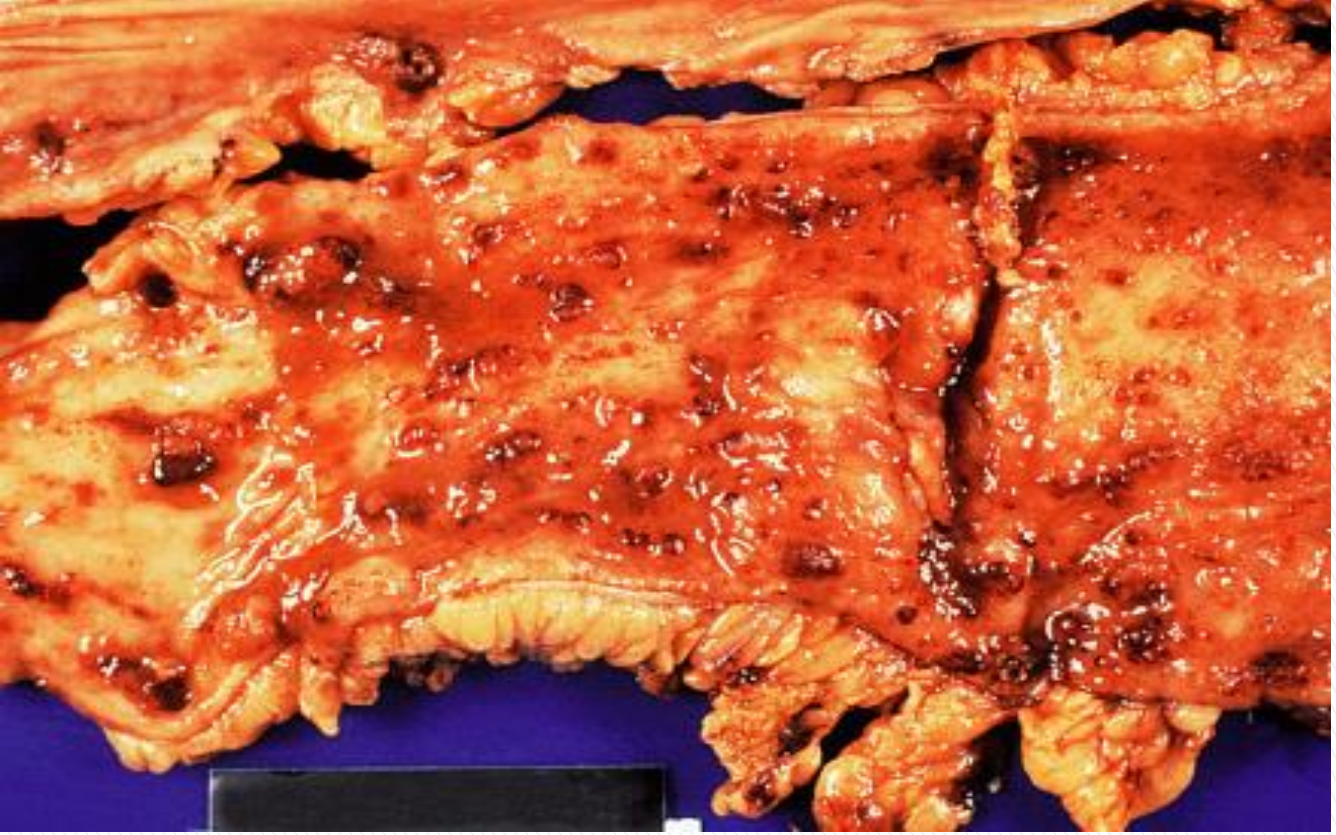
- Inflammation is severe and diffuse involving the mucosa and submucosa (rich in *eosinophils*).
- **No granulomas.****
- ± Dysplasia

Starts distally & diffusely



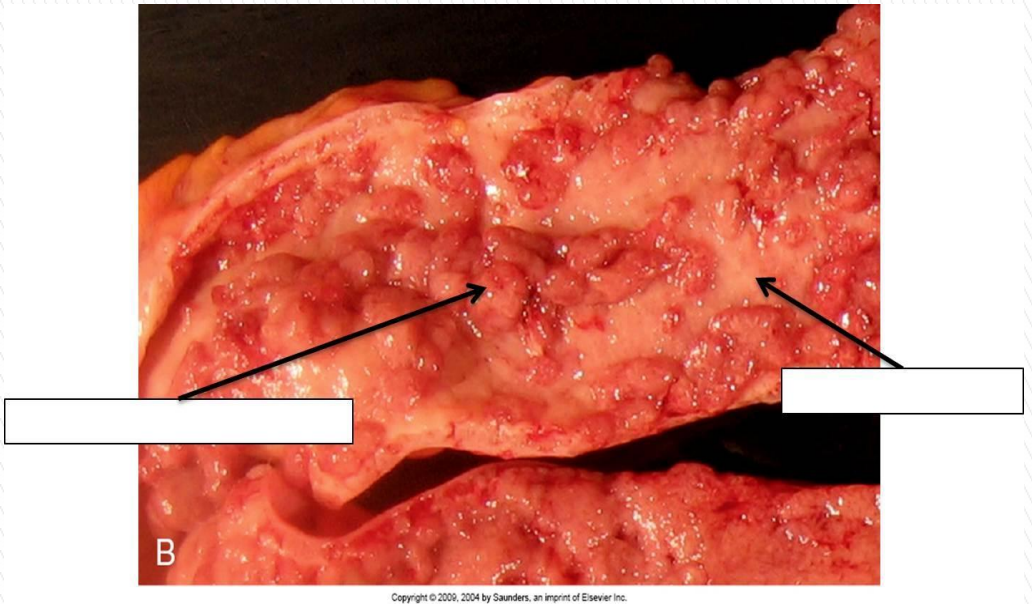
Pancolitis

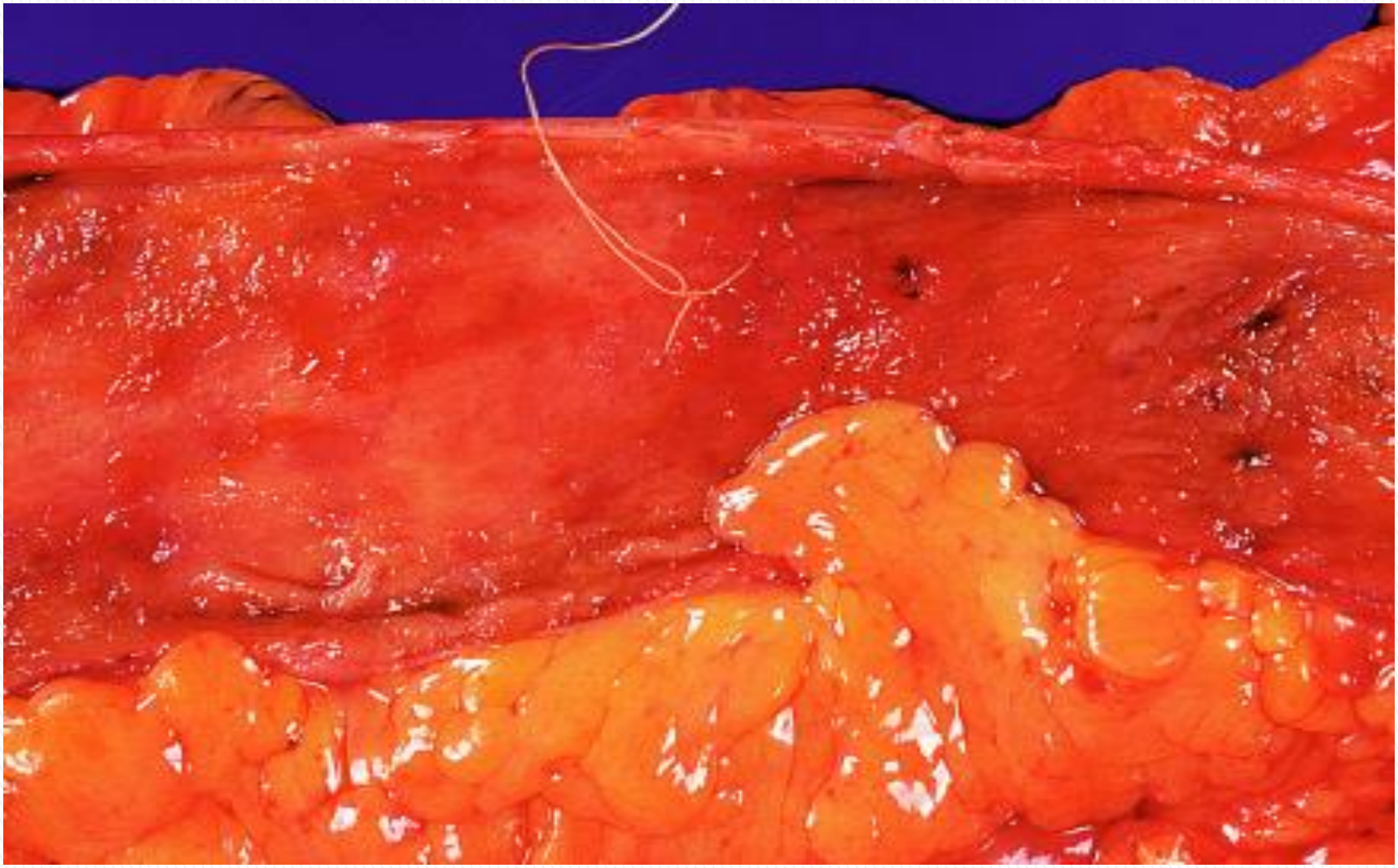
Acute form with marked hypremia



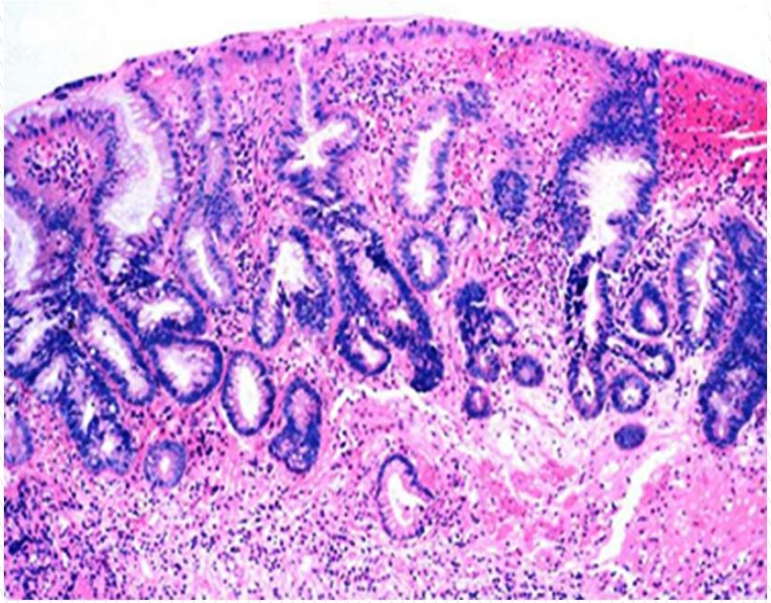
Broad based mucosal ulcers with residual hypremic mucosa

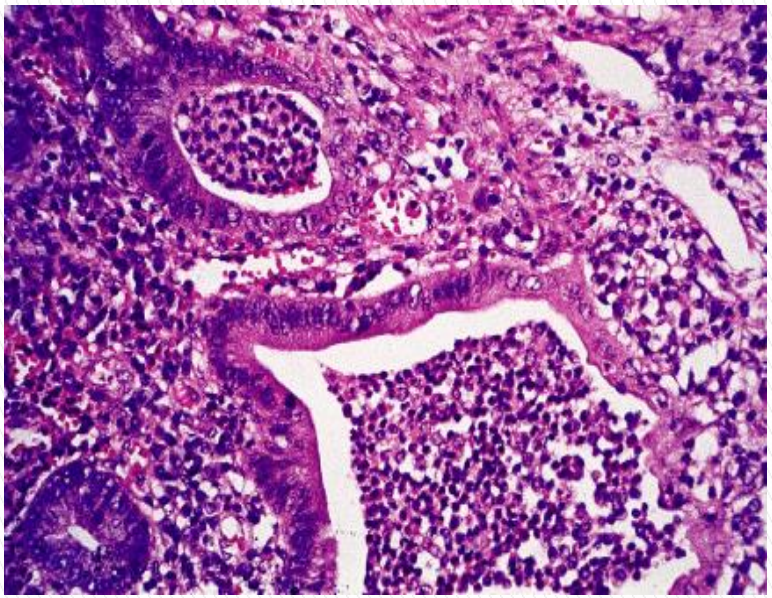
± Pseudopolyps

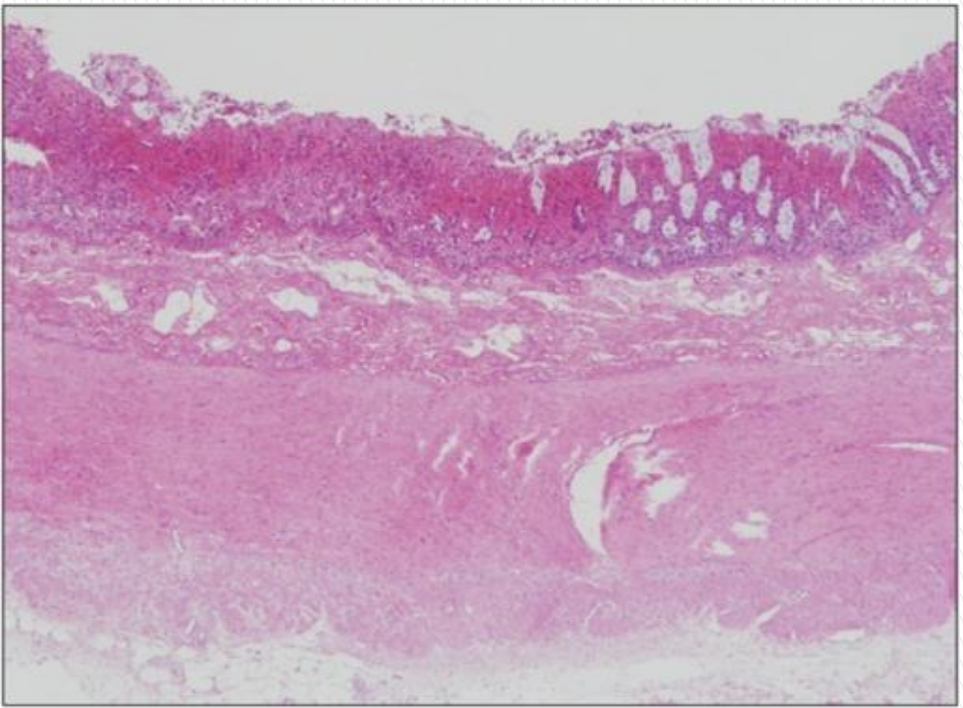


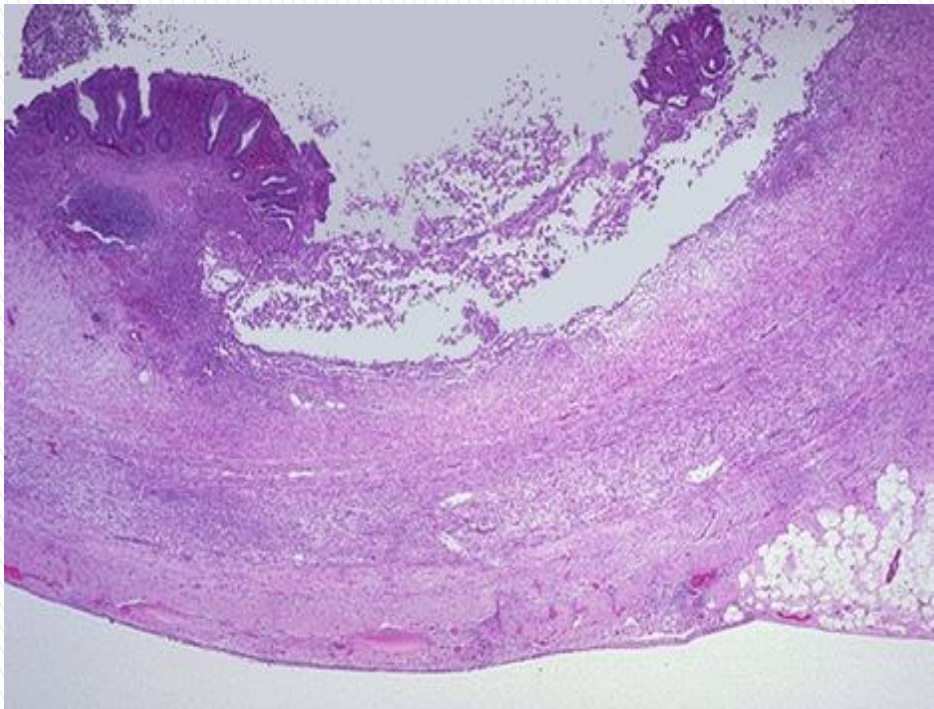


Late stage with total mucosal atrophy









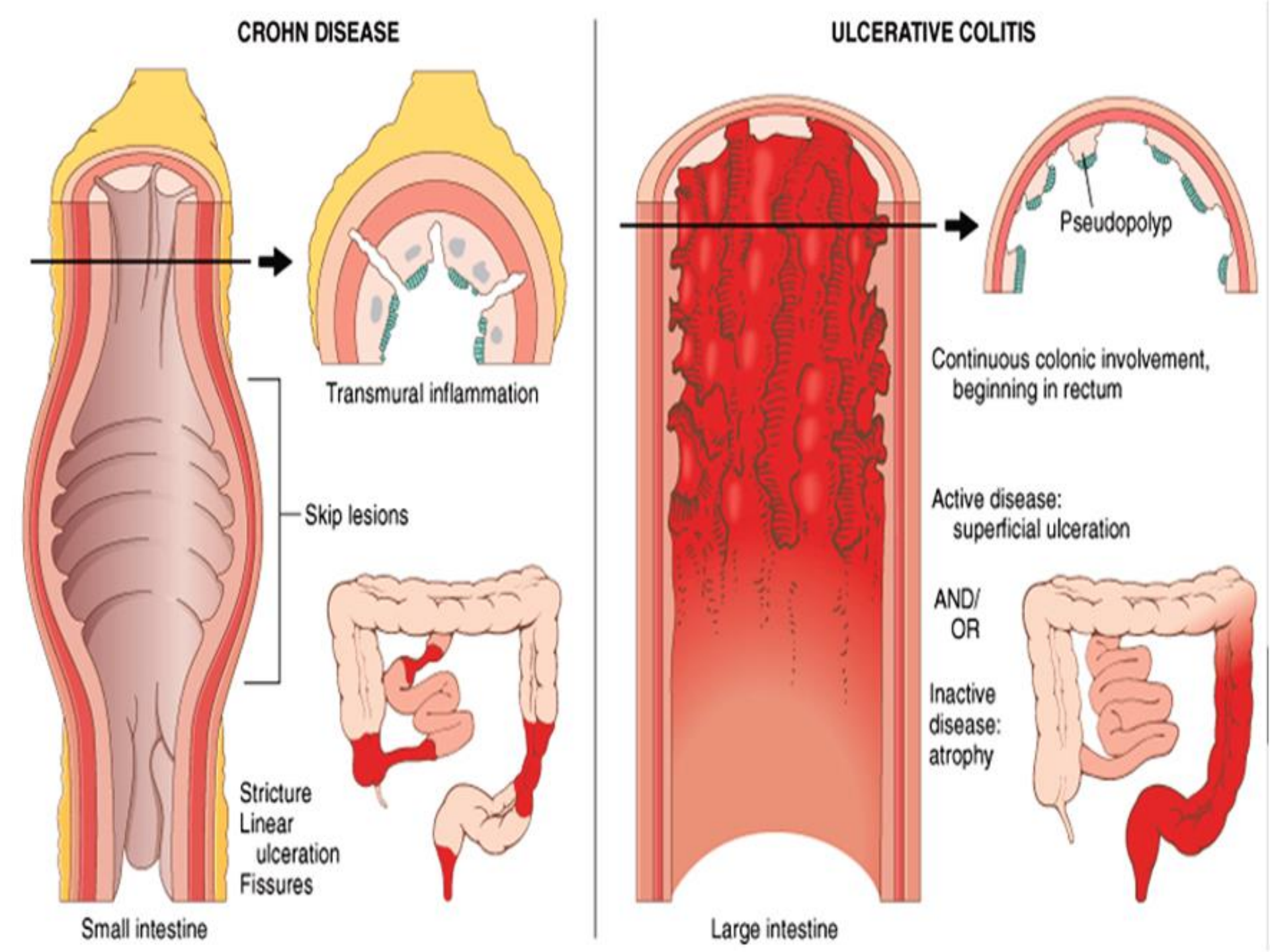
Clinical Features of UC

- UC usually is a *chronic relapsing disorder* with insidious onset
- Bloody mucoid diarrhea & tenesmus.
- Colicky lower abdominal pain relieved by defecation.
- Grossly bloody stools are more common with UC than with CD.
- Some people manifest fever and weight loss.

→ Colectomy **cures** intestinal disease*.

Extraintestinal manifestations

- **More common in UC** than CD
- Migratory polyarthritis
- Sacroiliitis
- Ankylosing spondylitis
- Uveitis
- Erythema nodosum
- Clubbing of fingertips
- Pericholangitis and primary sclerosing cholangitis (more than CD)


CROHN DISEASE
ULCERATIVE COLITIS
Transmural inflammation
Skip lesions
Stricture
Linear ulceration
Fissures
Small intestine
Pseudopolyp
Continuous colonic involvement, beginning in rectum
Active disease: superficial ulceration
AND/ OR
Inactive disease: atrophy
Large intestine

	Crohn Disease	Ulcerative Colitis
Bowel region affected	Ileum ± colon	Colon only
Rectal involvement	Sometimes	Always
Distribution	Skip lesions	Diffuse
Stricture	Yes	Rare
Bowel wall appearance	Thick	Thin
Inflammation	Transmural	Limited to mucosa and submucosa
Pseudopolyps	Moderate	Marked
Ulcers	Deep, knifelike	Superficial, broad-based
Lymphoid reaction	Marked	Moderate
Fibrosis	Marked	Mild to none
Serositis	Marked	No

	Crohn Disease	Ulcerative Colitis
Granulomas	Yes (~35%)	No
Fistulas/sinuses	Yes	No
Clinical Perianal fistula	Yes (in colonic disease)	No
Fat/vitamin malabsorption	Yes	No
Malignant potential	Less (with colonic involvement)	More
Recurrence after surgery	Common	No
Toxic megacolon	No (or very rare)	Yes
Smoking	Increases its risk	Decreases its risk

- **Intermediate Colitis:**

-Seen in 10% of pts with IBD.

-Due to histopathologic and clinical *overlap* between UC and CD → Not possible to make a distinction*.

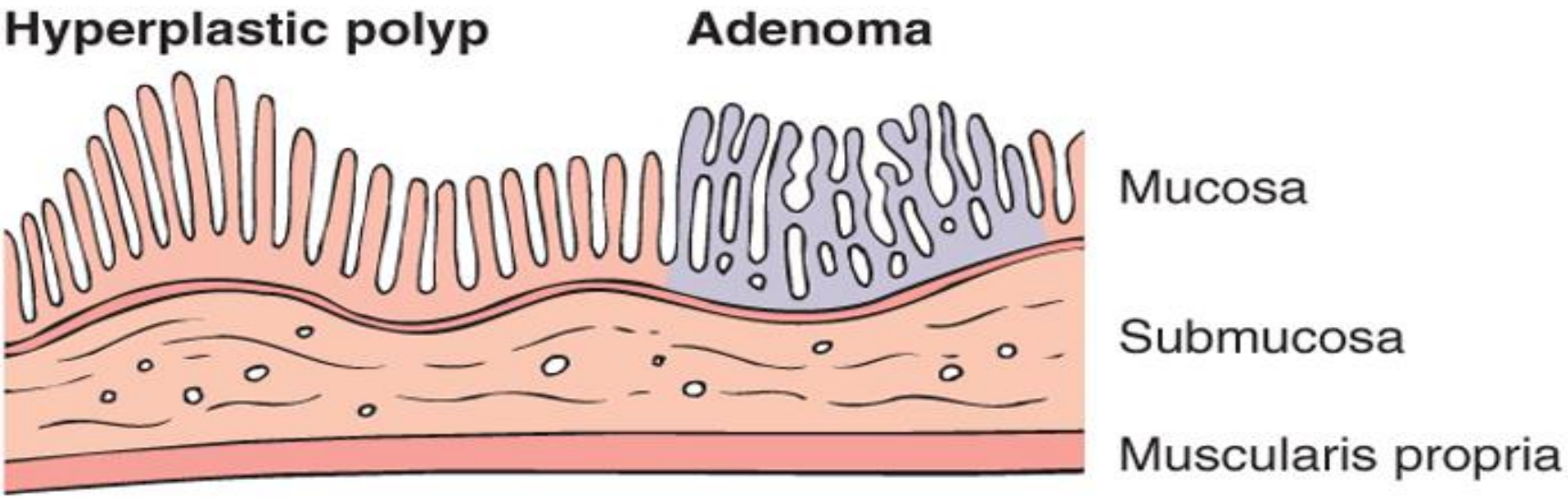
TUMORS OF THE SMALL AND LARGE INTESTINES

- Colorectal cancer is the **second common** cause of cancer related deaths
- **Adenocarcinoma** is the most common type.
- The small intestine is an *uncommon* site for benign & malignant tumors.

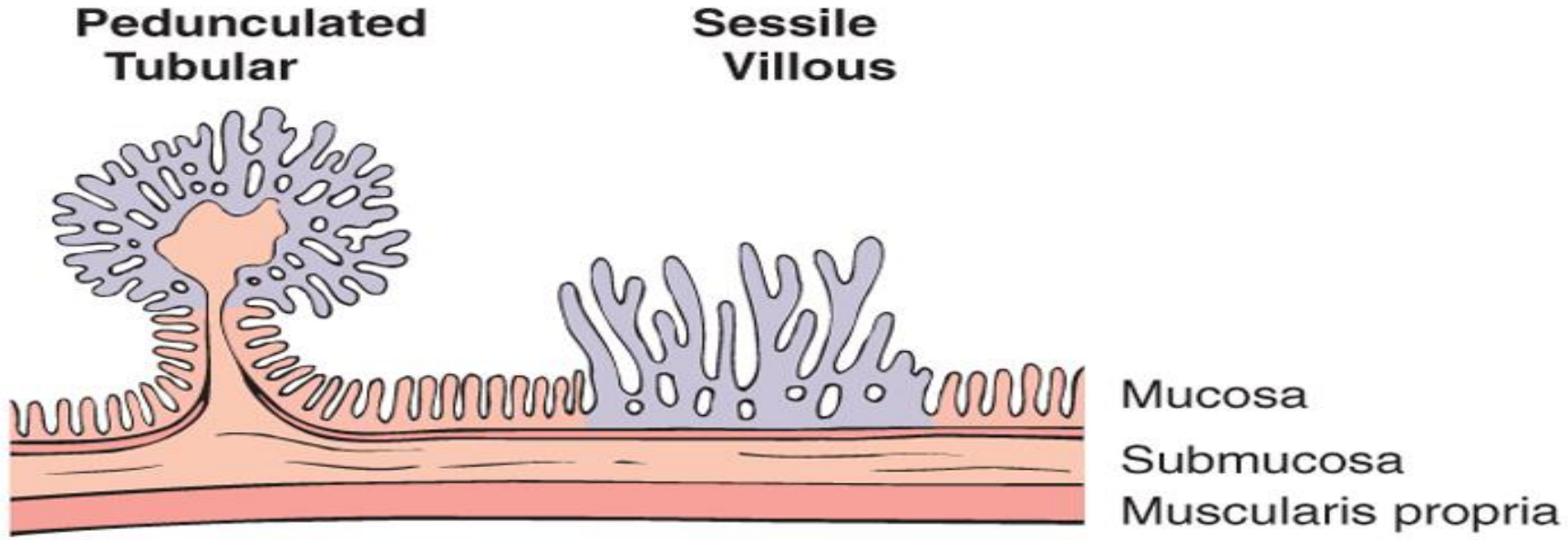
Terminology

- **Polyp:**
- A mass arises from the epithelium of the mucosa and protrudes into the lumen of the gut.
- **Gross morphology:**
- *Pedunculated polyp* has a stalk.
- *Sessile polyp* has no definable stalk.
- **Types of polyps**:
- Non-neoplastic polyps
- Adenomatous polyps (adenomas)

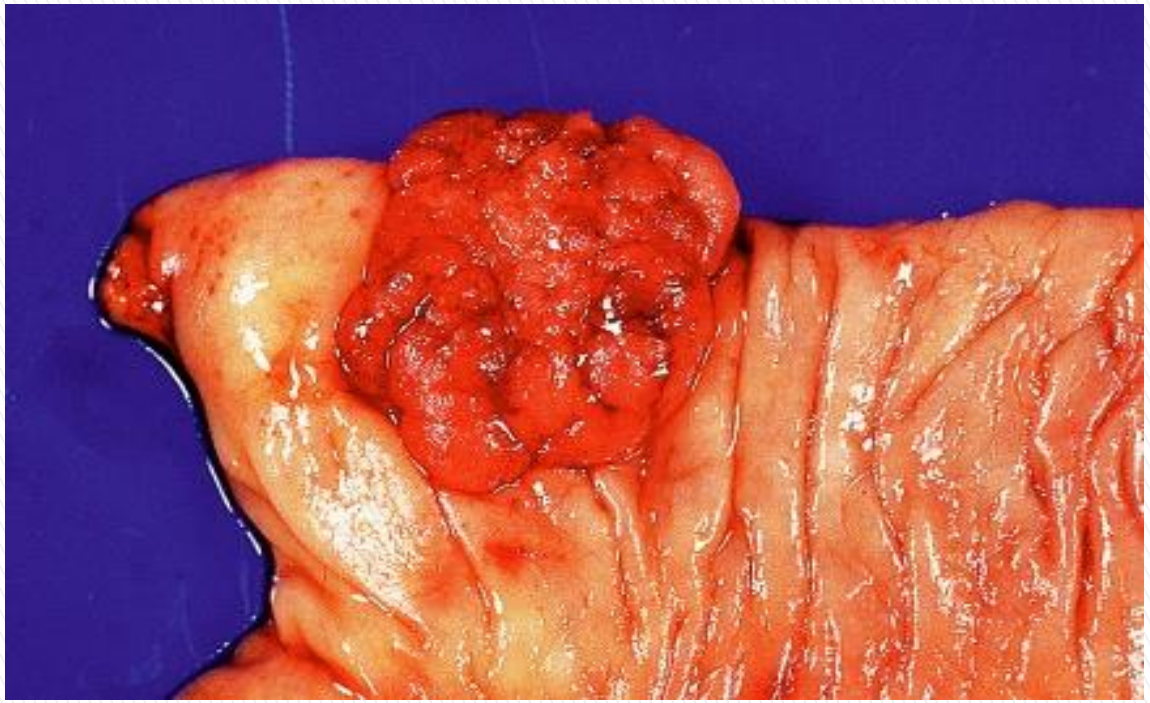
SESSILE POLYPS



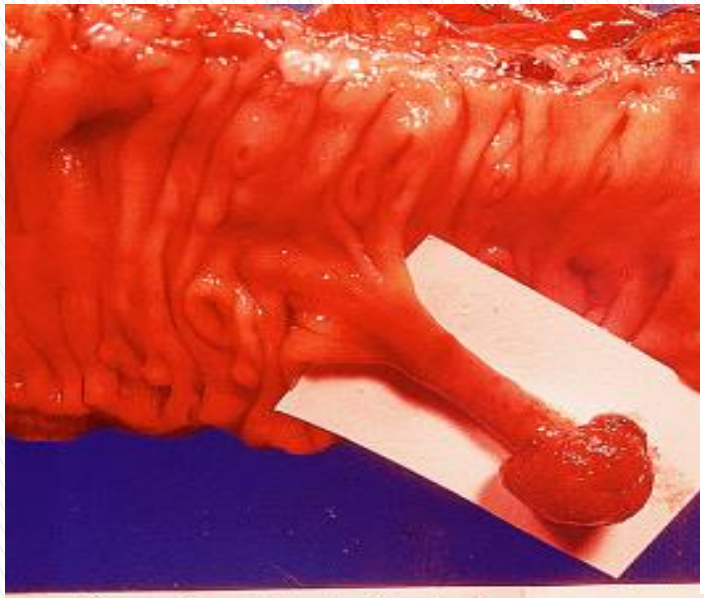
ADENOMAS

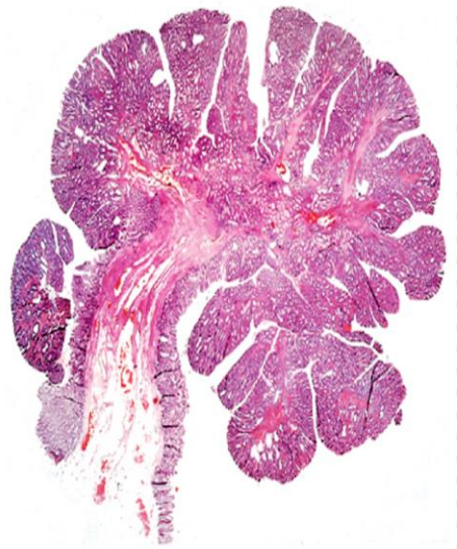


Sessile polyp (adenoma)



Pedunculated polyp (adenoma)





Classification of tumors of the Small and Large Intestines

Non-neoplastic Polyps – No malignant potential

Hyperplastic polyps, the most common polyps
Hamartomatous polyps*
- Juvenile polyps
- Peutz-Jeghers polyps

Inflammatory polyps
Lymphoid polyps

Neoplastic Epithelial Lesions

Benign polyps
- Adenomas**

Malignant lesions
- Adenocarcinoma
- Carcinoid tumor
- Squamous cell carcinoma of the anus

Other Tumors

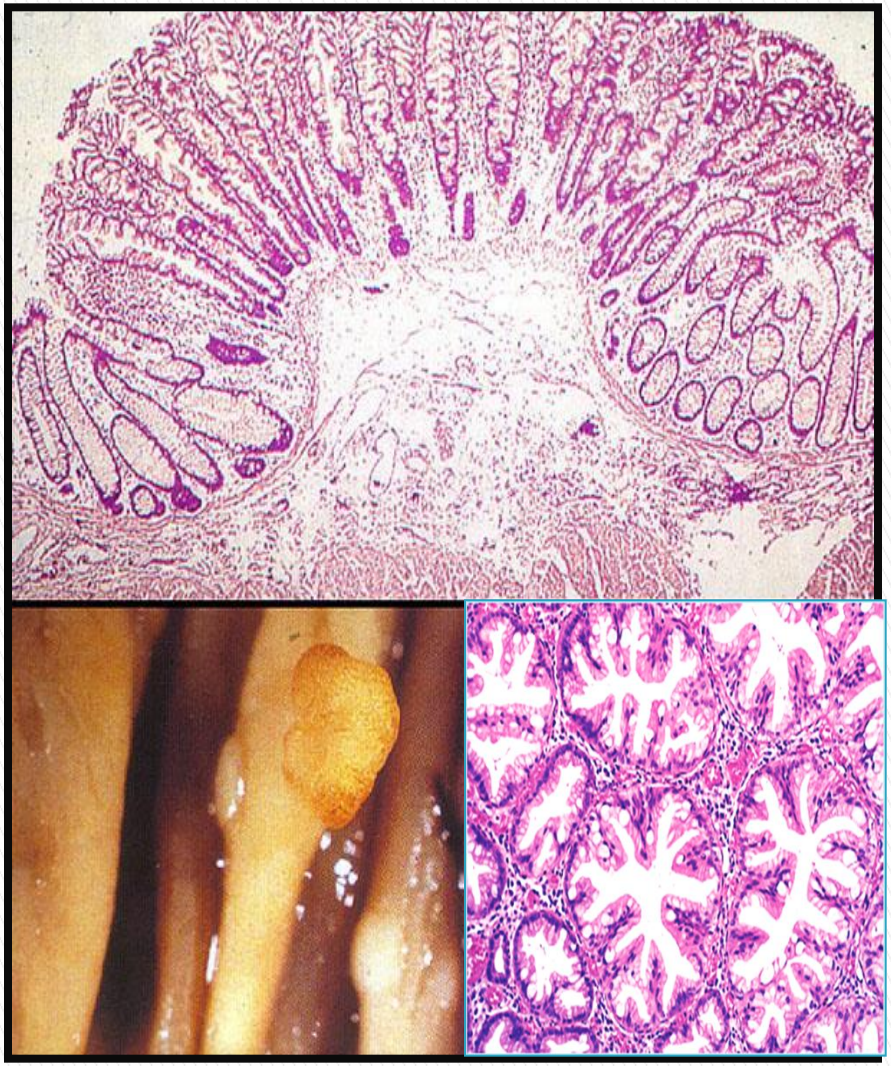
Gastrointestinal stromal tumors (GIST)
Lymphoma

Hyperplastic polyps

- The *most common* polyps.
- Frequency **increases** with age.
- Most are **sporadic**.
- **Multiple** > single. Small (<0.5cm).
- **Site:** Anywhere – most common in *rectosigmoid*.
- Decreased epithelial cell turnover & delayed shedding lead to infolding of the crypts.
- **No** malignant potential

Microscopic picture

- Well- formed crypts lined by mature non-neoplastic epithelium (absorptive and goblet cells) separated by a scant lamina propria.



Juvenile polyps

- In *children* younger < 5 years.
- In *adults* called **retention polyps*.**

- **Sporadic:**
  - Usually single in the *rectum*.
  - No malignant potential .

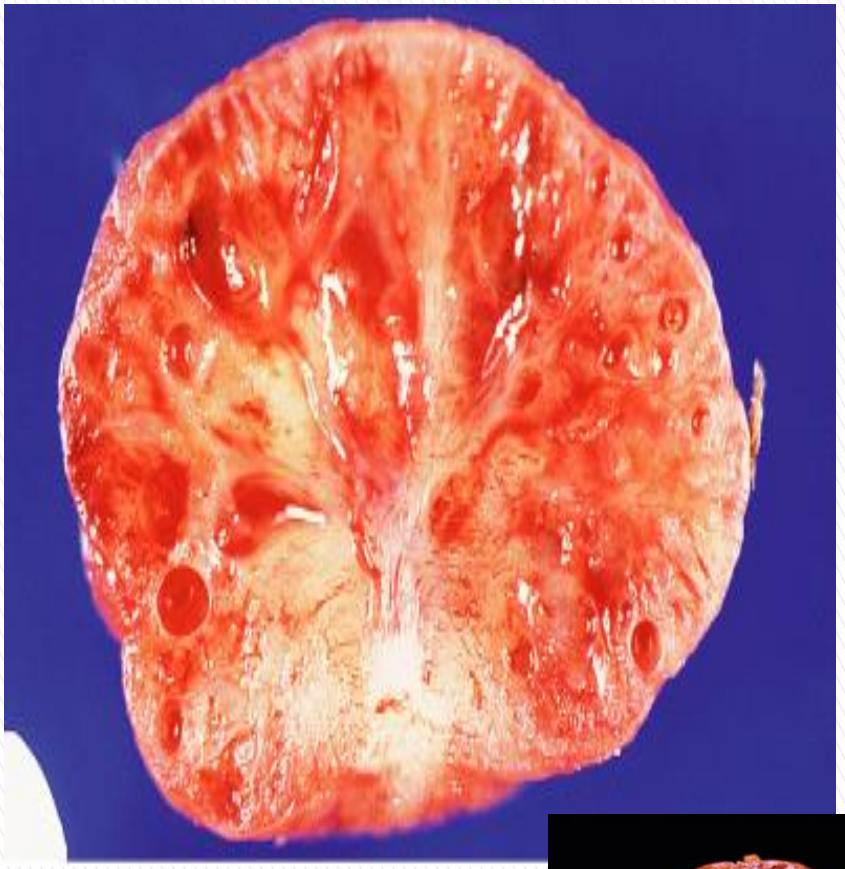
- **Juvenile polyposis syndrome:**
  - Multiple polyps.
  - May turn malignant.

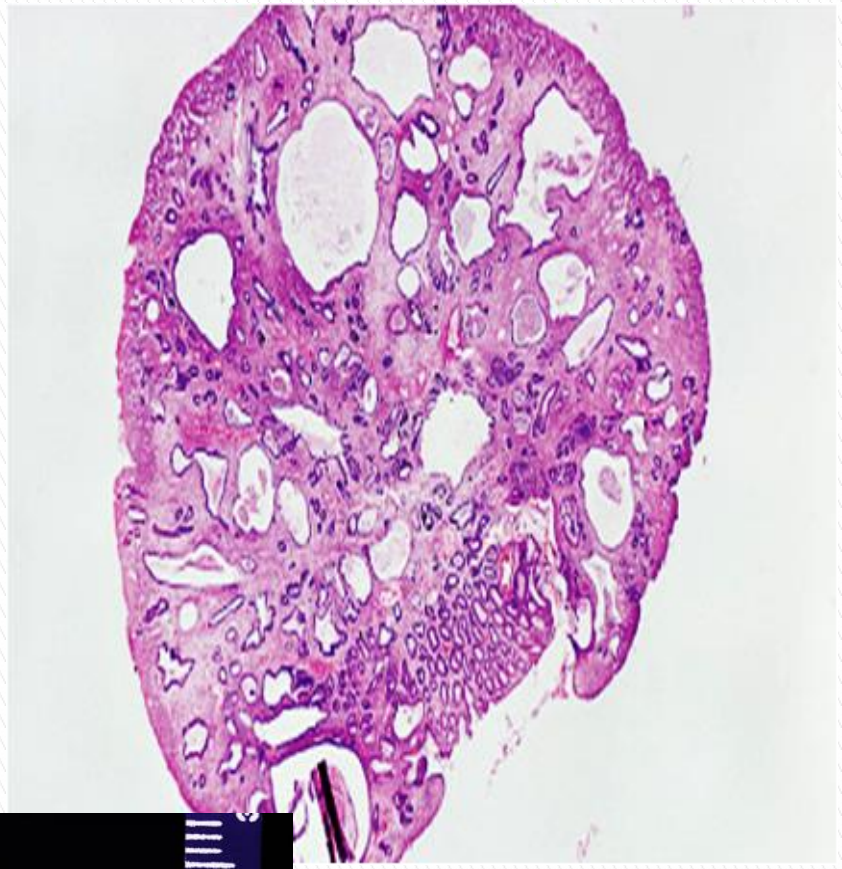
Juvenile polyps

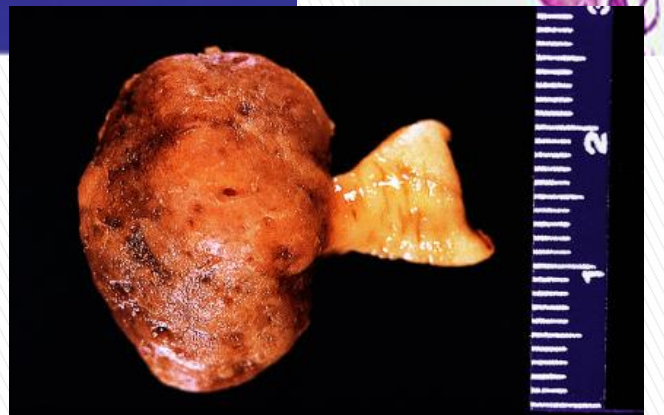
- **Gross appearance:**
  - Large in children (1-3 cm) & small in adults.
  - Pedunculated, smooth surfaced, reddish in diameter and display characteristic cystic spaces.

- **Microscopic appearance**
  - Hamartomatous proliferations of the lamina propria, enclosing widely spaced dilated cystic glands*.
  - Inflammation & ulceration are common.

Juvenile polyps





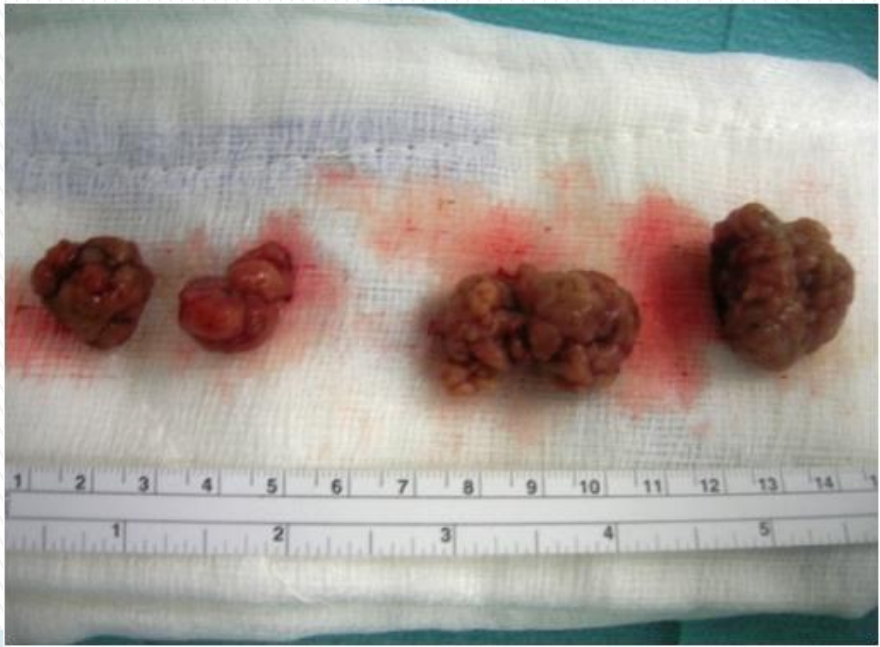


Peutz-Jeghers polyps

- Hamartomatous polyp involves mucosal epithelium, lamina propria and muscularis mucosa.

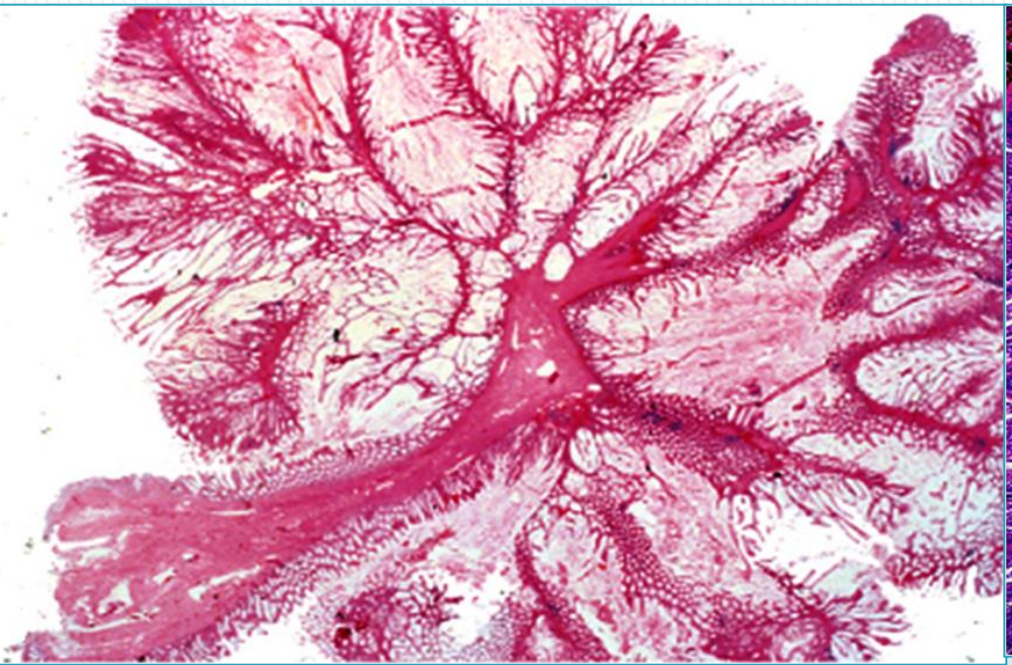
- May be *single* **OR** *multiple* (syndromatic)

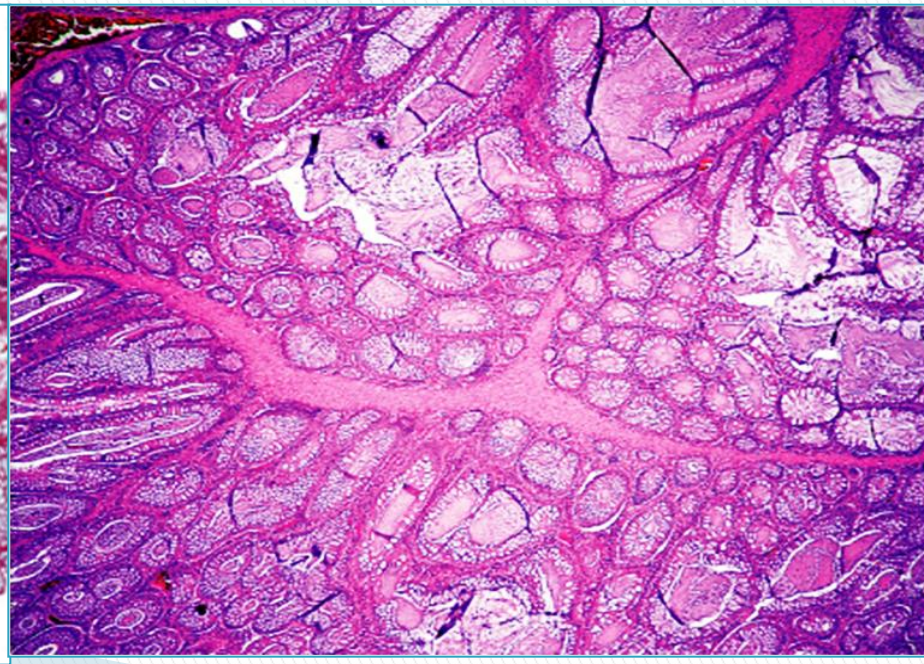
- **Gross appearance**
  - Large & pedunculated
  - Lobulated contour



Peutz-Jeghers polyps

- **Microscopic appearance:**
  - Arborizing network of connective tissue.
  - Well-developed **smooth muscule** extends into the polyp and surrounds normal abundant glands.





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