Approach to (Non-variceal) Upper GI Bleeding

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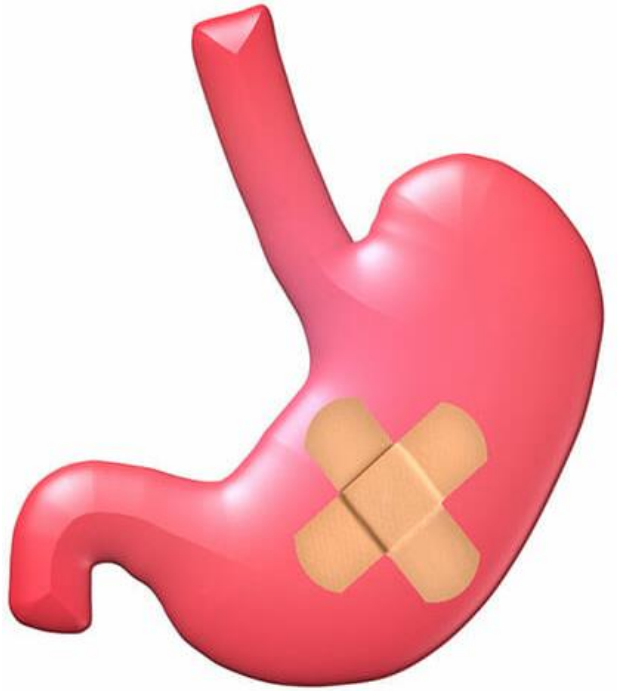
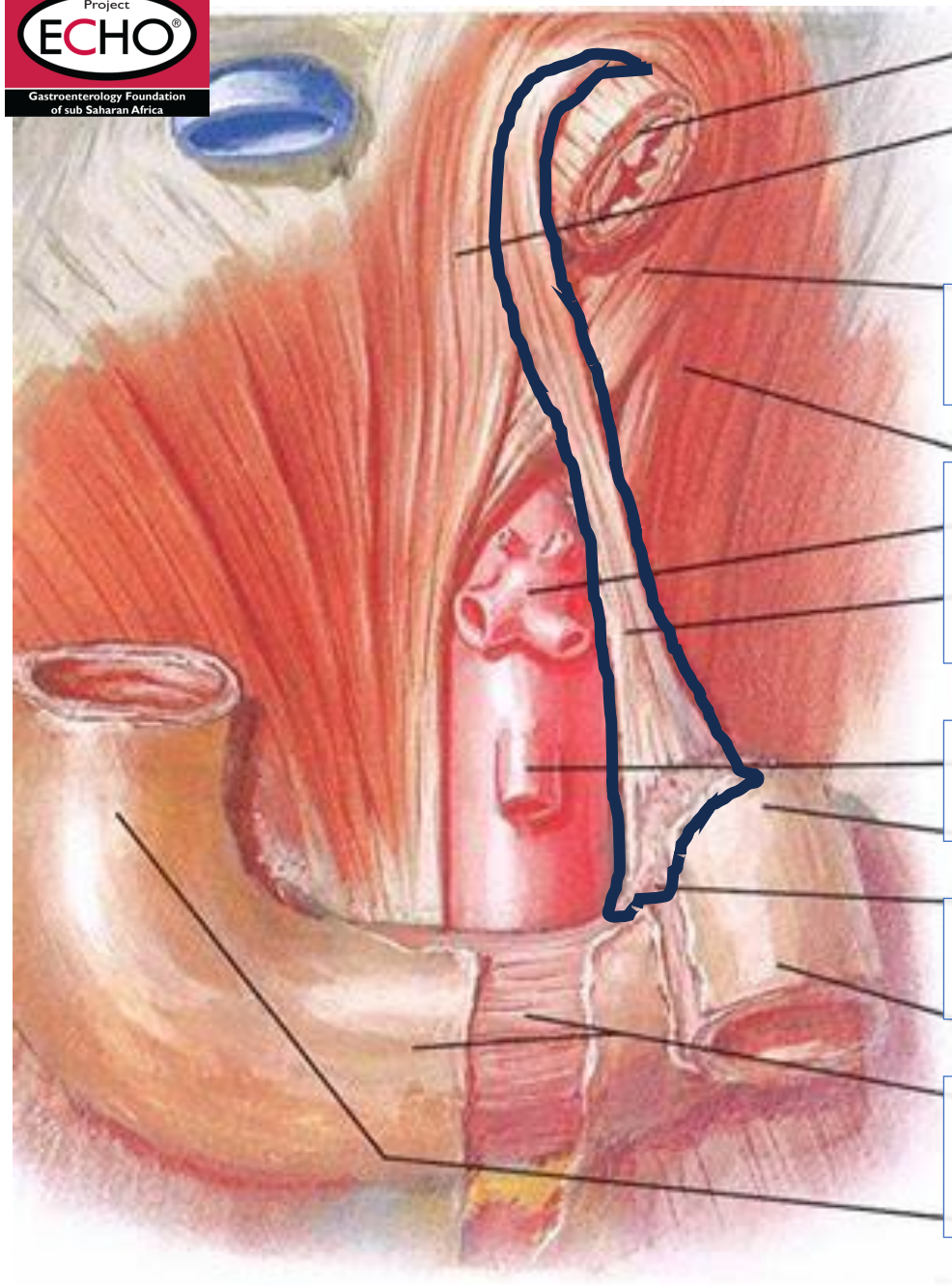
Facilitator: Dr Nazeer Chopdat



Definitions



UGIB

- Bleeding originating proximal to the ligament of Trietz.

Severe GI bleeding

- documented GI bleeding (hematemesis, melena, hematochezia, or positive NG lavage) + shock or orthostatic hypoTN, a decrease in Hct by at least 6% (or a decrease in the hemoglobin level of at least 2 g/dL), or Tx of at least 2 units PRBCs.

Overt bleeding

- visible signs of blood loss from the GI tract

Occult GI bleeding

- subacute bleeding that is not clinically visible.

Obscure GI bleeding

- bleeding from a site that is not apparent after routine endoscopic evaluation with EGD (upper endoscopy), and colonoscopy, and possibly push enteroscopy

Hematemesis

- Vomiting of blood, which is indicative of bleeding from the nasopharynx, esophagus, stomach,or duodenum
- vomiting of bright red blood, which suggests recent or ongoing bleeding

Malena

- Black tarry stool
- d/t degradation of blood to hematin or other hemochromes by intestinal bacteria.
- Melena can signify bleeding that originates from a UGI, small bowel, or proximal colonic source.
- > 50 to 100 mL blood required
- Occurring several hours after the bleeding event

Hematochezia

- bright red blood per rectum and suggests colonic or anorectal bleeding or active UGI or small bowel bleeding.
- If severe bleeding and rapid intestinal transit

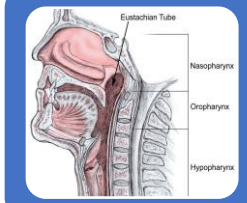
Coffee ground Emesis

- Dark material (coffee-ground), which suggests bleeding that stopped some time ago.
- can be due to non-bleeding pathology, including obstruction, but might indicate UGIB.

Severe GI Bleeding

History

Nasopharynx

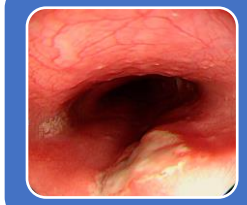


- History of nasopharyngeal radiation
- Prior nasopharyngeal malignancy
- Recurrent epistaxis

Lungs

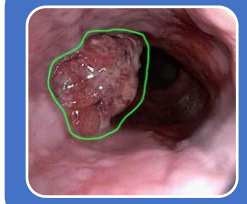
- Hemoptysis

Esophageal Ulcer



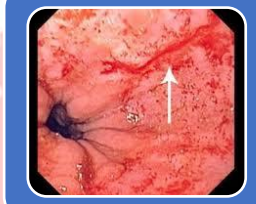
- GERD, Heartburn
- Heavy alcohol use
- Odynophagia
- Pill ingestion
- Traumatic NG tube placement

Esophageal Cancer



- Dysphagia
- History of Barrett esophagus
- Weight loss

Mallory-Weiss tear Alcohol binge

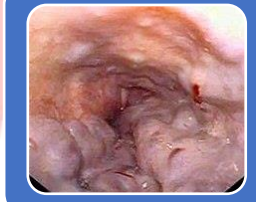


- Vomiting

Cameron lesions

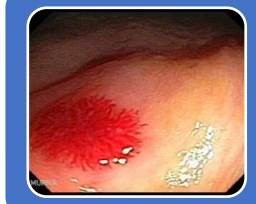
- Large hiatal hernia

Esophageal or gastric varices or portal hypertensive gastropathy



- Chronic liver disease
- Cirrhosis
- Morbid obesity

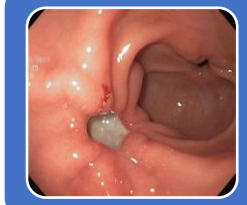
Gastric angiodysplasia



- Aortic stenosis
- Chronic kidney disease
- Systemic sclerosis

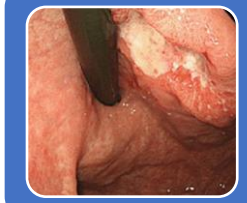
Severe GI Bleeding

History



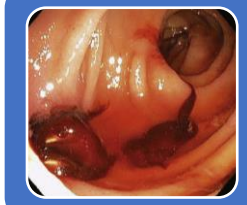
Peptic ulcer

- Hp infection
- Epigastric discomfort
- Frequent aspirin or other NSAID use
- History of PUD



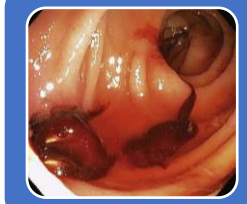
Gastric cancer

- Early satiety
- Weight loss



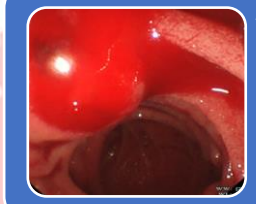
Primary aortoenteric fistula

- Prior severe acute unexplained bleeding
- Abdominal aortic aneurysm without surgery



Secondary aortoenteric fistula

- Prior surgical repair of an abdominal aortic aneurysm with synthetic graft

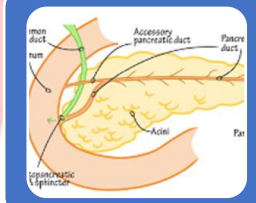


Ampulla of Vater

- Recent endoscopic sphincterotomy

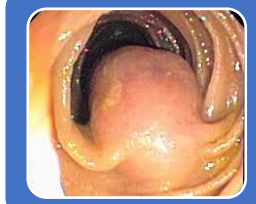
Bile ducts

- Recent liver biopsy
- cholangiography
- TIPS



Pancreatic ducts

- Pancreatitis
- Pseudocyst
- Recent pancreatography



Small intestinal malignancy

- Hereditary nonpolyposis colorectal cancer
- History of intra-abdominal metastatic cancer
- Intermittent SBO
- Recurrent unexplained GI bleeding
- Weight loss

Severe GI Bleeding

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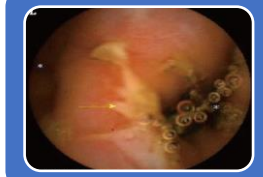
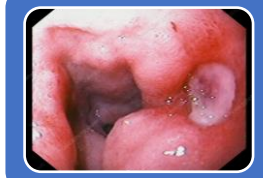
History



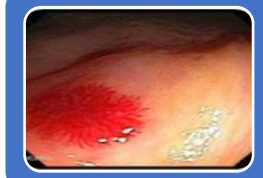
Meckel diverticulum

- Unexplained GI bleeding in patient ≤40 yr of age



Small intestinal ulcerations

- IBD
- Use of aspirin
- Other NSAID

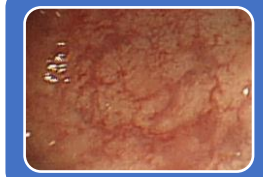


Small intestinal telangiectasias

- Frequent nosebleeds → HHT (Osler-Weber-Rendu disease)
- Age >60 yr, Chronic GI blood loss, IDA

Anastomotic ulceration

- Prior intestinal surgical anastomosis



Radiation enteritis

- History of abdominal radiation therapy

Severe GI Bleeding

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History

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Type and crossmatch
FBC
Chemistry panel
Liver biochemical tests
Coagulation tests

Transfusions as indicated

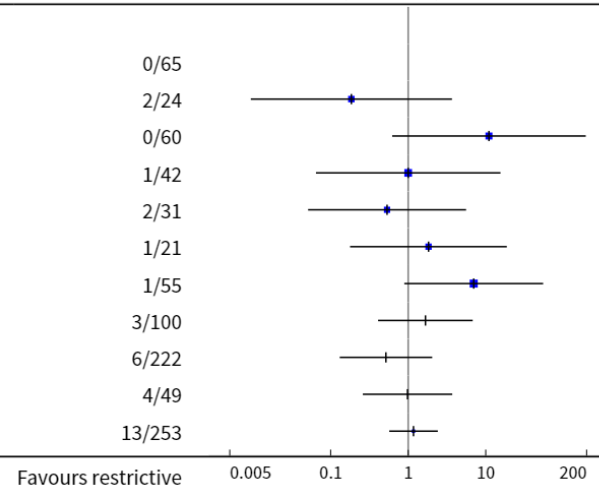
Restrictive vs Liberal PRBC transfusion

A restrictive transfusion threshold was 7-8 g/dL

A meta-analysis n=12 587 pts, across 31 RCTs, who required a Tx due to a range of causes, including acute blood loss, compared outcomes based on restrictive or liberal transfusion.

Analysis 1.2. Comparison 1 Mortality at 30 days, Outcome 2 30-day mortality subgroup by restrictive haemoglobin level.

Study or subgroup	Restrictive n/N	Liberal n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.2.1 Restrictive < 8 g/dL to 9 g/dL					
Lotke 1999	0/62	0/65			Not estimable
Blair 1986	0/26	2/24		0.35%	0.19[0.01,3.67]
Foss 2009	5/60	0/60		0.38%	11[0.62,194.63]
Carson 1998	1/42	1/42		0.42%	1[0.06,15.47]
Webert 2008	1/29	2/31		0.56%	0.53[0.05,5.58]
Cooper 2011	2/23	1/21		0.57%	1.83[0.18,18.7]
Carson 2013	7/55	1/55		0.73%	7[0.89,55.01]
Parker 2013	5/100	3/100		1.51%	1.67[0.41,6.79]
Bracey 1999	3/215	6/222		1.57%	0.52[0.13,2.04]
Bush 1997	4/50	4/49		1.67%	0.98[0.26,3.7]
Hajjar 2010	15/249	13/253		4.78%	1.17[0.57,2.41]



Carson JL, Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion. Cochrane Database of Systematic Reviews 2016, Issue 10. Art. No.: CD002042.

A restrictive transfusion did not alter mortality at 30 days (risk ratio 0.97).

Restrictive transfusion was not a/w increased adverse events in pts with CAD, but data were insufficient to be able to comment on those presenting with ACS.

Restrictive transfusion (in context of non-life-threatening UGIB) = standard of care and is recommended by all major guidelines.

In Exsanguinating bleeding, BSG does not advise target orientated Resuscitation.

Variceal guidelines suggest that a venous sats >70% is an easily measurable level within the resuscitation setting and a useful guide for clinicians.

Platelet & Clotting factors

Limited evidence regarding the need or threshold for PLT Tx in UGIB

The BSG consensus bundle advises a threshold of transfusion of ≤ 50×10^9 platelets/L based on major haemorrhage protocols (based primarily on expert opinion).

In Variceal bleed, no evidence suggests that platelet count correlates with inability to control bleeding or rebleeding.

- NICE and BSG variceal guidelines advise transfusion at the threshold of ≤ 50×10^9 /L
- Baveno VII consensus advises correction of platelets can be considered on an individual basis

FFP = No clear benefit (US variceal guidelines did not advocate its use in patients with cirrhosis and UGIB)

Ris

	REQUIRES ENDOSCOPY	COMPONENTS	MAIN USE(S)
Pre-endoscopy Rockall (clinical Rockall)[15,16]	No	Age, blood pressure, pulse, comorbidity	Predicts mortality
Post-endoscopy Rockall (full Rockall)[15,16]	Yes	Age, blood pressure, pulse, comorbidity, cause of bleeding, stigmata of recent haemorrhage	Predicts mortality
Glasgow-Blatchford[15-17]	No	Urea, haemoglobin, blood pressure, pulse, syncope, melaena, cirrhosis, heart failure	Predicts the need for intervention (endoscopic therapy or blood transfusion). Accurately identifies the lowest risk cases Identifies those suitable for non-admission and outpatient management. May have a role in triaging urgency of endoscopy
Abbreviated Glasgow Blatchford[18]	No	Urea, haemoglobin, blood pressure, pulse	Predicts the need for intervention (endoscopic therapy or blood transfusion)
AIMS65[15,17]	No	Albumin, Glasgow Coma Score, Systolic Blood pressure, age.	Predicts mortality
PNED[15]	Yes	Presence of cancer, ASA grade, cirrhosis, rebleeding, failure of endoscopic therapy	Predicts mortality
Iino[19]	No	Haemoglobin, urea, syncope, haematemesis, eGFR, anti-platelet treatment	Predicts need for clinical intervention (limited data)

ASA: American Society of Anaesthesiologists; eGFR: estimated glomerular filtration rate; GI: gastrointestinal.

The Rockall (full and pre-endoscopic), AIMS65, and Glasgow Blatchford scores are best studied

No score was particularly good at predicting rebleeding or death

GBS score of 0 or 1 = optimum threshold for outpatient management

Severe GI Bleeding

History

Risk Assessment

Type and crossmatch
FBC
Chemistry panel
Liver biochemical tests
Coagulation tests

Transfusions as indicated

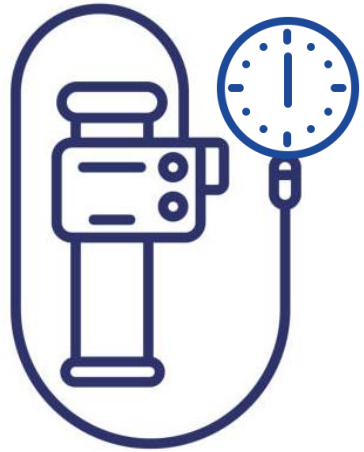
GBS score of 0 or 1 (Low risk of bleeding) = outpatient management + GI Referral

GBS score >1 = Admit

Hematochezia, Syncope, Shock, Comorbidities, onset of bleeding in hospital - ICU

Octreotide (bolus and infusion) if chronic liver disease suspected or confirmed

High-dose PPI therapy if peptic ulcer suspected



Antiplatelets

- If given for 1º Prophylaxis: Stopped (potentially indefinitely).
- If given for 2º Prophylaxis: Continue
- If aspirin was temporarily stopped d.t life threatening bleed: time to resumption varies across guidelines from time of haemostasias to five days

- Limited evidence on dual antiplatelet treatment.
- If patients has stents, the risk of occlusion is high and must be balanced → Call Cardiology.
- If severe bleeding → Continue Aspirin But stop P2Y12 antagonist. Restart P2Y12 within five days

Anticoagulation

- If severe UGIB; suggest that patients on warfarin have the drug withheld.
- Vitamin K should be given in addition to the faster acting four factor prothrombin complex
- FFP not preferred because of the high volume required.
- In less severe UGIB, the risk versus benefit balance of continuing anticoagulation must be assessed
- Rebleeding after endotherapy does not appear to be affected by a moderately elevated INR
- US guidelines suggest that endotherapy is appropriate in patients with an INR < 2.5
- Current European guidance advises reintroduction of warfarin after haemostasis is achieved and within 7 days, taking patient factors into consideration
- For DOACs; European & BSG guidelines suggest that given the short ½ life, apart from life threatening bleeds, simply withholding drugs if sufficient.

Pre-Endoscopy

- Prokinetic agents

- IV erythromycin at 250 mg for 30-120 minutes before endoscopy
  - Improves gastric mucosa visualization
  - ↓ transfusion requirements
  - ↓ need for second endoscopy
  - ↓ length of stay

- The BSG consensus bundle advises use of erythromycin in selected patients at the discretion of the endoscopist.

Pre-Endoscopy

- Tranexamic acid
  - Antifibrinolytic agent
  - Inhibits the interaction of plasminogen with plasmin and fibrin
  - Used in the management of major bleeding in trauma, obstetrics, and surgery.
  - In UGIB, no improvement in five day mortality with tranexamic acid vs placebo. Risk of VTE ↑ (HALT-IT study)

- Proton pump inhibitors
  - Might ↓ the need for endoscopic treatment at index endoscopy
  - Does not improve more clinically relevant endpoints (mortality, re-bleeding, need for Ø)
  - European, Asian-Pacific, International, and US guidelines are not consistent on the use of proton pump

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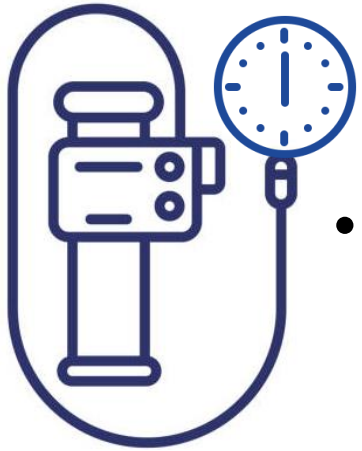
Time to Endoscopy



- Early (within 24 h) is preferable to later endoscopy.
- Current evidence does not appear to support urgent endoscopy <6 h, some variceal bleeding guidelines advise that endoscopy to be done at 12-24 hrs.
- Appropriate resuscitation & optimization of comorbidities is essential before endoscopy

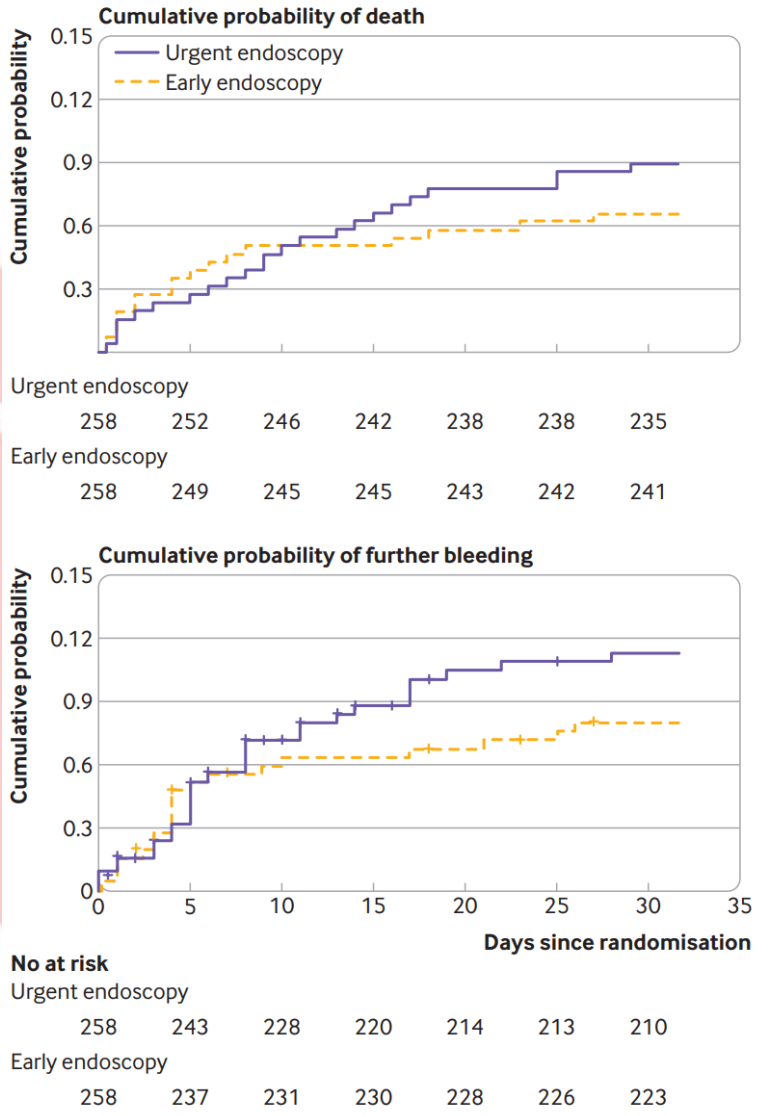
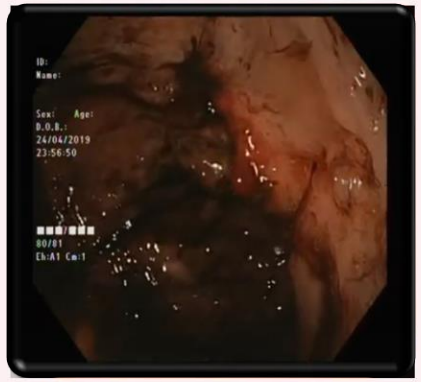


Figure 2 | Comparison of mortality and further bleeding between urgent (<6 h) versus early (6-24 h) endoscopy in patients with high risk gastrointestinal bleeding (Glasgow Blatchford Score ≥12)[53]

FORREST CLASSIFICATION

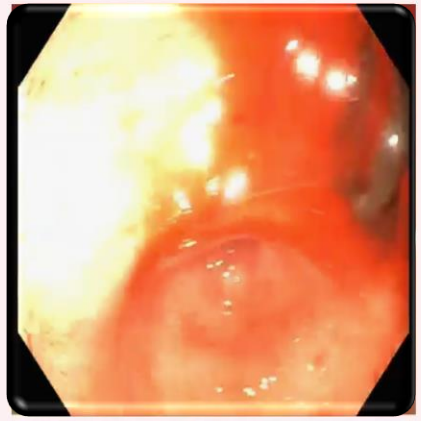
Acute Hemorrhage



1a

Active Spurting

Rebleeding Risk:
60 to 100%

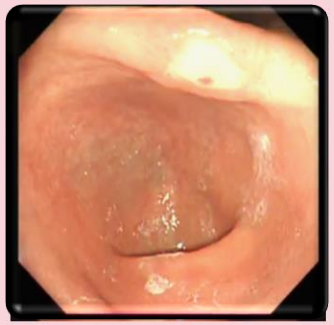


1b

Active Oozing

Rebleeding Risk:
50%

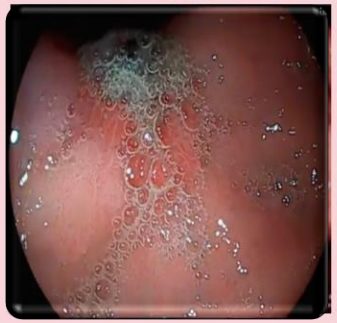
Signs of Recent Hemorrhage



IIa

Non-Bleeding Visible Vessel

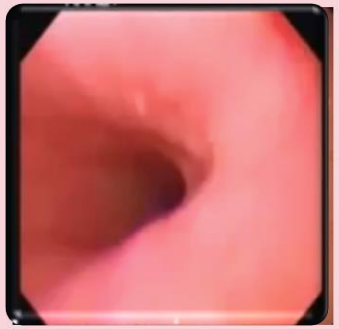
Rebleeding Risk:
40 to 50%



IIb

Adherent Clot

Rebleeding Risk:
20 to 30%

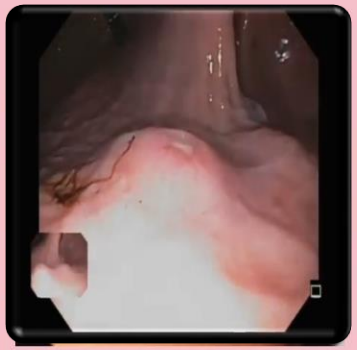


IIc

Flat Spot in Ulcer Base

Rebleeding Risk:
7 to 10%

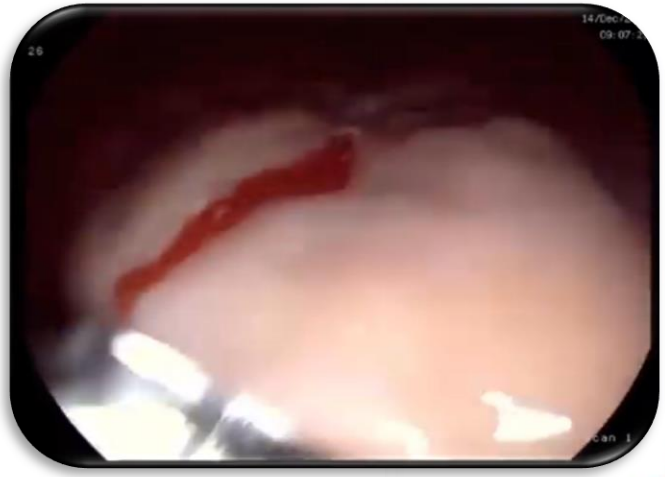
Lesions without Active Bleeding



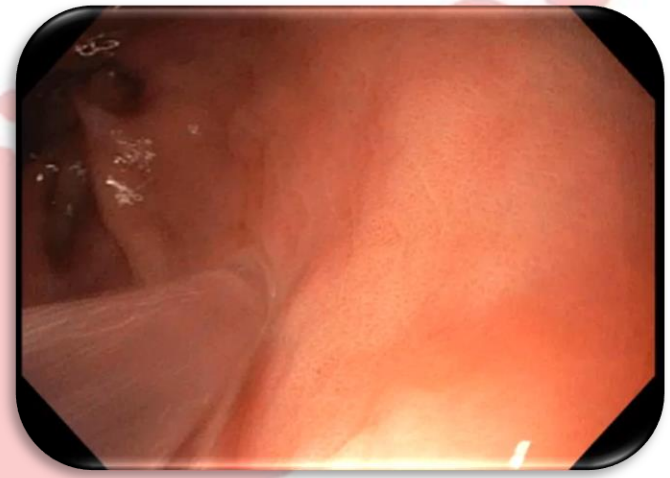
III

Clean-Based Ulcer

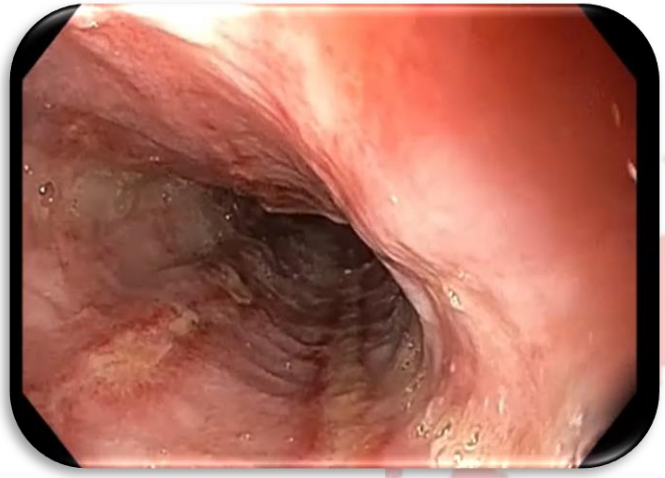
Rebleeding Risk:
3 to 5%



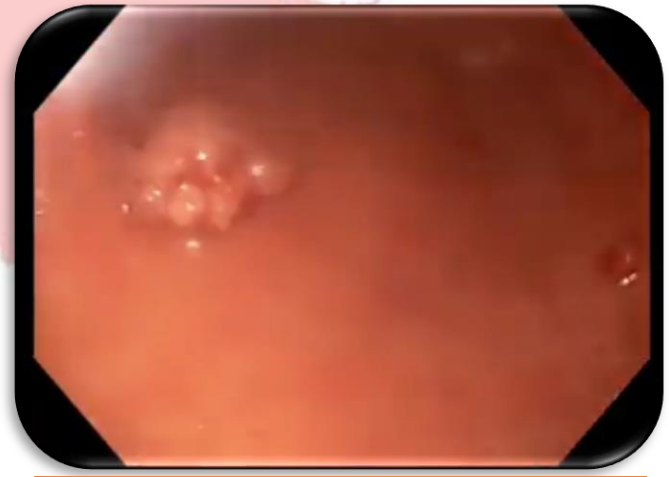
Deulofeu lesion



Angiodysplasia



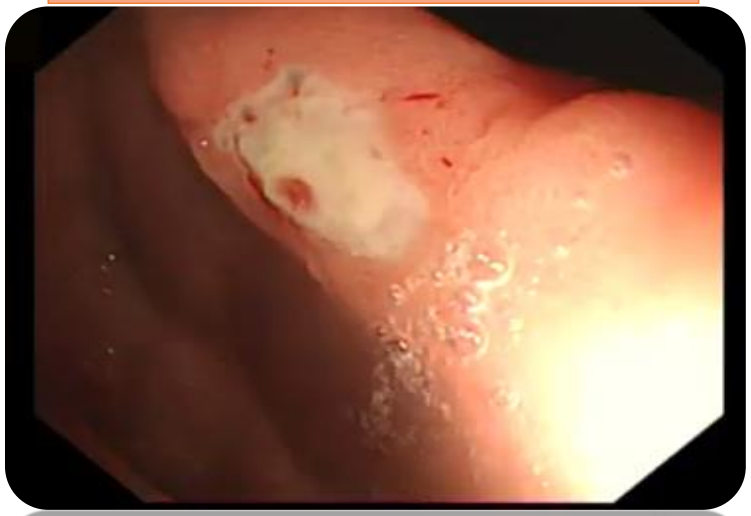
Esophagitis



Bleeding Polyp

Endo-therapy

Injection



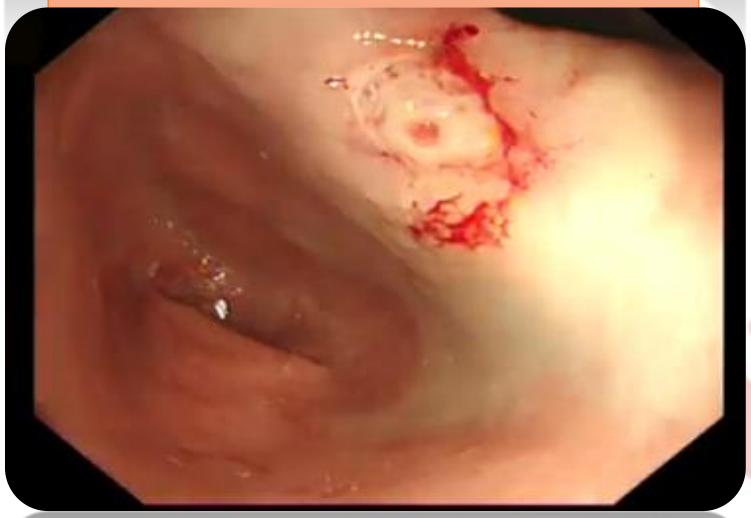
1:10 000 epinephrine

10-20mls

Provide temporary action by tamponade/ induce local vasospasm

Improves visibility

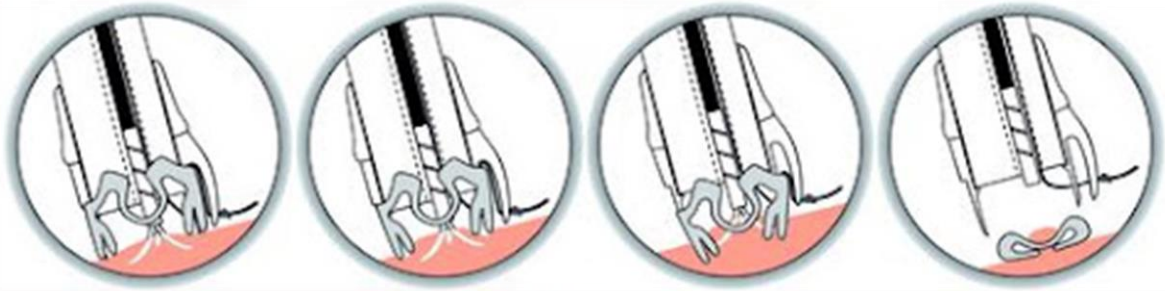
Clipping



Resolution clip 360

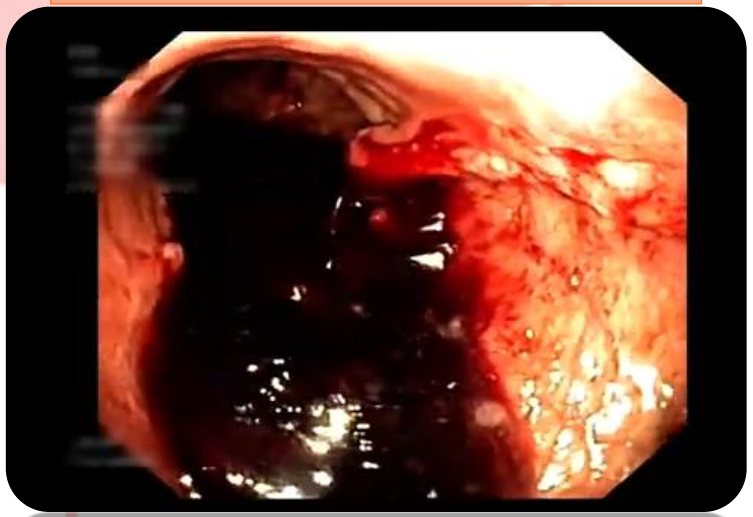
Clip placed over the bleeding site

OVESCO



Useful specially if ulcer has a fibrotic base

Hemospray



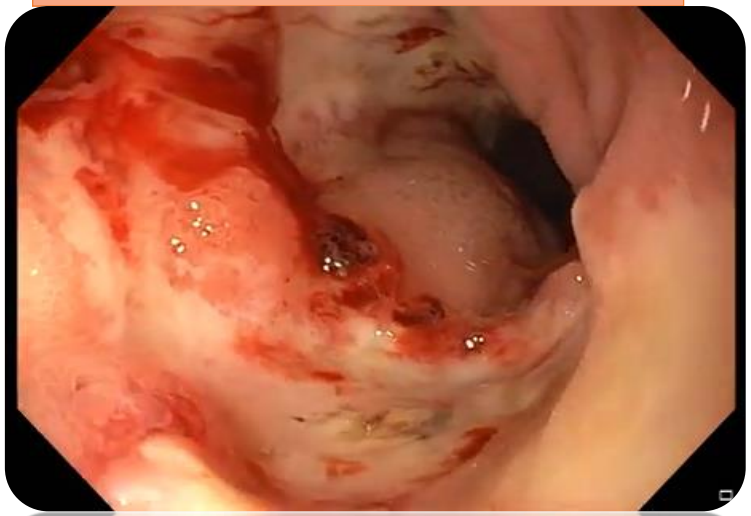
TC-35

Catheter tip 1-2cm from bleeding site

Apply 1-2s bursts

Until bleeding stops

Bipolar Electrocoagulation

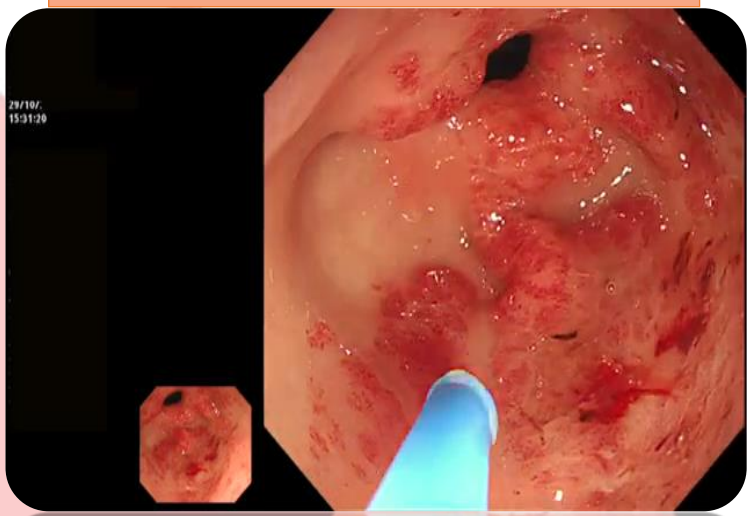


Use a large probe (3.2mm)

15Watts

8-10s of firm pressure

APC



Flow rate 1-2L/min of argon

Power 40-70W

Probe 2-10mm away

- Multiple studies have shown each single endo-therapy modality to be comparable in achieving hemostasis.
- Epinephrine = temporary action → Not to be used as a monotherapy

Post-Endoscopic therapy

PPI 80mg IV stat then 8mg/hour infusion x 72hrs

- Shown to reduce risk of re-bleeding, need for surgery & motality

PPI intermittent IV bolus or Oral PPI at high dose (potentially lowering cost) are equivalent to continuous intravenous infusion.

For high risk paitents after IV PPI and endoscopy → American and International guidelines advises PPI BD x 2 weeks

H. Pylori eradication

- If peptic ulceration found → test for H. Pylori (RUT or histology) at index endoscopy.

- If H. Pylori negative, European guidelines advised re- testing within four weeks & Eradication of H pylori if positive.

On-going bleeding / Re-bleeding

When to repeat Scope ?

- Externalization of blood
- More than 20 g/L reduction
- Tachycardia
- Hypotension

If bleeding cannot be controlled → involve IR (for transarterial embolisation) or surgery

European guidelines suggest the use of the larger over the scope clip or hemostatic powder

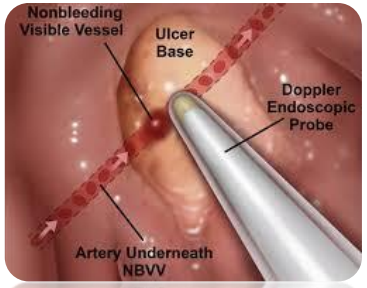
Haemostatic powder = high rates of rebleeding

- Used as a temporising measure before definitive management (interventional radiology)

Emerging Therapies

Machine learning modelling

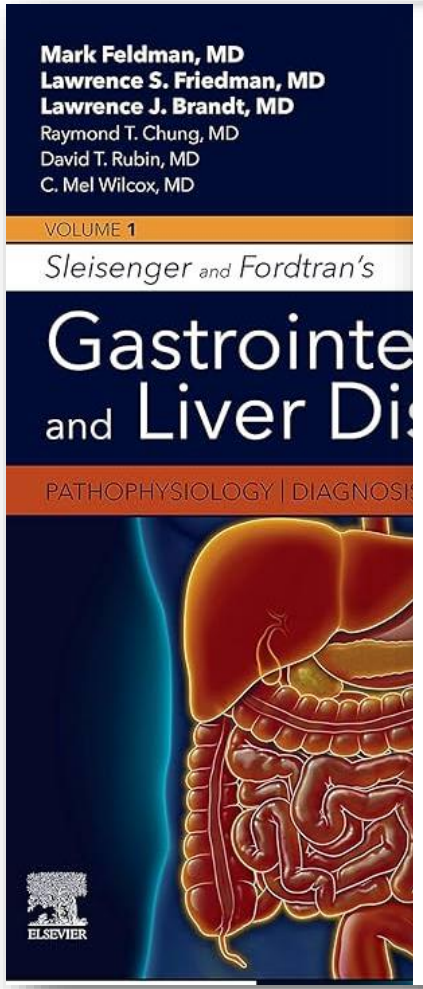
- Dynamic unlike existing risk scores
- Might improve patient management in cohorts at high or low risk.
- Outperformed existing risk scores at predicting an adverse event (composite of hospital intervention or death within 30 days).



- Doppler probes
  - The use of doppler probes as adjunct in endoscopic management
  - Not currently recommended by guidelines
  - Significantly lower rates of rebleeding at 30 days than visually guided endoscopic haemostasis

- Novel haemostatic techniques
  - Novel haemostatic powders or gels (Endoclot, Purastat, Nexpowder).
  - Studies are required to clarify their role in the endoscopic management of UGIB.

References



OPEN ACCESS

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Check for updates

Update on the management of upper gastrointes

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ABSTRACT

Upper gastrointestinal bleeding is a common emergency presentation requiring prompt resuscitation and management. Peptic ulcers are the most common cause of the condition. Thorough initial management with a structured approach is vital with appropriate intravenous fluid resuscitation and use of a restrictive transfusion threshold of 7-8 g/dL. Pre-endoscopic scoring tools enable identification of patients at high risk and at very low risk who might benefit from specific management. Endoscopy should be carried out within 24 h of presentation for patients admitted to hospital, although optimal timing for patients at a higher risk within this period is less clear. Endoscopic treatment of high risk lesions and use of subsequent high dose proton pump inhibitors is a cornerstone of non-variceal bleeding management. Variceal haemorrhage results in higher mortality than non-variceal haemorrhage and, if suspected, antibiotics and vasopressors should be administered urgently, before endoscopy. Oesophageal variceal bleeding requires endoscopic band ligation, whereas bleeding from gastric varices requires thrombin or tissue glue injection. Recurrent bleeding is managed by repeat endoscopic treatment. If uncontrolled bleeding occurs, interventional radiological embolisation or surgery is required for non-variceal bleeding or transjugular intrahepatic portosystemic shunt placement for variceal bleeding.

Introduction

Upper gastrointestinal bleeding (UGIB) is a common and potentially life threatening condition. Defined as bleeding originating proximal to the ligament of Trietz; bleeding from the oesophagus, stomach, or duodenum can present as haematemesis, melaena; or, in the context of severe bleeding and rapid intestinal transit, haematochezia. Coffee ground vomiting can be due to non-bleeding pathology, including obstruction, but might indicate UGIB. In addition to externalisation of blood, patients can present with symptoms of blood loss such as syncope, fatigue, and shortness of breath. The cause of bleeding can be classified as variceal or non-variceal, with non-variceal including p ulcer bleeding is the m despite *Helicobacter py* treatment and proton p incidence of UGIB has b owing to a combination interventions,[2 3] emerge with mortality between 2

Management of UGIB stages: pre-endoscopic assessment and treatm management. In this art with particular focus including risk stratificat treatment.

Incidence

The incidence of UGIB va ally. Based on populatio in Spain, the incidence o UGIB was 47-87 per 10 and 2005,[7] with more r administrative database admission rates of 67-8 2012.[3] Within the UK, d systematic linkage of h showed an incidence of data from Scotland repo 000. Factors proposed f social deprivation and p

Improved managem tion, proton pump inhi treatments have been a reduction in mortality f decades.[10] However, pat are increasingly of an comorbidities including disease, and use of antip is common. This demogr static mortality reported

Sources and selection crit

We searched PubMed, C Controlled Trials, and En gastrointestinal bleedin and "variceal bleedin between 1 January 201 We also reviewed refere we deemed to be high q to randomised control and systematic reviews lines. We included sma particular note or if othe for example, a large case

QUESTIONS FOR FUTURE RESEARCH

- ⇒ Is fresh frozen plasma of value in the correction of coagulation in patients with cirrhosis and upper gastrointestinal bleeding?
- ⇒ What is the optimal timing of urgent endoscopy in patients at higher risk?
- ⇒ Will explainable machine learning models allow meaningful treatment changes that improve patient outcomes?

Guidelines

Endoscopic diagnosis and management of nonvariceal upper gastrointestinal hemorrhage (NVUGIH): European Society of Gastrointestinal Endoscopy (ESGE) Guideline – Update 2021

ESGE

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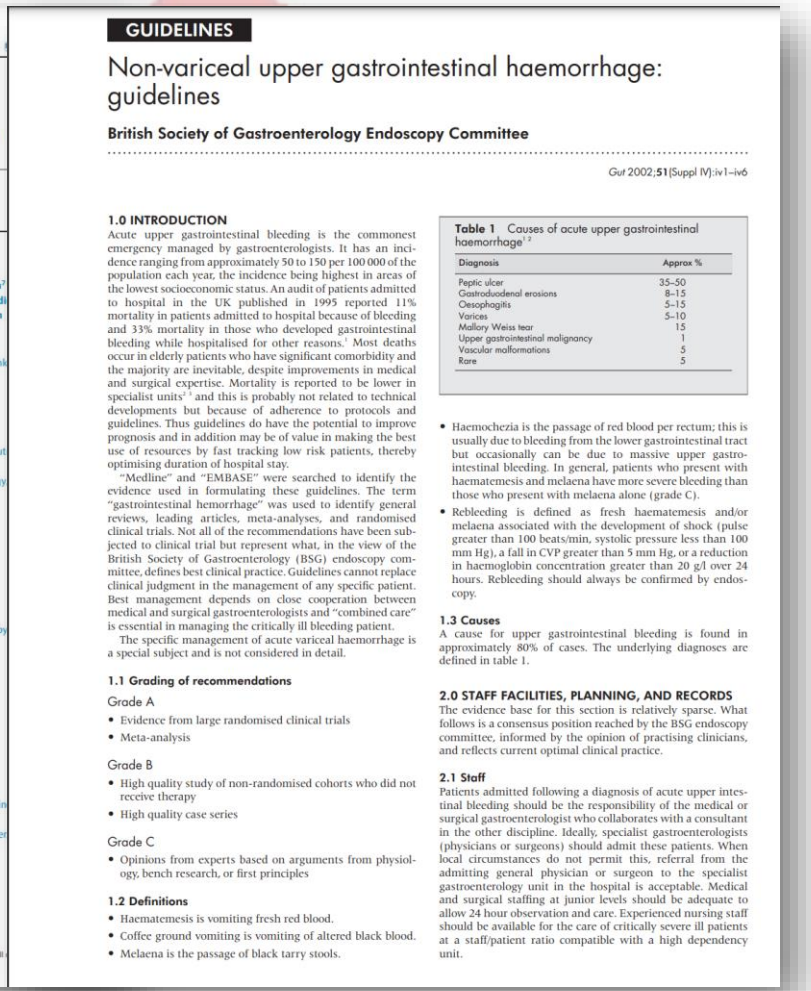

GUIDELINES

Non-variceal upper gastrointestinal haemorrhage: guidelines

British Society of Gastroenterology Endoscopy Committee

Gut 2002;**51**(Suppl IV):iv1–iv6

1.0 INTRODUCTION

Acute upper gastrointestinal bleeding is the commonest emergency managed by gastroenterologists. It has an incidence ranging from approximately 50 to 150 per 100 000 of the population each year, the incidence being highest in areas of the lowest socioeconomic status. An audit of patients admitted to hospital in the UK published in 1995 reported 11% mortality in patients admitted to hospital because of bleeding and 33% mortality in those who developed gastrointestinal bleeding while hospitalised for other reasons.[1] Most deaths occur in elderly patients who have significant comorbidity and the majority are inevitable, despite improvements in medical and surgical expertise. Mortality is reported to be lower in specialist units[2 3] and this is probably not related to technical developments but because of adherence to protocols and guidelines. Thus guidelines do have the potential to improve prognosis and in addition may be of value in making the best use of resources by fast tracking low risk patients, thereby optimising duration of hospital stay.

"Medline" and "EMBASE" were searched to identify the evidence used in formulating these guidelines. The term "gastrointestinal hemorrhage" was used to identify general reviews, leading articles, meta-analyses, and randomised clinical trials. Not all of the recommendations have been subjected to clinical trial but represent what, in the view of the British Society of Gastroenterology (BSG) endoscopy committee, defines best clinical practice. Guidelines cannot replace clinical judgment in the management of any specific patient. Best management depends on close cooperation between medical and surgical gastroenterologists and "combined care" is essential in managing the critically ill bleeding patient.

The specific management of acute variceal haemorrhage is a special subject and is not considered in detail.

1.1 Grading of recommendations

Grade A
- Evidence from large randomised clinical trials
- Meta-analysis

Grade B
- High quality study of non-randomised cohorts who did not receive therapy
- High quality case series

Grade C
- Opinions from experts based on arguments from physiology, bench research, or first principles

1.2 Definitions
- Haematemesis is vomiting fresh red blood.
- Coffee ground vomiting is vomiting of altered black blood.
- Melaena is the passage of black tarry stools.

Table 1 Causes of acute upper gastrointestinal haemorrhage[1 2]

Diagnosis	Approx %
Peptic ulcer	35–50
Gastroduodenal erosions	8–15
Oesophagitis	5–15
Varices	5–10
Mallory Weiss tear	15
Upper gastrointestinal malignancy	1
Vascular malformations	5
Rare	5

- Haemochezia is the passage of red blood per rectum; this is usually due to bleeding from the lower gastrointestinal tract but occasionally can be due to massive upper gastrointestinal bleeding. In general, patients who present with haematemesis and melaena have more severe bleeding than those who present with melaena alone (grade C).
- Rebleeding is defined as fresh haematemesis and/or melaena associated with the development of shock (pulse greater than 100 beats/min, systolic pressure less than 100 mm Hg), a fall in CVP greater than 5 mm Hg, or a reduction in haemoglobin concentration greater than 20 g/l over 24 hours. Rebleeding should always be confirmed by endoscopy.

1.3 Causes

A cause for upper gastrointestinal bleeding is found in approximately 80% of cases. The underlying diagnoses are defined in table 1.

2.0 STAFF FACILITIES, PLANNING, AND RECORDS

The evidence base for this section is relatively sparse. What follows is a consensus position reached by the BSG endoscopy committee, informed by the opinion of practising clinicians, and reflects current optimal clinical practice.

2.1 Staff

Patients admitted following a diagnosis of acute upper intestinal bleeding should be the responsibility of the medical or surgical gastroenterologist who collaborates with a consultant in the other discipline. Ideally, specialist gastroenterologists (physicians or surgeons) should admit these patients. When local circumstances do not permit this, referral from the admitting general physician or surgeon to the specialist gastroenterology unit in the hospital is acceptable. Medical and surgical staffing at junior levels should be adequate to allow 24 hour observation and care. Experienced nursing staff should be available for the care of critically severe ill patients at a staff/patient ratio compatible with a high dependency unit.