



METABOLIC DISEASES OF GIT

Asst. Prof. Dr. Jaafaru Sani Mohammed
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Lecture Five
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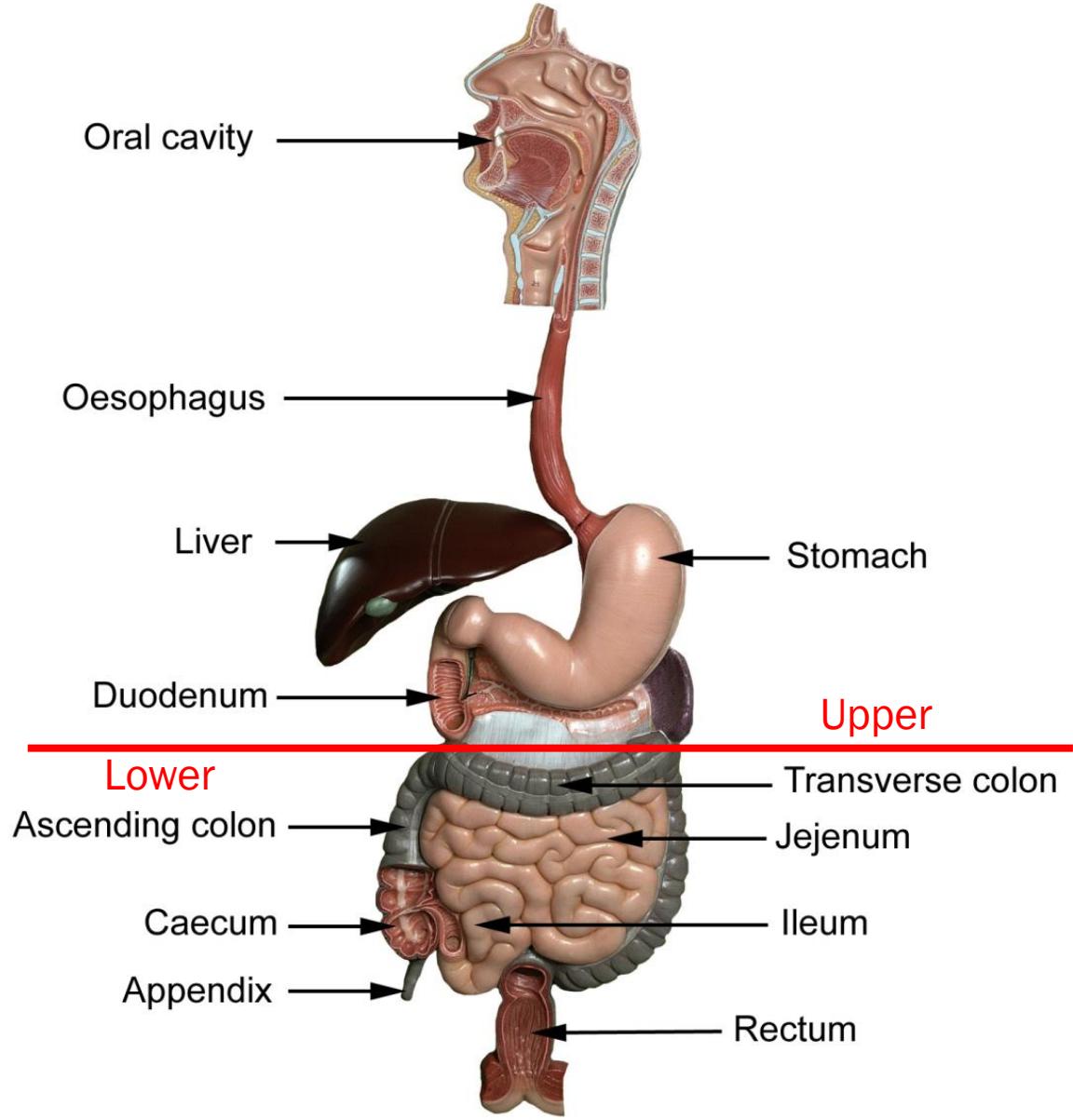
Outlines

- Objectives
- Introduction
- Biochemical functions of GIT
- Metabolic-related diseases of the GIT

Objectives

- At the end of the lesson, the students should be able to:
- The biochemical roles of GIT.
- The types and major metabolism-related diseases of GIT
- The symptoms and signs of GIT diseases
- The possible remedy and preventive measure for GIT development.





Introduction

- **The gastrointestinal tract in humans** begins at the mouth down to the large intestine through to the esophagus, stomach, and small intestine.
- The GI tract is about 9 meters with many supporting organs such as liver attached.
- The human GI tract can be divided into two major components namely:
 - Upper GI tract
 - Lower GI tract

Biochemical functions of GIT

- GIT is responsible for several biochemical functions that ensure the digestion, absorption, and metabolism of nutrients, including waste elimination.
- **Ingestion and Breakdown of Food:**
- **Acid and Enzyme Secretion (Hydrochloric Acid and Digestive Enzymes)**
- **Emulsification of Fats:**
- **Nutrient Absorption:**
- **Water and Electrolyte Balance:**
- **Metabolism and Transport:**
- **Waste Elimination:**
- **Microbial Fermentation:**
- **Hormone Production and Regulation:**



Interaction

- What are the two components of GIT?
- What are the major parts of each component?
- Are the stomach and Small intestine belonging to the same compartment? Why?
- Mention five biochemical functions of GIT

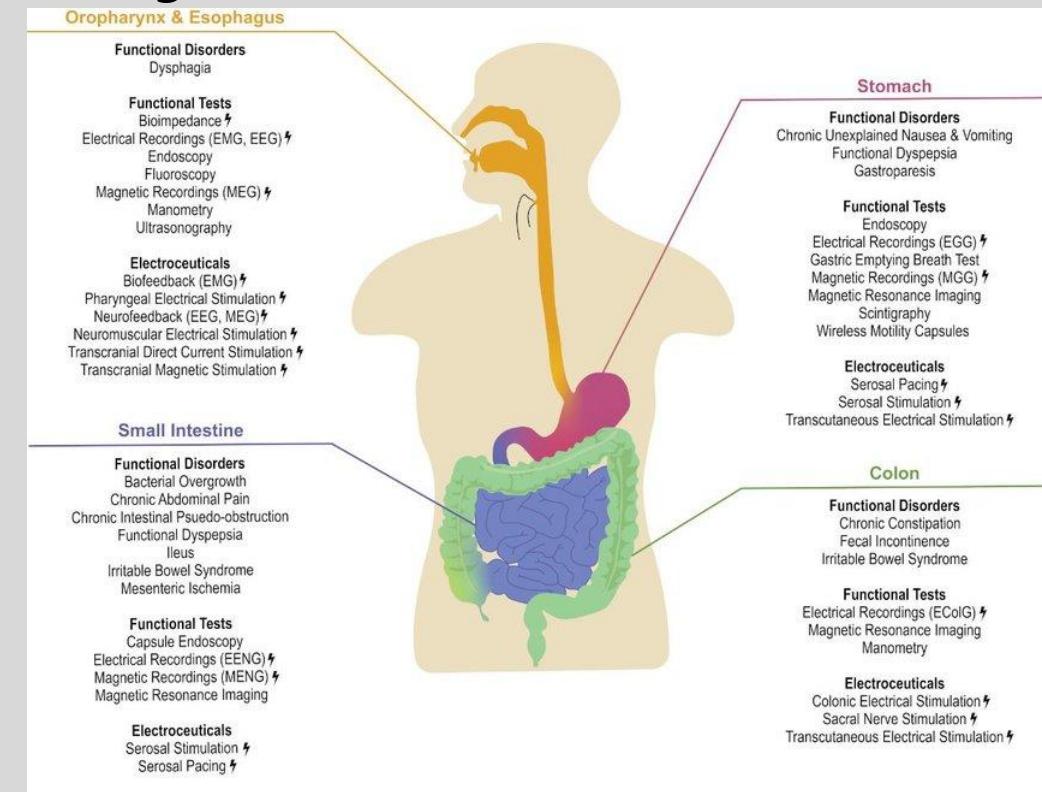


Diseases of GIT

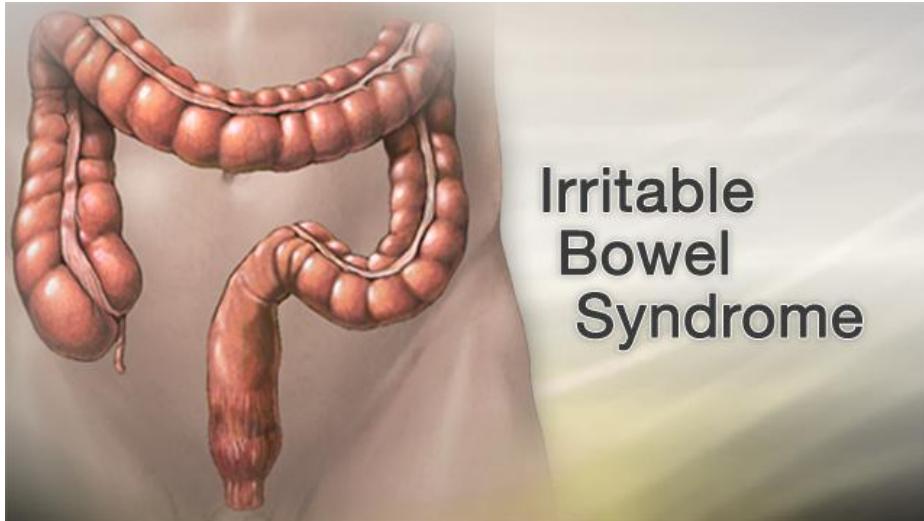
- GIT diseases affect the entire tract from the mouth to the anus.
- There are two types of GIT diseases:
 - Functional and Structural.

Functional diseases of the GIT

- Diseases that make GIT look normal when examined (Constipation, irritable bowel syndrome (IBS), nausea, food poisoning, gas, bloating, and diarrhea).
- Factors causing functional diseases of the GIT:
 - Eating a low-fiber diet.
 - Lack of enough exercise.
 - Eating large amounts of dairy products.
 - Stress and pregnancy.
 - Over usage of anti-diarrheal medications.
 - Excessive intake of antacid medicines containing Ca or Al

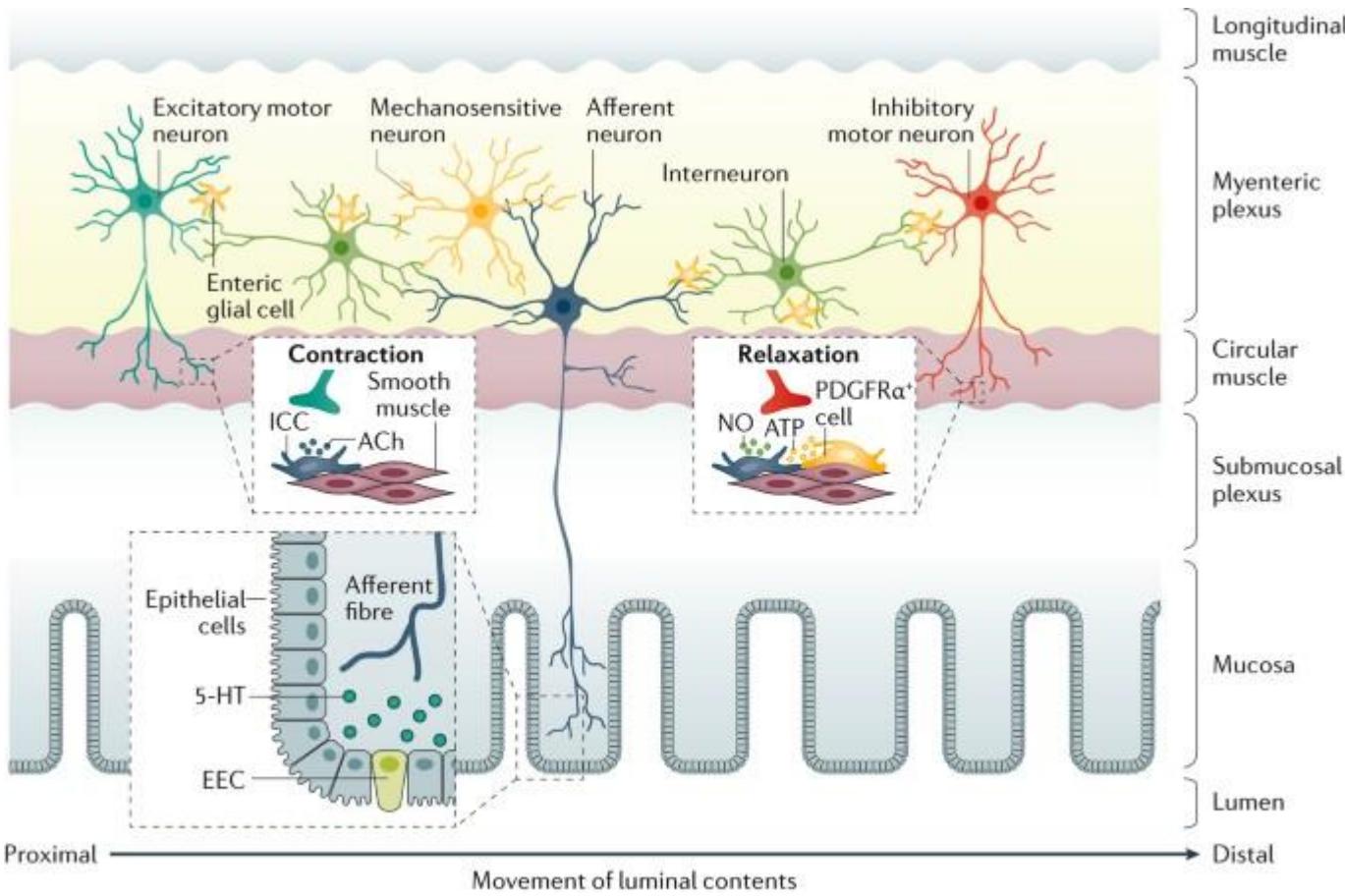


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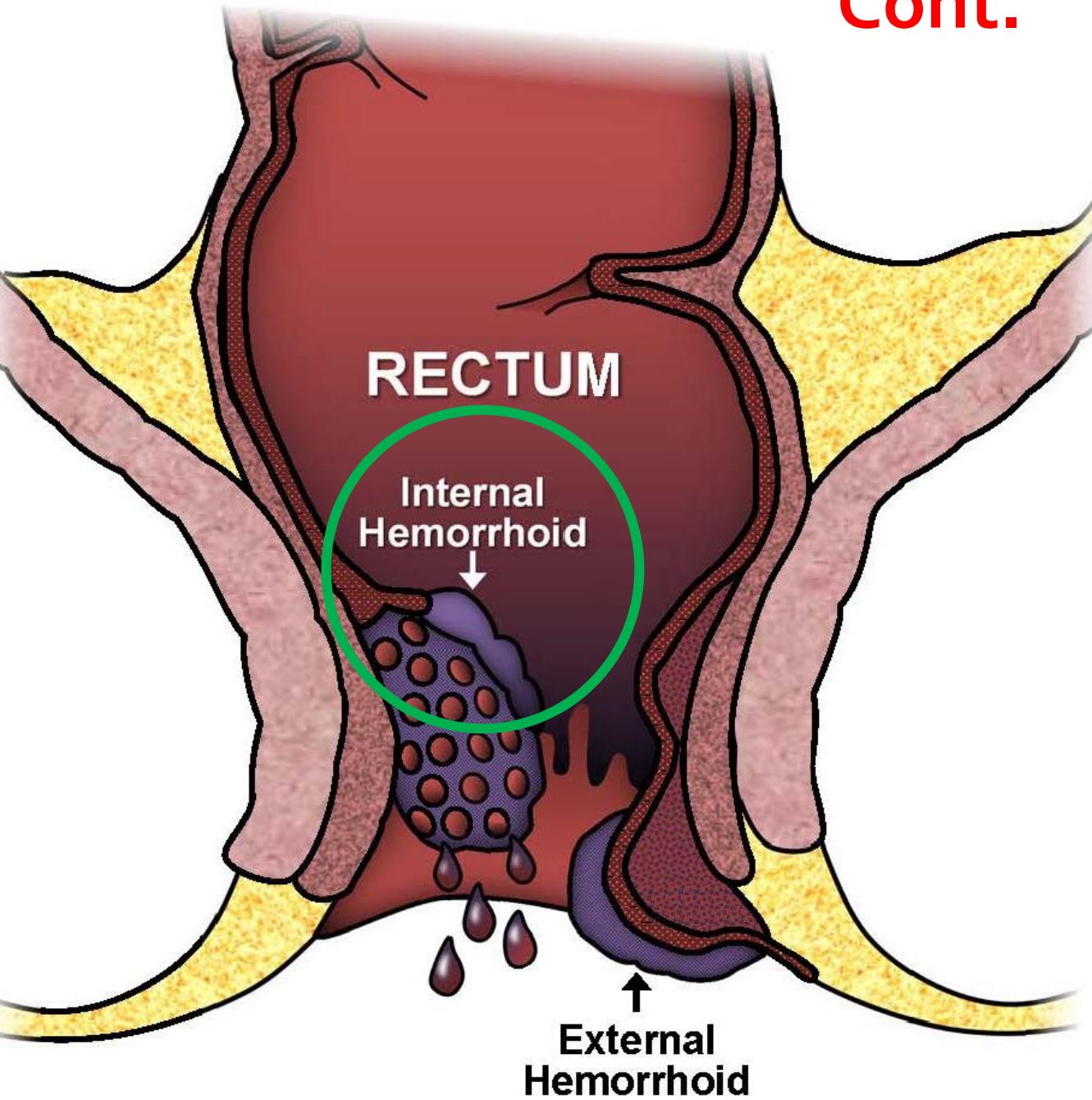
- **Irritable bowel syndrome (IBS):** aka spastic colon or nervous stomach,
 - It is a functional condition, where colon muscle contracts abnormally.
- **Causative factors:** certain foods, medicines, and emotional stress.
- **Symptoms:** abdominal pain and cramps, excess gas, more urgent stools than normal.
- **Treatment:** avoid excessive caffeine, high fiber diet, Minimum stress, prescribed medication, hydration, and enough sleep.

Structural diseases of GIT



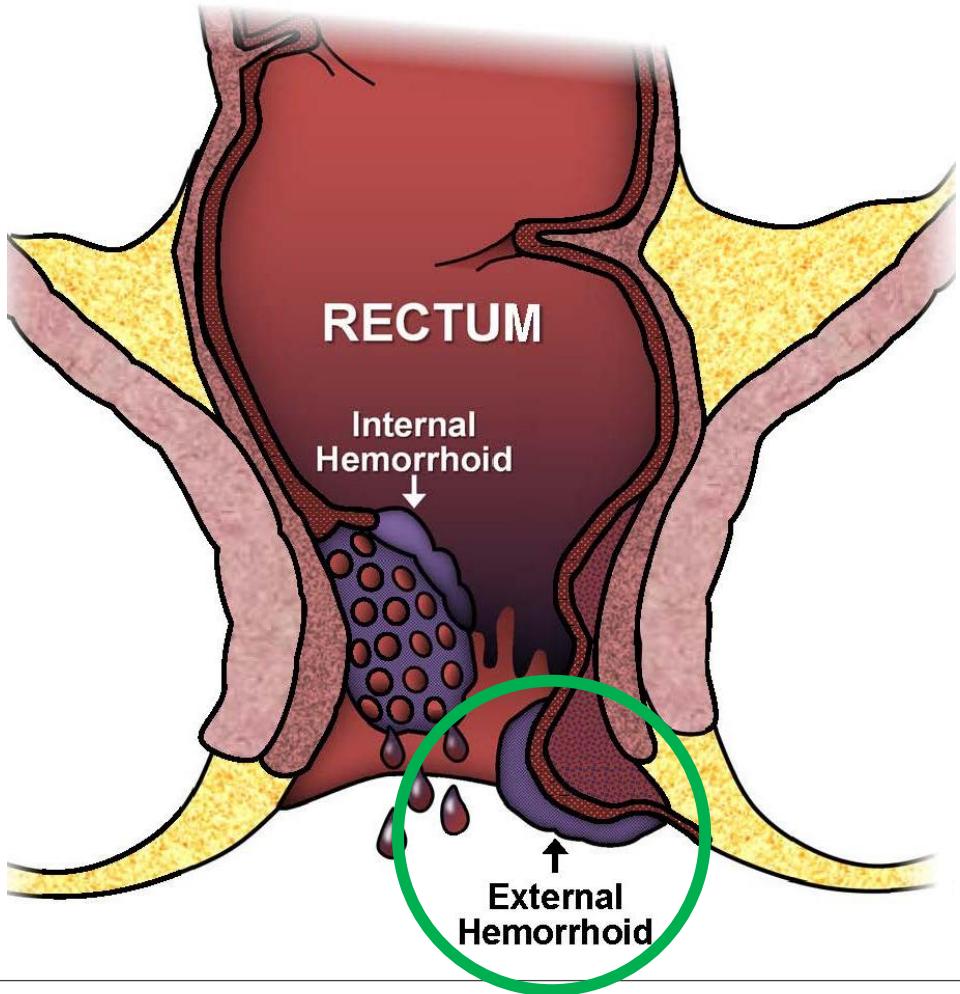
- Diseases that make bowel look abnormal when examined and also doesn't work properly and to be removed surgically. E.g. stenosis, hemorrhoids, diverticular disease, colon polyps, & colon.
- Constipation:** incomplete bowel movements due to inadequate consumption of fiber and water in the diet. It can be treated by increasing the amount of fiber in the meal and involving in regular exercise or laxative.

Cont.



- **Hemorrhoids:** are dilated and swollen blood vessels at the anal opening caused by chronic excess pressure from straining during a bowel movement, persistent diarrhea, or pregnancy.
 - The two types of hemorrhoids are **internal** and **external** hemorrhoids.
 - **Internal hemorrhoids:** blood vessels on the inside of anal opening, when they fall into the anus, they become irritated and start to bleed.
- ✓ Treatment: Improving bowel habits, and elimination of vessels surgically by experts.

Cont.



- **External hemorrhoids:** veins beneath the skin of the outer part of the anus that may be busted due to straining and result in blood clots under the skin (a very painful condition called **PILE**).
 - Treatment: removal of the clot and vein under local anesthesia and/or removal of hemorrhoid itself.
- ✓ **Anal fissures:** they are cracks in the lining of anal openings commonly caused by the passage of hard stools. It is one of the most painful GIT conditions as the exposed muscles to stool become irritated with intense pain and bleeding.
 - Treatment: pain killer medication, dietary fiber, bulky stools sitting in warm water, and surgery on sphincter muscle.

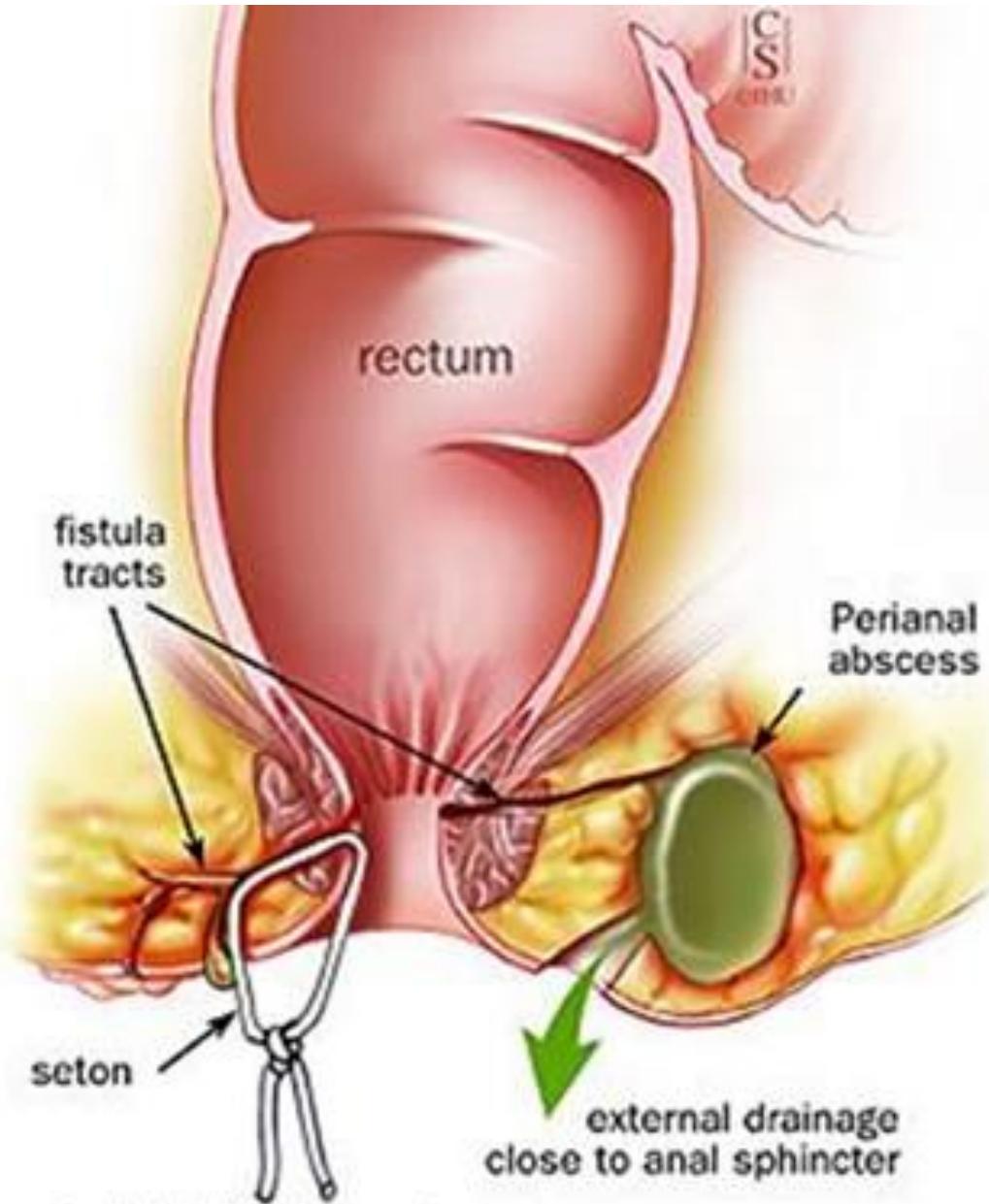
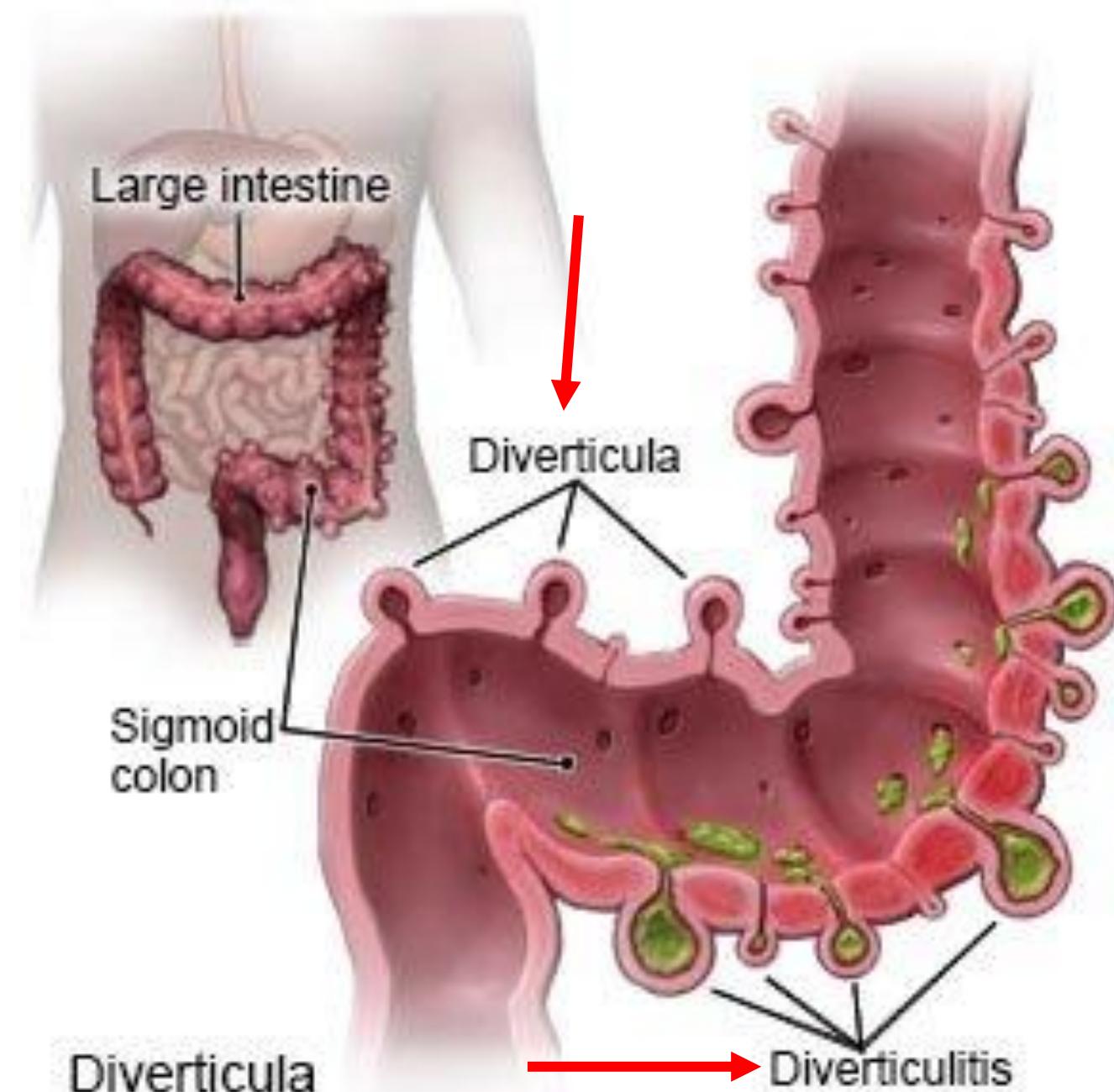


Image Credit: blog.listentoyourgut.com

Structural

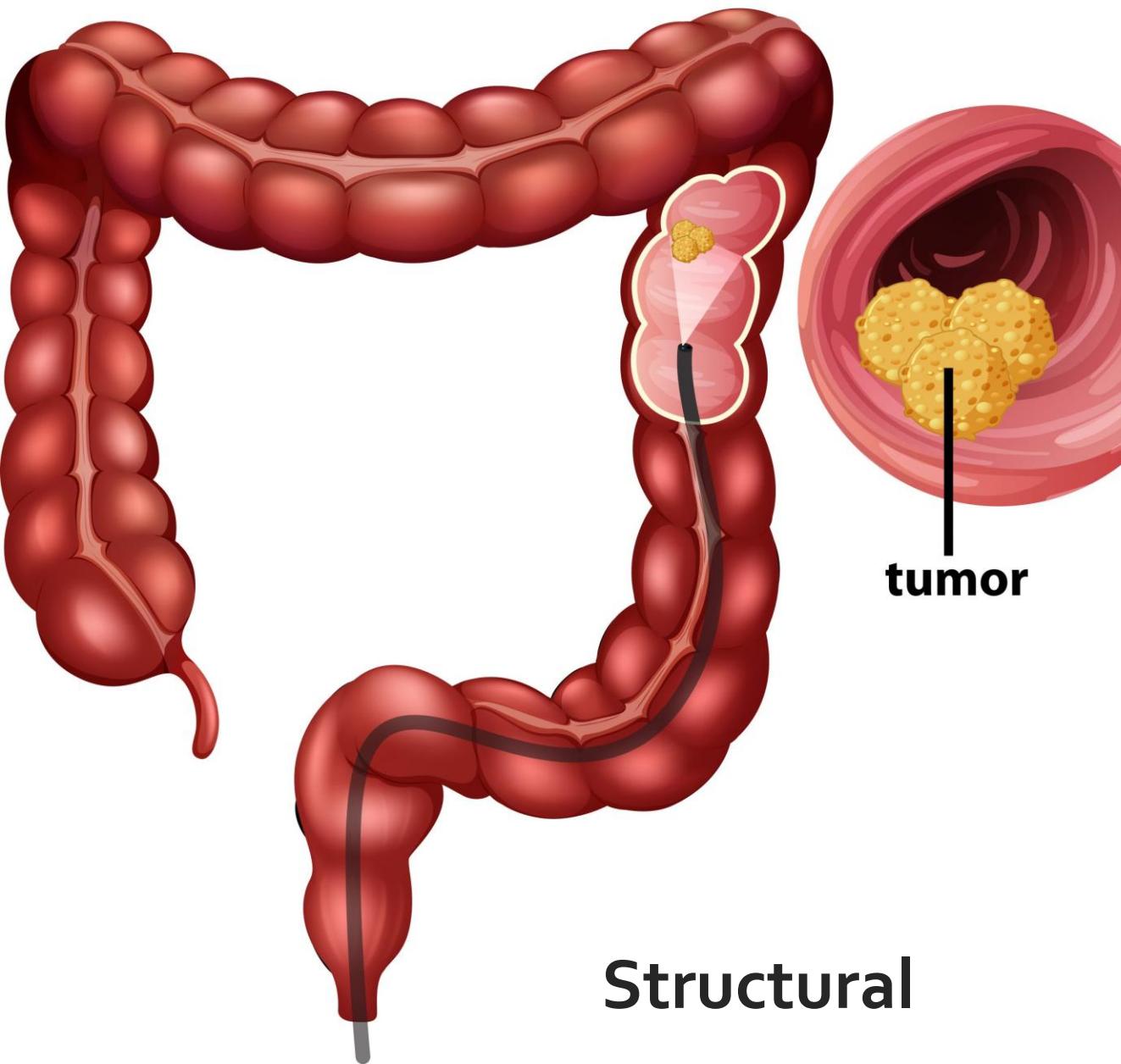
- **Perianal abscesses:** occur when the tiny anal glands that open inside the anus is blocked, the bacteria are always present in the glands & cause infection.
- **Anal fistula:** often follows drainage of an abscess and is an abnormal tube-like passageway from the anal canal to a hole in the skin near the opening of anus.
 - It causes itching and irritation, drainage, pain, and bleeding.
 - The condition rarely heals easily, rather, requires surgery to drain the abscess and close off the fistula.



Structural

- **Diverticular disease** (diverticulosis) is the presence of small outpouchings (diverticula) in the muscular wall of the large intestine that forms in some areas of the bowel.
- It is often caused by too little fiber in the diet, & develops or
- progresses into diverticulitis.
- **Treatment:** addressing constipation, use of antibiotics, and surgery if severe to remove the involved diseased segment of the colon.

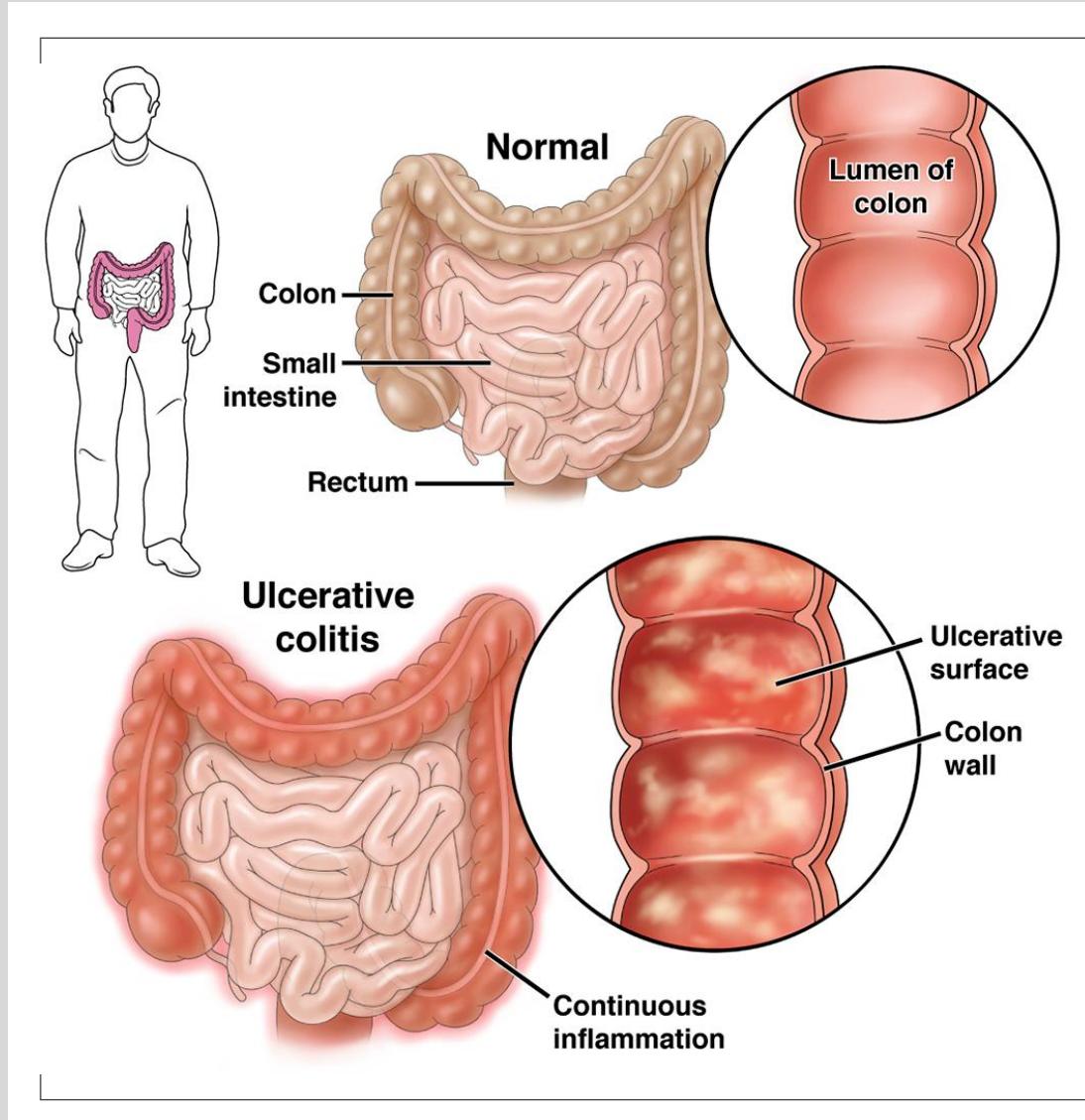
Colorectal Cancer (CRC)



Structural

- **Colorectal Cancer:**

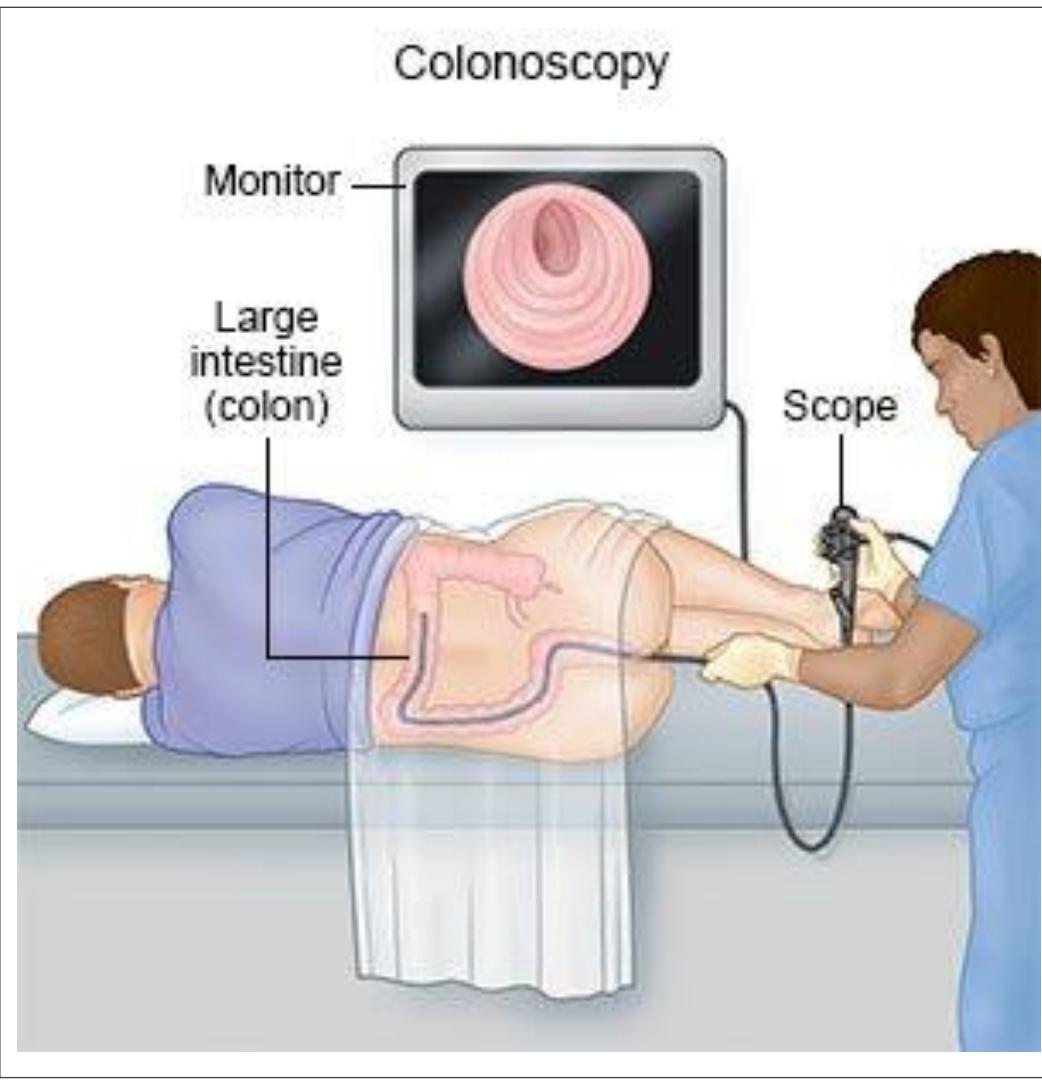
- begins in the colon (colon cancer), rectum (rectal cancer).
- Majority of colorectal cancers develop over time from adenomatous (precancerous) polyps.
- Polyps (growths) can change after a series of mutations (abnormalities) arise in their cellular DNA.
- Some of the risk factors for the disease include family history of colon or rectal cancer, diet, alcohol intake, smoking and inflammatory bowel diseases.,



Structural

- **Colitis:** this type of structural condition causes inflammation of the bowel in the following forms:
 - Ulcerative colitis
 - Crohn's colitis.
 - Ischemic colitis.
 - Radiation colitis
- Colitis causes diarrhea, rectal bleeding, abdominal cramps, and urgency in bowel emptying.
- **Treatment:** depends on the diagnosis made by colonoscopy and biopsy.

Precautionary measures



- Many diseases of the colon and rectum can be prevented by maintaining a healthy lifestyle, practicing good bowel habits, and getting screened for cancer.
- A colonoscopy is recommended for average-risk patients at age 45 or less in the case of a family history of colorectal cancer. (10 years younger than the affected family member).
- **Symptoms:** change in normal bowel habits, blood in the stool, Unusual abdominal pains, fatigue, anemia, unexplained weight loss, and feeling unsatisfactory bowel emptying.

Summary

- GIT constitutes two components namely Upper and Lower.
- The biochemical functions of the GIT work together to digest food, absorb nutrients, eliminate waste, and regulate metabolism.
- Small and large intestines are the components of lower GIT
- The disease of GIT are divided **into functional and structural**
- **Functional:** these make GIT look normal e.g. Irritable bowel syndrome.
- **Structural:** these make GIT looks abnormal e.g. colorectal cancer, colitis, Diverticular disease, Perianal abscesses, Anal fistula, Hemorrhoids, and Constipation

