

433 SURGERY TEAM

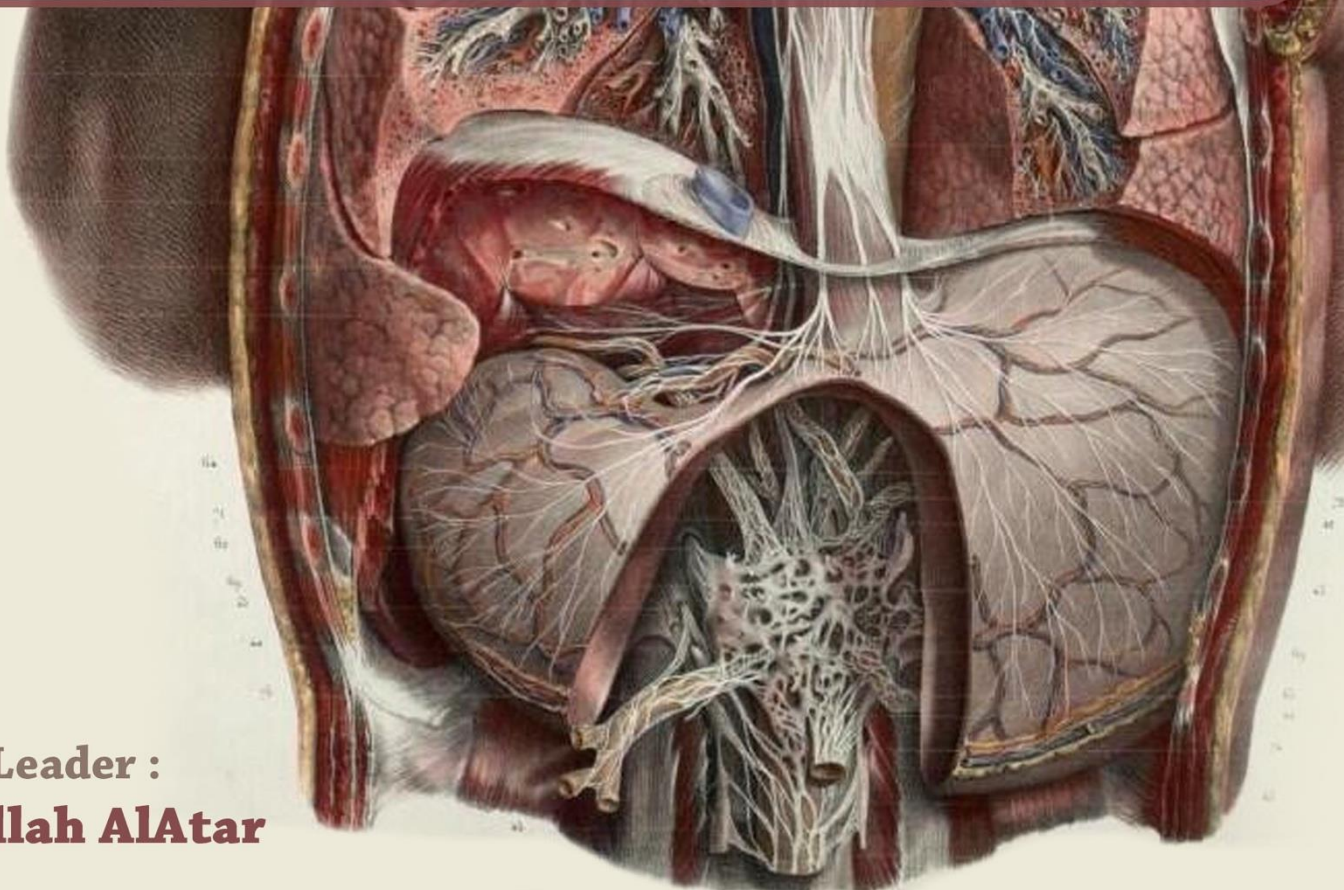
Gastrointestinal Bleeding

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Emergency Resuscitation

- Emergent resuscitation takes a priority over determining the cause of GI bleeding.
- Upper GI bleeding 4x more common than lower GI bleeding
- Emergency resuscitation same for upper and lower GI bleeds

ABC

- If the patient is hypoxic: 15L non-rebreather mask.
- 2 large bore cannula (gauge 14 or 16) into both ante-cubital fossae and take blood sample at same time for
 - **Haematocrit:** for follow-up. In the first 1-2 hours of bleeding will be sustained with no changes.
 - **Urea & Electrolyte:**
 - If you have high urea with normal creatinine or the ratio of urea/creatinine is 100 or above (BUN/creatinine ratio 36 or above); indicates upper GI bleeding due to digested blood in the GIT.
 - Acute kidney failure: due to diminished renal perfusion. Urea and electrolyte will be raised.
 - **LFT:** to rule out liver disease i.e. esophageal varices.
 - **Coagulation profile:** to rule out anti-coagulant usage drugs or bleeding tendency.
 - **Cross-matching** and prepare 6 units.
- Insert Urinary catheter to assess urine output (normal person 1 ml/kg/hour).
- Start IV fluid with crystalloids then if it is not corrected, move to blood transfusion (If cross-matching is not available, give \pm O group for the male and $-$ O for the female).
- Monitor response: to resuscitation frequently (HR, BP, urine output, level of consciousness, peripheral temperature [cold clammy skin in shock] and capillary refill time).
- Stop anti-coagulants and correct any clotting derangement.
- NG tube and aspiration (will help differentiate upper from lower GI bleed).

- Some patient with massive upper GI bleeding may present with hematochezia. So, NG tube will aspirate blood in this case.
- False negative result is high in case of NG tube.
- Finally, organize for definitive treatment (endoscope, radiology or surgery)

Estimating Degree of Blood Loss

	Class I	Class II	Class III	Class IV
Volume Loss (ml)	0-750	750-1500	1500-2000	>2000
Loss (%)	0-15	15-30	30-40	>40
RR	14-20	20-30	30-40	>40
HR	<100	>100	>120	>140
BP	Unchanged	Unchanged	Reduced	Reduced
Urine Output (ml/hr)	>30	20-30	5-15	Anuric
Mental State	Restless	Anxious	Anxious/confused	Confused/lethargic

* if the patients using B-blocker, don't rely on HR. The drug will mask effect of hypovolemia.

History

- Aim of the history:
 - localize the bleeding (upper or lower) and knowing the potential cause.
 - Determine the severity
 - Identify precipitants (e.g. Drugs)
- **Duration, frequency, and volume of bleeding** (indicate severity of bleeding)
- **Nature of bleeding:** will point to source
 - **Haematemesis** (fresh or coffee ground)
 - **Melaena** suggest upper GI bleed. (Note a very brisk upper GI bleed can present with dark or bright red blood PR).
 - PR **Dark** red blood suggests colon
 - PR **Bright** red blood suggests rectum, anus

- If PR bleeding, is blood being passed alone (suggests heavier bleeding) or with bowel opening.
- If with bowel opening is blood mixed with the stool (colonic), coating the stool (colonic/rectal), in the toilet water (anal), on wiping (anal).
- Ask about **associated upper or lower GI symptoms** that may point to underlying cause
 - E.g. Upper abdominal pain/dyspeptic symptoms suggest upper GI cause such as peptic ulcer
 - E.g. 2. lower abdominal pain, bowel symptoms such as diarrhea or a background of change in bowel habit suggest lower GI cause e.g. Colitis or cancer.
 - E.g. frequent bloody diarrhea, low-grade fever suggest IBD.
 - Previous episodes of bleeding and cause.
- **Past medical history**
 - History of any diseases that can result in GI bleeding, e.g. Peptic ulcer disease, diverticular disease, liver disease/cirrhosis
 - Bleeding disorders e.g. haemophilia
- **Drug history**
 - Anti-platelets (aspirin, Clopidogrel etc.) or anti-coagulants can exacerbate bleeding
 - NSAIDs and steroids may point to PUD
- **Social history**
 - Alcoholics at risk of liver disease and possible variceal bleeding as a result
 - Smokers at risk of peptic ulcer disease

Examination

- Signs of **shock**:
 - Reduced level of consciousness
 - Pale and clammy
 - Cool peripheries
 - Tachycardia and thready pulse

- Hypotensive with narrow pulse pressure
- Tenderness on abdominal examination may point to underlying cause e.g. Epigastric indicates peptic ulcer.
- Stigmata of **chronic liver disease** (palmer erythema, leukonychia, dupuytren's contracture, liver flap, jaundice, spider naevi, gynecomastia, shifting dullness/ascites)
- **Digital rectal examination** may reveal melena, dark red blood, bright red blood
- **Stool guaiac test:** bedside test to check presence of RBC in stool. But it is neither specific nor sensitive.

Upper GI bleeding

Upper GI bleeding refers to bleeding from esophagus, stomach, duodenum (i.e. Proximal to ligament of Treitz)

Presentation:

- **Acute Upper GI bleeding presents as:**
 - Haematemesis (vomiting of fresh blood)
 - Coffee ground vomit (partially digested blood)
 - Melena (black tarry stools PR)
 - Hematochezia (severe and brisk bleeding)
- If bleeding very slow and occult then can present with iron deficiency anaemia

Table 13.2 Causes of upper gastrointestinal bleeding.

● Peptic ulceration	50%
● Mucosal lesions including gastritis, duodenitis and erosions	30%
● Mallory-Weiss tear	5–10%
● Varices	5–10%
● Reflux oesophagitis	5%
● Angiodysplasia	2%
● Carcinoma	Uncommon
● Aortoduodenal fistula	Uncommon
● Dieulafoy syndrome (rupture of a large tortuous submucosal artery normally found in the body of the stomach)	Rare
● Coagulopathies	Uncommon

Risk Stratification: Rockall Score

Identifies patients at risk of adverse outcome following acute upper GI bleed

Variable	Score 0	Score 1	Score 2	Score 3
Age	<60	60-79	>80	
Shock	Nil	HR>100	SBP <100	
Co-morbidity	Nil major	-	IHD/CCF/major morbidity	Renal/liver failure
Diagnosis	Mallory Weiss tear	All other diagnoses	GI malignancy	-
Endoscopic findings	-	-	Blood, adherent clot, spurting vessel	-

*Score < 3 carries a good prognosis

*Score > 8 carries a high risk of mortality

Management:

Non-variceal Bleeding

- Emergency resuscitation as already described
- **Endoscopy**
 - Urgent oesophago-gastroduodenoscopy (OGD) (within 24hrs) – diagnostic and therapeutic
 - Treatment administered if active bleeding, visible vessel, adherent blood clot
 - Treatment options include injection (adrenaline), coagulation, clipping
 - Contraindication: high INR (Correct it then do endoscopy)
 - If re-bleeds then arrange urgent repeat OGD analysis)
- **Pharmacology**
 - PPI (infusion): pH >6 stabilises clots and reduces risk of re-bleeding following endoscopic haemostasis (pantoprazole dose: 80 mg stat then 8 mg/h)
 - Tranexamic acid (anti-fibrinolytic) – maybe of benefit (more studies needed)

- If H pylori positive then for eradication therapy
- Stop NSAIDs/aspirin/clopidogrel/warfarin/steroids if safe to do so (risk vs benefit)
- **Surgery**
 - Reserved for patients with failed medical management (ongoing bleeding despite 2x OGD)
 - Nature of operation depends on cause of bleeding (most commonly performed in context of bleeding peptic ulcer: duodenal ulcer > gastric ulcer)
 - E.g. Under-running suture of ulcer in case of duodenal ulcer. And wedge excision of bleeding lesion in case of gastric ulcer, partial/total gastrectomy for the malignancy.

Variceal Bleeding

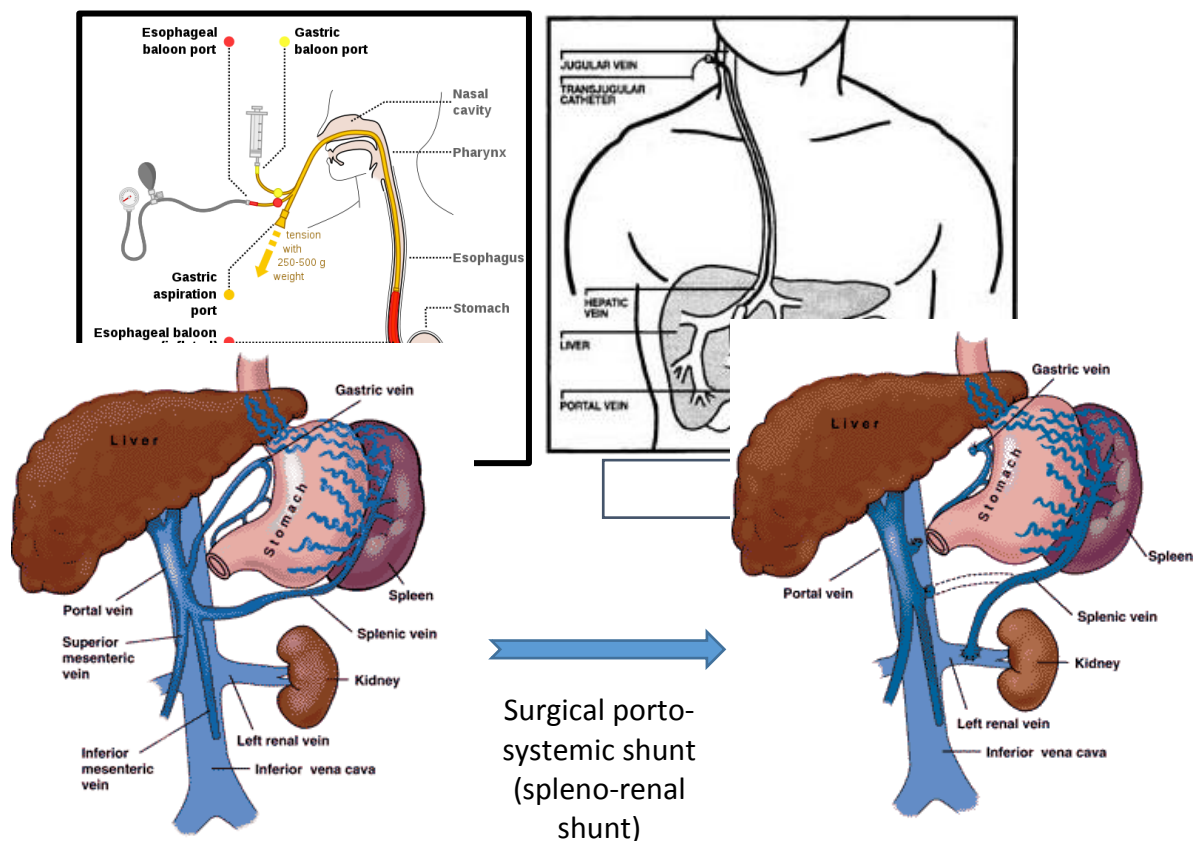
- Suspect if upper GI bleed in patient with history of chronic liver disease/cirrhosis or stigmata on clinical examination
- Liver Cirrhosis results in portal hypertension and development of porto-systemic anastomosis (opening or dilatation of pre-existing vascular channels connecting portal and systemic circulations).
- Sites of porto-systemic anastomosis include:
 - Oesophagus
 - **Portal branch:** esophageal branch of left gastric vein
 - **Systemic branch:** esophageal branch of azygous vein
 - Umbilicus
 - **Portal branch:** para-umbilical vein
 - **Systemic branch:** inferior epigastric vein
 - Retroperitoneal
 - **Portal branch:** right/middle/left colic vein
 - **Systemic branch:** renal/supra-renal/gonadal vein
 - Rectal
 - **Portal branch:** superior rectal vein
 - **Systemic branch:** middle/inferior rectal vein

- Furthermore, clotting derangement in those with chronic liver disease can worsen bleeding (in liver disease, PT and PTT is prolonged)
- **Pharmacology**
 - PPI (infusion)
 - Somatostatin/octreotide – vasoconstricts splanchnic circulation and reduces pressure in portal system (octreotide dose: 50 µg stat then 5 µg/h)
 - Terlipressin – vasoconstricts splanchnic circulation and reduces pressure in portal system
 - Propranolol – used only in context of primary prevention (in those found to have varices to reduce risk of first bleed)
 - Antibiotics (IV ceftriaxone or azithromycin) (**only medication which reduce mortality in upper GI bleeding with cirrhosis**)
- **Endoscopy**
 - Band ligation
 - Injection sclerotherapy
- **Balloon tamponade** – Sengstaken-Blakemore tube
 - Rarely used now and usually only as temporary measure if failed endoscopic management
- **Radiological procedure** – used if failed medical/endoscopic
 - Selective catheterisation and embolisation of vessels feeding the varices
 - **TIPSS procedure:** transjugular intrahepatic porto-systemic shunt
 - shunt between hepatic vein and portal vein branch to reduce portal pressure and bleeding from varices): performed if failed medical and endoscopic management
 - Can worsen hepatic encephalopathy
- **Surgical**
 - Surgical porto-systemic shunts (often spleno-renal)

- Liver transplantation (patients often given TIPP/surgical shunt whilst awaiting this)
- **Variceal bleeding prognosis:**
 - Prognosis closely related to severity of underlying chronic liver disease (Childs-Pugh grading)
 - Child-Pugh classification grades severity of liver disease into A,B,C based on degree of ascites, encephalopathy, bilirubin, albumin, INR
 - Mortality 32% Childs A, 46% Childs B, 79% Childs C

Parameter	Points assigned		
	1	2	3
Ascites	Absent	Slight	Moderate
Hepatic encephalopathy	None	Grade 1-2	Grade 3-4
Bilirubin micromol/L (mg/dL)	<34.2 (<2)	34.2-51.3 (2-3)	>51.3 (>3)
Albumin g/L (g/dL)	>35 (>3.5)	28-35 (2.8-3.5)	<28 (<2.8)
Prothrombin time Seconds over control INR	<4 <1.7	4-6 1.7-2.3	>6 >2.3

CPT classification:
 Child A: score 5-6 (well compensated);
 Child B: score 7-9 (significant functional compromise);
 Child C: score 10-15 (decompensated)



Lower GI bleeding

Lower GI bleed refers to bleeding arising distal to the ligament of Treitz (DJ flexure). Although this includes jejunum and ileum bleeding from these sites is rare (<5%). Vast majority of lower GI bleeding arises from colon/rectum/anus.

Presentation:

- **Dark red blood PR** – more proximal bleeding point (e.g. Distal small bowel, colon)
- **Bright red blood PR** – more distal bleeding point (e.g. rectum, anus)
- PR blood maybe:
 - mixed or separate from the stool
 - If separate from the stool it maybe noticed in the toilet water or on wiping
 - Passed with motion or alone
- If blood mixed with stool (as oppose to separate from it) suggests more proximal bleeding
- If bleeding very slow and occult then can present with iron deficiency anaemia

Causes of lower GI bleeding		
Colon	Rectum	Anus
Diverticular Disease	Polyps	Haemorrhoids
Polyps	Malignancy	Fissure
Gastritis/erosions	Proctitis	Malignancy
Malignancy		
Colitis		
Angiodysplasia		

Management:

- Emergency resuscitation as already described
- **Pharmacological**
 - Stop NSAIDS/anti-platelets/anti-coagulants if safe
 - Tranexamic acid

- **Endoscopic**
 - OGD (15% of patients with severe acute PR bleeding will have an upper GI source!)
 - Colonoscopy – diagnostic and therapeutic (injection, diathermy, clipping).
- **Radiological**
 - CT angiogram – diagnostic only (non-invasive)
 - Determines site and cause of bleeding
 - Mesenteric Angiogram – diagnostic and therapeutic (but invasive)
 - Determines site of bleeding and allows embolisation of bleeding vessel
 - Can result in colonic ischaemia
 - Nuclear Scintigraphy – technetium labelled red blood cells: diagnostic only
 - Determines site of bleeding only (not cause)
- **Surgical** – Last resort in management as very difficult to determine bleeding point at laparotomy
 - Segmental colectomy – where site of bleeding is known
 - Subtotal colectomy – where site of bleeding unclear
 - Beware of small bowel bleeding – always embarrassing when bleeding continues after large bowel removed!
- As 85% of lower GI bleeds will settle spontaneously the interventions mentioned on previous slide are reserved for:
 - Severe/Life threatening bleeds
- In the 85% where bleeding settles spontaneously OPD investigation is required to determine underlying cause:
 - Endoscopy: flexible sigmoidoscopy, colonoscopy
 - Barium enema

Management Flow Chart for Severe lower GI bleeding

