



UPPER GASTRO-INTESTINAL HAEMORRHAGE

With special reference to peptic ulcer disease

PC Bornmann

JEJ Krige

S Burmeister

MA Banderker

INTRODUCTION

Acute upper gastrointestinal haemorrhage is a common cause of emergency admission to large community hospitals. It is a potentially dangerous condition and therefore all patients should be admitted to hospital regardless of the apparent severity of the bleeding episode. Bleeding usually stops spontaneously and the overall mortality is low (5-10%). However, in a small but increasing number of elderly patients, often with co-morbid diseases, the mortality is substantially higher. The management of these patients requires a multidisciplinary approach with close co-operation between physicians and surgeons.

INCIDENCE AND AETIOLOGY

The development of forward-viewing fibre-optic pan-endoscopy has made it possible to identify the source of bleeding in over 90% of cases. Table 1 shows a world-wide estimate of the relative frequencies of bleeding lesions.

Oesophagus	
Oesophageal varices	10%
Mallory-Weiss tear	10%
Stomach	
Gastric ulcer	25%
Erosive haemorrhagic gastritis	10%
Duodenum	
Duodenal ulcer	25%
Erosive duodenitis	5%

Other uncommon causes include Tumours, stomal or anastomotic ulcers, vascular malformation, oesophagitis or oesophageal ulcers. The most common causes for major upper gastrointestinal bleeding are peptic ulcer disease and oesophageal varices.

EARLY MANAGEMENT

The immediate management of a patient presenting with gastrointestinal haemorrhage includes taking an adequate history and performing a clinical examination and resuscitation. In severe haemorrhage priority must be given to resuscitation. Once the patient's condition is stabilised, diagnostic investigations are then undertaken and definitive treatment initiated.

History

A carefully taken history may disclose the probable source of haemorrhage. A history of periodic dyspepsia related to meals or excessive analgesic ingestion may implicate peptic ulcer disease. However, one-third of patients bleeding from a peptic ulcer will have no history of dyspepsia, and conversely, 40% of patients with dyspepsia will be bleeding from a lesion other than a peptic ulcer. Furthermore, in known cases of portal hypertension and oesophageal varices, one-third of patients will be bleeding from another site. Excessive alcohol intake and known liver disease may suggest the presence of oesophageal varices. Patients with a Mallory-Weiss tear often give a history of an episode of repeated vomiting.

An attempt should be made to estimate the amount of blood loss, although the history obtained from patients or their relatives can be misleading. Exsanguinating

haemorrhage may be preceded by an apparently small 'innocuous' haematemesis.

Clinical examination

Clinical examination should include an accurate assessment of the patient's haemodynamic status and a general assessment of the patient's cardiovascular, respiratory, hepatic and renal status.

Major haemorrhage will be associated with the clinical findings of hypotension, pallor, a weak and rapid pulse and poor peripheral perfusion with cool extremities. In the majority of patients these findings will be associated with a systolic blood pressure of <100 mm Hg and a tachycardia of >100 beats per minute. Shocked patients are at increased risk of rebleeding and dying as a consequence, particularly in elderly patients. Younger patients have a greater capacity to compensate for haemorrhage, and the clinical findings may be more subtle such as a tachycardia and cold extremities.

It is important to look for clinical evidence of liver failure and portal hypertension (encephalopathy, jaundice, spider naevi, liver palms, foetor, flapping tremor, ascites) suggesting the presence of oesophageal varices. The findings on rectal examination of melaena (black tarry stools), which is formed by blood mixed with acid, is useful as it indicates that the source is in the upper gastrointestinal tract.

Resuscitation and further management

All high risk patients should be admitted to a high-care unit and be looked after by a team of medical and surgical gastroenterologists. There should be no delay in establishing an intravenous line. In a severely shocked patient a central venous pressure line and urinary catheter are mandatory. Baseline haematological

and biochemical investigations must be urgently requested together with cross-matching of blood.

Resuscitation is started with standard crystalloid and colloid solutions, until blood is available. Blood loss must be replaced adequately and promptly with whole blood. Patients with major bleeding who are distressed may be given a small dose of opiate analgesic such as morphine.

The resuscitation of patients who are suspected to be bleeding from oesophageal varices due to underlying liver disease differs from that of other patients with haemorrhage. These patients should not be given sodium-containing crystalloid solutions. Such solutions may lead to deterioration in liver function and ascites. They should be resuscitated only with blood and 5% dextrose, given fresh-frozen plasma to replenish clotting factors and, receive Octreotide to lower portal pressure.

The role of a nasogastric tube in patients with upper gastrointestinal haemorrhage is controversial. Benefits include early identification of recurrent or continued bleeding, the performance of gastric lavage and emptying the stomach of its contents before endoscopy. We prefer not to use a nasogastric tube routinely; it is unreliable in detecting the onset of rebleeding, is uncomfortable for the patient and, may cause rather than prevent aspiration in the elderly patients.

Diagnostic investigations

Endoscopy

Endoscopy has replaced barium studies as the diagnostic procedure of choice. The timing of endoscopy is important. **Urgent endoscopy** is indicated when oesophageal varices are suspected or where there are signs of continuing haemorrhage. Under these circumstances, endoscopy should be undertaken as

an emergency procedure under anaesthesia in the operating theatre to protect the patient against aspiration. High risk patients should undergo endoscopy as soon as they have been stabilised. All other patients should undergo a full diagnostic **endoscopy within 12-24 hours** of admission when they are clinically stable and have been fully resuscitated. **Follow-up endoscopy** may be indicated during the course of the initial admission if there is doubt about continued bleeding or the source of the bleeding.

Endoscopy in the bleeding patient requires the expertise of an experienced endoscopist and should be done in a fully equipped endoscopy suite or theatre with facilities for oropharyngeal suction, cardiac monitoring, intubation and ventilation. Expert nursing assistance is also essential.

A major benefit of endoscopy is the identification within the base of the ulcer of the signs or 'stigmata' of recent bleeding (**Table 2**). The presence of endoscopic stigmata in patients with peptic ulceration and recent haemorrhage is an important predictor of further bleeding. The highest incidence of rebleeding occurs in patients with spurting or oozing of blood, a visible vessel and an adherent clot.

Table 3 The Rockall Risk Score

	Score			
	0	1	2	3
Age (years)	< 60	60–79	≥ 80	–
Haemodynamic status				–
Heart rate (beats/min)	< 100	≥ 100		
Systolic BP (mmHg)	≥ 100	≥ 100	< 100	
Co-morbidities	None	–	Ischaemic heart disease, congestive heart failure, or any major co-morbidity	Renal failure, hepatic failure or metastatic malignancy
Endoscopic diagnosis	No lesions and no stigmata of recent haemorrhage or Mallory–Weiss tear	Other	Malignancy of upper gastrointestinal tract	–
Stigmata of recent haemorrhage	No stigmata or pigmented spot	–	Spurting vessel, visible vessel, adherent clot or blood	–

Table 2 Endoscopic stigmata of bleeding peptic ulcer	
Forrest classification	
<u>High risk</u>	
IA	spurting blood (visible vessel)
IB	ooze blood (non-visible vessel)
IIA	non bleeding visible vessel
IIB	adherent clot
<u>Low risk</u>	
IIC	pigmented spot
III	clean ulcer base

Angiography

Angiography is indicated in a small number of patients who continue to bleed and when endoscopy has failed to disclose a likely bleeding site. Bleeding from obscure and uncommon sites such as the liver, pancreatic duct, small bowel and colon may be identified.

Risk stratification

Early stratification of patients into high and low risk categories allows identification of individuals at risk of death or adverse outcome and thus facilitates early introduction of intensive monitoring and lifesaving interventions. The Rockall score is one such risk scoring model that is practically useful. A total score of >2 indicates increased risk of rebleeding and death.

TREATMENT OF BLEEDING PEPTIC ULCERATION

Medical treatment

The aim of medical therapy during the acute bleeding episode is to increase the intragastric pH to above 6 in order to prevent clot lysis. For this purpose proton pump inhibitors (PPIs) are the most effective acid reducing agent and there is now good evidence that the rebleeding rate, need for surgery and mortality are significantly reduced by this treatment regime. The current recommendation is to start with an intravenous PPI either at the time of admission or as soon as the diagnosis of a bleeding peptic ulcer is confirmed on endoscopy. The former approach is more practical in cases with major bleeding as there may be a delay in confirming the diagnosis on endoscopy. In order to save costs, oral PPIs can be commenced once the patient has stabilised.

The possibility of rebleeding is greatest in the first 48 hours after haemorrhage. During this period regular monitoring of vital signs is essential. Haemoglobin and electrolyte levels should be monitored daily and patients should receive blood transfusions to maintain the haemoglobin as near as possible to normal levels.

Patients at risk for rebleeding

- Age over 60 years
- shock on admission
- endoscopic stigmata of recent bleeding (spurting vessel, visible vessel and fresh clot in base of ulcer)
- large ulcers (>2cm)
- lesser curve gastric and posterior duodenal bulb ulcers.

Most patients, will not bleed again and they should then continue with medical treatment. Late rebleeding is not uncommon and for this reason high-risk patients should be observed in

hospital, preferably for a minimum of 3 days.

There is increasing evidence that the eradication of *H.pylori* is an important medical strategy for the long-term prevention of rebleeding. It is important to note that: (i) the incidence of *H.pylori* infection may be lower in bleeding peptic ulceration and (ii) maintenance medical therapy needs to be considered in high risk patients in patients who require continuous NSAID therapy. Furthermore, both ulcer healing and *H.pylori* eradication needs to be confirmed in these patients, ie. these cases will usually require follow-up endoscopy.

Endoscopic methods for control of bleeding

In the treatment of bleeding peptic ulcers, a variety of endoscopic devices have significantly reduced the need for surgical intervention. The most commonly used are injections with diluted adrenalin (1:10,000) and bipolar thermal coagulation or a combination of the two.

There will be a small group of patients with continuing brisk bleeding and whose condition cannot be stabilised by adequate resuscitation and endoscopic interventions. Failure to recognise this group and to persist with conservative treatment will be associated with a high mortality.

Angiography and embolisation

Transcatheter arterial embolization has evolved as an alternative to surgery in high risk patients where endoscopic measures have failed to control non-variceal upper GI bleeding. It should be reserved for patients who are poor candidates for surgery on the basis of co-morbid conditions or other anaesthetic considerations.

Surgical treatment

The timing of surgery is critical to minimise the morbidity and mortality

both from the haemorrhage and the operation. A clear distinction must be made in the management of the fit young patient and those who have concurrent medical conditions, especially the elderly. Patients over 60 years tolerate recurrent bleeding and massive blood transfusion poorly.

Indications for surgery

- Exsanguinating haemorrhage
- Associated perforation
- Failed endoscopic therapy of active bleeding in shocked patients
- Recurrent bleeding after endoscopic therapy
- Patients at risk for rebleeding where endoscopic therapy is not available

The primary objective of surgery is to secure the bleeding vessel with a non-absorbable suture. With the high cure rate achieved with *H.pylori* eradication, definitive surgery (eg. vagotomy and pyloroplasty) is no longer required. A Billroth I partial gastrectomy may be required for gastric ulcers when under-running of the bleeding site is not technically feasible or in cases with large penetrating ulcers. Overall mortality associated with emergency surgery for bleeding peptic ulcer is about 10% but can be as high as 40% in elderly patients.

Table 4 outlines a management strategy for bleeding peptic ulcers.

Table 4

Management algorithm for acute bleeding peptic ulcer

- **Assess haemodynamic status**
- **Obtain FBC, INR, urea & electrolytes**
- **Commence resuscitation**
- **Consider intravenous proton pump inhibitor (PPI)**

- **Perform endoscopy**

- °Urgent: evidence of continued bleeding

- °after resuscitation: high risk patients

- °within 24 hrs: low risk patients

- **High risk patients**

- °admit to high care unit

- °endoscopic therapy

- (combination of adrenalin injection and thermal therapy).

- °commence IV PPI's

- °initiate oral intake of clear

- fluids 6 hrs after endoscopic haemostasis.

- °transition to oral PPI's

- °Perform testing for

- helicobacter pylori*: initiate

- eradication therapy if the result is positive.

- **Low risk patients**

- °no endoscopic haemostasis

- °commence oral PPI

- °perform testing for

- helicobacter pylori*:

- °initiate eradication therapy if the result is positive.

- °consider early discharge from hospital



This work is licensed under a [Creative Commons Attribution 3.0 Unported License](https://creativecommons.org/licenses/by/3.0/).