South Tees Hospitals NHS
NHS Foundation Trust

Causes and Management of Acute Upper GI Bleeding

A Bleeding Crisis?

Durham - October 2014

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AUGIB Causes & Management – Session overview

- **Background information**
- **Causes of AUGIB**
  - Aetiological clues
  - Trends
- **Management of AUGIB**
  - Who should be admitted to hospital?
  - Should patients receive IV PPI & when?
  - Who needs endoscopy / OOH endoscopy?
  - What interventions are available?
  - What are the outcomes?

AUGIB – Incidence

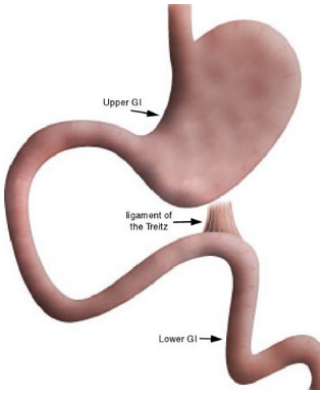
- Historical population studies 50-190/10^5 p.a.
- 2007 National audit - 103/10^5 p.a.

  [ACS – 300 per 10^5 & Stroke 400 per 10^5]

  – 23/10^5 in those less than 30 yoa
  – 485/10^5 in those >75 yoa (UK demographics)
- 8% of acute hospital admissions (@ 85% of all AUGIBs)
- In-patients @ 15% of all “bleeders”
- Hong Kong – 30% decrease in last decade
- UK - stable or slight increase (in elderly)
  – Prevalence of *H.pylori*,
  – NSAIDs use
  – Increasing liver disease

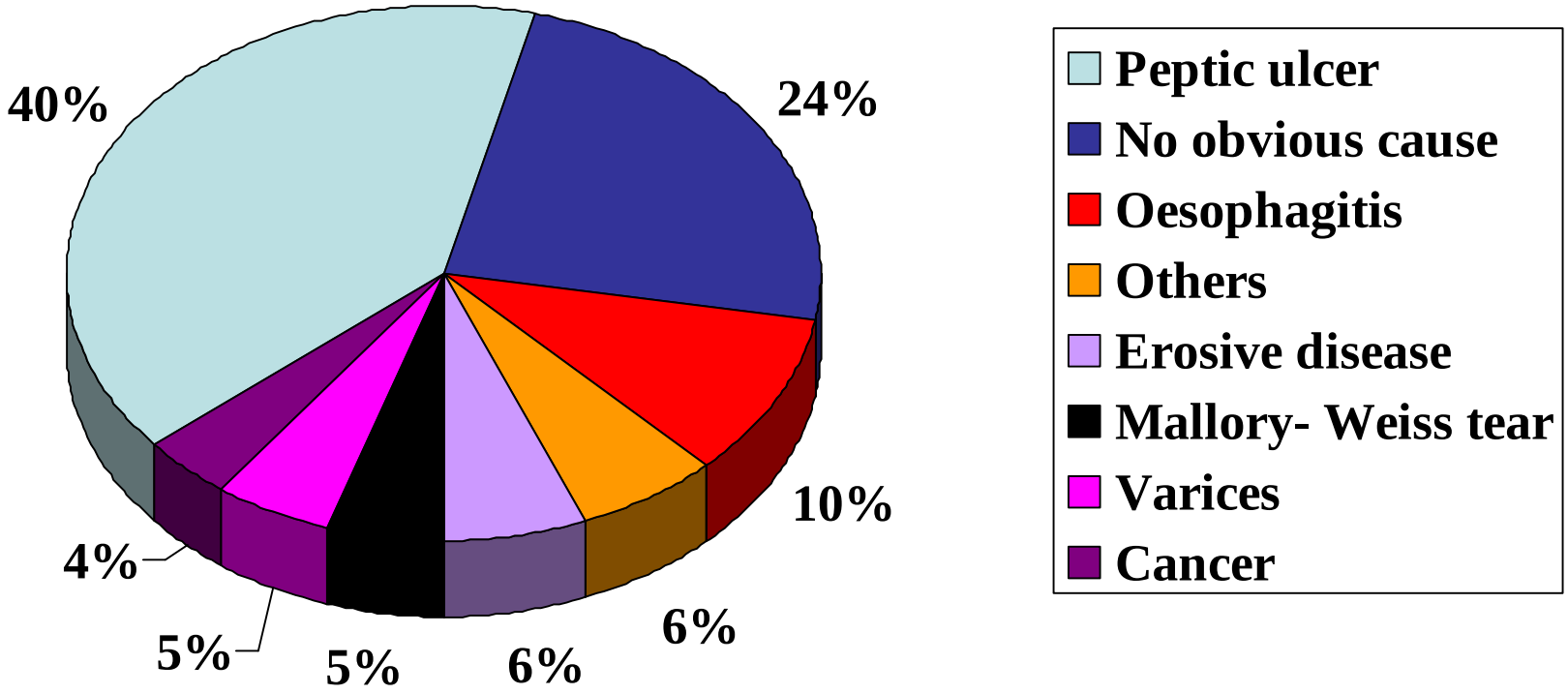
AUGIB - Definitions

- Upper GI haemorrhage
  - Bleeding originating from proximal to ligament of Treitz
- Haematemesis
  - Vomiting of blood (fresh or coffee-ground)
- Melaena
  - Passage of black tarry stools (usually from proximal GI tract but can emanate from as low as right colon)
- Haematochezia
  - Passage of fresh or altered blood per rectum (usually colonic source but profuse AUGIB in @ 15%)



AUGIB Aetiology - 1993/4

Rockall: BMJ, Volume 311(6999).July 22, 1995.222-226



AUGIB - Current aetiology

Endoscopic finding	**%**
Oesophagitis	24
Gastritis/ erosions	22
Ulcer	36
Erosive duodenitis	13
Malignancy	4
Mallory- Weiss	4
Varices	11
Portal Gastropathy	5
Vascular malformation	3
None	17

32% SRH

6% 1993

Aetiology - Clues

- Epigastric pain - Peptic ulceration
- Odynophagia / GORD - Oesophagitis
- Dysphagia - Oesophageal malignancy
- Protracted vomiting / coughing - Mallory Weiss tear
- Cachexia / early satiety / weight loss - Gastric malignancy
- ETOH / Chronic liver disease - Varices

Aetiology – Clues

- Past history of AUGIB - 60% bleed from same lesion
- AAA surgery - Aorto-enteric Fistula
- Chronic pancreatitis - Splenic vein thrombosis with Gastric varices or Aneurysmal transformation of Gastro-duodenal artery
- Renal Disease / Aortic Stenosis / HHT - Angiodysplasia
- Previous Gastric Surgery - Anastomotic ulcers / malignancy
- Medication – NSAIDS, anti-platelet agents & Pill Oesophagitis

Approach to the patient

- **Triage : Assessment of Instability**
- Resuscitation
- **Diagnostic tests and treatment**
- Treatment of specific disorders

AUGIB – who needs to be admitted to hospital?

- Gold standard – all patients with AUGIB
- Allows:-
  - Risk stratification
  - Swift decision regarding appropriateness of investigation
  - Swift in-patient investigation, arrangement of outpatient endoscopy (or decision that “not for endoscopy”)

AUGIB – who needs to be admitted to hospital?

Patient's Name:

Blatchford Score - Risk assessment in Upper GI bleed

Admission Risk Marker		*Score*
Blood Urea (mmol/L)	>=6.5 and <8	2
	>=8 and <10	3
	>=10 and <25	4
	>=25	6
Haemoglobin (dg/L) **Men**	>=12 and <13	1
	>=10 and <12	3
	<10	6
Haemoglobin (dg/L) **Women**	>=10 and <12	1
	<10	6
Systolic BP	100-109	1
	90-99	2
	<90	3
Pulse	>100 bpm	1
Melaena	present	1
Syncope	present	2
Hepatic disease	present	2
Cardiac failure	present	2

(From: Blatchford O, Murray WR & Blatchford M (2000) A risk score to predict need for treatment for upper gastrointestinal haemorrhage Lancet 356; 1318-21

- Glasgow-Blatchford Score (GBS) [/23]
  - Commonly available blood indices, standard observations & limited co-morbidity
  - Stratification of potential need for intervention (BTx / Endoscopic)
  - @ 9% stratified at low risk [score 0] (outpatient endoscopy only if >50 years of age)
    - NICE CG141- Consider "early discharge"
    - Mortality = 0

The “Rockall” scoring system

- Predictive of acute GI bleed outcome – figures from “national” audit
- 74 acute hospitals, 1993/4 – 4,486 cases from a population of 12.5 million (UK)
- Pre & post endoscopy scores
  - Pre endoscopy – age, shock, co-morbidity (Max 7)
    - Predicts Mortality, Pathology and need for endoscopic intervention
  - Post endoscopy – above & diagnosis & stigmata (Max 11)
    - Refines Mortality and predicts risk of re-bleeding

"Rockall" risk scoring system

Score					
Variable	**0**	**1**	**2**	**3**	
Age	< 60 years	60-79 years	≥ 80 years		**Initial score criteria**
Shock	'no shock', SBP* ≥ 100 mm Hg, pulse < 100 beats per minute	'tachycardia', SBP ≥ 100 mm Hg, pulse ≥ 100 beats per minute	'hypotension', SBP < 100 mm Hg,		
Comorbidity	no major comorbidity		cardiac failure, ischaemic heart disease, any major comorbidity	renal failure, liver failure, disseminated malignancy	
Diagnosis	Mallory-Weiss tear, no lesion identified and no SRH	all other diagnoses	malignancy of upper GI tract		**Additional criteria for full score**
Major stigmata of recent haemorrhage (SRH)	none, or dark spot only		blood in upper GI tract, adherent clot, visible or spurting vessel		

AUGIB – Mortality Factors

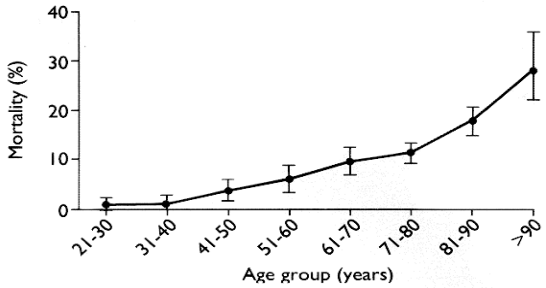
Study	Mortality – All	Mortality – 1º Admission	Mortality – In-patient
Rockall 1995	14%	11%	33%
Blatchford 1997	8.1	6.7%	42%
BSG 2007	10%	7%	26%

- On average a 3-fold increase in mortality for AUGIB in patients already admitted with another condition
- 7,000 deaths per annum in UK
- Compared to other major acute killers
  - ACS @ 5%, stroke @ 11%

AUGIB - Mortality Factors

Age

Age	Mortality
< 60 yoa	3%
60 – 79 yoa	11%
> 79 yoa	20%



Co-morbidity

- One co-morbidity - OR 1.8 / Malignancy – OR 3.8
- Liver Disease - doubles mortality, higher risk of interventions (overall mortality for variceal bleeding 14%)

Haemodynamic factors (increased intervention)

- Shock – Mortality OR of 3.8
- Continued bleeding – up to 50-fold increased mortality

BSG 2007 (http://bsg.org.uk/pdf_word_docs/blood_audit_report _2007.pdf), Blatchford et al. BMJ 1997, Rockall et al. BMJ 1995, Klebl et al. Int J Colorectal Dis 2005, Zimmerman et al. Scand J Gastroenterol 1995, Cameron et al. Eur J Hepatol 2002, Lecleire et al. J Clin Gastroenterol 2005.

AUGIB – who can safely be discharged?

- Take account of proximity & adult supervision
- Initial (pre-endoscopic) Rockall score = 0
  - should be considered for non-admission or early discharge with outpatient follow up
    - 15% of patients (all by definition < 60 yoa)
    - 0.2% risk of death (or re-bleeding)
  - Should confirm absence of witnessed haematemesis or haematochezia (suspicion of ongoing bleeding – both factors double mortality)
  - Not a current I/P or transfer

AUGIB – who can safely be discharged?

- Initial (pre-endoscopic) Rockall score
  - >0 - endoscopy is recommended for a full assessment of bleeding risk.
- Patients with a full (post-endoscopic) Rockall score <3 have a low risk of re-bleeding or death and should be considered for early discharge and outpatient follow up.
- The Rockall score should be taken into account with other clinical factors in assigning patients to different levels of care.
- Rockall score should not be used in isolation to assign patients to high dependency care

AUGIB – Resuscitation

- Resuscitation paramount -The next lecture
- May include blood product transfusion
- Shock associated with greater risk of death in AUGIB – early recognition and aggressive resuscitation vital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ACUTE UPPER GASTROINTESTINAL HAEMORRHAGE PROTOCOL

Clinical Assessment (must include Rockall score)

Table 5: Classification of hypovolaemic shock by blood loss in adults

	Class I	Class II	Class III	Class IV
Blood loss, volume (ml)	<750	750-1500	1500-2000	>2000
Blood loss (% of circulating blood)	0-15	15-30	30-40	>40
Systolic blood pressure	No change	Normal	Reduced	Very reduced
Diastolic blood pressure	No change	Raised	Reduced	Very reduced/ unrecordable
Pulse (beats per minute)	Slight tachycardia	100-120	120 (thready)	>120 (very thready)
Respiratory rate	Normal	Normal	Raised (>20/min)	Raised (>20/min)
Mental state	Alert, thirsty	Anxious or aggressive	Anxious, aggressive or drowsy	Drowsy, confused or unconscious

Adapted from Baskett, PJF. ABC of major trauma. Management of Hypovolaemic Shock. BMJ 1990; 300: 1453-1457.

IV PPI treatment – Pre Endoscopy

- IV Omeprazole
  - Meta-analysis - Reduces LOS, presence of high-grade SRH of ulcers (need for interventional endoscopy)
  - No difference in rates of surgery, re-bleeding or death
  - Not an alternative to early endoscopy
- Not supported in SIGN Guidelines (2008)
- NICE 2012
  - “Do not offer acid-suppressant drugs before endoscopy to patients with suspected non-variceal AUGUB”

Sreedharan A,Martin J, Leontiadis GI, Dorward S,Howden CW, Forman D,Moayyedi P. Proton pump inhibitor treatment initiated prior to endoscopic diagnosis in upper gastrointestinal bleeding. *Cochrane Database of Systematic Reviews* 2010, Issue 7. Art. No.: CD005415. DOI: 10.1002/14651858.CD005415.pub3.

AUGIB – Timing of Endoscopy

- **Immediate endoscopy** – unstable patients within 2 hours of adequate resuscitation ("Out of Hours" endoscopy if required)
- **"Early Endoscopy"** (< 24 hours) – any of:-
  - Aged 60 or over (certainly if > 70 years)
  - Witnessed haematemesis or haematochezia (suspected continued bleeding)
  - Haemodynamic compromise (SBP < 100 mm Hg or tachycardia)
    - Early therapeutic endoscopy reduced transfusion requirements, re-bleeding and surgery
    - No significant effect on mortality (NNT 35-500)
  - Liver disease or known varices

AUGIB Endoscopy Service

- Diagnosis
  - 90-95% accurate in locating bleeding site
  - Limitations: we can only treat what we see
    - Double-channel endoscopes
    - Water pump / jet
- Prognosis
  - Predict likelihood of persistent / recurrent bleeding
- Therapy
  - Provides therapeutic options
- Safe
  - Mortality < 0.1% (50% cardiopulmonary)
- Allow swift diagnosis and discharge of low risk patients

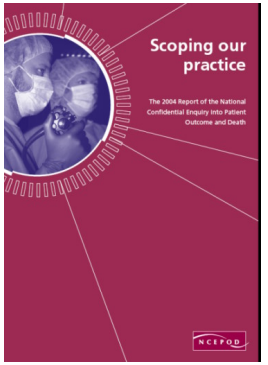
AUGIB – Organising services

- Dedicated GI bleeding unit for all AUGIBs
  - Dedicated ward area
  - Nursing staff experienced in the care of AUGIB,
    - with the ability to monitor vital signs at least hourly
    - ability to manage central venous access,
  - Unit guidelines for the management of AUGIB
  - Consultant Gastroenterology 24 hour on-call service
  - Ability to perform immediate interventional endoscopy if needed
  - Shared care between Gastroenterology and the referring

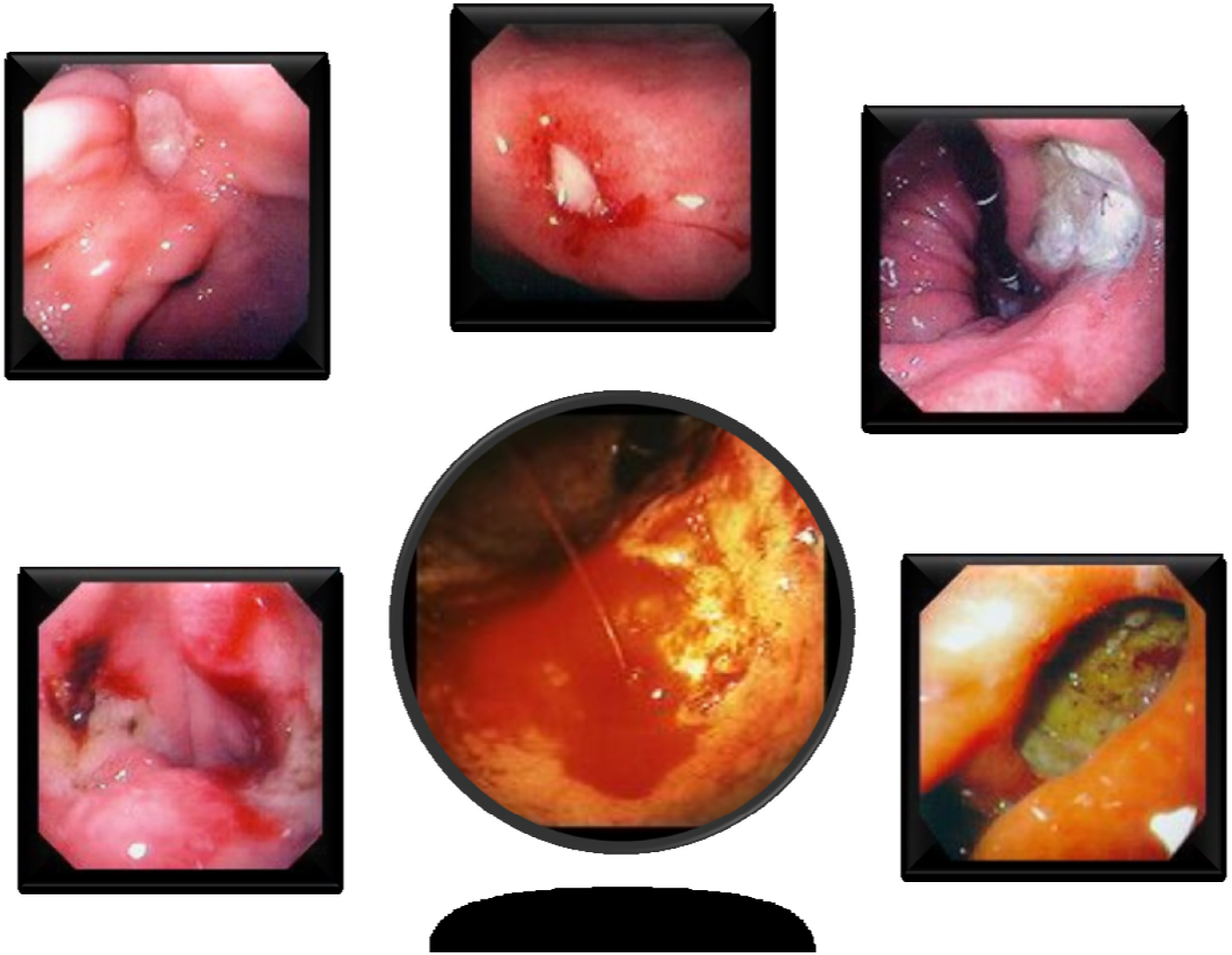
Table 4: A comparison of mortality data from a dedicated GI bleeding unit and a National Audit

Patient group	SMR	95% confidence interval
All	0.63	0.48 to 0.78
Low-risk (full Rockall score 0-3)	0.35	0.00 to 1.04*
Medium-risk (full Rockall score 4-6)	0.56	0.34 to 0.78
High-risk (full Rockall score ≥7)	0.70	0.49 to 0.91

** Not significant*



AUGIB – Non-Variceal bleeding

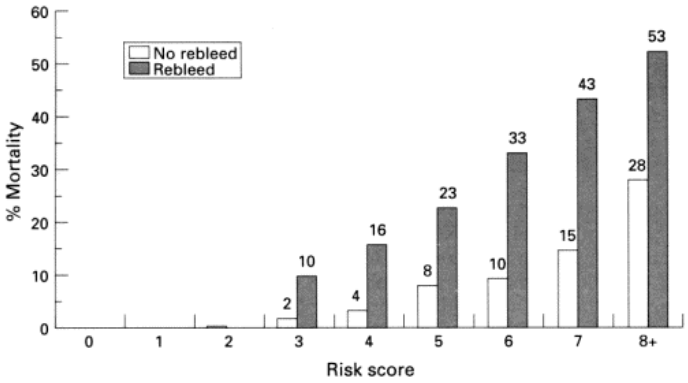


Post-endoscopy "Rockall" risk scoring system (max of 11)

Score					
Variable	**0**	**1**	**2**	**3**	
Age	< 60 years	60-79 years	≥ 80 years		**Initial score criteria**
Shock	'no shock', SBP* ≥ 100 mm Hg, pulse < 100 beats per minute	'tachycardia', SBP ≥ 100 mm Hg, pulse ≥ 100 beats per minute	'hypotension', SBP < 100 mm Hg,		
Comorbidity	no major comorbidity		cardiac failure, ischaemic heart disease, any major comorbidity	renal failure, liver failure, disseminated malignancy	
Diagnosis	Mallory-Weiss tear, no lesion identified and no SRH	all other diagnoses	malignancy of upper GI tract		**Additional criteria for full score**
Major stigmata of recent haemorrhage (SRH)	none, or dark spot only		blood in upper GI tract, adherent clot, visible or spurting vessel		

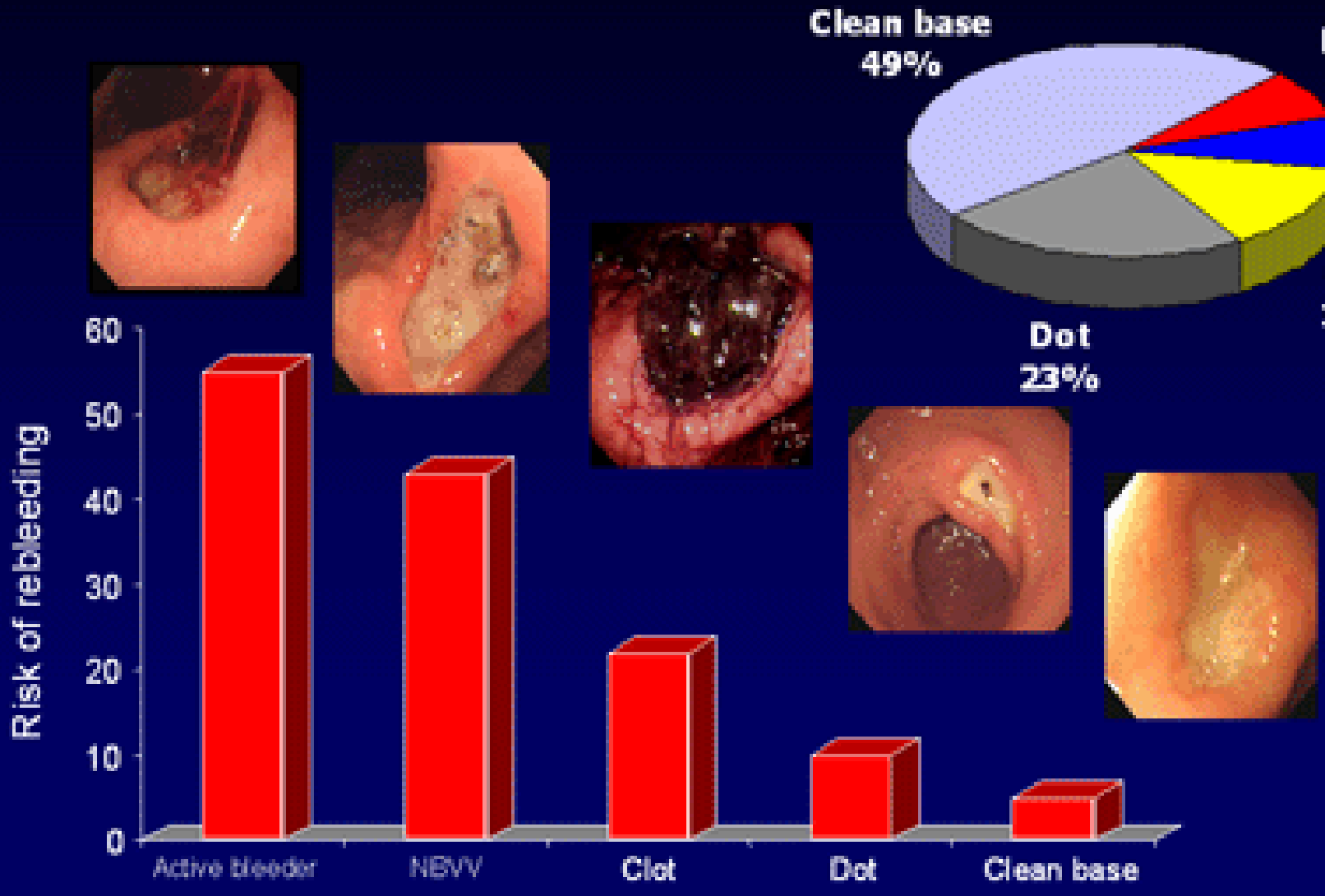
Mortality by post-endoscopy risk score

Score	Mortality No re-bleed	Mortality Re-bleed
3	2%	10%
4	4%	16%
5	8%	23%
6	10%	33%
7	15%	43%
8+	28%	53%



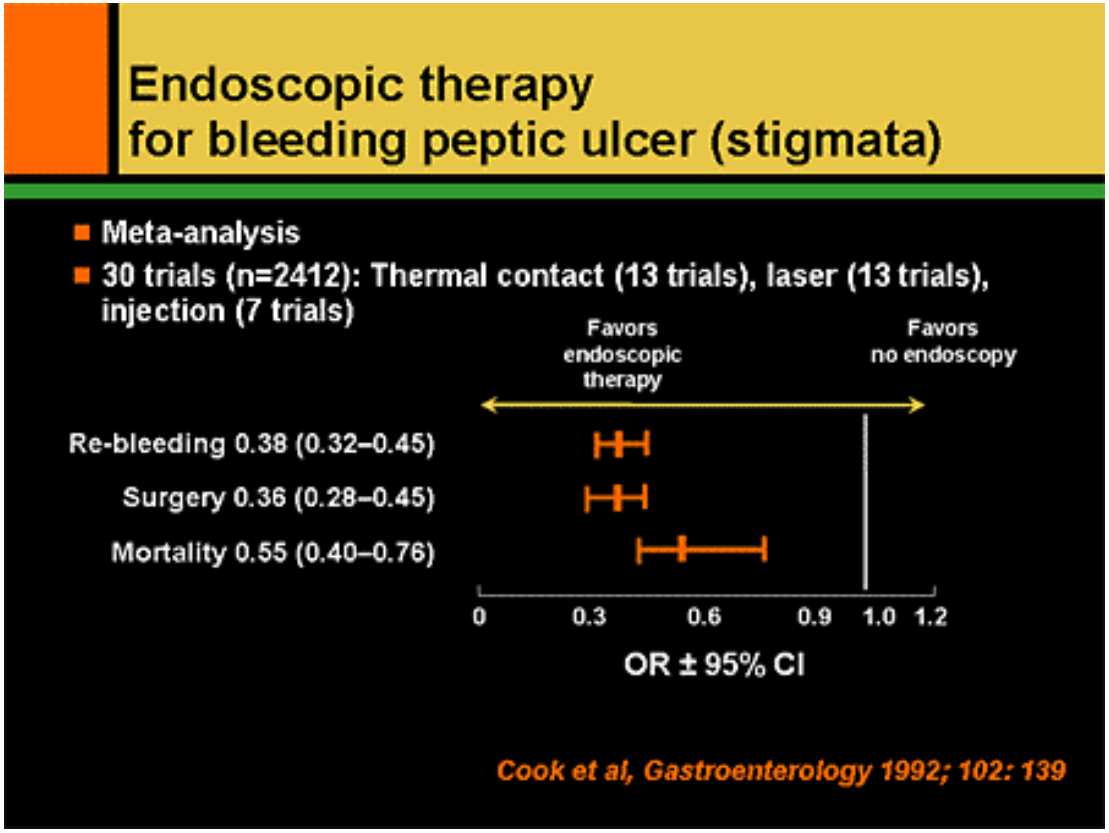
Rockall: BMJ, Volume 311(6999).July 22, 1995.222-226

Stigmata of Bleeding: Risks for Rebleeding and Prevalence



Endoscopic Treatments (1)

- Rationale for endoscopic treatment well established

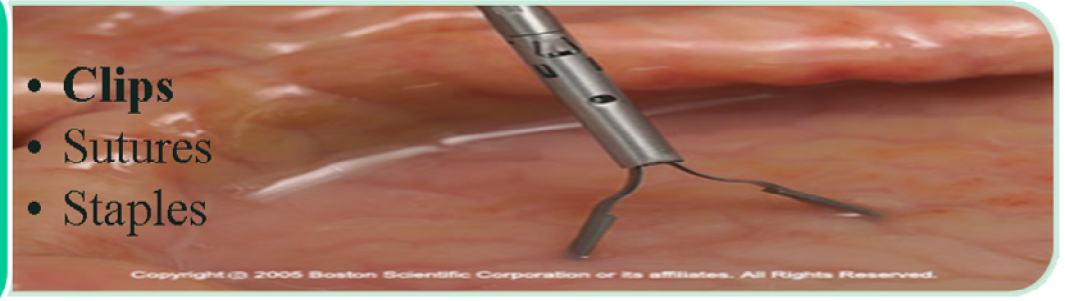


Endoscopic Treatments (2)

Injection

Thermal

Mechanical



Emerging therapies – Hemospray

Endoscopic Treatments (3)

- 80% of Admitted AUGIB patients require supportive treatment only
  - Endoscopic haemostatic Rx not required in patients with low risk stigmata (clean-based ulcer / dot in ulcer bed)
- Clot at ulcer base
  - Vigorous irrigation
    - Adherent – treatment controversial
    - Non-adherent – Dual modality treatment
- Dual-modality haemostatic Rx for high risk stigmata

Endoscopic Treatments (4)

- **Injection**
  - Fluid injection into high-risk SRH reduces re-bleeding
    - NBVV – 50% to 15-20%
    - Adherent clot 35% to 10%
  - Commonest injection fluid = 1:10,000 Epinephrine
  - Optimum amount @ 30 ml (many say never less than 20mls for DU) – increased epigastric pain and ulcer perforation with 40mls
    - One RCT suggests >13mls – NICE supports
  - Sclerosants (STD / Ethanolamine) & Absolute Alcohol also effective but increased perforation cf Epinephrine
  - Good evidence for Fibrin & thrombin but poor availability

Church & Palmer. Non-variceal haemorrhage. In McDonaldJWD, Burroughs AK, Feagan BG (eds). Evidence-based Gastroenterology and Hepatology, 2nd ed. Blackwell Publiucations, 139-159.
Chung et al. Endoscopic injection of adrenaline for actively bleeding ulcers: a randomised trial. BMJ 1988 (296) 1631-1633.

Endoscopic Treatments (5)

- **Thermal**
  - Heater probe or multi-polar coagulation has similar efficacy to injection
  - No single thermal coagulant therapy superior

Church & Palmer. Non-variceal haemorrhage. In McDonaldJWD, Burroughs AK, Feagan BG (eds). Evidence-based Gastroenterology and Hepatology, 2nd ed. Blackwell Publiucations, 139-159.

Endoscopic Treatments (6)

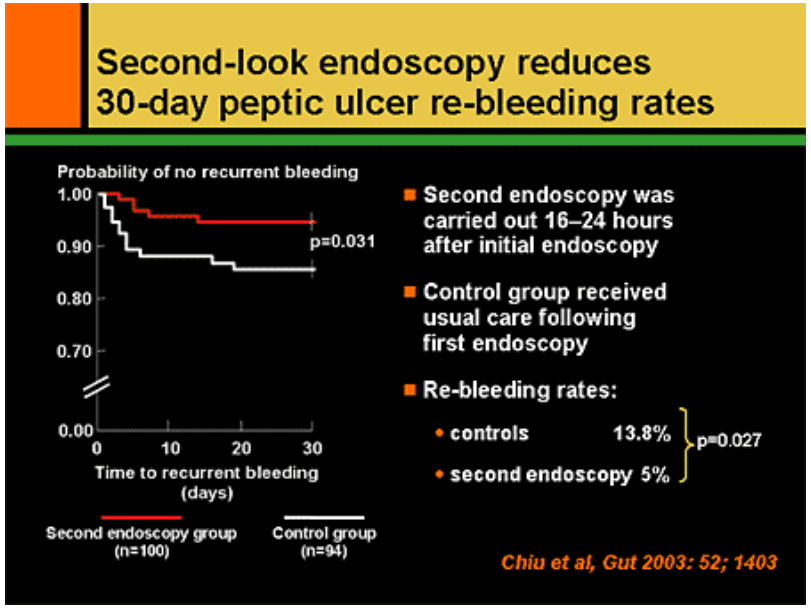
- **Mechanical**
  - Use of clips promising for high risk stigmata
  - Meta-analysis (Sung et al) - clipping equivalent to thermal and better haemostasis than injection
    - Reduced re-bleed & surgery

Endoscopic Treatments (7)

- **Combination therapy**
  - Monotherapy (injection or coagulation) effective
    - NICE – not as monotherapy
  - Combination of (Epinephrine) injection & thermal / Mechanical - superior to solo treatment
    - Bleeding 18.4% to 10.6%
    - Surgery 11.3% to 7.6%
    - Mortality 5.1% to 2.6%
    - No increase in complications
- **Suggested therapy**
  - Mechanical method (Clips) +/- Adrenaline
  - Thermal & Adrenaline
  - Fibrin / Thrombin & Adrenaline

Endoscopic Treatments (8)

- Consider "second-look" Endoscopy
  - to treat any residual high risk lesion again
  - Review when ongoing bleeding in absence of identifiable lesion
  - Initial view sub-optimal



Reduces re-bleeding but no effect on mortality

AUGIB – Re-bleed Post Endoscopy

- Interventional radiology for unstable patients who re-bleed after endoscopic treatment
  - Cohort studies show 98% technical success with low complications (4-5%)
  - Comparative studies show equivalence to Surgery
- Refer urgently for surgery if interventional radiology is not promptly available
  - Re-bleeding post index endoscopic therapy associated with increased mortality (up to 80% with high-risk stigmata)
- Joint Physician / Surgical management
  - RCT (tertiary care centre) 30-day mortality & transfusion requirements similar between repeat endoscopic therapy and surgery (more complications with surgery)

IV PPI treatment – Post Endoscopy

- Intragastric pH > 6 [Omeprazole / Pantoprazole, 80mg bolus then 8mg/hr for 72 hrs]
  - stabilises clots with reduced re-bleeding in high-risk
  - Promotes ulcer healing in low-risk (oral)
- Significant reduction in :-
  - re-bleeding (NNT 13)
  - Need for surgery (NNT 34)
  - Need for further endoscopy (NNT 10)
  - LOS and BTx requirements
- Only reduced mortality in high-risk lesion sub group

Conclusions

- Significant condition – worthy of greater status & resources?
  - Ageing population
  - Sicker patients (Varices etc)
- Prompt assessment and resuscitation with risk stratification
- Endoscopy with specific multi-modal haemostatic treatment
- “Second-look” endoscopy recommended if no obvious bleeding source on index OGD or re-bleeding
- IV PPI for high-risk stigmata post endoscopy
- Appreciate importance of emerging therapies
  - Surface coagulant agents – Hemospray