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Department of surgical diseases No. 2

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GASTROINTESTINAL BLEEDING

Textbook for students of the 4th year
of the Faculty of Dentistry in the discipline "Surgical Diseases"

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This teaching guide covers main issues about etiology, pathogenesis, clinical features, laboratory and instrumental diagnostics and complications of Gastrointestinal bleeding.

Teaching guide “Gastrointestinal bleeding” is made for “Surgical Diseases” discipline in accordance with requirements of FSES HE, and is intended for students from medical universities and faculties, studying for specialty 31.05.03 Dentistry.

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- Haemorrhage from peptic ulcer can be chronic which causes anaemia, or acute, resulting in massive haematemesis and melaena.
- It is the posterior duodenal ulcer which commonly bleeds, because it erodes into the gastroduodenal artery which runs posterior to the duodenum. A gastric ulcer on the lesser curvature erodes into one of the branches of left or right gastric artery.

Precipitating factors for haemorrhage

1. Chronicity, results in destruction of the layers of the stomach, exposing the vessel.
2. Sudden, severe acid peptic digestion brought about by irritants such as alcohol, drugs, etc.
3. Atherosclerosis: Sclerotic artery does not contract, resulting in massive haemorrhage.

Characteristics of individuals at an increased risk of developing acute GI bleeding

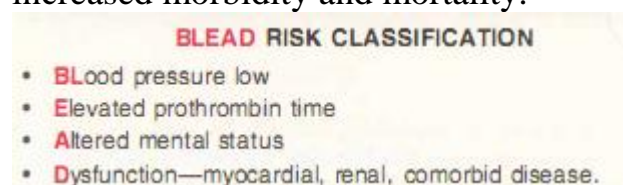
- Increased age
- Male sex
- Cardiovascular disease
- Diabetes mellitus and renal disease
- Increased number of medications
- Oral anticoagulant use

Clinical features of bleeding peptic ulcer

1. Previous history of abdominal pain of peptic ulcer disease.
 2. History of haematemesis or melaena (black tarry stools), one or more attacks.
 3. There may be features of hemorrhagic shock such as feeble, thready pulse, hypotension, syncope.
- Oliguria, due to inadequate renal perfusion.
 - Brainstem hypoxia results in change in rate and depth of respiration.
 - There may not be any abdominal signs. However, due to accumulation of blood in the intestines and stomach, mild distension may be present. Perforation produces abdominal signs and haemorrhage produces systemic signs.

BLEAD risk classification

The following are some of the factors associated with increased morbidity and mortality.



Forrest classification of endoscopic appearance of bleeding ulcers

Type	Description
Ia	Spurting, bleeding
Ib	Nonspurting, active bleeding
IIa	Visible vessel
IIb	Nonbleeding ulcer with overlying clot
IIc	Ulcer with haematin—covered (black) base
III	Clean ulcer base

As previously mentioned, endoscopy provides the opportunity not only for diagnosis but also for therapy.

MANAGEMENT

- Emergency upper OGD is done to confirm the diagnosis. If the source cannot be detected due to large clots or massive bleeding, it can be repeated a few hours after a stomach wash and blood transfusion.
- Emergency upper OGD should be done within 12-24 hours of bleeding depending upon condition of the patient.
- Resuscitation is more important than an urgent endoscopy.
- Since elderly patients cannot tolerate shock well, decision to control bleeding surgically must be taken early.

I. Conservative line of management

1. Emergency replacement of blood, after initial resuscitation with a plasma expander.
 2. Ryle's tube is passed and cold saline stomach wash is given to produce vasoconstriction.
 3. Cold antacids are given every 2nd hourly, about 10-20 ml.
 4. IV ranitidine 50 mg, 8th hourly or IV pantoprazole 40 mg is given to reduce acidity.
- Majority of cases respond to conservative line of management within 48 hours.

II. Nonsurgical treatment

I. Laser coagulation

- It can arrest the bleeding without direct tissue contact. Nd:YAG laser has been used more commonly because it can penetrate tissue more deeply compared to argon laser which penetrates very superficial tissues. The success rate of laser coagulation is around 80%.

2. Sclerotherapy

ENDOTHERAPY

- Bipolar electrocoagulation—failure rate—50%
- Inj. sclerotherapy—failure rate—20%
- Haemoclip application

ENDOSCOPIC PROGNOSTIC FACTORS

- Visible level: 40–60% rebleeding ulcer > 2 cm
- Adherent clot: 20% rebleeding
- Flat pigmented spot: 10% rebleeding
- Clean ulcer base: Rarely bleeding

- Epinephrine (1: 10,000) arrests bleeding by vaso- constriction.
- 2% ethanolamine, a sclerosant causes dehydration and shrinkage of surrounding tissues.
- It also produces inflammation and thrombosis of the bleeding vessel (Fig. 1).



Bleeding vessel

Fig. 1

- This is the most popular method. The success rate is around 80-90%. It is a cheap and easy treatment.

3. Haemoclip application (Fig. 2)



Haemoclip applied

Fig. 2

- 4. Bipolar electrocoagulation-failure rate is 50%
- Surgical eradication of . pylori prevents rebleeding.

III. Surgical control of bleeding peptic ulcer

ROLE OF SURGERY

- Explore when endotherapy fails
- Explore when rebleeding occurs in the elderly
- Explore an unstable patient
- Gastroduodenotomy, under-running of ulcer base for CDU and partial gastrectomy for gastric ulcer.

Indications

1. Failure of endoscopic haemostasis-prognostic factors are given below.
2. Rebleeding in the hospital (rebleeding is more common in gastric ulcer patients).
3. Bleeding requiring transfusion of more than 2000 ml blood in 24 hours (6 units).
4. Elderly patients with rebleeding.
5. Massive haemorrhage leading to shock or cardiovascular instability.
6. Recurrent haemorrhage requiring hospitalisation

Types of surgery

1. Surgery for bleeding duodenal ulcer
 - Laparotomy and anterior gastroduodenotomy.
 - Visualise the bleeding ulcer in the first part of duodenum
 - Under-running of the ulcer base by direct suture or 4 quadrant ligation of gastroduodenal artery by using nonabsorbable sutures (Fig. 3).

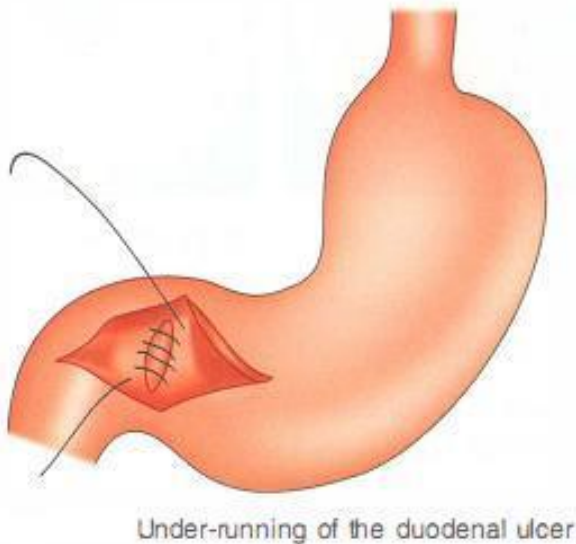


Fig. 3

- Gastroduodenotomy incision is converted into a pyloroplasty followed by vagotomy which completes the treatment.
2. Surgery for bleeding gastric ulcer (benign)
 - Laparotomy, gastrotomy and visualise the bleeding ulcer.
 - Under-running of the ulcer base. There are chances of rebleeding with this method.

- Partial gastrectomy is the best treatment provided general condition of the patient is good (Figs 4 and 5). Otherwise, local excision of the ulcer, vagotomy followed by GJ or pyloroplasty can also be done.
- Haemostatic methods currently employed include thermotherapy (heater probe, multipolar or bipolar electrocoagulation) as well as injection of ethanol or epinephrine solutions.
- When the bleeding is controlled, long-term medical therapy includes antisecretory agents, usually in the form of a proton pump inhibitor, in addition to testing for H. Pylori with treatment if positive.
- If H. pylori is present, documentation of eradication should be performed after therapy.

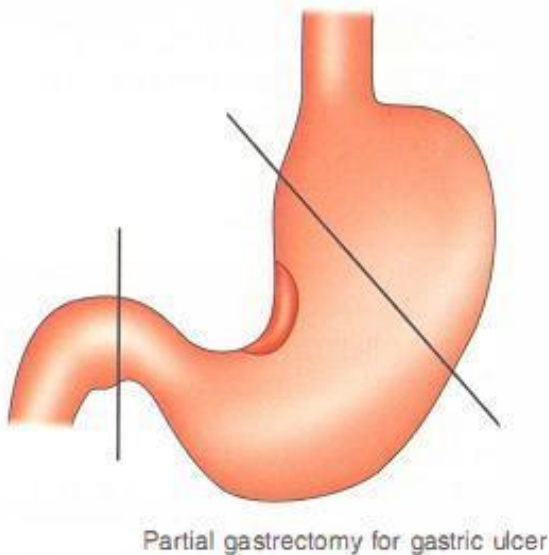


Fig.4

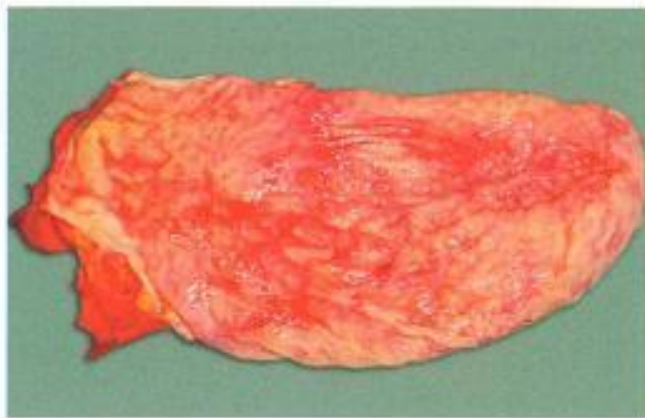


Fig.5

DIFFERENTIAL DIAGNOSIS OF HAEMATEMESIS (UPPER GI TRACT BLEEDING)

- 80% bleeding is from upper GI tract.
- Almost 20% is from lower GI tract (colon)
- 1% from small intestines.
- Bleeding proximal to ligament of Treitz.
- Haematemesis refers to vomiting of fresh red blood. Melaenemesis refers to vomiting of dark altered blood. However, both are included under upper GI tract bleeding. Small bowel, even though is a midgut structure, some of its lesions can produce haematemesis. Hence, they are also included under this heading.

Causes (Fig. 6)

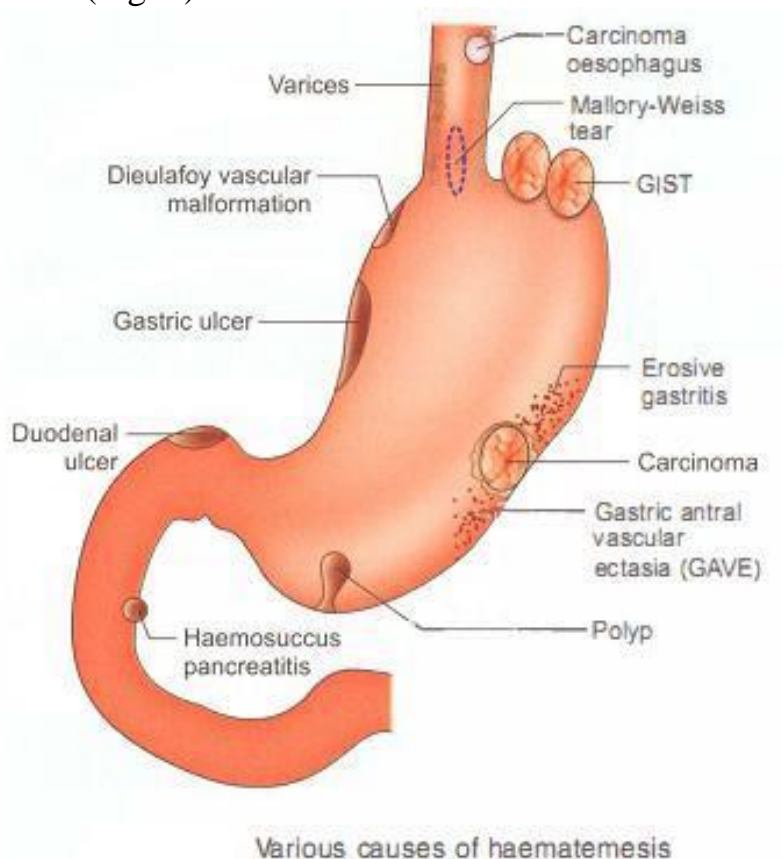


Fig. 6

1. Oesophageal causes

- Reflux oesophagitis
- Mallory-Weiss syndrome
- Oesophageal varices
- Cancer of oesophagus, leiomyoma oesophagus

2. Gastric causes

- Gastric ulcer
- Gastric varices
- Acute erosive gastritis
- Gastric cancer
- Stromal tumours-GIST

- Lymphoma
 - Arteriovenous malformation
 - Gastric polyp
 - Gastric antral vascular ectasia (GAVE)
3. Duodenal causes
- Duodenal ulcer
 - Arteriovenous malformation
 - Duodenal carcinoma
 - Aortoduodenal fistula diverticulae
 - Polyps
4. Other rare causes
- Purpura
 - Haemophilia
 - Haemobilia
 - Pseudoaneurysms due to acute pancreatitis.

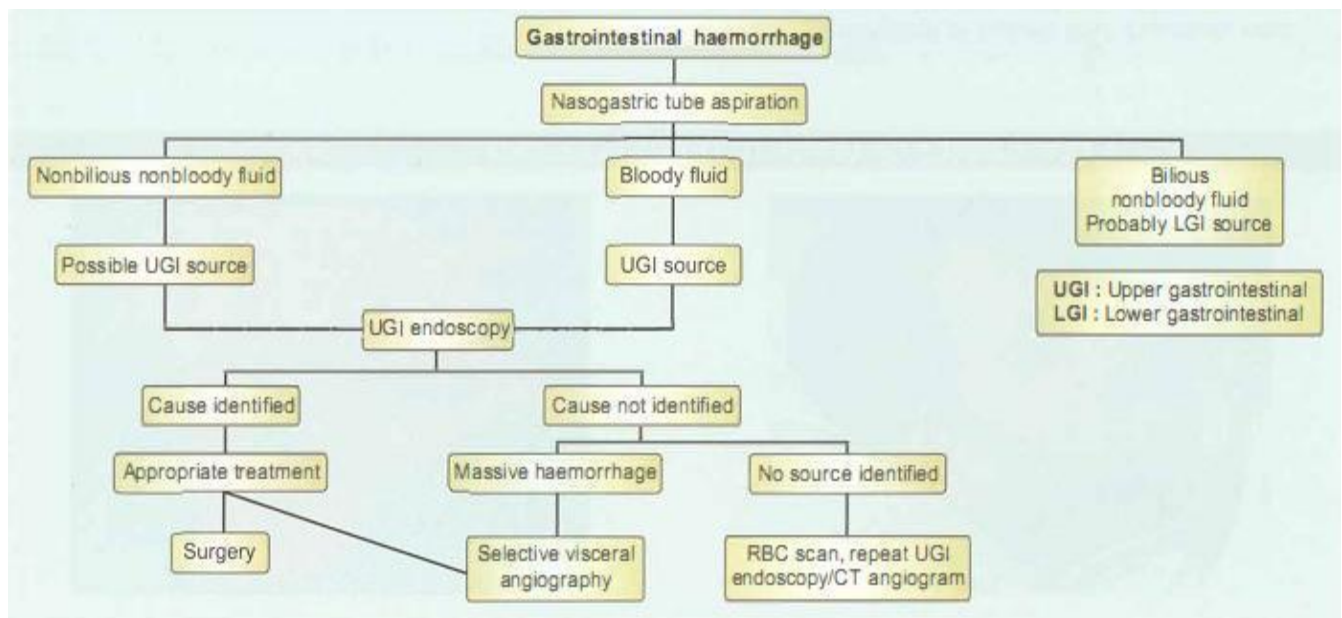
Initial assessment (Table 23.6)

Initial assessment	
History	Probable causes
1. Abuse of drugs and alcohol Previous abdominal pain H/o jaundice, liver cell failure Anaemia, loss of weight, loss of appetite Violent vomiting—haematemesis	Acute erosive gastritis Chronic peptic ulcer Oesophageal varices Carcinoma stomach Mallory-Weiss syndrome
2. General physical examination <ul style="list-style-type: none"> • Testicular atrophy, gynecomastia • Palpable left supraclavicular node • Arthritis—multiple joint involvement • Purpuric spots (Fig. 23.45) 	<ul style="list-style-type: none"> • Cirrhosis of the liver • Carcinoma stomach • Acute erosive gastritis (use of NSAID) • Bleeding tendencies
3. Abdominal examination <ul style="list-style-type: none"> • Palpable spleen, ascites • Palpable stomach mass • Tenderness in the epigastrium 	<ul style="list-style-type: none"> • Portal hypertension • Carcinoma stomach • Peptic ulcer disease
4. Assessment of haemorrhage Massive haemorrhage (more than 1,000 ml of blood) Moderate haemorrhage (500–1000 ml of blood) Mild haemorrhage (less than 500 ml of blood)	<p>Portal hypertension, acute erosive gastritis, chronic peptic ulcer</p> <p>Chronic peptic ulcer</p> <p>Other causes</p>



Purpuric spots

Investigations (Fig. 7)



Investigation algorithm of UGI bleeding (Courtesy: Dr Sibasis Bisoi, Asst Professor, KMC, Manipal)

Fig. 7

- Fiberoptic endoscopy should be done on an emergency basis within 6 to 36 hours of admission. It can diagnose variceal bleeding, erosive gastritis, bleeding peptic ulcer, carcinoma stomach, etc.
- Only when endoscopy cannot yield any diagnosis, selective coeliac angiography should be done which can detect uncommon causes such as angiodysplasia of the stomach or bleeding from a rolling hernia, etc. Barium study is done to rule out intestinal causes in less urgent cases.
- Isotope studies: Intravenous injection of ^{99m}Tc pertechnetate can demonstrate hypertrophic gastric like mucosa in Meckel's diverticulum.
- CT angiogram is the gold standard investigation when haemobilia or haemosuccus pancreatitis is suspected (Fig. 8).



Massive haematemesis in this patient of haemobilia

Fig. 8

Treatment

Initial management is to treat the shock in the line discussed or peptic ulcer haemorrhage.

Indications for surgery

1. Elderly patients with rebleed in the hospital
2. Rarity of blood groups
3. Spurting vessel in an endoscopy

Surgery

- Surgical management of individual case has been discussed along with the concerned chapter. However, summary of the treatment is discussed in Table

Surgery for haematemesis			
Causes	Conservative	Failure	Surgical method
1. Acute erosive gastritis	Yes		Rarely—gastrectomy
2. Chronic duodenal ulcer	Yes		Vagotomy, under-running, pyloroplasty
3. Chronic gastric ulcer	Yes		Partial gastrectomy
4. Mallory-Weiss syndrome	Yes		Suturing of the tear
5. Cancer of the stomach	No		Gastrectomy
6. Duodenal polyp	Endoscopic snaring		Surgery, if endoscopic facility not available
7. Haemobilia	Yes, therapeutic embolisation		Ligation of feeding vessel
8. Variceal bleeding	Yes, sclerotherapy		Devascularisation
9. Haemosuccus pancreatitis	Yes, therapeutic embolisation		Ligation of pseudoaneurysm
10. Dieulafoy lesion	Yes, injection sclerotherapy		Wide excision

- Thus, upper GI bleeding can occur due to various causes. However, acute erosive gastritis, chronic peptic ulcer and esophageal varices are the three important causes of bleeding. Endoscopy is the investigation or the diagnosis of upper GI bleeding (Fig. 9). Today, most of the upper GI bleeding is managed either in the form of injection sclerotherapy, laser coagulation, or with powerful H₂ blockers or proton pump inhibitors. In appropriate cases, surgery is definitely indicated. Some common conditions which give rise to haematemesis are discussed in the following pages.



Endoscopy showing erosions

Fig. 9

LOWER GI BLEEDING

Lower gastrointestinal (GI) bleeding refers to bleeding which occurs beyond the ligament of Treitz. Bleeding per rectum may be a manifestation of upper GI bleeding, the causes of which have been discussed under haematemesis. In this chapter, bleeding per rectum due to lower GI causes will be discussed.

Lower gastrointestinal (GI) haemorrhage accounts for 1 % of acute hospital admissions each year. Severe bleeding is that which continues for 24 hours after hospital admission or that which recurs 24 hours after resolution.

Definition

- Haematochezia: Bloody stools (LGIB or rapid UGIB)
- Melaena: Black tarry stools from digested blood. Bleeding is there for more than 8 hours.
- Massive GI tract bleeding: The bleeding which requires more than 3 units of blood transfusions in 24 hours.

• OBSCURE: Bleeding which persists or recurs after initial evaluation has failed (with EGD and colonoscopy). Two types:

A. Obscure occult: Iron deficiency anaemia, faecal occult blood positive, no visible bleeding. More than 80% resolve without treatment.

B. Obscure overt: Recurrent and visible bleeding, e.g. angiodysplasia.

Investigating a case of lower GI bleeding is like investigating a 'crime' by CBI officer. One should not jump to conclusions as soon as one cause of bleeding is found. There are innumerable examples of 'piles' being treated for bleeding, totally missing a growth above in the rectum

CAUSES

Depending on aetiology

COMMON CAUSES OF LOWER GI BLEEDING

- Most originate in the colon or rectum—haemorrhoids, polyps, carcinoma, inflammatory bowel diseases are common causes.
- 10% from upper intestinal tract
- Small intestinal haemorrhage is usually due to arteriovenous malformations (angiodysplasia), accounting for 70–80%.
- Jejunal diverticula, Meckel's diverticula, neoplasia, Crohn's disease, and aorto-enteric fistula following a previous aortic graft are other causes of bleeding from small intestines.

LOWER GI BLEEDING—TYPES

Depending upon the source:

- Small bowel bleed—5%
- Colonic bleed—95%

Depending upon the clinical manifestation:

- *Melaena*: Passage of black tarry stools (altered blood) due to slow bleeding or more proximal source of bleed.
- *Haematochezia*: Passage of bright red stools with or without clots.

I. Congenital

- Polyps: Congenital polyp,

	Peutz-Jeghers syndrome, Familial polyposis coli (FPC) • Meckel's diverticulum • Hereditary haemorrhagic telangiectasia (HHT)
II. Inflammatory	• Tubercular ulcers • Enteric ulcers • Crohn's ileocolitis • Ulcerative colitis • Necrotising enterocolitis • Dysentery-amoebic, bacillary, strongyloides infestation
III. Neoplastic	• Papilloma of rectum • Carcinoma colon, rectum • GIST • Lymphoma • Carcinoma small bowel
IV. Vascular	• Angiodysplasia • Ischaemic colitis • Vasculitis-polyarteritis nodosa • Haemangioma
V. Clotting disorders	• Haemophilia • Thrombocytopaenia • Leukaemia • Warfarin therapy • Disseminated intravascular coagulopathy
VI. Miscellaneous	• Piles, anal fissure • Prolapse • Injury to the rectum • Diverticular disease

DEPENDENT ON SITE OF BLEEDING

- I. Small intestine
 - Peutz-Jeghers polyps
 - Meckel 's diverticulum
 - Tubercular ulcers
 - Crohn 's ulcers
 - Leiomyoma
- II. Large bowel
 - Angiodysplasia right colon
 - Carcinoma colon
 - Ulcerative colitis
 - Dysentery
 - Diverticular disease
- III. Anorectal
 - Piles conditions
 - Prolapse rectum
 - Fissure in ano
 - Fistula in ano (rare)
 - Injuries to the rectum

Differential diagnosis of lower GI bleeding (US statistics)	
Colonic bleeding (90–95%)	Small bowel bleeding (5–10%)
Diverticular disease 30–40%	Angiodysplasia
Ischaemia 5–10%	Erosions or ulcers secondary to NSAID
Anorectal disease 5–15%	Crohn's disease
Neoplasia 5–10%	Radiation enteritis
Infectious colitis 3–8%	Meckel's diverticulum
Inflammatory bowel disease 3–4%	Neoplasia (adenocarcinoma, lymphoma)
Angiodysplasia 3%	

CLINICAL EXAMINATION

1. Age of the patient

- Children and young boys: Polyps, Meckel's diverticulum, necrotising enterocolitis.
- Young age group: Piles, tuberculosis, Crohn's, dysentery
- Middle and old age: Carcinoma, piles, prolapse, diverticular disease.

2. Colour of blood

- Bright red: Piles, fissure, polyp
- Altered blood: Carcinoma, tubercular ulcer, Crohn's colitis, dysentery.
- Maroon colour: Meckel's diverticulum

3. Blood with mucus

- Intussusception
- Dysentery
- Inflammatory bowel diseases
- Carcinoma

4. Other special features

- Severe pain with bleeding: Anal fissure
- Splash in the pan: Piles
- Red currant jelly stools: Intussusception
- Streaks of blood: Anal fissure
- Bloody slime: Carcinoma rectum
- Blood with cherry-red mass coming out (piles, polyps).

5. Palpable mass abdomen

- Hard mass in the colon: Carcinoma colon
- Firm to hard mass in the right iliac fossa: Ileocaecal tuberculosis.
- Contracting mass: Intussusception

6. Rectal examination

- Very painful: Anal fissure
- Pedunculated mass: Rectal polyp Juvenile polyps)
- Ulcerations in the rectum: Solitary rectal ulcer
- Indurated ulcer or growth: Carcinoma rectum.

7. Evidence of bleeding tendencies

- Purpuric spots
- Haematoma

INVESTIGATIONS

1. Proctoscopy

- Cherry red to pink mucosal bulges: Haemorrhoids
- Bleeding ulcer or a growth: Cancer of rectum
- Single anterior ulcer: Solitary ulcer rectum.

2. Sigmoidoscopy

- Multiple small pinpoint ulcers: Ulcerative colitis
- Large deep flask-shaped ulcer: Amoebic ulcers
- Multiple small polyps: Hereditary polyposis coli.

3. Colonoscopy

- It is the gold standard investigation for lower GI bleeding. It can detect 3 important diseases: Carcinoma, inflammatory bowel diseases (IBDs) and diverticular diseases. It can also detect ischaemic colitis, polyps and angiodysplasia. It needs to be repeated. In massive bleeding it can really tax an expert colonoscopist also.
- Colonoscopic adrenaline injections, snaring and coagulation (Argon plasma coagulation) are therapeutic advantages.

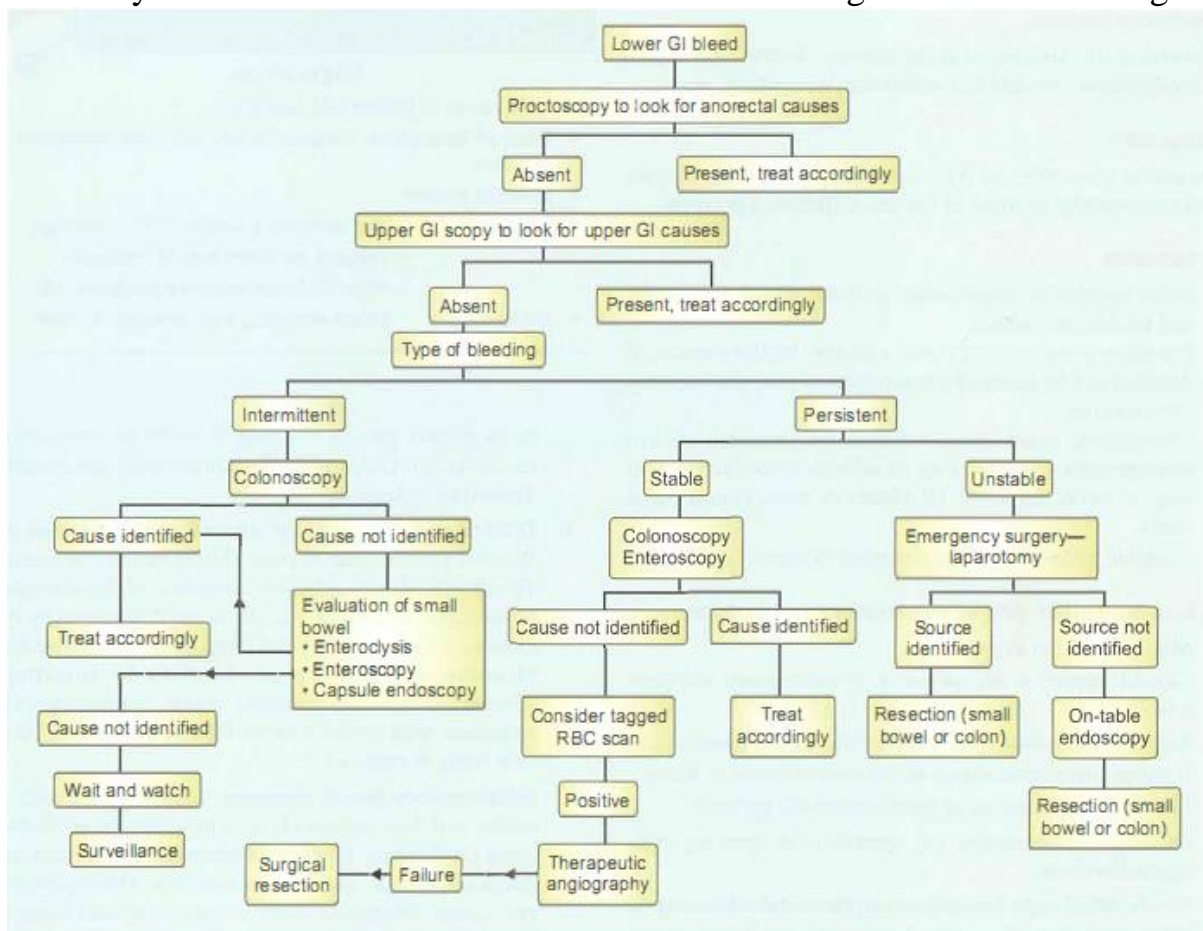
4. Stool examination

- Amoebiasis, bacillary dysentery
- Hookworm infestations.

5. Barium enema

- Irregular filling defect in the colon: Cancer colon
- Contracted pipe-stem colon: Ulcerative colitis
- Pincer ending: Intussusception

- Saw-tooth appearance: Diverticular disease.
6. Small bowel enema (enteroclysis)
- Diverticulum in the terminal ileum is Meckel's diverticulum. Multiple ulcers and stricture terminal ileum can be due to tuberculous ulcer.
 - Barium studies have a little value in the presence of acute hemoRRhage. They can be used in intermittent or chronic bleeding wherein endoscopy has failed to detect the cause.
7. Special investigations
- They are indicated when the diagnosis of lower GI bleeding cannot be made out. They are more useful where there is active bleeding or obscure bleeding.



MASSIVE LOWER GI BLEEDING

- Massive lower GI bleeding is defined as haemorrhage distal to the ligament of Treitz that requires more than 3 units of blood in 24 hours.

Common causes

Diverticular disease, inflammatory bowel diseases, angiodysplasia, Meckel's diverticulum, haemobilia, etc.

Diagnosis

Diagnosis is established by colonoscopy, REC tagged scan and angiography in most of the cases (follow algorithm).

Treatment

- Initial aggressive resuscitation by fluids, blood transfusion and treatment of shock.
- Emergency colonoscopy and vascular malformations if detected can be treated by argon plasma coagulation or by cauterisation.
- Therapeutic vasopressin infusion 0.2 units/minute via angiographic catheter with or without embolisation will stop or arrest the lower GI bleeds in more than 85% of cases.
- Unstable patient should be subjected to urgent laparotomy.

A few important tips at exploratory laparotomy

- Midline incision is preferred.
- Careful inspection and palpation of entire small and large bowel.
- Empty small bowel. Then palpate for hidden lesions.
- Intraoperative enteroscopy if no obvious lesion is found.
- Endoscopic evaluation of transilluminated gut wall.
- On table colonoscopy via appendiceal opening after appendicectomy.
- Rarely, blind right hemicolectomy/subtotal colectomy or blind resection of proximal jejunum may be necessary in obscure bleeding (keeping in mind angiodysplasia).

SUMMARY

Summary and important causes of the GI bleeding are given here.

I. From the colon

1. Haemorrhoids: These are the common causes. They cause splash in the pan. It is painless, fresh bleeding. It is one of the differential diagnosis for anaemia. Diagnosis is by proctoscopy as cherry red spongy masses. Sigmoidoscopy is done to rule out proximal carcinoma. Treated by haemorrhoidectomy.
2. Fissure in ano: A severe painful condition of the anal canal, results in constipation, hard pellet like stools and drop of blood. Treated by lateral sphincterotomy.
3. Carcinoma rectum/colon: Fresh bleeding per rectum bloody slime, loss of weight, anaemia, mass abdomen in an elderly patient suggests it could be carcinoma rectum/colon. Diagnosis is by colonoscopy and biopsy. Treated by colectomy.
4. Diverticular disease of the sigmoid colon: Common in Western patients, diet in poor fibre is mostly the cause. The diverticula are acquired herniation of the mucosa, hence thin. Bleeding can be occult/intermittent or massive. Diagnosis is by colonoscopy-to visualise the bleeders, endotherapy can be done by injecting adrenaline into the bleeding vessel. In emergency situations, with massive lower GI bleeding, emergency colectomy is required.

5. Inflammatory bowel diseases: Commonly ulcerative colitis and less commonly Crohn's disease produces lower GI bleeding. Bleeding is intermittent with mucous diarrhoea, weight loss and malnutrition. Often patients are young. Diagnosis is by colonoscopy and biopsy. Initial treatment is always conservative-salazopyrines, steroids, etc. In massive bleeding to save the life- emergency total colectomy with or without pouch may be required. In Crohn's disease, the aim is always to conserve the segment of the intestine. Resection is required only if massive bleeding is present. This is rare in Crohn's disease.

6. Angiodysplasia (Key Box 32.5): Vascular ectasia also called angioma, haemangiomas and arteriovenous malformations are collectively grouped under angiodysplasia. Commonly right side colon, i.e. caecum and ascending colon are affected. In the small intestines, jejunum is the most common site. Typically elderly patients present with intermittent bleeding is cause of anaemia. Usual causes of lower GI bleeding are ruled out by colonoscopy and other investigations. Suspect angiodysplasia. A few cases present with massive bleeding-a difficult problem to treat. Repeat colonoscopy, capsule endoscopy, angiography, on-table enteroscopy are the taxing investigations-all may provide no results-emergency colectomy or intestinal resection of the suspicious segment may be required.

ANGIODYSPLASIA

- They are acquired lesions, seen in elderly patients
- Less rapid, but recurrent
- Caecum and right colon are common sites—Caecum is the most common site
- Small bowel (proximal) is the second common site
- Small red mucosal lesions between 2 and 10 mm, flat or raised lesions—dilated tortuous submucosal veins
- Recurrent painless and self-limiting bleeding often associated with aortic stenosis—Heyde's syndrome
- Colonoscopy is the investigation of choice
- They can be treated endoscopically—coagulation with heat probe, bipolar electrode or laser, etc. but recurrence or failure can occur
- Surgery by resecting the segment is a definitive procedure
- Angiography is rarely positive
- Enteroscopy, capsule endoscopy or intraoperative endoscopy are useful investigations
- These lesions are seen in acute renal failure, von Willebrand's disease, HHT
- Hormone treatment
- Endoscopy directed resection

7. Ischaemic colitis: Elderly, hypertensive patients present with diffuse abdominal pain, severe in nature, with blood in stools-it is often massive, sometimes moderate. On examination tenderness may be present on the left side of the colon. Plain X-ray abdomen supine will show thumb printing sign due to mucosal oedema and submucosal haemorrhage. CT scan-colonic wall

thickening with posterior at shadowing. Colonoscopy may reveal ulcers or a few changes in the splenic flexure region. If conservative measures fail such as blood transfusion, segmental colectomy may be required. (Fig. 10)

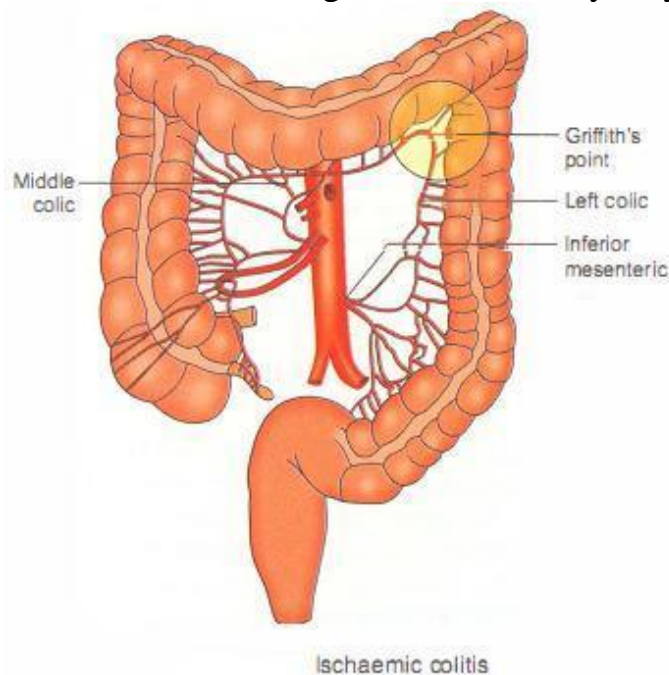


Fig. 10

8. Dysentery: Various dysenteries such as amoebic, bacillary, Shigella, HIV related-all produce ulcerations in the colon resulting in blood and mucus in the stools. Gripping pain, acute in nature with or without fever and tenderness over the colon-in the right iliac fossa and in the left iliac fossa are suggestive. Diagnosis is by stool examination and colonoscopy. Treated with anti amoebic drugs or antibiotics.

9. Radiation proctocolitis: Usually occurs with pelvic radiotherapy, example-radiation given to treat carcinoma cervix. Most common site is rectum. Tenesmus, mucus and blood in stools common. Proctoscopy reveals ulceration. Treated with stool softening agents, 5 ASA (aminosalicylic acid) topical or steroid enema.

10. Adenoma, polyps, familial polyposis coli: They are common in the colon. All are precursors of carcinoma colon. Often patients are young with lower gastro-intestinal bleeding. Diagnosis is by colonoscopy and biopsy. Villous adenomas, polyps can be snared or excised. Always histological examination is a must.

II. From the small intestines

I. Tubercular ulcers: They are never massive bleeders. Patients are between 20 and 40 years old with blood and mucus in the stools, loss of weight, crampy abdominal pain, evening rise of temperature with or without

pulmonary tuberculosis. On examination mass may be palpable if caecum is also involved (ileocaecal tuberculosis). Visible step ladder peristalsis indicates obstruction from a tubercular stricture or obstruction due to mass. Colonoscopy with visualization of the terminal ileum and biopsy is the key to the diagnosis. Obstructed cases can be treated with stricturoplasty in a single stricture or resection in appropriate cases. Cases without obstruction are treated with antitubercular treatment.

2. Crohn's ulcers: Ileum is the commonest site-rest of the bowel can also be affected. Transmural inflammation, multiple ulcers, skip lesions are other features. Diagnosis is by CT scan, push enteroscopy and biopsy. Treatment is as for ulcerative colitis.

3. Enteric ulcers: High grade fever-enteric fever patient who has bleeding after 15 days of fever may be having enteric ulceration of the Peyer's patches with bleeding. In majority of the cases, bleeding is occult and usually stops once the disease is treated, rarely exploration and resection of the segment may be required in cases of massive bleeding cases.

4. Meckel's diverticulum: Children or young patients, often bleeds are intermittent, maroon coloured with or without abdominal pain. Peptic ulceration in the ectopic mucosal site in the Meckel's diverticulum causes bleeding. Colonoscopy is normal. RBC tagged technetium scan is the investigation of choice. It can pick up bleeding as little as 0.1 ml/min of bleeding. Exploration and excision of the Meckel's diverticulum is the treatment of choice.

5. Angiodysplasias: Small intestines are the most common sites of angiodysplasia. They are the differential diagnosis or obscure bleeds. Angiogram and small bowel push enteroscopy, capsule endoscopy are the investigations. Diagnosis is by exclusion.

6. Small bowel tumours: They are uncommon causes of lower GI bleeding. But they have to be kept in mind when the common causes described above are ruled out one by one. Adenocarcinoma, lymphoma and stromal tumours (GIST-gastrointestinal stromal tumours) are the few examples. GIST can affect small intestine. The mucosal ulcerations cause GI blood loss. Bleeding is not massive-can be intermittent and result in anaemia. Palpable mass sometimes massive which is bosselated, anaemia and bleeding are the triad of GIST. CT scan is the investigation of choice. Resection almost cures the disease. Degree of malignancy is decided by the mitotic figures in pathology. Imatinib is the drug used in recurrent cases of GIST or GIST with metastasis. Patients with liver metastasis will live beyond 5-10 years with imatinib.

1. Lower GI tract bleeding refers to bleeding:
 - A. Below ligament of Treitz
 - B. Below ampulla of Vater
 - C. Below Meckel's diverticulum
 - D. Distal to ileocaecal junction
2. Most important inherited anomaly which produces bleeding is:
 - A. Juvenile polyp
 - B. Meckel's diverticulum
 - C. Familial polyposis coli
 - D. Hereditary haemorrhagic telangiectasia
3. The ideal investigation of bleeding Meckel's diverticulum is:
 - A. CT scan
 - B. Colonoscopy
 - C. ^{99m}Tc-tagged RBC scan
 - D. Push enteroscopy
4. Following acts are true or angiodysplasia except:
 - A. They are congenital lesions
 - B. Right colon is the common site
 - C. It is one of the causes of obscure bleeding
 - D. Small bowel is the second common site
5. Following are true about capsule endoscopy except:
 - A. It is disposable pill
 - B. Ideal for small intestinal bleeds
 - C. Biopsy can be taken
 - D. Capsule retention can occur
6. Following are true for jejunal bleeding lesions except:
 - A. Carcinoma
 - B. Meckel's diverticulum
 - C. Angiodysplasia
 - D. Hamartomatous polyp
7. Following are true for haemobilia except:
 - A. It causes melaena
 - B. It causes biliary colic
 - C. Obstructive jaundice
 - D. Splenomegaly
8. Which one of the following is the cause for massive lower GI bleeding?
 - A. Carcinoma rectum
 - B. Crohn's colitis
 - C. Typhoid colitis
 - D. Diverticulitis of the colon
9. Which one of these causes bleeding with septic shock?
 - A. Carcinoma colon
 - B. Ulcerative colitis
 - C. Mesenteric ischemia
 - D. Angiodysplasia
10. Which one of these causes painless and massive bleeding per rectum?
 - A. Angiodysplasia
 - B. Sigmoid volvulus

- C. Necrotising enterocolitis
- D. Mesenteric ischaemia

ANSWERS

1-A 2-D 3-D 4-A 5-C 6-B 7-D 8-D 9-C 10-A

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