Endoscopy for upper gastrointestinal bleeding: where are we in 2017?

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BACKGROUND

Acute upper gastrointestinal bleeding (UGIB) is a common medical emergency with an incidence of 103–172 per 100 000 in the UK, equating to approximately 25 000 hospital admissions.^{1 2} The most common causes of UGIB are peptic ulcer disease (36%) and oesophageal varices (11%).³ Endoscopy plays a crucial role in the management of patients with UGIB, yielding diagnosis, calculation of risk assessment scores and prognosis and allowing therapy to be delivered.

A UK audit carried out by the British Society of Gastroenterology (BSG) and the national blood transfusion service in 2007 identified several areas in the management of patients presenting with UGIB that need improvement.⁴

In recent years, there have been several international guidelines with recommendations on how to optimise the management of UGIB.^{5–7} Despite this the recent National confidential enquiry in peri-operative deaths (NCEPOD) report, 'Time to get control' has highlighted ongoing deficiencies in current UK practice.⁸

RECENT DEVELOPMENTS

Pre-endoscopy care

Risk assessment

National Institute for Health and Care Excellence (NICE) guidelines recommend that all patients should have a Glasgow Blatchford Score (GBS) calculated pre-endoscopy followed by a full Rockall Score post-endoscopy.⁵ The Rockall Score was initially created to predict risk of rebleeding and mortality and requires endoscopy for full calculation.⁹ The GBS can be calculated prior to endoscopy and has been shown to predict the need for intervention (blood transfusion, endotherapy and surgery) or death.¹⁰ Although a GBS >12 has been suggested to identify

patients who would benefit from early endoscopy, risk assessment scores have not yet been proven to accurately predict patients who need emergency or urgent endoscopy.¹¹

Blood transfusion

Recent studies have supported a restrictive transfusion policy in UGIB aiming to transfuse at a haemoglobin threshold of 7–8 g/dL.^{6 7 12 13} The recent European Society of Gastrointestinal Endoscopy (ESGE) guidelines now recommend a target haemoglobin between 7 and 9 g/dL, although a higher threshold may be considered in older patients and those with significant comorbidities.⁷

Timing of endoscopy

The optimal timing of endoscopy remains unclear. NICE, ESGE and BSG variceal haemorrhage guidelines recommend that all patients have an endoscopy performed within 24 hours of presentation and that unstable patients have an endoscopy performed immediately after adequate resuscitation.^{5–7} A recent Danish study of over 12 000 patients with ulcer bleeding suggested that if circulatory failure or severe comorbidity was present, survival was optimum if endoscopy was undertaken between 6 and 24 hours from presentation.¹⁴

Endoscopy and therapy

Non-variceal bleeding

The Forrest classification is based on endoscopic appearance of stigmata of recent haemorrhage (SRH) and is used to stratify patients with non-variceal bleeding (NVB) by their risk of rebleeding and mortality (table 1). All patients should have SRH recorded in the index endoscopy report. Patients with evidence of active bleeding (Ia, Ib) or recent bleeding (IIa) should receive endotherapy. In peptic ulcers with adherent clot, there is some debate regarding the optimal

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Table 1 Outcomes based on Forrest classification

Stigmata of recent haemorrhage	Forrest classification	Further bleeding (n=2994)	Mortality (n=1387)
Active spurting bleeding	Ia/Ib	55% (17%–100%)	11% (0%–23%)
Non-bleeding visible vessel	IIa	43% (0%–81%)	11% (0%–21%)
Adherent clot	IIb	22% (14%–36%)	7% (0%–10%)
Flat pigmented spot	IIc	10% (0%–13%)	3% (0%–10%)
Clean-based ulcer	III	5% (0%–10%)	2% (0%–3%)

Adapted from Laine and Peterson.¹⁵

management. The ESGE guidelines recommend that these patients should be considered for clot removal then treatment of the underlying lesion.⁷

There are a variety of endoscopic therapies used to achieve haemostasis in NVB (table 2). Dual modality endotherapy has been shown to be significantly superior to adrenaline monotherapy and is recommended in the management of patients with NVB with SRH.^{5 7}

Variceal bleeding

All patients presenting with suspected variceal bleeding (VB) should receive intravenous antibiotics (guided by local resistance patterns) and terlipressin (2 mg intravenous every 4–6 hours unless contraindicated) prior to endoscopy. Variceal band ligation (VBL) is recommended for the treatment of oesophageal VB. This has reduced rebleeding and mortality, and fewer complications compared with sclerotherapy, which should no longer be used.⁶ The variceal banding device is attached to the distal tip of the endoscope. The bleeding varix is sucked into the transparent cap and a rubber band is deployed ligating the blood flow. Following initial VBL further banding is delivered at 2–4 weekly intervals until complete eradication of the varices is observed, in addition to use of non-selective β -blockers if appropriate.

N-Butyl-2-cyanacrylate injection is the treatment of choice for the treatment of gastric VB, although injection of thrombin may also be considered. N-Butyl-2-cyanacrylate is injected into the bleeding gastric varix and rapidly solidifies occluding the varix.^{5 6} Repeat injections on follow-up may be

necessary to complete occlusion of the gastric varices, although the optimal timing of these is unclear.

Failed endoscopic haemostasis

Patients with NVB where haemostasis cannot be achieved with endotherapy at index endoscopy should be referred for interventional radiological (IR) or for surgical management. In the event of rebleeding following endoscopic haemostasis, a further endoscopy should be performed. If endoscopic retreatment fails, the patient should then be referred for urgent IR or surgery.^{5 7}

In patients with uncontrolled VB following index endoscopy a Sengstaken Blakemore Tube (SBT) should be inserted until further endoscopic treatment can be attempted, or if they cannot be managed endoscopically, referred for urgent transjugular intrahepatic portosystemic shunt.^{5 6}

All patients should have a 'rebleed plan' clearly documented at the time of index endoscopy. This is one of the quality standards produced by the BSG joint advisory group (JAG) in 2007.¹⁶

Gastrointestinal haemorrhage service

NICE recommends that units seeing more than 330 cases of UGIB a year should offer a daily endoscopy list for bleeding patients. Units seeing fewer cases should organise their service according to local circumstances with clearly documented management pathways.⁵ A delay in endoscopy can potentially increase the length of stay in low-risk patients that might be discharged following endoscopy. Although data are not consistent, there have been reports of a 'weekend effect' on UGIB patients in the UK, with those admitted at the weekend having worse outcomes including mortality and length of stay.¹⁷

FUTURE POTENTIAL

Achieving endoscopic haemostasis in acute UGIB can be at times extremely challenging. New modalities have been developed recently and look promising in the treatment of both NVB and VB and could potentially improve the outcomes in difficult cases.

Non-variceal bleeding

Topical endoscopic haemostats: Hemospray and EndoClot

Hemospray is a mineral powder delivered via a catheter which is inserted through the endoscope accessory channel. The powder is only effective when delivered to actively bleeding lesions until haemostasis is achieved. Hemospray is currently licensed for use in NVB only. In case studies, it has shown promise as an effective haemostatic modality as a monotherapy, in combination with conventional modalities or as a rescue modality following failure of standard endotherapy. It may also be useful in diffuse areas of bleeding, for example, from a malignant tumour.^{18 19}

Table 2 Available endoscopic modalities

Modality	Effect
Injection, eg, epinephrine/saline	Local tamponade, vasoconstriction
Mechanical eg, heater probe, BICAP probe, Endo Clip	Cauterisation, occlusion of vessel
Topical eg Hemospray/EndoClot	Haemostat

A recent prospective, observational case series showed that a similar topical agent Endoclot achieved haemostasis in 64% of patients as a primary modality and in 100% of patients following failure of haemostasis with conventional endotherapy.¹⁹

Randomised studies are needed to clarify the safety and long-term outcome of these topical endoscopic haemostats to clarify their role should be used in the management of UGIB.

Over the scope clip

The over the scope clip (OTSC) is a new endoscopic device which is attached via a cap to the end of the endoscope in a similar way to a variceal banding device. The bleeding lesion is sucked into the cap similar to an oesophageal varix and the clip deployed. Despite limited data of efficacy, one retrospective study looked at the use of this device in 41 patients with UGIB and reported successful treatment in 85%.²⁰

Doppler endoscopic probe

Successful endoscopic therapy may be confirmed using a Doppler endoscopic probe (DEP). This is inserted via the accessory channel, and a Doppler signal identifies the presence of blood flow in a vessel following treatment of bleeding ulcer. This may reduce the risk of rebleeding by confirming the absence of blood flow; however, a false-negative DEP may occur due to probe position following endotherapy with endoclips or due to vasoconstriction following adrenaline injection. Ulcers with a positive DEP following endotherapy will not always rebleed; therefore, this could lead to over treatment.²¹

The recent ESGE guidelines recommend the use of hemostatic spray and OTSC if NVB is not controlled using standard therapy but do not currently advocate a role for DEP.⁷

Variceal bleeding

Hemospray

Hemospray is currently only licensed for use in NVB; however, small cohort studies and case reports have reported the use of hemospray in patients with bleeding from varices and portal hypertensive gastropathy.^{22–24} Currently, there is insufficient evidence to recommend this in routine practice.

Danis stent

The Danis stent is a metal mesh stent, which is inserted at endoscopy into the lower oesophagus for the treatment of oesophageal varices. Radiological guidance is not required for insertion. It can remain in situ for up to 2 weeks unlike the Sengstaken-Blakemore tube which should be removed after 24 hours. A recent small multicentre randomised control trial comparing the Danis stent with the SBT reported improved bleeding control with the Danis stent, but mortality was similar.²⁵ Further data on its role in the management of acute VB are required.

Endoscopy training

There has been a drive in the UK to deliver a 24/7 consultant-led endoscopy service for UGIB following the BSG audit in 2007.⁴ The recent NCEPOD identified that 53% of consultants contributing to an on-call UGIB rota did not feel confident in their ability to glue gastric varices.⁸ Gastroenterology trainees in the UK report a deficiency in their training and exposure to the management of UGIB especially in the out-of-hours period and with more difficult cases, with 21% of trainees reporting that they were not satisfied with the training they received.²⁶ There is a clear need to develop structured therapeutic endoscopy training for UGIB in the UK.

SUMMARY

Acute UGIB is a common medical emergency which still carries a significant mortality. Over recent years, there have been advances in both the endoscopic and the non-endoscopic management of these patients.

For patients with NVB and SRH, dual modality endotherapy is recommended.

Band ligation is the endoscopic therapy of choice for patients with oesophageal VB with N-butyl-2-cyanacrylate injection recommended for gastric varices. There are many new treatments emerging that will require further study to confirm where they best fit in the management of patients with UGIB.

Patients should ideally have access to a 24/7 consultant-led endoscopy service to receive endoscopy and appropriate therapy within the optimum time-scales recommended by International guidelines.

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