Massive lower gastrointestinal bleeding

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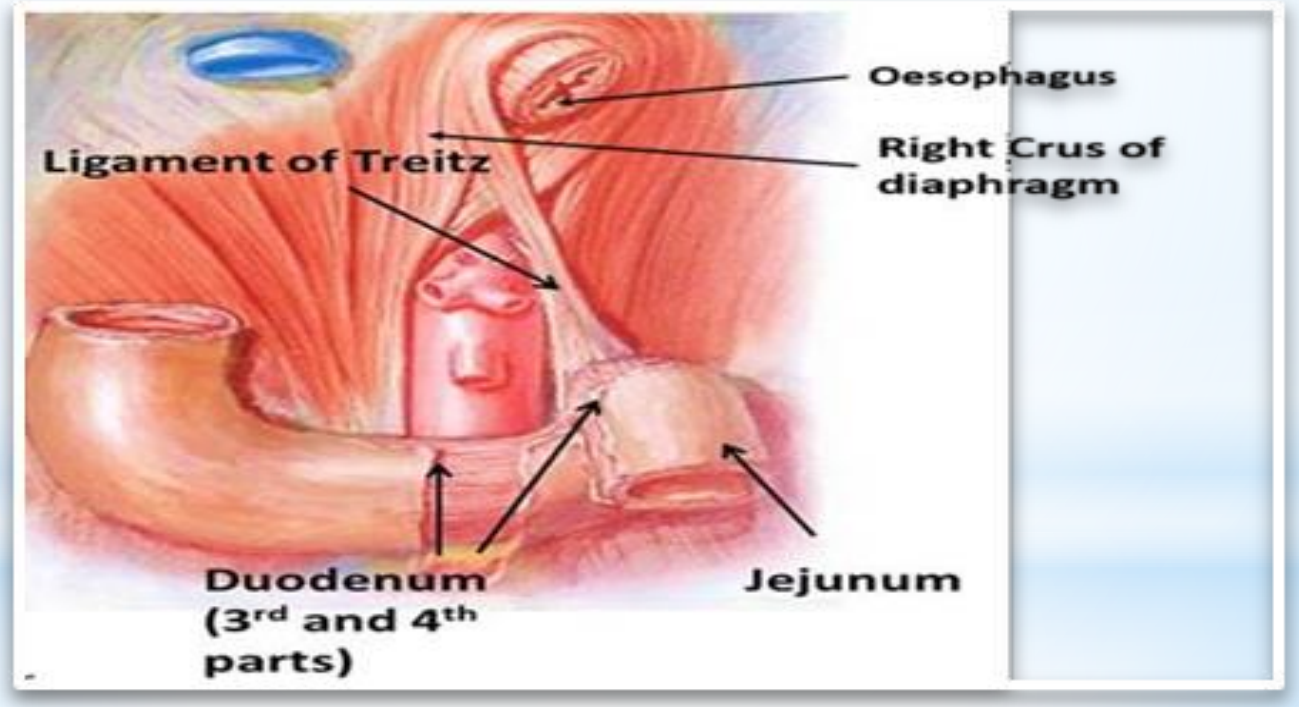
*Definition:

*lower gastrointestinal bleeding is hemorrhage arising **distal to the ligament of Treitz.**



* **Massive LGIB** is defined as :
Passage of a large volume of red or maroon blood through the rectum with hemodynamic instability and shock

*Epidemiology

*The colon is the source of hemorrhage in more than 95% to 97% of cases, with the remaining 3% to 5% arising in small bowel sites.

*20-30% of episodes of gastrointestinal hemorrhage.

*The incidence rises with advancing age(bad prognosis).

*80% resolve spontaneously, 25% will re-bleed

*Approach

*Most cases of acute colonic bleeding will stop spontaneously , thereby allowing non-urgent evaluation. However, for patients with **severe hematochezia**, defined as **continued bleeding within the first 24 h of hospitalization** with a **drop in the hemoglobin of at least 4-6 g/dL** and/or **a transfusion requirement of at least 2 units of packed red blood cells**, **urgent diagnosis and intervention are required to control the bleeding.**

* Clinical factors predictive of severe colonic bleeding include:
  * aspirin use, at least two comorbid illnesses, pulse greater than 100/minute, and systolic blood pressure <115 mmHg.

* The overall mortality rate from colonic bleeding is 2.4–3.9 % . Independent predictors of inhospital mortality are age over 70 years, intestinal ischemia, and two or more comorbidities

*Emergency Department

*patients with acute LGIB, who might have signs of **hemodynamic instability** should be resuscitated thoroughly according to the extent of blood loss.

1) Two wide bore cannulas are installed,

2) Blood is withdrawn for CBC, cross-match, coagulation profile and urea and electrolytes

3) Proper replacement with I.V fluids or blood products is done

4) Urinary catheter is important for input-output charts

5) Oxygen is administered as needed.

*History

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 colitis.

9) Light headedness, dizziness or syncope Consider severe volume depletion (heavy GI Bleeding)

*Physical examination

*should include measurement of orthostatic vital signs in patients without overt shock.

1. **Scars** from previous abdominal incisions.
2. The presence of **abdominal masses, or skin and oral lesions** suggestive of polyposis syndromes.
3. **Stigmata of cirrhosis** suggestive of bleeding from hemorrhoids or varices secondary to portal hypertension should be considered.
4. **The rectal examination** is important to identify any anorectal pathology, including tumors, ulcers, or polyps.

5. The **color of the rectal contents** and the presence of formed stool or blood clot should also be noted.

6. **Anoscopic examination** to exclude hemorrhage from hemorrhoids should be completed.
7. A **nosogastric tube** should be inserted to look for blood or coffee ground-like material to exclude an upper gastrointestinal source.

8. In patients with hematochezia and hemodynamic instability, emergency upper endoscopy is required.

*Investigations

1) **Early sigmoidoscopy** for the detection of **obvious, low-lying lesions**. However, the procedure is difficult with brisk bleeding, and it is usually not possible to identify the area of bleeding. **Sigmoidoscopy is useful primarily in patients <40 years with minor bleeding.**

2) Patients with **hematochezia** and hemodynamic instability (acute LGIB) should have **upper endoscopy** to rule **out an upper GI source** before evaluation of the lower GI tract, upper endoscopy is also indicated in patients with **chronic LGIB suspected to have UGIB.**

3) You can use NGT: if suction is blood this mean UGIB .

4) **Colonoscopy** after an oral lavage solution is the procedure of choice in patients admitted with LGIB unless **bleeding is too massive or unless sigmoidoscopy has disclosed an obvious actively bleeding lesion**, colonoscopy provides both a diagnostic and therapeutic tool

*Bowel preparation

Bowel preparation, commonly known as **bowel prep**, is the process of **removing feces from the colon prior to a medical or surgical procedure**. It is important to clean the colon of all stool, food particles, and any other residues that may be clinging to tissue surfaces.

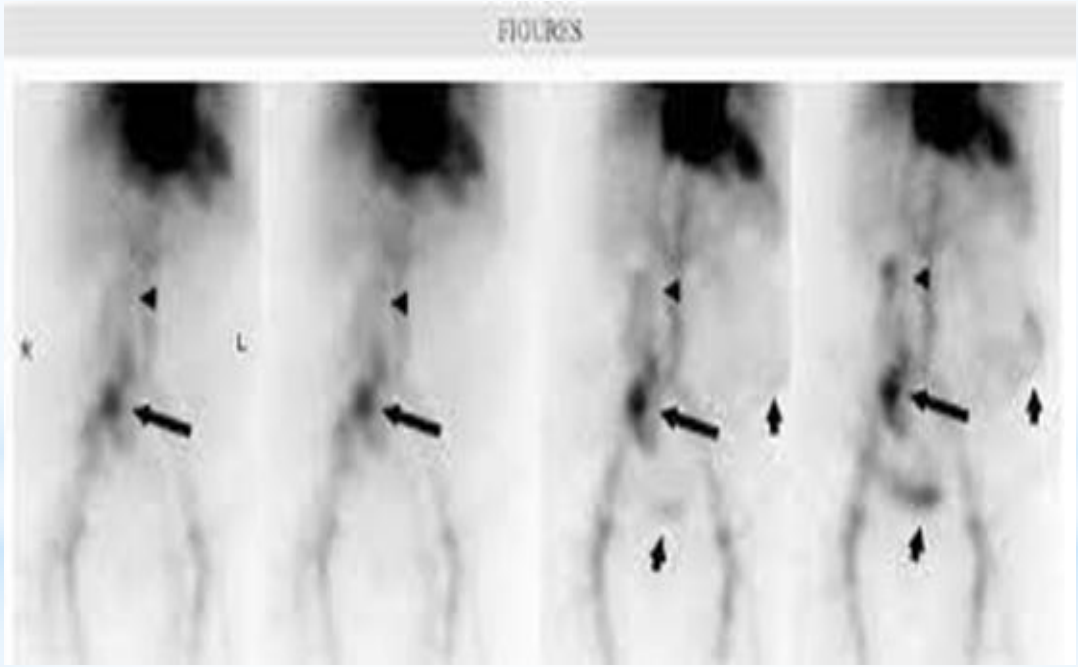
Rapid bowel prep: **Polyethylene glycol solution "PEG"** preferred for patients with acute LGIB requiring urgent colonoscopy are and stable enough to tolerate it. 1 L of PEG is administered every 30—45 minutes. The median volume of PEG for rapid purge is 5.5 L.

Standard bowel prep: for **nonurgent or outpatient colonoscopy**

WHEN TO PERFORM COLONOSCOPY?

- The optimal timing of colonoscopy remains controversial.
- The definition of **early colonoscopy** used in most studies was **within 24 h of presentation**.
- Studies showed that early colonoscopy had the possibility of improving identification of the bleeding source, and the rate of endoscopic intervention, compared with elective colonoscopy.
- However, there is no clear evidence that early colonoscopy reduces important clinical outcomes, such as rebleeding or mortality.

5) **99MTc-labeled red cell scan** allows repeated imaging for up to 24 h reveals bleeding even with a low rate of blood lose(1ml/min).it does localize the site of the lesion but not identify the cause.



6) In active LGIB, **angiography** can **detect the site of bleeding** (extravasation of contrast into the gut) and permits **treatment with intraarterial infusion of vasopressin or embolization**. Even after bleeding has stopped, angiography may identify lesions with abnormal vasculature, such as vascular ectasias or tumours.

* **It is useful** for patients in **whom active bleeding precludes colonoscopy or where colonoscopy fails to identify the bleeding site**

* **May be emergent or elective:**

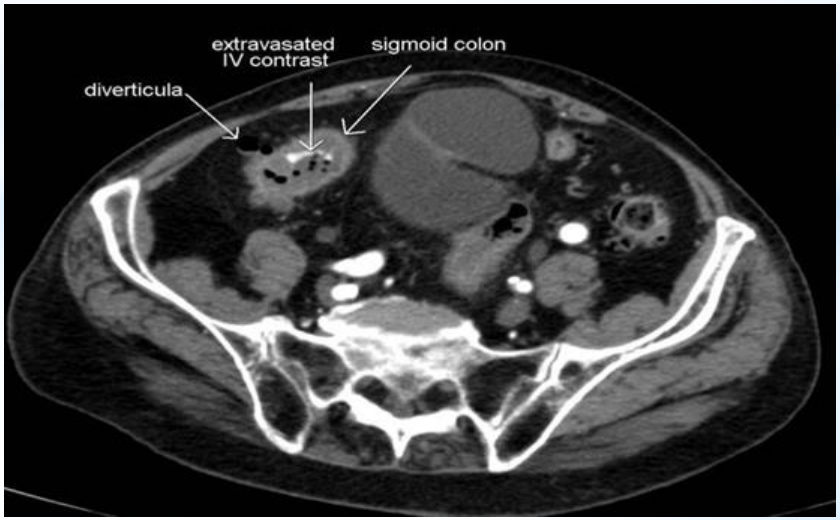
* **Elective angiography** -patients with multiple episodes of LGIB without a known source or diagnosis.

* **Emergency angiography** is very useful in patients with massive ongoing bleeding

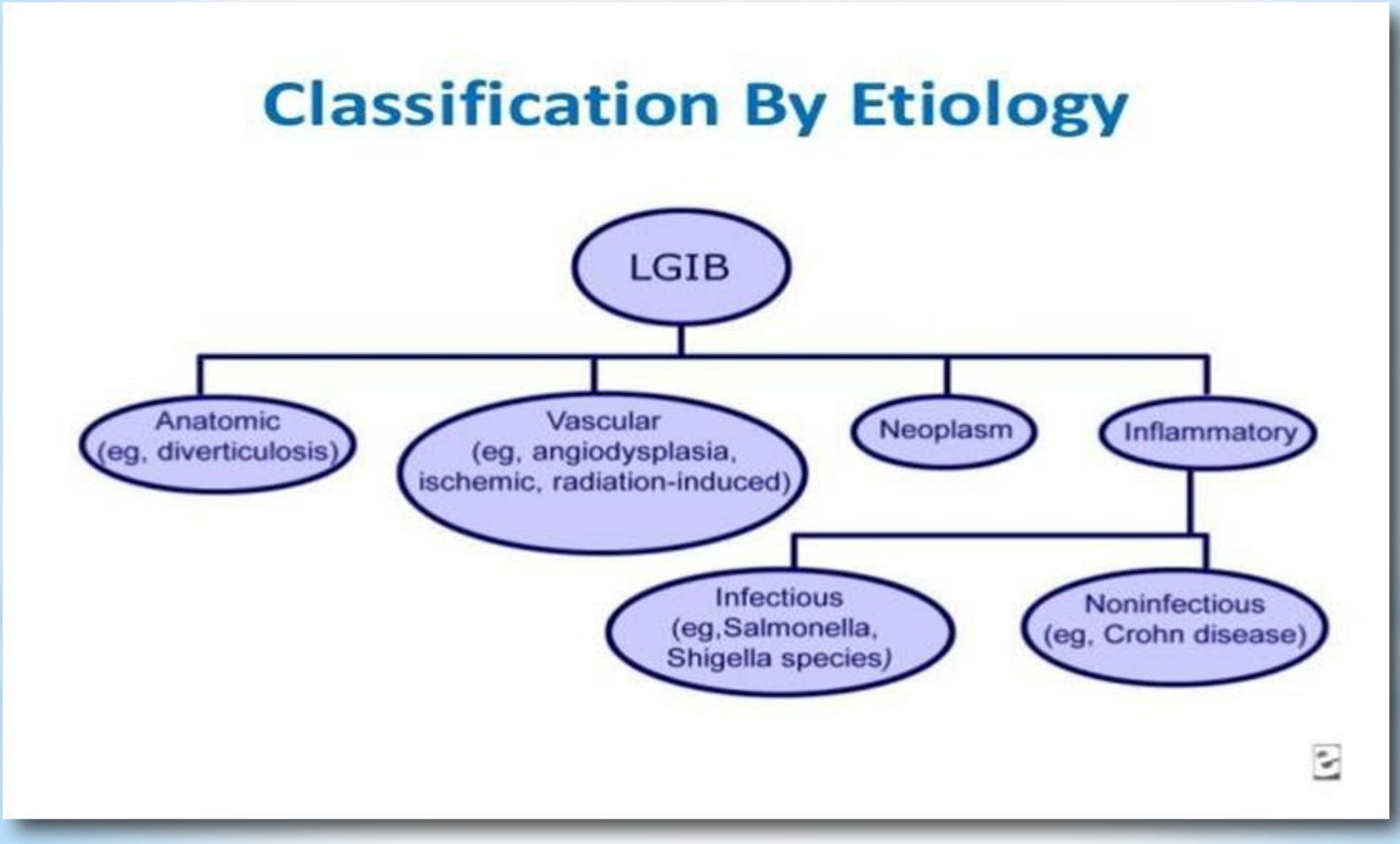
7) Occasionally, the LGIB source is **in the small intestine**. **Push enteroscopy and capsule endoscopy** have been used for the assessment of obscure bleeding

8) **CT scanning** using IV contrast is safe, fast convenient and accurate diagnostic tool

* vascular dilatations, vascular extravasation
* Presence of diverticula - this alone is not enough for localization
* Comparable identification rate to mesenteric angiography and colonoscopy



*Classification



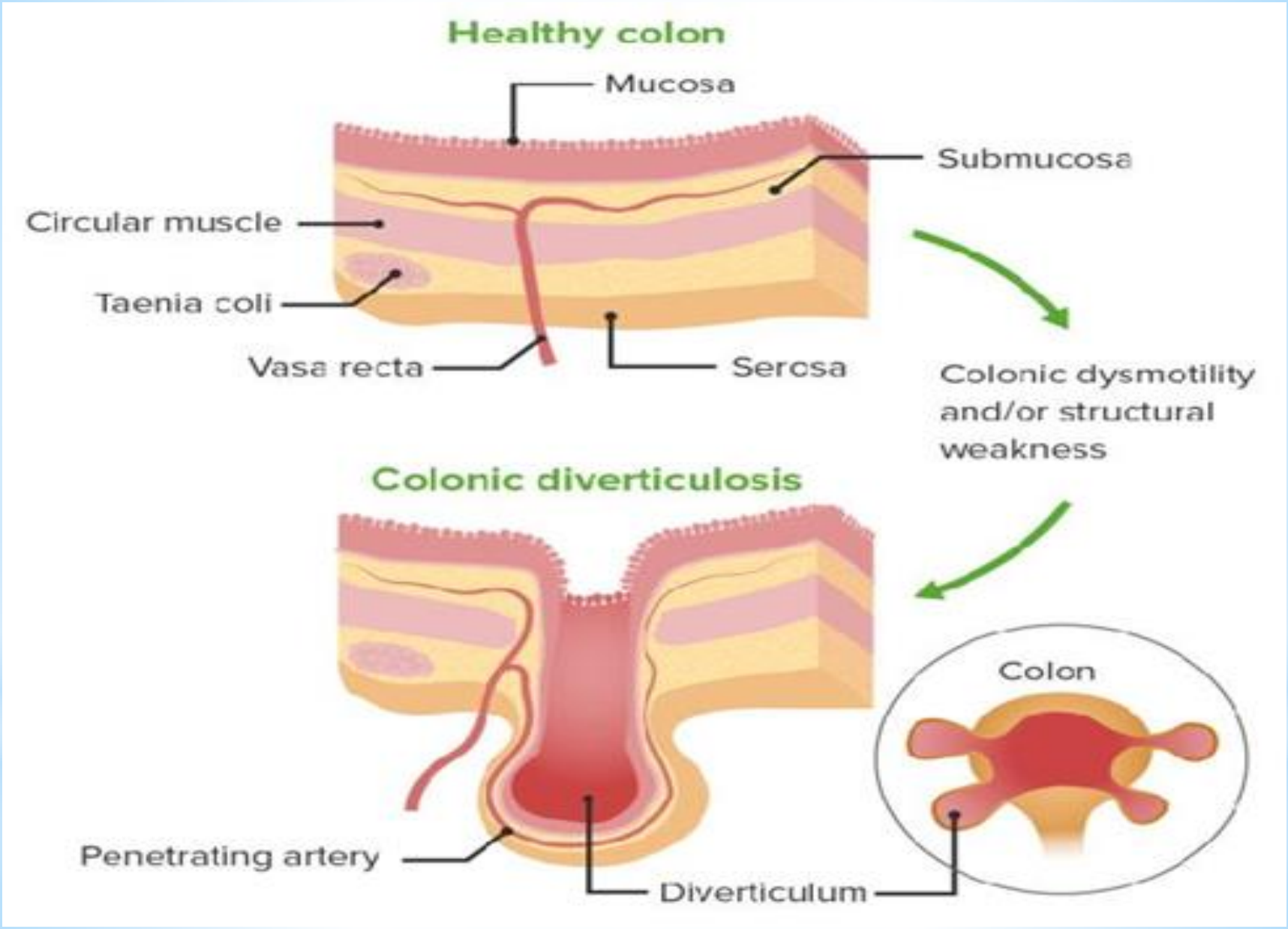
*classification by severity

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

*Most common causes:

Diverticular disease

In the United States, **diverticula are the most common cause of significant lower GI bleeding**. In the past diverticula were thought to be rare in patients younger than 40 years, **but it is now an increasingly common diagnosis in this age group**. Only 3% to 15% of individuals with diverticulosis experience any bleeding. It occurs where vasa recta penetrate muscularis of colon so the blood vessel is only separated from the bowel lumen by mucosa which makes it susceptible to injury and ,with time, rupture causing arteriolar bleeding.


Healthy colon
Mucosa
Submucosa
Circular muscle
Taenia coli
Vasa recta
Serosa
Colonic dysmotility and/or structural weakness
Colonic diverticulosis
Colon
Penetrating artery
Diverticulum

Diverticular disease

* Of those that bleed, more than 75% stop spontaneously, although approximately 10% will rebleed within a year and almost 50% within 10 years.

* Although diverticular disease is much more common on the left side, **right-sided disease is responsible for more than half the bleeding.**

Angiodysplasia

Angiodysplasias of the intestine, also referred to as arteriovenous malformations, are distinct from hemangiomas and true congenital arteriovenous malformations.

They are thought to be **acquired degenerative lesions** secondary to **progressive dilation of normal blood vessels within the submucosa of the intestine**. Angiodysplasias have an **equal gender distribution** and are almost uniformly found in patients **older than 50 years**. These lesions are notably associated with **aortic stenosis and renal failure especially in the elderly.**

*The hemorrhage tends to arise from **the right side of the colon**, with **the cecum being the most common location,** although they can occur in the rest of the colon and small bowel.

*Most patients present with chronic bleeding, but in up to 15%, hemorrhage may be massive. Bleeding stops spontaneously in most cases, but approximately 50% will rebleed within 5 years

Bleeding from angiodysplasia is **venous in origin** (in contrast to arterial bleeding with diverticula) and therefore tends to be **less massive** than diverticular bleeding

Management

Therapeutic Intervention to Stop Bleeding:

1. **Colonoscopy**
2. **Angiography**
3. **SURGERY**

In diverticular disease:

* The best method of diagnosis and treatment is **colonoscopy**, although **success is sometimes limited by the large amount of bleeding.** If the **bleeding diverticulum can be identified**, **epinephrine injection may control the bleeding.**

* **Electrocautery** can also be used, and most recently, endoscopic clips have been successfully applied to control the hemorrhage. If bleeding ceases with these maneuvers or spontaneously, expectant management may be appropriate; however, this requires clinical judgment based on the magnitude of the hemorrhage and the patient's comorbidities, particularly cardiac disease

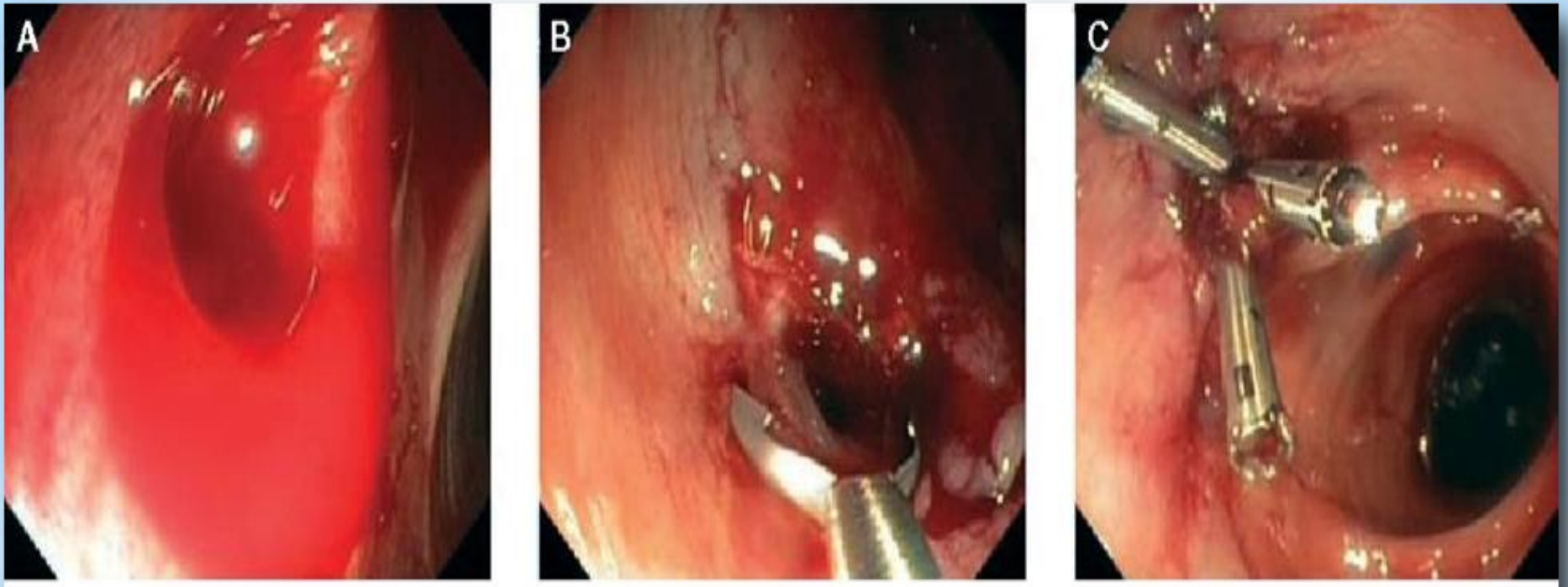


Figure 3 Endoscopic clipping for the treatment of an actively bleeding colonic diverticulum. (**A**) An actively

* If none of these maneuvers is successful or if hemorrhage recurs, **angiography with embolization can be considered.**
* **Superselective embolization** of the bleeding colonic vessel has gained popularity with high success rates (>90%), although the risk of ischemic complications continues to be of concern. Under these circumstances, colonic resection is indicated. Certainty of the site of bleeding is critical

* As surgery:

* **Blind hemicolectomy** is associated with **rebleeding** in more than 50% of patients, and operation based on RBC scan localization alone can result in recurrent hemorrhage in up to one third of patients. **Subtotal colectomy** does not eliminate the risk of recurrent hemorrhage and, compared with segmental resection, is accompanied by a **significant increase in morbidity, particularly diarrhea** in older patients, in whom the remaining rectum may never adapt

*In angiodysphagia :

*These lesions can be diagnosed by either **colonoscopy or angiography**. During colonoscopy, they appear **as red stellate lesions with a surrounding rim of pale mucosa** and can be treated with sclerotherapy or electrocauter. Angiography demonstrates dilated, slowly emptying veins and sometimes early venous filling. If these lesions are discovered incidentally, no further therapy is indicated.

*.

*In **acutely bleeding patients,** they have been successfully treated with:

1. Intra-arterial vasopressin (as a drug)
2. Selective gel foam embolization
3. Endoscopic electrocoagulation
4. Injection with sclerosing agents

* **As Surgery:**
* If these measures fail or bleeding recurs and the lesion has been localized, segmental resection, most commonly **right colectomy**, is effective

Indications for Surgery in Gastrointestinal Hemorrhage

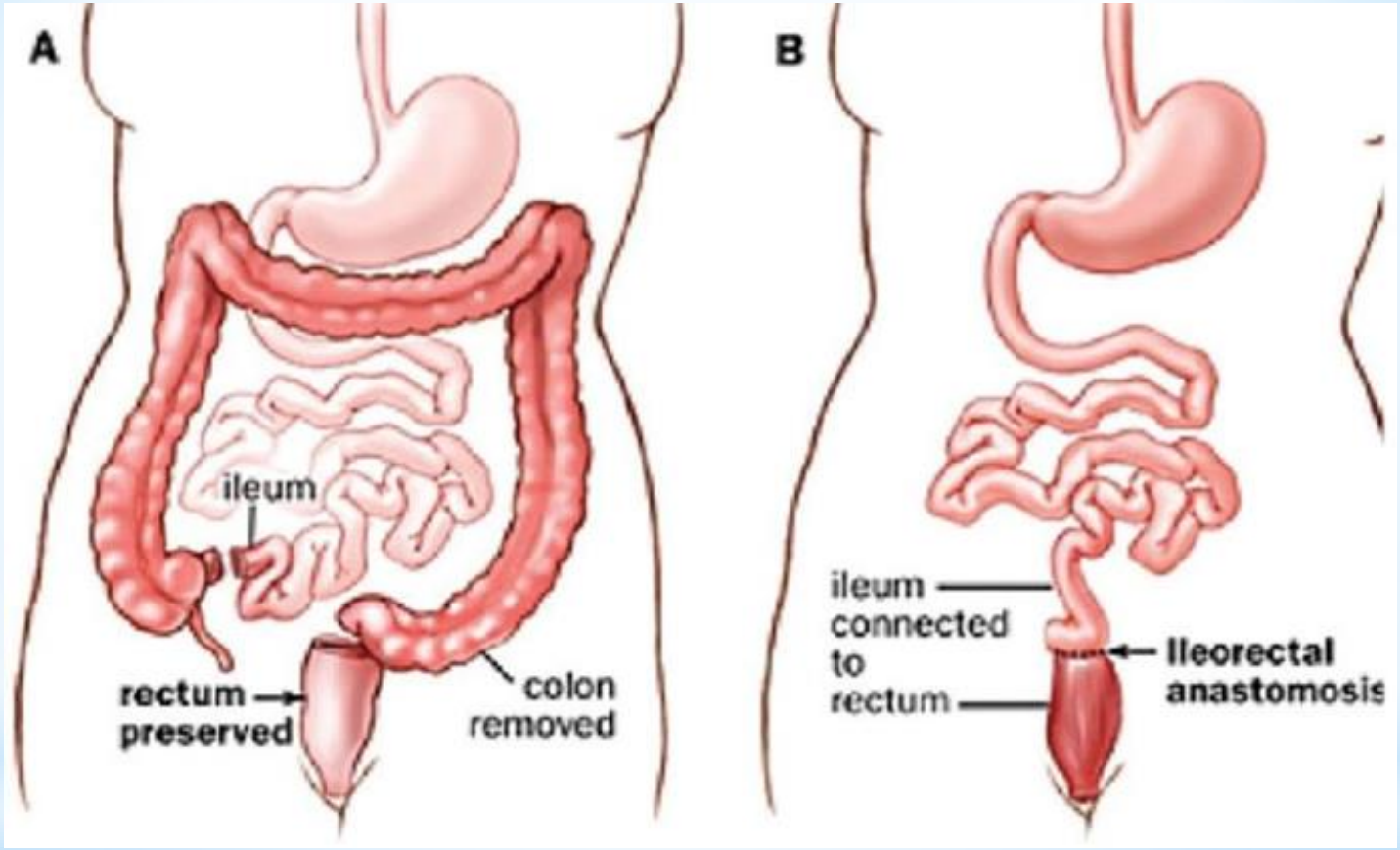
1. Hemodynamic instability despite vigorous resuscitation (>6-unit transfusion).
2. Failure of endoscopic techniques to arrest hemorrhage.
3. Recurrent hemorrhage after initial stabilization (with up to two attempts at obtaining endoscopic hemostasis).
4. Shock associated with recurrent hemorrhage.
5. Continued slow bleeding with a transfusion requirement exceeding 3 units/day.

* The procedure of choice when continued bleeding cannot be localized despite multiple different tests begins with an **exploratory laparotomy**. At the time of the operation, the entire small bowel should be examined to ensure lack of a palpable lesion that may be responsible for the bleed.

* Additionally, during exploration, a colonoscopy and/or enteroscopy can be performed, and if a bleeding lesion is found, may allow for a targeted resection.

Very rarely if the source of bleeding is not identified despite these measures and is suspected to be colonic in origin, **then a "blind" subtotal colectomy with ileostomy or ileoproctostomy** should be performed.

In this setting, just prior to proceeding with a "blind" subtotal colectomy, it is crucial to irrigate the rectosigmoid and reexamine the mucosa of the anal canal and rectum by anoscopy and proctoscopy to ensure the source of ongoing bleeding is not distal to the planned resection margin


A
ileum
rectum
preserved
colon
removed
B
ileum
connected
to
rectum
Ileorectal
anastomosis

Thank you