

Lower GI Bleeding

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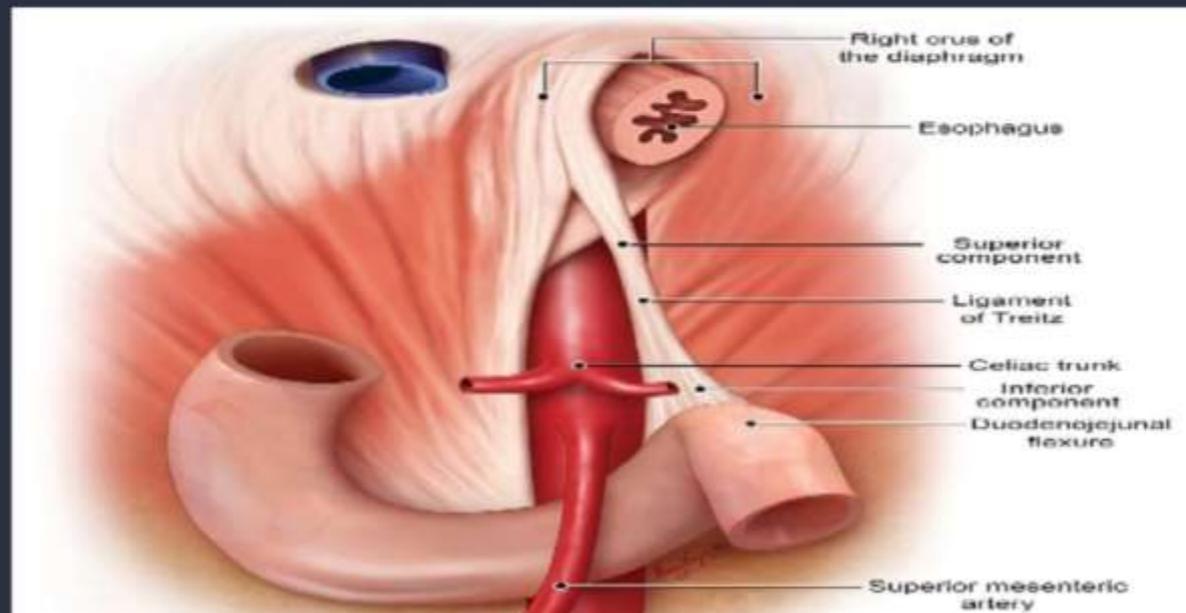
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Introduction

Definition

Lower gi bleeding is any bleeding that occurs distal to the ligament of Treitz
(the suspensory muscle of the duodenum)

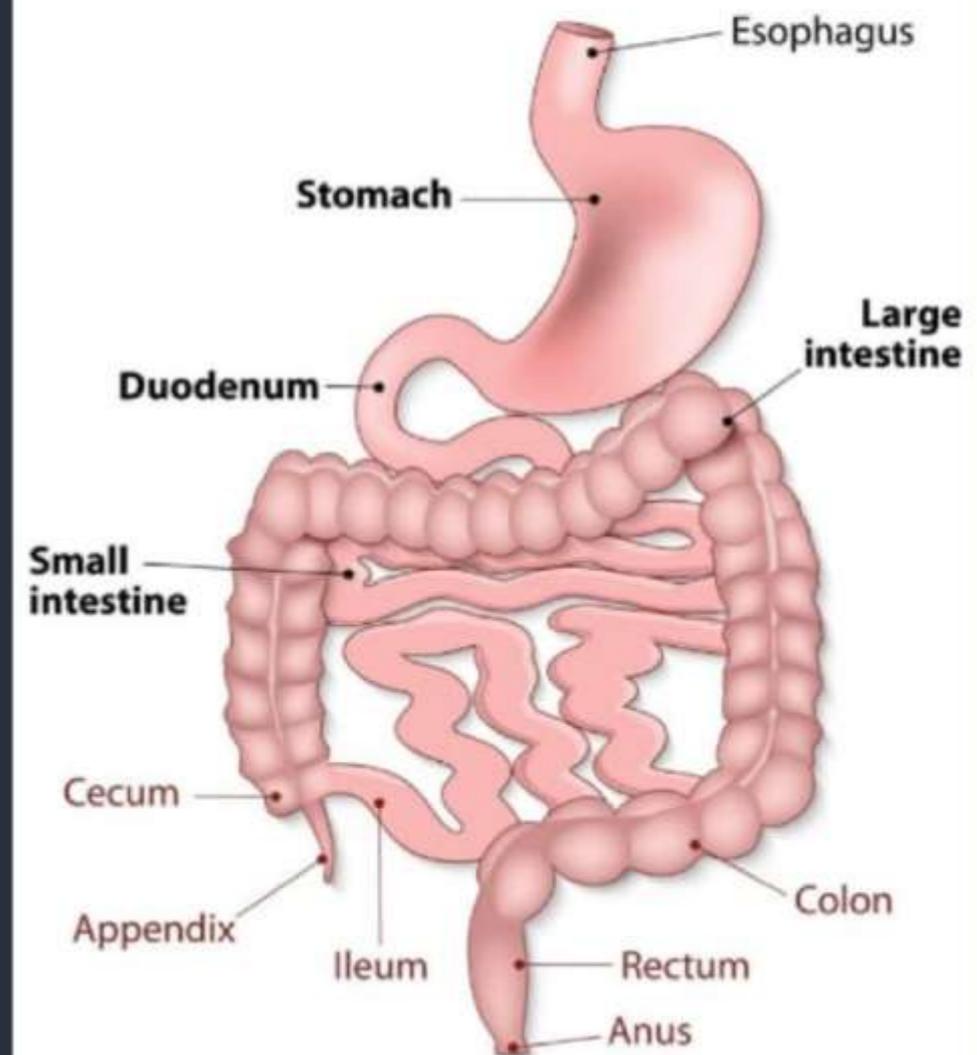
This includes: the 2nd and 3rd parts of the duodenum and the entire area of the jejunum, ileum, colon, rectum, and anus with the colon responsible for more than 95% to 97% of cases, with the remaining 3-5% arising in small bowel sites.



Anatomy

- Ã The lower gastrointestinal (GI) tract is the last part of the digestive tract. The lower GI tract consists of the large intestine and the anus.
- The large intestine absorbs water and changes the waste products of the digestive process from liquid into formed stool.
 - The large intestine includes the appendix, the cecum, the colon, which has four sections: the ascending colon, the transverse colon, the descending colon, and the sigmoid colon the rectum, the lower end of the large intestine leading to the anus.

HUMAN GASTROINTESTINAL TRACT



Epidemiology

- It accounts for approximately 20%-33% of episodes of gastrointestinal (GI) hemorrhage.
- Annual incidence of about 20-27 cases per 100,000 population in Western countries.
- A survey of GI bleeding from the American collage of gastroenterology found that LGIB accounts for 24% of all GI bleeding events.
- Despite diagnostic advancements, in 10% of cases the location of LGIB cannot be identified.
- LGIB is a more significant problem in males.
- Approximately, 80% to 85% of lower GI bleeds originate distal to the ileocaecal valve, with only 0.7% to 9% originating from the small intestine.

Etiology

- Major causes of lower gi bleeding : “NADIR”

N- neoplasms

A- angiodysplasia/ AV malformations

D- diverticulosis, drugs(NSAIDS)

I- IBD

R- ‘rhoids (hemorrhoids)

Classification

- There are 3 classifications of LGIB according to:

1. Amount of blood:

Figure 1: Types of lower GI bleeding

LOWER GI BLEEDING

MASSIVE BLEEDING

1. Patients >65 years of age with multiple medical problems
2. Present as a hematochezia or bright red blood per rectum.
3. Hemodynamically unstable
 - SBP < 90 mmHg
 - HR > 100/min
 - Low urine output
4. Hemoglobin level = 6 g/dl
5. Most commonly due to
 - Diverticulosis
 - Angiodysplasias
6. Mortality rate may be as high as 21%.

MODERATE BLEEDING

1. Patients with any age.
2. May present as hematochezia or melena.
3. Hemodynamically stable patients.
4. Long list of diseases including benign anorectal, congenital, inflammatory, and neoplastic diseases may cause moderate amount of acute or chronic bleeding.

OCCULT BLEEDING

1. Patients with any age.
2. Patients present with microcytic hypochromic anemia due to chronic blood loss.
3. Long list of diseases including congenital, inflammatory, and neoplastic diseases may cause chronic occult bleeding.

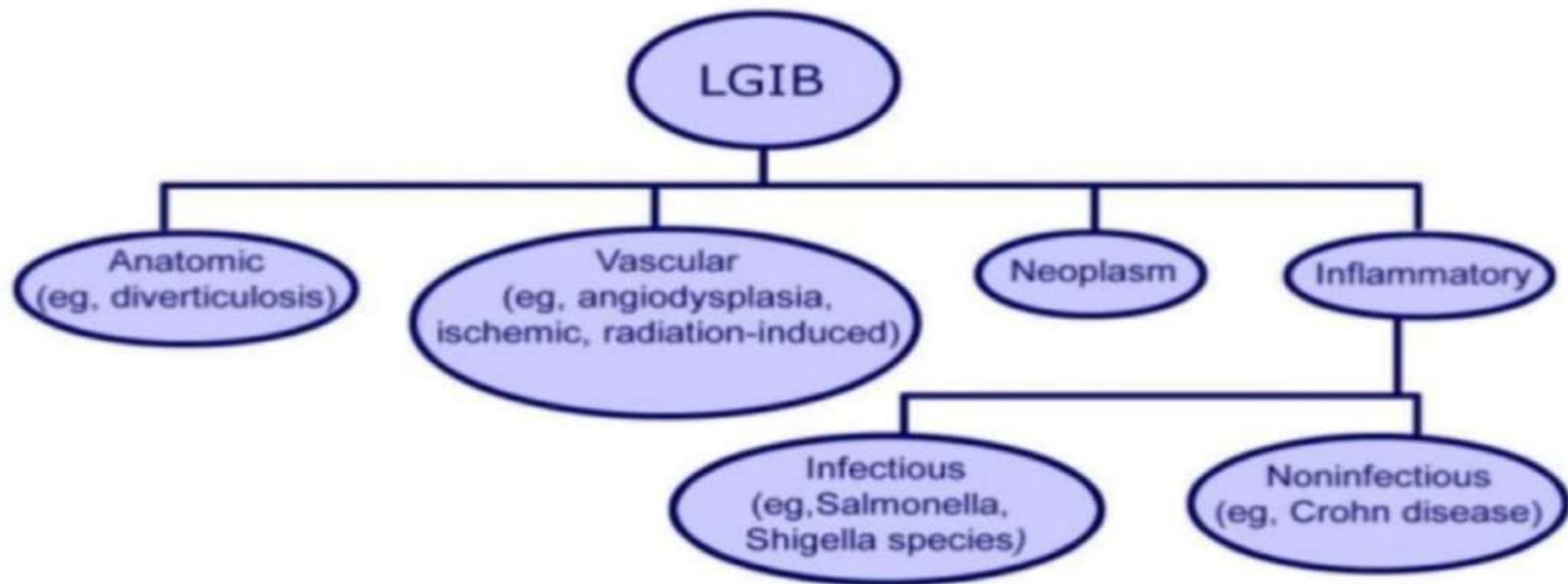
2. Severity:

- Acute LGIB : defined as bleeding of less than 3 days associated with instability of vital signs , anemia , and/or blood transfusion.
- Chronic LGIB : any passage of blood per rectum that results from intermittent or slow loss of blood.

Acute	Subacute/Chronic
Diverticular disease	Anal disease
Angiodysplasia	Polyps
Meckel's diverticulum	Carcinoma
Ischemic colitis	Solitary rectal ulcer
Mesenteric ischemia	Radiation enteritis

3. Etiology:

Classification By Etiology



2.

History & PE

History

- Important historical points to assess include:
 - 1. Abdominal pain and weight loss (non-specific, but may suggest inflammatory bowel disease, ischemia, and/or malignancy).
 - 2. Medication use (NSAIDs and other medications that can cause ulcers or intestinal ischemia).
 - 3. Recent colonoscopy with polypectomy (post-polypectomy bleed), prior abdominal/pelvic radiation (radiation proctitis/colitis).
 - 4. Prior operations (possible anastomotic ulcers).
 - 5. History of abdominal aortic aneurysm with or without surgical repair (possible aorto-enteric fistula).
 - 6. History of alcoholism or chronic liver disease raises the suspicion for bleeding due to portal hypertension.
 - 7. The manner in which the patient with bleeding presents can also suggest potential etiologies. Bright red blood is more often seen from ano-rectal and distal colonic sources, but brisk upper GI bleeding can also manifest this way.
 - 8. Painless severe bleeding with clots is more common with diverticular hemorrhage. Bloody diarrhea often occurs with ischemic and inflammatory colitides.
 - 9. It's important to ask the female patient about her menstruation cycle.

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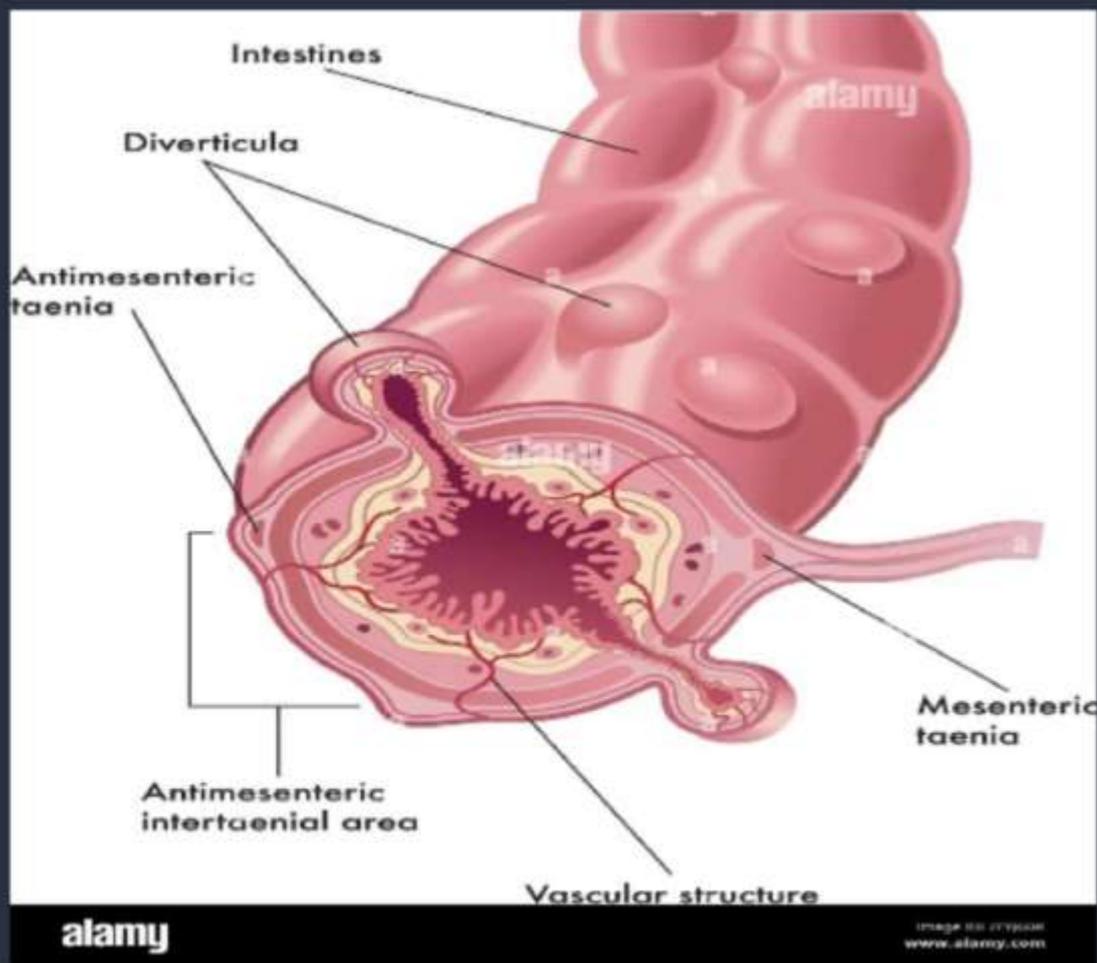
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Causes

Diverticular disease (diverticulosis)

- is a clinical term used to describe the presence of symptomatic diverticula. Diverticulosis refers to the presence of diverticula without inflammation.
- The majority of colonic diverticula are false diverticula in which the mucosa and muscularis mucosa have herniated through the colonic wall. These diverticula occur between the teniae coli, at points where the main blood vessels penetrate the colonic wall (presumably creating an area of relative weakness in the colonic muscle). Diverticular bleeding can be massive but usually is self-limited.
- Diverticulosis is extremely common in the United States and Europe. It is estimated that half of the population older than age 50 years has colonic diverticula. The sigmoid colon is the most common site of diverticulosis. The etiology is poorly understood. The most accepted theory is that a lack of dietary fiber results in smaller stool volume, requiring high intraluminal pressure and high colonic wall tension for propulsion. Although diverticulosis is common, most cases are asymptomatic, and complications occur in the minority of people with this condition.

- **Clinical presentation:** Patient usually above 40 yrs with history of chronic constipation, lower abdominal pain, abdominal distention, mass in the LIF and Fresh bleeding per rectum
- **Complications :** Obstruction of the neck of diverticula → acute diverticulitis → perforation → localized or generalized peritonitis , fistula formation, bleeding due to erosion of blood vessels



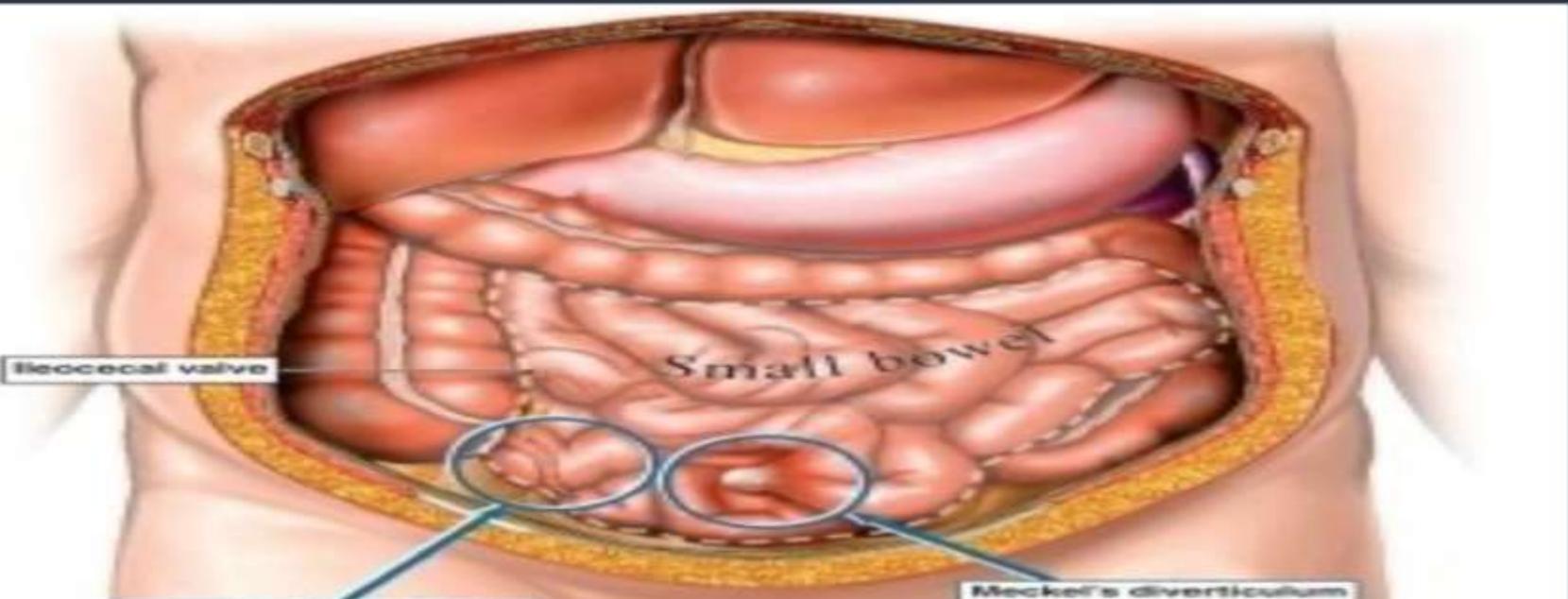
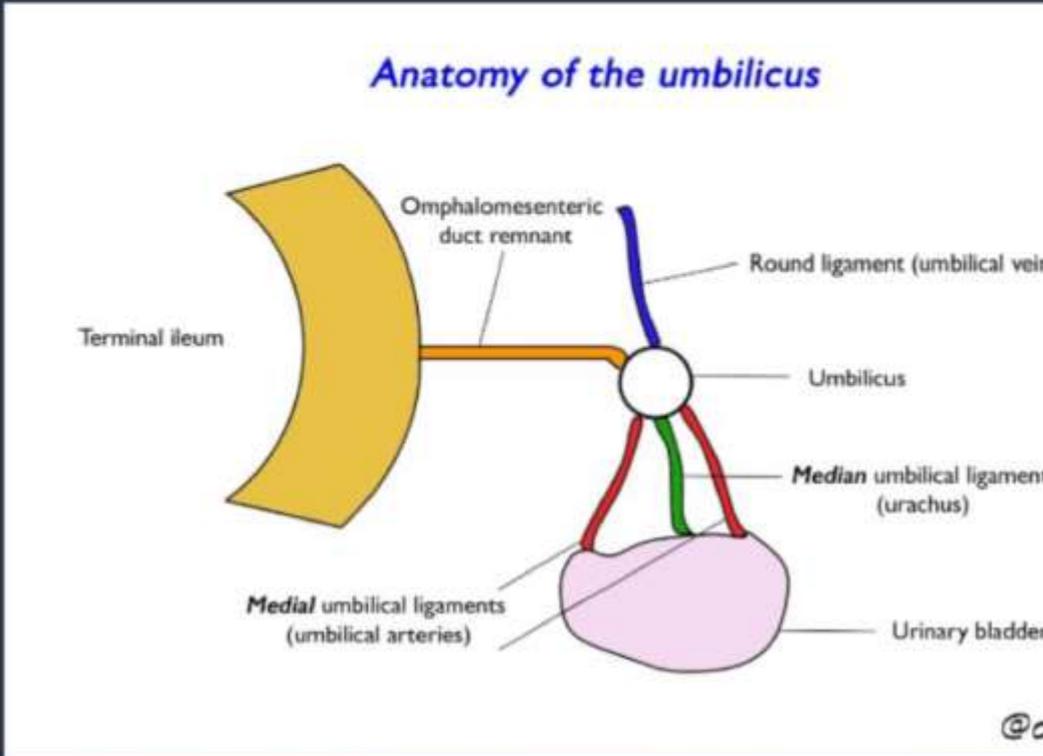
Meckel's diverticulum

- A diverticulum is a blind pouch continuous with the lumen of a hollow viscus (gut or urinary bladder).
 - The most common congenital malformation of the GIT (2 – 4% of births).
 - Caused by incomplete obliteration of omphalomesenteric duct (also called vitelline duct).
 - Most common cause of GI tract bleeding in children, usually before age 2
 - Usually occurs within 2 feet from the ileocecal valve at the antimesenteric border of the ileum
 - True diverticulum that consists of all layers of intestinal wall
 - 50% with ectopic tissue, most common is gastric mucosa and then followed by pancreatic tissue
-
- Rule of 2s:
 - Occurring in about 2% of infants
 - Usually 2 inches long
 - Located in the ileum approximately 2 feet from ICV
 - M:F = 2:1
 - 2 types of ectopic tissue (gastric or pancreatic)

Generally, it is asymptomatic

Peptic ulceration in the adjacent intestinal mucosa sometimes is responsible for intestinal bleeding or symptoms resembling acute appendicitis. May be associated with other congenital anomalies .

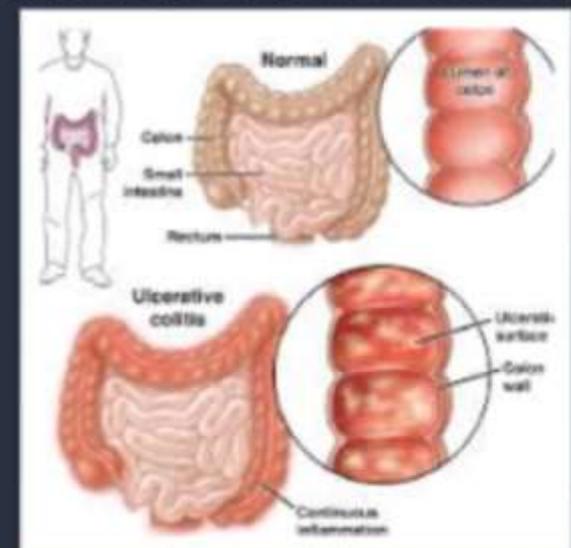
- Complications:** the commonest is **intestinal obstruction** that could be due to either intussusceptions or a fibrous band connecting the diverticulum to the umbilicus leading to volvulus/ traction of the ileum, **Acute meckel's diverticulitis**, **litter's hernia**, **Peptic ulceration** due to ectopic gastric mucosa which is the commonest cause of lower GIT bleeding in children



COLITIS

- **a chronic digestive disease characterized by inflammation of the inner lining of the colon**
- It is either in the rare form of infectious colitis (E.Coli,salmonella typhi) or IBD(ulcerative colitis,crohns disease,antibiotic associated colitis,infective colitis,ischemic cholitis) which is more common

- ***ULCERATIVE COLITIS:** which abnormal reactions of the immune system, genetic, environmental factors causes inflammation and ulcers on the inner lining of the large intestine .Ulcerative colitis can develop at any age, but the disease is more likely to develop in people between the ages of 15 and 30.
- It is because of ulceration then the colon become irregular makes islands of mucous then the Wall becomes fibrotic and rigid
- **the prevalence of ulcerative colitis was estimated to be 5 million cases around the world**
- The most common site sigmoid and rectal



The patient comes with chronic frequent diarrhea, often colicky lower abdominal pain, blood and mucus per rectum

Persistent pain may cause acute toxic dilation of the colon

Ulcerative colitis treatment usually involves either medication therapy like anti-inflammatory drugs and blood transfusion or surgery.

- **CROHNS COLITIS:**is a type of inflammatory bowel disease (IBD) caused by genes or immunology cause. It causes swelling of the tissues (inflammation) in your digestive tract
- The affected segments of colon as a skip lesions commonly become adherent to adjacent structures with abscesses and multiple fistula in anorectal is also common and it may be the first manifestation of the disease

****Patient comes with:**

Intestinal Symptoms of
Crohn's Disease



PACE HOSPITALS

- Difficult to pass stools
- Pain and cramps in the abdomen
- Feeling of an incomplete bowel evacuation
- Bleeding in the rectum
- Urgency is passing bowel
- Persistent diarrhoea
- Anal fistulas / Anal fissures

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- Crohn disease can affect **any part of the gastrointestinal tract**. About one-third of patients have small bowel involvement, especially the terminal ileum, another 20% have only colon involvement and about 50% have involvement of both the colon and small bowel.
- The goals of treatment are to decrease the inflammation in your intestines, to prevent flare-ups of your symptoms, and to keep you in remission.

Colon polyps

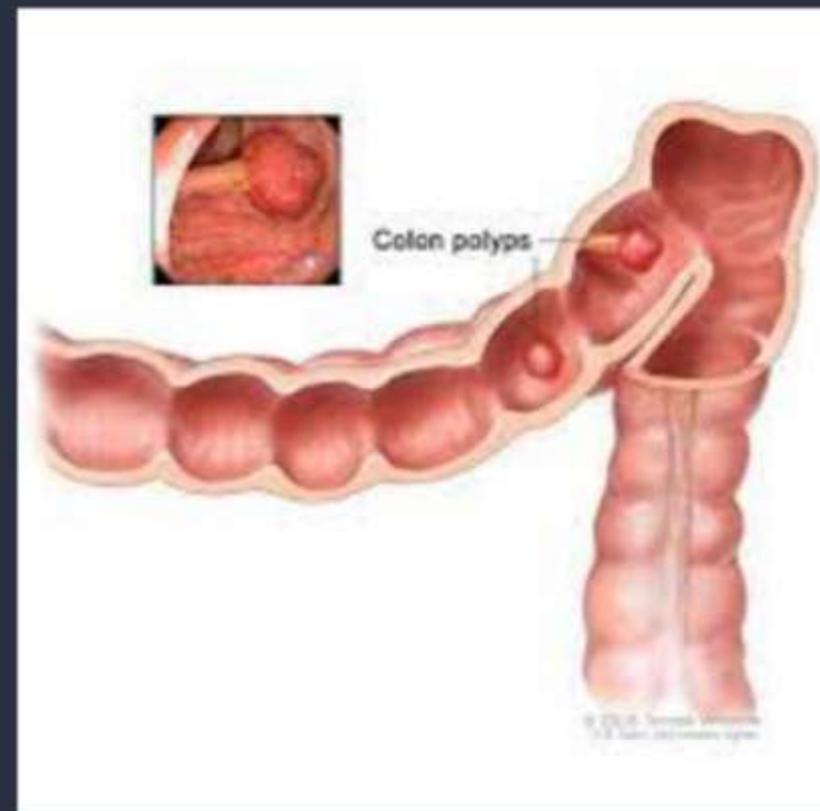
- A colon polyp is a small clump of cells that forms on the lining of the colon. Most colon polyps are harmless. But over time, some colon polyps can develop into colon cancer. Colon cancer can be fatal when found in its later stages
- higher risk :age-50 or older, overweight,smoking and personal or family history of colon polyps or colon cancer

- Patient comes with change in bowel habits, Iron deficiency anemia, Blood can show up as red streaks in the stool or makes stool appears black, pain and rectal bleeding

- CAUSES**

Change in certain genes can cause cells to continue dividing even when new cells aren't needed. In the colon and rectum, this continued growth of cells can cause polyps to form. Polyps can grow anywhere in the large intestine.

- treat colon polyps by **removing them**. In most cases, doctors use special tools during a colonoscopy or flexible sigmoidoscopy to remove colon polyps. After doctors remove the polyp, they send it for testing to check for cancer



Tumors.

Carcinoma of the colon

-Even when a mass is palpable, it is rarely possible to be certain that this is not an inflammatory mass, and even if the mass is very hard, discrete, knobbly and not very tender, it may simply be the result of inflammation.

Cancer of the right colon

-right sided GI tumors are oftenly silent until grown in size and present with anemia,WL,Mass with adull pain

-A carcinoma of the caecum may cause appendicitis.Consequently, the possibility of a cancer of the caecum must always be considered in a patient over 40 years old who presents with acute appendicitis.

-Localized perforation of the caecum can also occur, leading to initially localized and then generalized peritonitis

-Right-sided colon cancers tend to be asymptomatic or cause these symptoms only when they are at an advanced stage and fairly large

Cancer of the left colon

- The majority of colon cancers are found in the sigmoid colon and at the rectosigmoid junction, where they are usually small, annular and ulcerated.
- Most rectal cancers occur in the lower part of the rectal ampulla The vast majority are adenocarcinomas.
- Age The majority of patients are over 50 years old, but colon cancer can occur in young adults with ulcerative colitis or familial polyposis.
- Sex Both sexes are equally affected.
- The liver is by far the most common site of distant metastases from rectal cancer and must always be palpated.

-They usually present with a change in bowel habit, often with variable periods of constipation which is caused by the intestinal obstruction, interspersed with episodes of explosive diarrhoea by liquefaction of faeces above the obstruction, and the passage of a number of loose stools.

-Tumours in the left side of the colon can present with generalized peritonitis. In such cases, severe generalized abdominal pain develops, accompanied by signs of shock with tachycardia, hypotension, distension, tenderness, loss of liver dullness and absent bowel sounds. In many cases, the peritonitis is by a rupture of a distended caecum caused by an obstructing left-sided tumour.

-The weight loss often precedes the anorexia and they are not commonly

-Rectal bleeding is not a common symptom of a tumour of the sigmoid or descending colon but, when it occurs, the blood is dark and plum-coloured, sometimes with clots of blood interspersed among the faeces.

-When the tumour is at the rectosigmoid junction or within the rectum, it is more likely to cause bleeding and it may prolapse, causing tenesmus. Painful frequent micturition indicates involvement of the bladder.

-Tenesmus occurs when a tumour in the lower part of the rectum becomes large enough to be mistaken for faeces. The persistent desire to empty the rectum is often accompanied by the passage of mucus, called 'slime' by the patient.

-The mass is tender if there is any surrounding inflammation or a pericolic abscess associated with a perforation

Family history **Familial adenomatous polyposis** is a rare inherited condition in which the entire colon and rectum are carpeted with adenomatous polyps, one or more of which inevitably becomes malignant. Twenty-five per cent of cases arise as new mutations, so there is no family history. The family history may be denied out of fear of cancer.

-**carcinomatous ulcer** feels hard, and the raised, rolled, everted edge bulges into the lumen of the rectum.

- tumors often grow in an extraluminal direction and if they erode or ulcerate through the small bowel mucosa they can cause intermittent bleeding.

Adenomas

Adenomas that are initially benign can develop dysplasia and undergo malignant change to invasive cancer. This is unusual if the adenoma is less than 3 cm in diameter, but eventually most true adenomas will turn into carcinomas.

Not all polyps in the rectum are true adenomas.

- Hyperplastic polyps** are most common in the recto- sigmoid colon, and are usually less than 5 mm in diameter.

- Pseudopolyps** are islands of normal mucosa in patients with severe ulcerative colitis.

- Rare **hamartomatous polyps** are found in children and can cause intussusception or rectal bleeding. They also occur in Peutz–Jeghers syndrome

- the most common adenoma caused GI bleeding are

Small intestinal adenomatous polyps, leiomyomas, peutz-Jeghers syndrome, hemangiomas, non polyposis colorectal cancer

4.

Diagnosis

Lab test:

- 1- complete blood count (including RBCs,WBCs,hemoglobin, haematocrit , thrombocytes) .
- 2- Coagulation profile, including activated partial thromboplastin time(aPTT), prothrombin time (PT),manual plateletcount,and bleeding time.
- 3-serum chemistry(electrolytes and creatinine)
- 4-hemocult &stool culture
- 5-blood typing,cross-matching and recipient antibody screen tests are required before blood transfusion.

Colonoscopy

- Examine the whole length of colon, for majority of cases it's the only intervention is needed.

- -needs bowel preparation

**Can identify the site of bleeding:

1-active bleeding

2-visible vessels

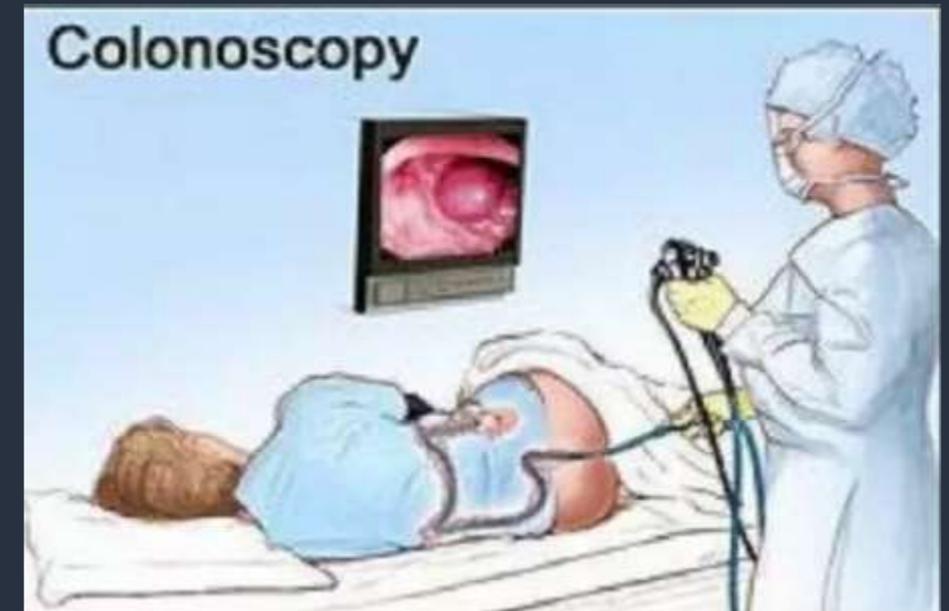
3-blood clot

4- fresh blood adherent to the colonic segment

5-ulceration in the diverticulum with fresh blood in adjacent area

Cecal intubation is achieved in more than 95% of attempts.

-Colonoscopy is the first choice for investigation because it is highly accurate and its sensitivity is very high





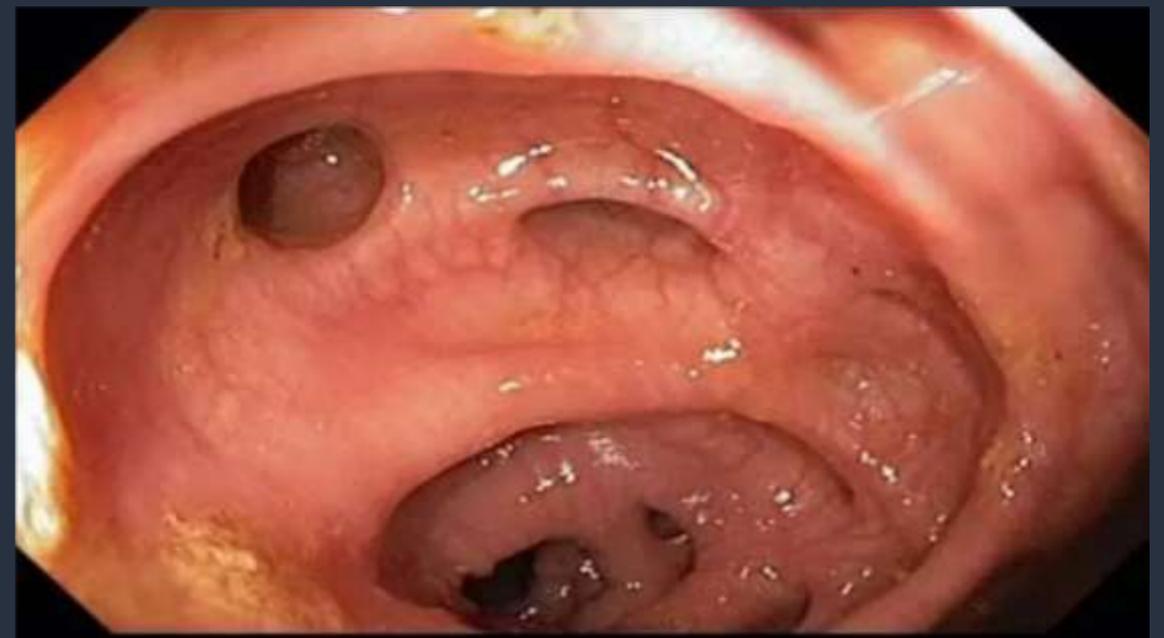
Ulcerative colitis



Colon CA with bleeding



Crohn's disease



Diverticulosis

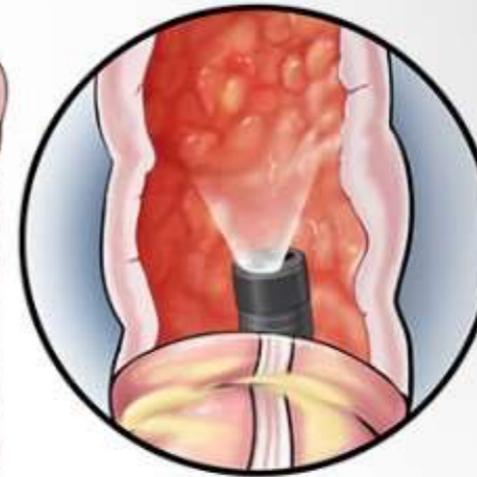
**Ulcerative
colitis**



Polyps



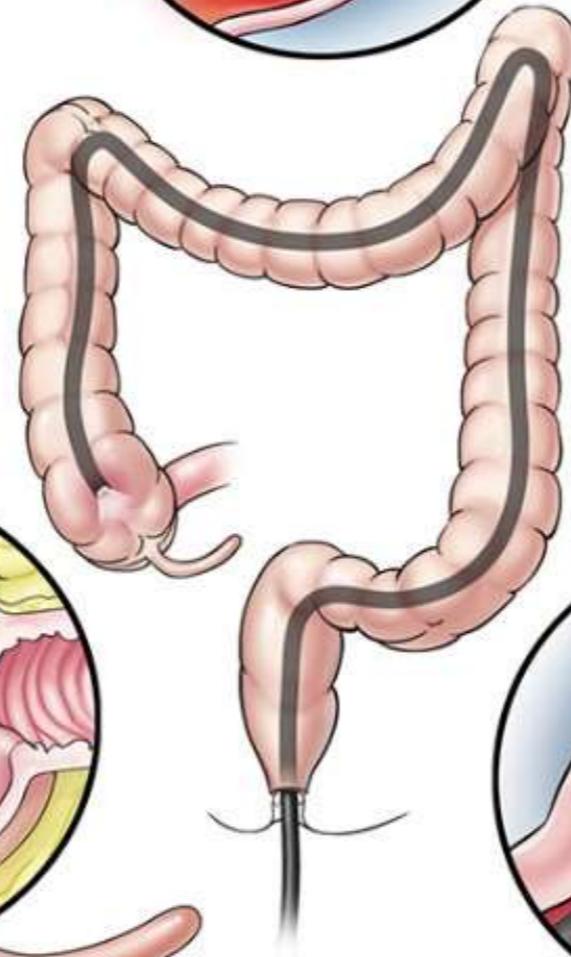
**Crohn's
disease**



Cancer



Diverticulosis



Angiography:

- If colonoscopy fails to define the site of bleeding in patients with massive bleeding, angiography is recommended .
- This test is less sensitive than colonoscopy
- Identify bleeding site by showing you extravasation of contrast into lumen
- Criteria for emergency angiography : at least 4 units of blood transfusion in the first 2 hours following hospital admission and systolic blood pressure of less than 100 mm Hg.
- By embolization or vasopressin infusion can control bleeding
- Diagnostic yield 27% - 67%
- Complication rate 2% - 4% (allergy, renal failure, bleeding and / or embolism)

Mechanism of Angiography:

-- In a patient with active GI bleeding , the radiologist first cannulates the superior mesenteric artery , because most of the hemodynamically significant bleeding originates in the right colon. The extravasation of contrast material indicates a positive study finding .

-- If the findings from the study are negative , the inferior mesenteric artery is cannulated , followed by the celiac artery.



Radio-labeled Red Blood Cell Scanning

Highly sensitive 80% - 98%

Accuracy rate 93%

Bleeding rate 0.1 – 0.4 ml/min

Tc-labeled sulfur colloid

Considerable disagreement in literature concerning specificity in identifying the anatomic site of bleeding

No therapeutic intervention capabilities

Used in patients with none-life threatening lower GIT bleeding as guide to mesenteric angiography

5.

Treatment

Initial Management

- -Admit to ICU
- -ABCDE!

Airway Breathing Circulation Disability Exposure

- - Supplemental oxygen via nasal cannula
- - NPO (nothing by mouth)
- - Two large bore Ivs
- - IV Normal Saline
- -After that take CBC(complete blood count)
 - Be aware that blood transfusion may be needed
 - If hb is less than 7mmgh transfuse blood
 - If hb is 10 and patient is still having anemia symptoms, then transfuse blood
 - If patient is thrombocytopenic (platelets less than 50000), transfuse platelet

Treatment

- The treatment of lower gastrointestinal (GI) bleeding depends on the source of the bleeding

In most cases bleeding ceases spontaneously and supportive care is sufficient

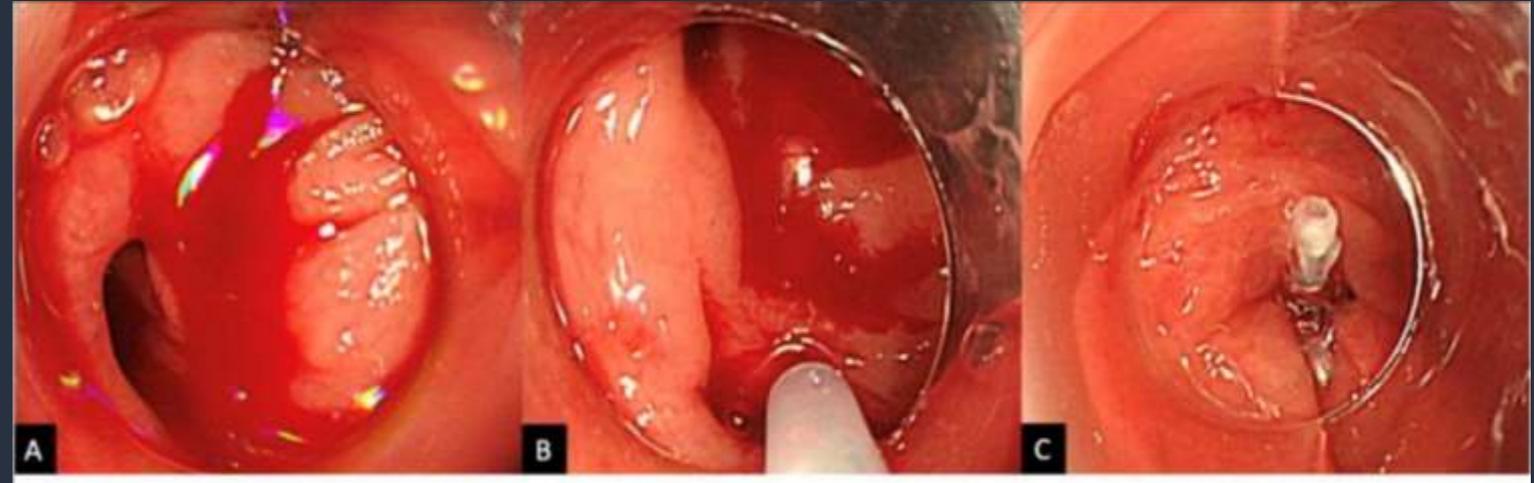
Some therapies used in LGIB:

1. Endoscopic Therapies
2. Angiographic Therapy
3. Embolization
4. Surgery

Endoscopic Therapies



Thermocoagulation



Injection (ex; epinephrine)

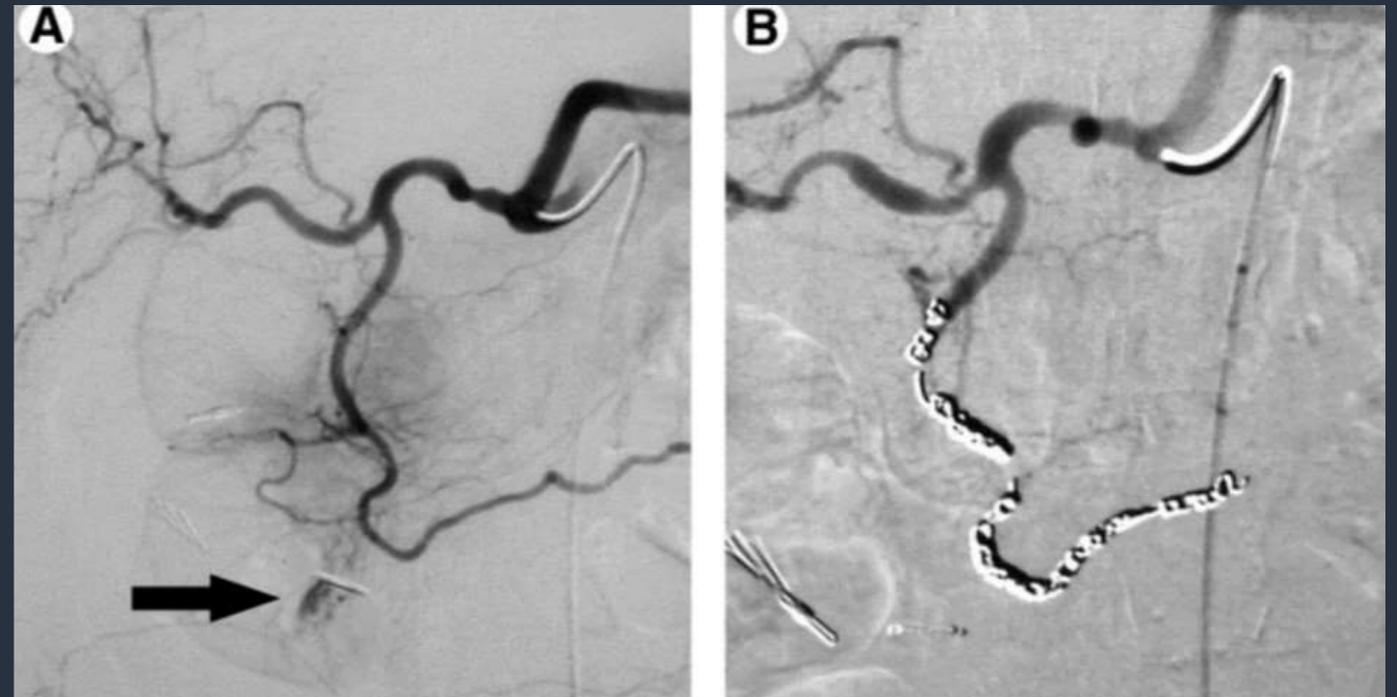
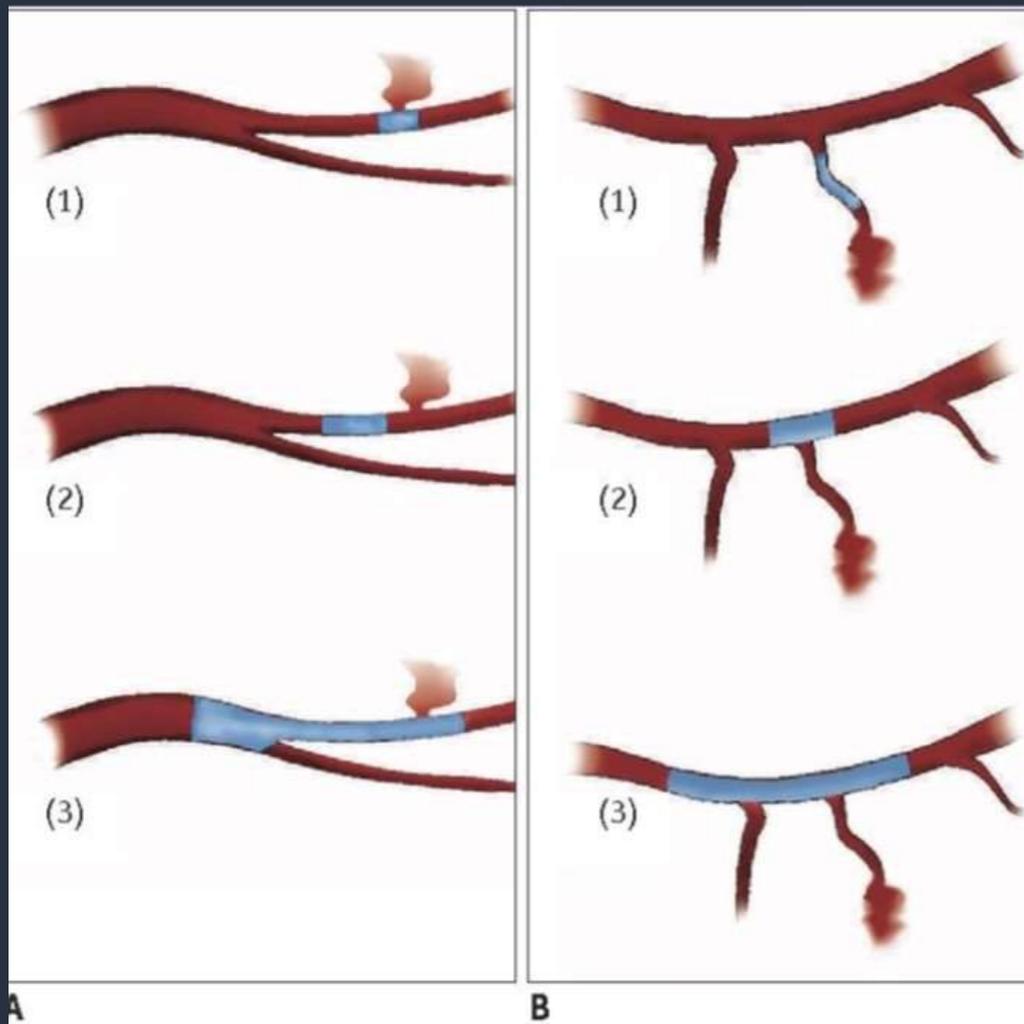
Clipping



Angiographic Therapy

Embolization

Injection



Surgery

Done on patients who have failed medical, colonoscopic, angiographic intervention. Ongoing bleeding >4U of PRBC per 24h Effort should be made to localize the source prior to surgery.

If the patient is hemodynamically stable → preoperative localization
→ segmental colectomy

In patients who are hemodynamically stable, once the bleeding site is preoperatively localized, intra-arterial vasopressin is used as a temporizing measure to reduce

the bleeding before patients undergo segmental colectomy.

Subtotal colectomy is the procedure of choice in patients who are actively bleeding from an unknown source.

Thank

You