



NON-NEOPLASTIC INTESTINAL DISEASES

DIARRHEAL DISORDERS

Definition

❖ **Increased** frequency **OR** volume of stool (**more** than 250 gm/day).

TYPES/CAUSES

①	Secretory diarrhea	<ul style="list-style-type: none"> ⊗ Intestinal cells secrete more water than they absorb as: <ol style="list-style-type: none"> 1. Cholera toxins 2. E.coli & Entero-virus infection 3. Preformed toxins of staphylococcal food poisoning.
②	Exudative diarrhea	<ul style="list-style-type: none"> ⊗ Purulent bloody stool (inflammation of the mucosa and/or hemorrhage) <ol style="list-style-type: none"> 1. Infections causing tissue damage: <i>Shigella</i>, <i>Salmonella</i>, <i>Entamoeba histolytica</i> 2. Idiopathic inflammatory bowel disease
③	Osmotic-diarrhea	<ul style="list-style-type: none"> ⊗ Due to the presence of non-absorbable substances which increase the intra luminal osmotic pressure leading to influx of water & electrolytes into the lumen. E.g. <ol style="list-style-type: none"> 1. Patients with genetic lactase deficiency → Diarrhea after milk ingestion due to lactose osmosis. 2. Malabsorption syndrome . 3. Using excess laxatives (<i>Mannitol</i> – <i>Sorbitol</i>)
④	Reduced absorption time	
⑤	Mixed causes	





MALABSORPTION SYNDROMES

Definition

- ❖ State of **abnormal** intestinal absorption of nutrients resulting in: **malnutrition - weight loss - osmotic diarrhea**.

ETIOLOGY

1 LUMINAL PHASE:

Inadequate digestion	<ol style="list-style-type: none"> 1) Postgastrectomy 2) Deficiency of pancreatic lipase <ol style="list-style-type: none"> a. Chronic pancreatitis b. Cystic fibrosis c. Pancreatic resection 3) Zollinger-Ellison syndrome (high acid inhibits lipase)
Hypomotility states	<ol style="list-style-type: none"> 1) Diabetes 2) Scleroderma 3) Visceral myopathy 4) Amyloidosis
Deficient bile salt concentration	<ol style="list-style-type: none"> 1) Obstructive jaundice 2) Bacterial overgrowth → Leading to bile salt deconjugation → Stasis in blind loops & diverticula 3) Interrupted enterohepatic circulation of bile salts <ol style="list-style-type: none"> a. Terminal ileal resection b. Crohns' disease c. Precipitation of bile salts (as neomycin)

2 CELLULAR PHASE:

Primary mucosal abnormalities	<ol style="list-style-type: none"> 1) Surgical resection 2) Celiac disease 3) Whipple's disease 4) Radiation enteritis 5) Amyloidosis
Lymphatic obstruction	<ol style="list-style-type: none"> 1) Intestinal lymphangiectasia 2) Lymphoma
Decreased Intestinal Transit Time & Inadequate small intestine	<ol style="list-style-type: none"> 1) Intestinal resection 2) Crohn's disease 3) Increased intestinal motility as carcinoid syndrome (serotonin stimulates smooth muscle)





CELIAC DISEASE

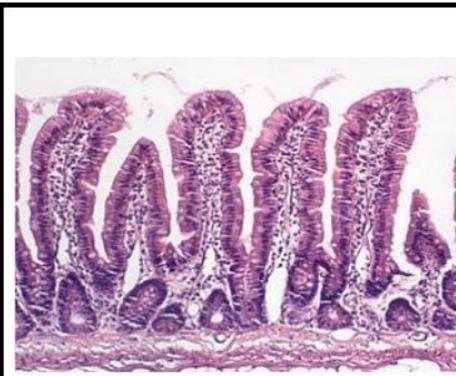
Gluten-sensitive enteropathy

Definition

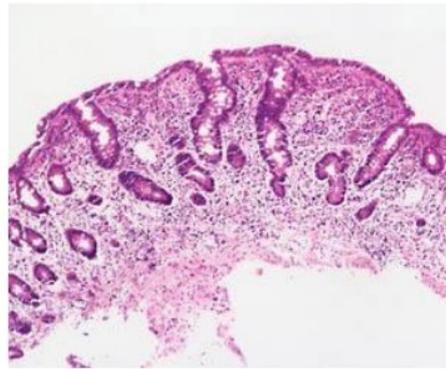
- ❖ Hypersensitivity to gliadin (a component of gluten "present in wheat flour")

PATHOPHYSIOLOGY

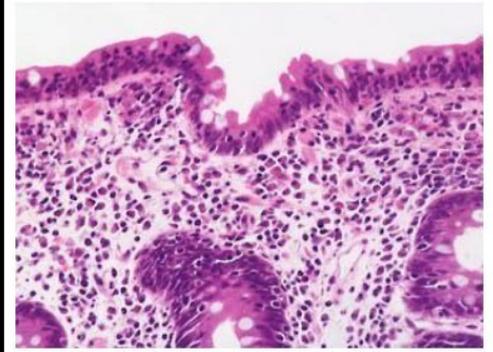
- ⊗ leading to flattened villi & increased intraepithelial lymphocytes.
 - Flattening of the villi → Greatly **decreases** the surface area available for absorption.
- ⊗ Changes disappear with gluten-free diet.
- ⊗ Increased risk for lymphoma.



Normal villi



Celiac disease



WHIPPLE DISEASE

Definition

- ❖ Malabsorption & diarrhea occurring in certain tropical areas.

ETIOLOGY

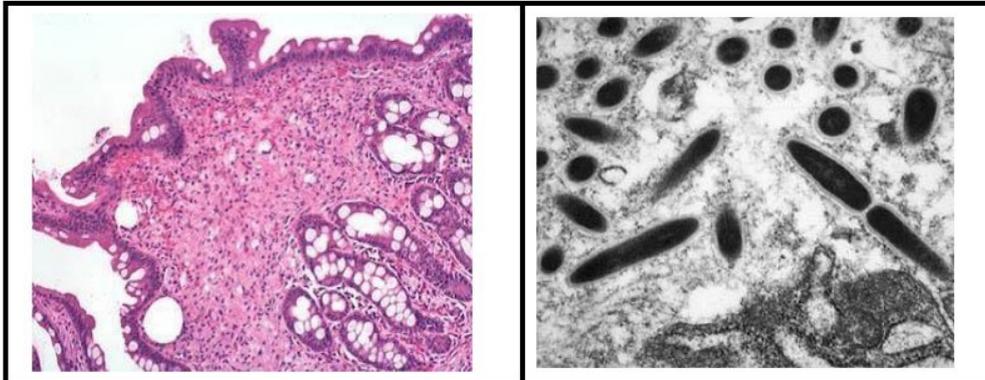
- ⊗ **Infectious: Caused by T. whippelii**
 - Gram-**positive** organism
 - **Responds** to antibiotics.
 - Can be demonstrated inside the macrophages by **PAS** stain



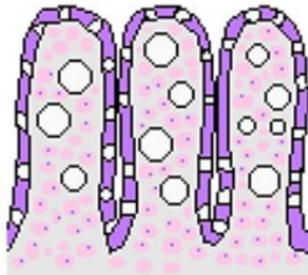


PATHOPHYSIOLOGY

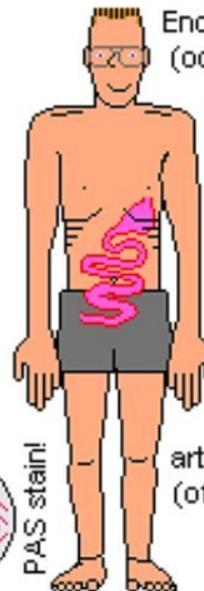
- Widening of the intestinal villi with numerous macrophages seen throughout the lamina propria
- Systemic disease that affects (GIT – nervous system – joints).



Easy to diagnose and treat -- if you think of it.



Bacteria-laden macrophages and lipid pools in the mucosa



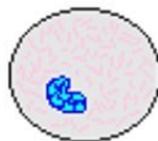
Encephalopathy (occasionally)

Lymphadenopathy (same morphology as gut)

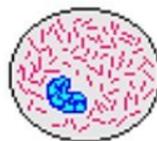
Malabsorption and diarrhea

arthritis (often)

steatorrhea



Tropheryma whippelli bacilli within the macrophages



PAS stain!

INFLAMMATORY BOWEL DISEASE (IBD)

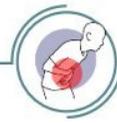
Definition

- ❖ Chronic inflammation of the intestine caused by dysregulated immune responses to commensal bacteria.
- ❖ Prolonged inflammation results in damage to the GI tract that results in impaired absorption of nutrients.

PROGNOSIS

- ❖ Chronic course with exacerbations & remissions

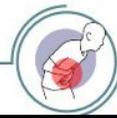




☑ **Inflammatory bowel disease includes two disorders:**

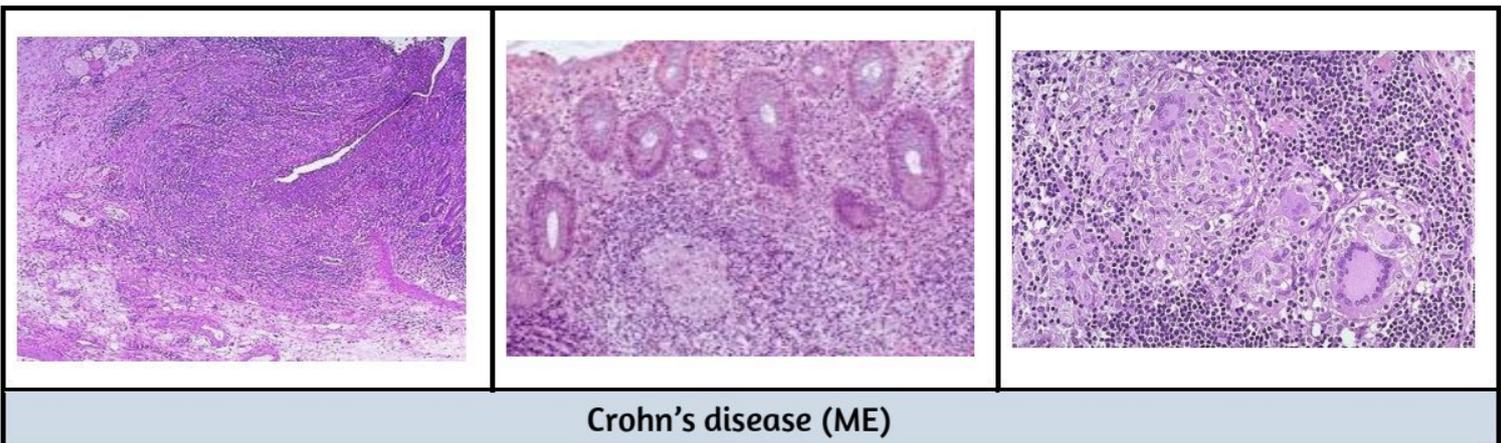
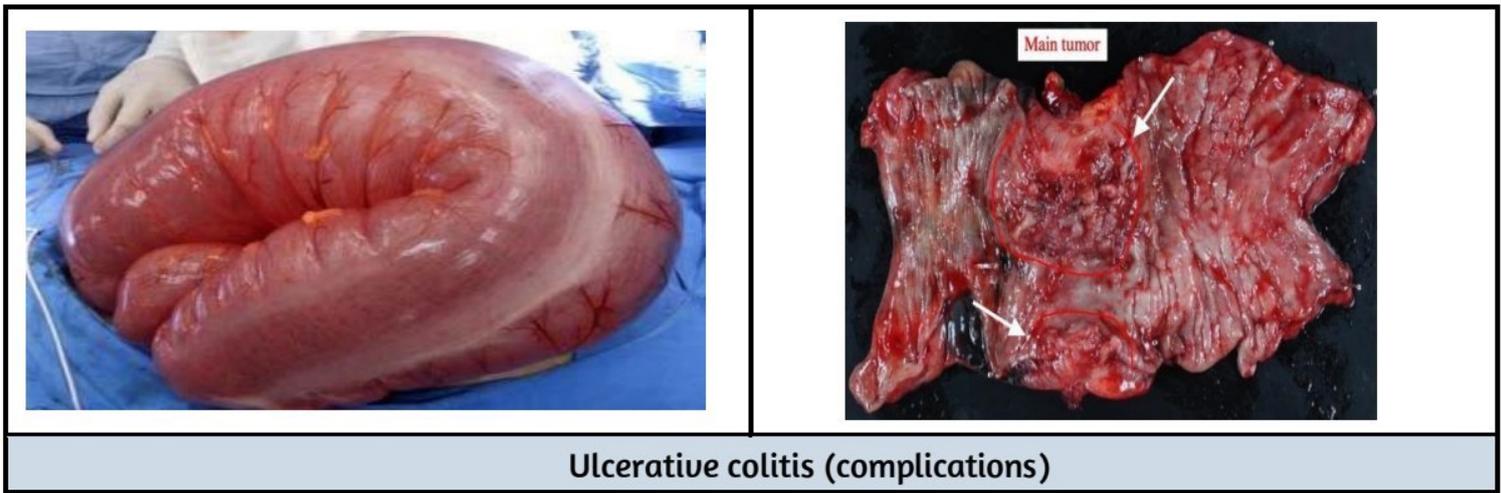
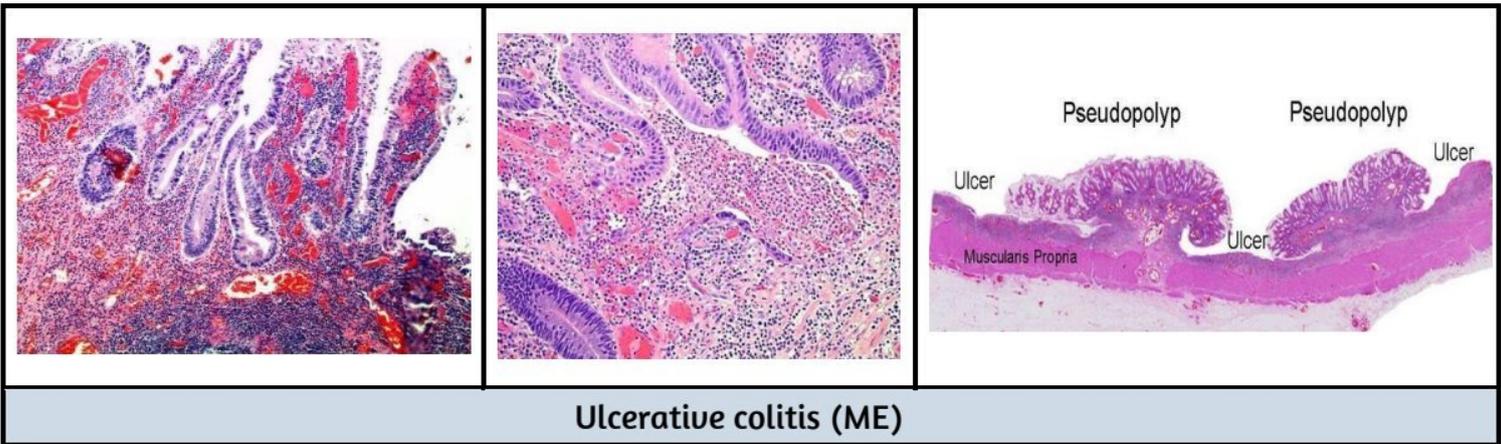
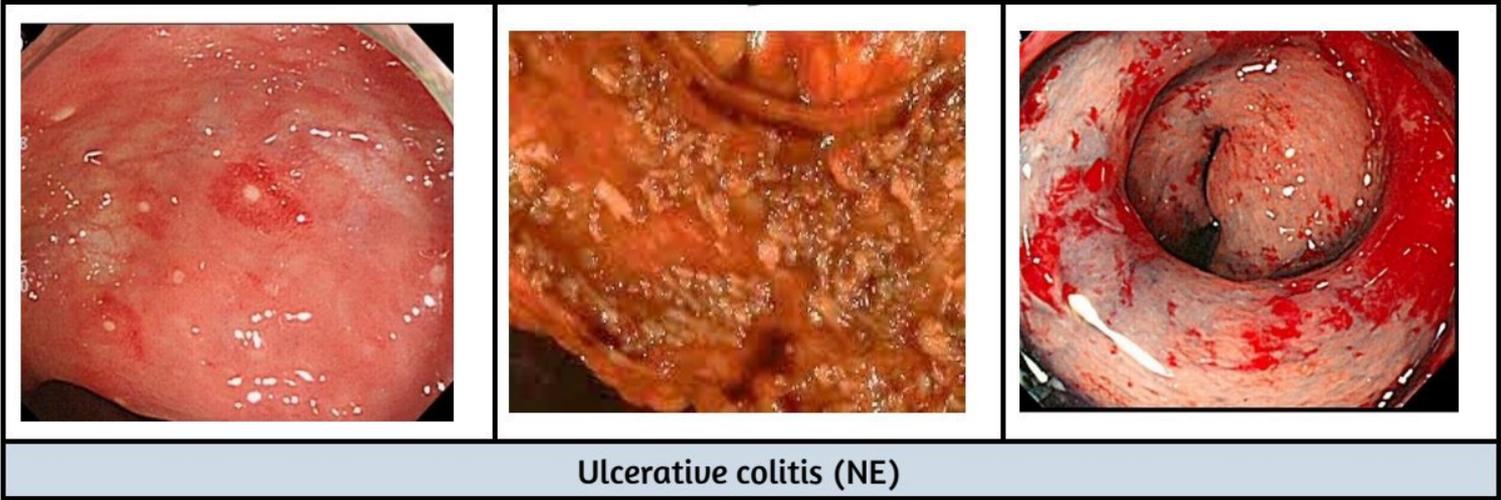
		Ulcerative Colitis (UC)	Crohn Disease (CD)
DEFINITION		Chronic inflammatory disease diffusely involving the mucosa of the colon & rectum characterized by severe ulceration	Chronic inflammatory disease of alimentary tract that is associated with transmural inflammation & skip lesion
CAUSES		<ul style="list-style-type: none"> Idiopathic but it can be: <ol style="list-style-type: none"> Genetic predisposition Virus or amoebiasis Psychosomatic. Diets Allergic 	<ul style="list-style-type: none"> Idiopathic but it can be: <ol style="list-style-type: none"> Genetic predisposition Virus or bacteria Autoimmune.
N/E	SITE	<ul style="list-style-type: none"> Rectum & spread contiguously for varying distances. The small intestine is not affected 	<ul style="list-style-type: none"> Terminal ileum & Right colon But any part can be affected.
	SKIP LESIONS	No skip lesions	Presence of multiple areas of disease separated by uninvolved gut .
	MUCOSA	<ul style="list-style-type: none"> Appears deeply congested associated with mucopurulent discharge Mucosa in between the ulcers: Swollen producing pseudopolyposis 	<ul style="list-style-type: none"> The affected segment shows intense edema of the mucosa <ul style="list-style-type: none"> leading to thickening of the wall & narrowing of the lumen.
	ULCER	Superficial irregular ulcers	Linear ulcers (fissures) deep penetrating & cobble stone appearance .
	OTHERS	<ul style="list-style-type: none"> The lesion occurs only in mucosa & submucosa. No serositis. 	<ul style="list-style-type: none"> Fibrosis leads to stricture. The mesentery is thickened Mesenteric LNs are enlarged

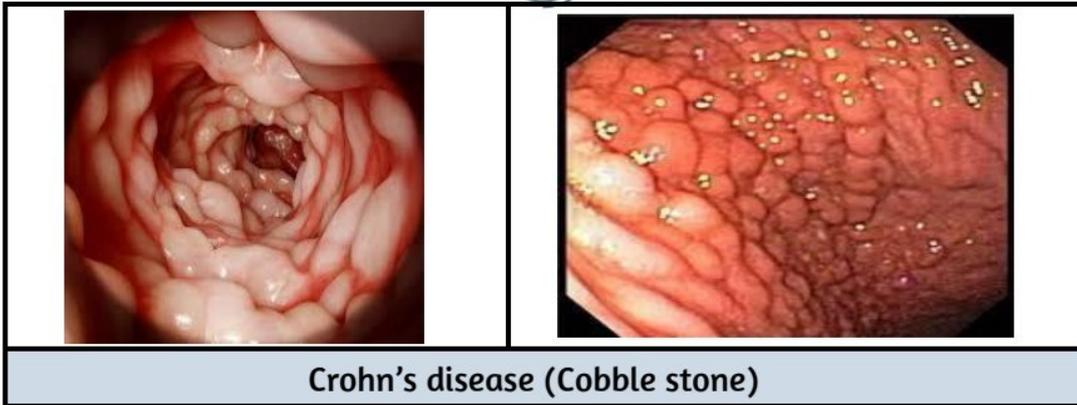




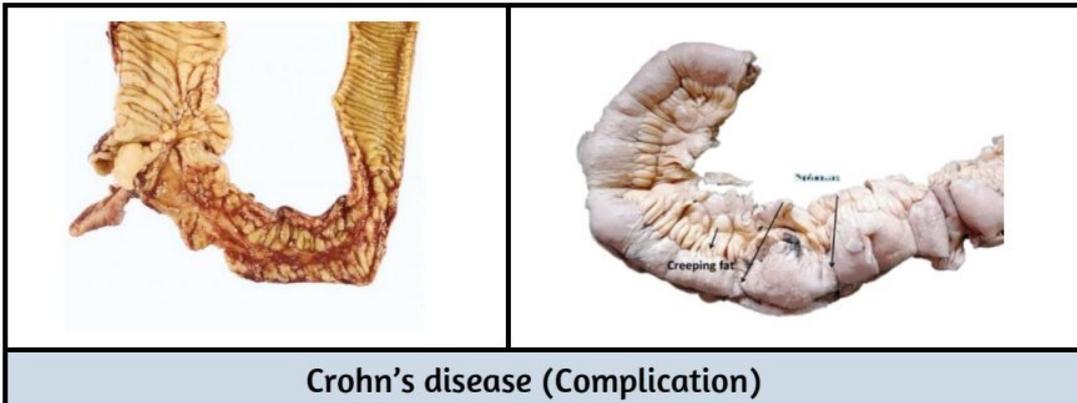
M/E	<ul style="list-style-type: none"> ▪ Mucosa: Congested & infiltrated by inflammatory cells (neutrophils & plasma cells). ▪ Multiple ulcerations. ▪ Mucosa at the margins of the ulcers: <ul style="list-style-type: none"> - Show irregularly branched crypts - Decreased goblet cells - Metaplasia (gastric) - Hyperplasia - Dysplasia. ▪ Crypt abscess: Neutrophils in the wall & lumen of the crypt. ▪ Pseudopolyps: Consists of hyperplastic mucosa & granulation tissue 	<ul style="list-style-type: none"> ▪ Inflammatory reaction extends through whole wall of intestine reaching the serosa & the mesentery. ▪ It consists of lymphocytes, plasma cells, eosinophils & mast cells. ▪ Some cases show non caseating granuloma & fibrosis. ▪ Mucosa: Shows metaplasia (to mucus secreting pyloric cells) & hyperplasia.
COMPLICATIONS	<ol style="list-style-type: none"> 1) Bleeding 2) Malnutrition & anemia 3) Perforations & strictures are rare 4) Toxic megacolon 5) Malignancy: <ul style="list-style-type: none"> - More common than crohn's disease. - The risk increase with prolonged course of disease 6) Associated extraintestinal disease: Common <ul style="list-style-type: none"> - Iridocyclitis - Artheritis - Vasculitis - Fatty change liver & cirrhosis - Secondary amyloidosis 	<ol style="list-style-type: none"> 1) Intestinal obstruction due to stricture 2) Perforation: <ul style="list-style-type: none"> - Peritoneal abscess - Fistula with nearby organs (intestine - U.B - skin – Vaginal) 3) Secondary malabsorption syndrome. 4) Carcinoma: Rare 1/1000 5) Toxic megacolon.



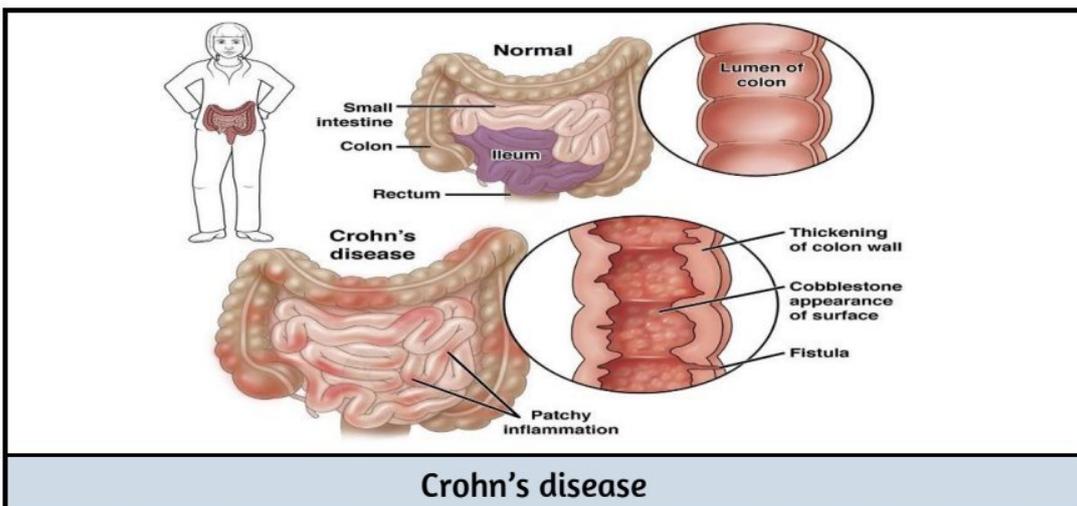




Crohn's disease (Cobble stone)



Crohn's disease (Complication)



Crohn's disease

	Ulcerative Colitis	Crohn's Diseases
SITE	Colon & rectum Mucosa only	From mouth to anus Transmural
MUCOSA	Continuous lesion Ulcerations Pseudopolyps	Skip lesions Cobble stone Fissure ulcer
SEROSA	Normal	Inflammation
STRICTURES	Rare	Common
FISTULA	Rare	Common

