Upper and Lower GI Bleeding

John Poneros MD, FASGE, NYSGEF
Associate Professor
Columbia University College of Physicians and Surgeons
Acting Director, Endoscopy Unit
New York Presbyterian/Columbia
UGIB

- What is appropriate peri-procedural management of UGIB?
- Which lesions deserve endoscopic therapy and when?
- Should we drop an NGT before EGD?
- Which endoscopic therapies are most efficacious?
- What is the optimal timing for EGD in UGIB?
UGI Bleeding

- 5% of all ER visits
- 300,000 hospitalizations/year
- Gender: 2:1 M:F
- 90% Non-variceal UGIB
- 68% > 60 years old; 27% > 80 years old
- > 3 billion dollars per year
- Mortality 2-14% (10x > for rebleeds)
GI Bleed Mortality
Causes of UGIB

- Duodenal ulcer
- Gastric ulcer
- Varices
- Esophagitis
- Mallory-Weiss
- Duodenitis
- Tumors
- Gastric erosions
- Rare causes
- Unknown
Rare causes of UGIB

- AVMs
- Stomal ulcer
- Dieulafoy's lesion
- Watermelon stomach
- Hemobilia
- Connective tissue disorder
- Kaposi's sarcoma
- Aorto-enteric fistula
- Benign tumors
- Others
Prior to Endoscopy: Resuscitation

• Adequate resuscitation and stabilization is essential prior to endoscopy to minimize procedure associated complications

• 500 ccs of NS over 30 minutes while being type and crossed

• Amount of blood transfusion should be carefully considered – more is not always better (see next slide)

• Assess cardiac and respiratory status, risk

• Erythromycin (to empty stomach) improves visualization, shortens LOS, decreases need for repeat EGD and transfusion but does NOT decrease re-bleeding or mortality

Villaneuva et al NEJM 2013
Gralnek et al Endoscopy 2015
How much to transfuse?

- 921 subjects with severe acute UGIB
- **Restrictive** (transfuse when Hgb<7; target 7-9)
- **Liberal** (transfuse when Hgb<9; target 9-11)
- Primary outcome: all cause mortality rate within 45 days

NEJM 2013;368;11-21
Restrictive Strategy Superior

<table>
<thead>
<tr>
<th></th>
<th>Restrictive</th>
<th>Liberal</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality rate</td>
<td>5%</td>
<td>9%</td>
<td>0.02</td>
</tr>
<tr>
<td>Rate of further bleeding</td>
<td>10%</td>
<td>16%</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Benefit seen primarily in PUD and Child A/B cirrhotics

NEJM 2013;368;11-21
Predicting Risk

- Multiple scoring systems developed
  - 1993 Baylor Bleeding Score
  - 1996 Cedars-Sinai Predictive Index
  - 1996 Rockall Score
  - 2000 Glasgow-Blatchford Score
  - 2010 AIMS65
# Rockall Scoring System

- 2 components: clinical + endoscopic

<table>
<thead>
<tr>
<th>Variable</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&lt;60</td>
<td>60-79</td>
<td>≥ 80</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>No SBP ≥ 100 P&lt;100</td>
<td>Tachy-SBP ≥ 100 P&gt;100</td>
<td>Hypotension-SBP &lt;100</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td>No major</td>
<td></td>
<td>Cardiac failure, CAD, other major</td>
<td>Renal failure, liver failure, malignancy</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>MWT</td>
<td>NON Malignant</td>
<td>GI cancer</td>
<td></td>
</tr>
<tr>
<td>Recent Hemorrhage</td>
<td>None</td>
<td>Blood in lumen</td>
<td></td>
<td>Gut 1996;38:316</td>
</tr>
</tbody>
</table>
Clinical Rockall Score – Mortality Rates
## Glasgow Blatchford Risk Score

### Table 1 Risk stratification – Modified from Glasgow Blatchford risk score (GBS)\(^{[18,22]}\)

<table>
<thead>
<tr>
<th>Clinical parameters</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (beats/min)</td>
<td>≥100</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>100-109</td>
</tr>
<tr>
<td></td>
<td>90-99</td>
</tr>
<tr>
<td></td>
<td>&lt;90</td>
</tr>
<tr>
<td>Blood urea nitrogen (mmol/L)</td>
<td>6.5-7.9</td>
</tr>
<tr>
<td></td>
<td>8.0-9.9</td>
</tr>
<tr>
<td></td>
<td>10.0-24.9</td>
</tr>
<tr>
<td>Hemoglobin (g/dL)</td>
<td>≥25</td>
</tr>
<tr>
<td>Men</td>
<td></td>
</tr>
<tr>
<td>12.0-12.9</td>
<td>1</td>
</tr>
<tr>
<td>10.0-11.9</td>
<td>3</td>
</tr>
<tr>
<td>&lt;10.0</td>
<td>6</td>
</tr>
<tr>
<td>Women</td>
<td></td>
</tr>
<tr>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>10.0-11.9</td>
<td>3</td>
</tr>
<tr>
<td>&lt;10</td>
<td>6</td>
</tr>
</tbody>
</table>

### Subjective findings\(^{[22]}\)

<table>
<thead>
<tr>
<th>Comorbidities</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart failure</td>
<td>2</td>
</tr>
<tr>
<td>Liver disease</td>
<td>2</td>
</tr>
</tbody>
</table>

### Presentation

| Syncope                                | 2     |
AIMS65

**Albumin** <3.0
**INR** > 1.5
**M**ental status altered
**S**ystolic BP <90
**65+** years old

AIMS65 better than GBS and pre-EGD Rockall in predicting in hospital mortality and need for ICU

Gastrointest Endosc 2011;74:1215
Robertson et al GIE 2016
Vital signs in the bleeding patient
Mild to moderate hypovolemia: Resting tachycardia
Blood loss > 15%: Orthostatic hypotension (Decrease in systolic of > 20 mm Hg and/or increase in HR of 20 when standing)
Blood loss > 40%: Supine hypotension

Stool color not reliable indicator of location of bleeding
In 80 patients with hematochezia (74% colonic, 11% upper, 9% small bowel and 6% unidentified

BUN:Cr ratio of > 30 (LR 7.5 that upper source)

Presence of blood clots in the stool make UGI source less likely

Ask if prior episode of UGIB: 60% with hx of UGIB bleeding from same lesion

Take a good history: alarm signs, retching, NSAID use
Predicting Risk: Role of NG lavage

<table>
<thead>
<tr>
<th></th>
<th>Active Bleeding</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>Coffee Grounds</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>Red Blood</td>
<td>23%</td>
<td>18%</td>
</tr>
</tbody>
</table>
Etiology of bleeding with clear NGT lavage
NGT Lavage Prior to Endoscopy

Role of nasogastric lavage:

- Assessment for location of bleeding
- Utility in “cleaning”
- Studies have failed to demonstrate a benefit in clinical outcome
Do I Need to Get Up in the Middle of the Night?

- Endoscopy within 12h leads to increased use of endotherapy for stigmata of bleeding
- Two studies evaluated the value of immediate EGD and found no improvement in clinically important outcomes
- No evidence exists for any clinical benefit of endoscopy performed within 12h vs 24h (re-bleeding rate, LOS, surgery or mortality)
- Consensus guidelines recommend endoscopy within 24h
Timing of upper endoscopy influences outcomes in patients with acute nonvariceal upper GI bleeding

Navin L. Kumar, MD,1,2 Aaron J. Cohen, BS,2 Jennifer Naylor, MD,1,2 Brian L. Claggett, PhD,2 John R. Saltzman, MD1,2
Boston, Massachusetts, USA

Background and Aims: Current guidelines advise that upper endoscopy be performed within 24 hours of presentation in patients with acute nonvariceal upper GI bleeding (UGIB). However, the role of urgent endoscopy (<12 hours) is controversial. Our aim was to assess whether patients admitted with acute nonvariceal UGIB with lower-risk versus high-risk bleeding have different outcomes with urgent compared with nonurgent endoscopy.

Methods: A retrospective cohort study was conducted of patients admitted to an academic hospital with nonvariceal UGIB. The primary outcome was a composite of inpatient death from any cause, inpatient rebleeding, need for surgical or interventional radiologic intervention, or endoscopic reintervention. The Glasgow-Blatchford score (GBS) was calculated; lower risk was defined as a GBS < 12, and high risk was defined as a GBS ≥ 12.

Results: Of 361 patients, 37 patients (10%) experienced the primary outcome. Patients who underwent urgent endoscopy had a greater than 5-fold increased risk of reaching the composite outcome (unadjusted odds ratio [OR], 5.6; 95% confidence interval [CI], 2.8-11.4; P < .001). Lower-risk patients who were taken urgently to endoscopy were more likely to reach the composite outcome (adjusted OR, 0.71 per 6 hours; 95% CI, 0.55-0.91; P = .008). However, in the high-risk patients, time to endoscopy was not a significant predictor of the primary outcome (adjusted OR, 0.93 per 6 hours; 95% CI, 0.77-1.13; P = .47; adjusted P for interaction = .039).

Conclusion: Urgent endoscopy is a predictor of worse outcomes in select patients with acute nonvariceal UGIB.

(Gastrointest Endosc 2017;85:945-52.)
TABLE 2. Univariate and multivariate analyses of predictors of the composite outcome

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds ratio (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Univariate analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>0.98 (0.78-1.21)</td>
<td>.825</td>
</tr>
<tr>
<td>Sex (male)</td>
<td>0.90 (0.46-1.78)</td>
<td>.759</td>
</tr>
<tr>
<td>Weekend or holiday presentation</td>
<td>1.74 (0.84-3.58)</td>
<td>.134</td>
</tr>
<tr>
<td>Aspirin</td>
<td>0.66 (0.33-1.36)</td>
<td>.266</td>
</tr>
<tr>
<td>Thienopyridine</td>
<td>0.19 (0.02-1.40)</td>
<td>.102</td>
</tr>
<tr>
<td>Warfarin</td>
<td>0.80 (0.30-2.14)</td>
<td>.656</td>
</tr>
<tr>
<td>Any anticoagulation</td>
<td>1.60 (0.73-3.47)</td>
<td>.238</td>
</tr>
<tr>
<td>Charlson comorbidity index</td>
<td>1.10 (0.96-1.26)</td>
<td>.166</td>
</tr>
<tr>
<td><strong>Vital signs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td>0.78 (0.67-0.90)</td>
<td>.001</td>
</tr>
<tr>
<td>Heart rate (beats/min)</td>
<td>1.17 (0.99-1.38)</td>
<td>.072</td>
</tr>
<tr>
<td><strong>Laboratory values</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelet count (×10^3/mL)</td>
<td>1.00 (1.00-1.00)</td>
<td>.507</td>
</tr>
<tr>
<td>INR</td>
<td>0.97 (0.75-1.26)</td>
<td>.840</td>
</tr>
<tr>
<td><strong>Prognostic scores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIMS65 score</td>
<td>1.68 (1.21-2.32)</td>
<td>.002</td>
</tr>
<tr>
<td>Glasgow-Blatchford score</td>
<td>1.08 (0.99-1.17)</td>
<td>.093</td>
</tr>
<tr>
<td><strong>Endoscopy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to endoscopy (hours)</td>
<td>0.77 (0.66-0.91)</td>
<td>.002</td>
</tr>
<tr>
<td><strong>Multivariate analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekend/holiday presentation</td>
<td>2.27 (1.05-4.87)</td>
<td>.036</td>
</tr>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td>0.82 (0.70-0.95)</td>
<td>.008</td>
</tr>
<tr>
<td>Time to endoscopy (hours)</td>
<td>0.81 (0.69-0.94)</td>
<td>.005</td>
</tr>
</tbody>
</table>

CI, Confidence interval; INR, international normalized ratio.
Pre-endoscopy PPI

- Reduces the proportion of patients with high risk endoscopic stigmata ("downstages" lesion)
- Decreases need for endoscopic therapy
- Has not been shown to reduce rebleeding, surgery, or mortality rates

**Endoscopic treatment required:**
- Omeprazole – 19% (23% of PUD)
- Placebo – 28% (37% of PUD)

Gastric Ulcers: Endoscopic Findings

Forrest III
Clean base

Forrest IIb
Adherent Clot

Forrest IIa
Visible vessel

Forrest Ib
Oozing without visible vessel

Forrest Ia
Active bleeding
Peptic Ulcer

% of Patients Rebleeding

- Clean ulcer base
- Flat spot
- Adherent clot
- Visible vessel
- Arterial bleeding
# Endoscopic Stigmata

<table>
<thead>
<tr>
<th>Stigmata of hemorrhage</th>
<th>Incidence (%)</th>
<th>Re-bleeding (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spurting arterial bleeding</td>
<td>8</td>
<td>85-100</td>
</tr>
<tr>
<td>Non-bleeding visible vessel</td>
<td>17-50</td>
<td>18-55</td>
</tr>
<tr>
<td>Adherent clot (no visible vessel)</td>
<td>18-26</td>
<td>24-41</td>
</tr>
<tr>
<td>Other stigmata</td>
<td>12-18</td>
<td>5-9</td>
</tr>
<tr>
<td>No stigmata</td>
<td>10-36</td>
<td>0</td>
</tr>
</tbody>
</table>
Endoscopic Findings with GU/DU
Endoscopic Treatment Options

• **Injection** (Epinephrine1:10,000 or Saline)
• **Thermal**
  – Heater probe (leads to edema, tissue protein coagulation, contraction of vessels, activation of coagulation cascade)
  – Multi/Bipolar probes (no grounding pad)
  – APC (Argon Plasma Coagulation)
• **Mechanical**
  – Clips
  – Bands
  – “Other devices”
Peptic Ulcer - Therapeutic Endoscopy

% Patients with active bleeding

- Medical treatment
- Bipolar probe
- YAG
- Injection
- Heater probe

Initial control: 20%
Rebleeding rate: 5%

AGA
Endoscopic Clips
Endoscopic Treatment
Endoscopic clipping versus injection and thermo-coagulation in the treatment of non-variceal upper gastrointestinal bleeding: a meta-analysis

Joseph J Y Sung, Kelvin K F Tsoi, Larry H Lai, Justin C Y Wu, James Y W Lau

Background: Hemoclips, injection therapy and thermocoagulation (heater probe or electcoagulation) are the most commonly used types of endoscopic hemostasis for the control of non-variceal gastrointestinal bleeding.

Aim: To compare the efficacy of hemoclips versus injection or thermocoagulation in endoscopic hemostasis by pooling data from the literature.

Method: Publications in the English literature (MEDLINE, EMBASE and Cochrane Library) as well as abstracts in major international conferences were searched using the keywords “hemoclips” and “bleeding”, and 15 trials fulfilling the search criteria were found. Outcome measures included: initial hemostasis (after endoscopic intervention); recurrent bleeding; definitive hemostasis (no recurrent bleeding until the end of follow-up); the requirement for surgical intervention; and all-cause mortality. The heterogeneity of trials was examined and the effects were pooled by meta-analysis.

Results: Of 1156 patients recruited in the 15 studies, 390 were randomly assigned to receive clips alone, 242 received clips combined with injection, 359 received injection alone, and 165 received thermocoagulation with or without injection. Definitive hemostasis was higher with hemoclips (86.5%) than injection (75.4%; RR 1.14, 95% CI 1.00–1.30), or endoscopic clips with injection (88.5%) compared with injections alone (78.1%; RR 1.13, 95% CI 1.03–1.23), leading to a reduced requirement for surgery but no difference in mortality. Compared with thermocoagulation, there was no improvement in definitive hemostasis with clips (81.5% versus 81.2%; RR 1.00, 95% CI 0.77–1.31). These estimates were robust in sensitivity analyses. There was also no difference between clips and thermocoagulation in rebleeding, the need for surgery and mortality. The reported locations of failed hemoclip applications included posterior wall of duodenal bulb, posterior wall of duodenal bulb, and posterior wall of the first part of the duodenum.

Conclusion: Successful application of hemoclips is superior to injection alone but comparable to thermocoagulation in producing definitive hemostasis. There was no difference in all-cause mortality irrespective of the modalities of endoscopic treatment.
Dual Therapy *Versus* Monotherapy in the Endoscopic Treatment of High-Risk Bleeding Ulcers: A Meta-Analysis of Controlled Trials

Riccardo Marmo, M.D.,1 Gianluca Rotondano, M.D.,2,4 Roberto Piscopo, M.D.,3 Maria A. Bianco, M.D.,4 Rosario D’Angella, M.D.,1 and Livio Cipolletta, M.D.4

1Department of Medicine, Division of Gastroenterology, Hospital L. Curto, Polla, Italy; 2Division of General Surgery, Section of Gastrointestinal Endoscopy, Civil Hospital, Rocca d’Aspide, Italy; 3Division of Internal Medicine, Section of Gastroenterology, Evangelic Hospital Villa Betania, Naples, Italy; and 4Department of Gastroenterology and Digestive Endoscopy, Hospital Maresca, Torre del Greco, Italy

**BACKGROUND:** There is no definite recommendation on the use of dual endoscopic therapy in patients with severe peptic ulcer bleeding. A systematic review and meta-analysis were performed to determine whether the use of two endoscopic hemostatic procedures improved patient outcomes compared with monotherapy.

**METHODS:** A search for randomized trials comparing dual therapy (i.e., epinephrine injection plus other injection or thermal or mechanical method) *versus* monotherapy (Injection, thermal, or mechanical alone) was performed between 1990 and 2006. Heterogeneity between studies was tested with $\chi^2$ and explained by metaregression analysis.

**RESULTS:** Twenty studies (2,472 patients) met inclusion criteria. Compared with controls, dual endoscopic therapy reduces the risk of recurrent bleeding (OR [odds ratio] 0.59 [0.44–0.80], $P = 0.0001$) and the risk of emergency surgery (OR 0.66 [0.49–0.89], $P = 0.03$) and showed a trend toward a reduction in the risk of death (OR 0.68 [0.46–1.02], $P = 0.06$). Subcategory analysis showed that dual therapy was significantly superior to injection therapy alone for all the outcomes considered, but failed to demonstrate that any combination of treatments is better than either mechanical therapy alone (OR 1.04 [0.45–2.45] for rebleeding, 0.49 [0.50–4.87] for surgery, and 1.28 [0.34–4.86] for death) or thermal therapy alone (OR 0.67 [0.40–1.20] for rebleeding, 0.89 [0.45–1.76] for surgery, and 0.51 [0.34–1.10] for death).

**CONCLUSIONS:** Dual endoscopic therapy proved significantly superior to epinephrine injection alone, but had no advantage over thermal or mechanical monotherapy in improving the outcome of patients with high-risk peptic ulcer bleeding.
Argon Plasma Coagulation

- 6000 peak volt energy delivered from ERBE electrosurgical generator
- Tungsten electrode within probe ignites gas jet
- Ionized argon “plasma” seeks nearest ground
- Tissue coagulated with depth of 2-3 mm
Newer Weapons

Ovesco © Over the Scope Clips OTSC
Newer weapons

Cook© Hemospray
Proprietary inorganic powder delivered with CO2
Mechanical barrier and absorption
OUTCOMES FROM AN INTERNATIONAL MULTICENTRE REGISTRY OF PATIENTS WITH ACUTE GASTROINTESTINAL BLEEDING UNDERGOING ENDOSCOPIC TREATMENT WITH HEMOSPRAY

Presentation Number: 402
View Presentation Add to Schedule

AuthorBlock: Durayd Alzoubaidi, Radu Rusu, Jason Mark Dunn, Johannes Wilhelm Rey, Shraddha Gulati, Bu Hayee, Selena Dixon, Sulleman Moreea, Duncan Napier, John Anderson, Martin Dahan, Max Hu, Patricia Duarte, Phil Boger, Alberto Murino, Sina Jameie-Oskooei, Edward Despott, Cora Steinheber, Martin Goetz, Sharmila Subramaniam, Pradeep Bhandari, Cormac Magee, Martin Anthony Everson, Omer Ahmad, Matthew Banks, Laurence Lovat, Emmanuel Coron, Ralf Kiesslich, Rehan Haidry
Introduction:

• Hemospray is a novel proprietary mineral blend that forms a mechanical barrier over the bleeding site when applied endoscopically
• Primary aim of this international prospective multicentre registry is to collect data on the outcomes of patients with AGIB after endoscopic application of Hemospray
• Secondary outcomes of rebleeding, 30 day mortality, disease and procedure specific outcomes were collected
Method:

- Prospective data from 11 centers: UK, France and Germany
- Hemospray use was at endoscopist’s discretion
- Hemospray was either mono therapy, dual-therapy with standard haemostatic endoscopic techniques or as rescue therapy once standard methods had failed
- Immediate haemostasis defined as cessation of bleeding within 5 mins after Hemospray application
- Rebleeding: sustained drop in Hb (>2g/l) OR haematemesis OR persistent melaena with ongoing haemodynamic compromise after EGD
Results:

• 228 cases
• 202 patients (89%) achieved immediate haemostasis after Hemospray.
• Equal haemostasis rates seen in Hemospray monotherapy (90%), combination therapy (89%) and rescue therapy (85%)
• Peptic ulcer bleed (122/228=54%) was the most common pathology and forrest Ib (151/228=66%) the most common lesion type. Mean pre-treatment Blatchford score BS was 11 for all cases
OUTCOMES FROM AN INTERNATIONAL MULTICENTRE REGISTRY OF PATIENTS WITH ACUTE GASTROINTESTINAL BLEEDING UNDERGOING ENDOSCOPIC TREATMENT WITH HEMOSPRAY

Results:

• 26 patients did not achieve immediate haemostasis. Mean BS was higher in this group at 13.35 (p<0.05). Forrest Ib was the most common lesion type in this group [lb=20/26 (77%), p<0.05]

• 26 cases of rebleeding reported after successful haemostasis. The mean BS was higher at 12.26 (p< 0.05). Forrest Ib was the most common bleed in this group [lb=15/26 (58%), p<0.05]

• 55 (24%) patients were anticoagulated at the time of emergency endoscopy. Haemostasis was achieved in 49/55 (89%) patients
<table>
<thead>
<tr>
<th></th>
<th>Mono-Therapy (n=86)</th>
<th></th>
<th>Combination Therapy (n=96)</th>
<th></th>
<th>Rescue Therapy (n=46)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Most Common Pathology</td>
<td>Forrest Classification</td>
<td>Most Common Pathology</td>
<td>Forrest Classification</td>
<td>Most Common Pathology</td>
<td>Forrest Classification</td>
</tr>
<tr>
<td>Peptic Ulcer</td>
<td>29/86 (34%)</td>
<td>Ia = 2/86 (2%)</td>
<td>Peptic Ulcer</td>
<td>58/96 (60%)</td>
<td>Ia = 10/96 (19%)</td>
<td>Peptic Ulcer = 35/46 (76%)</td>
</tr>
<tr>
<td>Malignancy</td>
<td>18/86 (21%)</td>
<td>Iib = 9/86 (10%)</td>
<td>Post procedure = 15/96 (16%)</td>
<td>Iib = 7/96 (7%)</td>
<td>Iib = 2/46 (4%)</td>
<td>Malignancy = 3/46 (7%)</td>
</tr>
<tr>
<td>Inflammation</td>
<td>12/86 (14%)</td>
<td>III = 12/86 (14%)</td>
<td></td>
<td>III = 2/96 (2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blatchford</td>
<td>mean 10.67</td>
<td></td>
<td>10.9</td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>SD 4.88</td>
<td></td>
<td>4.54</td>
<td></td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower 95% CI of mean</td>
<td>9.45</td>
<td>9.97</td>
<td>9.42</td>
<td>12.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper 95% CI of mean</td>
<td>11.89</td>
<td>11.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Haemostasis</td>
<td>78/86 (90%)</td>
<td>85/96 (89%)</td>
<td>39/46 (85%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Re-Bleed Rate</td>
<td>7/78 (9%)</td>
<td>10/85 (12%)</td>
<td></td>
<td>9/39 (23%)</td>
<td></td>
</tr>
</tbody>
</table>


Managing Acid Suppression after EGD

- Does IV acid suppression matter after endoscopic therapy?
- 767 patients with PUD, randomized to either high-dose IV PPI (80 mg IV Eso + 8/hr drip) or placebo after successful endoscopic hemostasis obtained
- Significant difference in 72 hr re-bleeding and all cause mortality

-Sung Ann Intern Med 2009; 150:455-64
Role of Repeat Endoscopy in UGI Bleeding

- **Therapeutic endoscopy**
  - At least 2 attempts indicated prior to surgery
- **Surgery for failed endoscopic Rx**
  - Consider early (6-8 units transferred)
- **Therapeutic angiography**
  - High operative risk patients
  - Difficult bleeding sources
Variceal bleeding

- Cirrhosis affects 2 million in the USA
- 50% develop varices
- 25-35% bleed within 2 years
- Mortality 30-50%
- Highest mortality first bleed
- Variceal size predicts risk of bleeding
- Severity of underlying liver disease determines survival
VARICEAL Bleed

- Vasoconstrictor therapy
- Antibiotics
- Resuscitation
- ICU level care
- Endoscopy
- Alternative/Rescue therapies
- Beta blockade
Vasoconstrictor therapy

• Goal: Reduce splanchnic blood flow
• Terlipressin – only agent shown to improve control of bleeding and survival in RCTs and meta-analysis
  – Not available in US
• Somatostatin – not available in US
• **Octreotide** (somatostatin analogue)
  • Decreases splanchnic blood flow (variably)
  • Efficacy is controversial; no proven mortality benefit
  • Standard dose: 50 mcg bolus, then 50 mcg/hr drip for 3-5 days

Gastro 2001;120:946
Cochrane Database Syst Rev 2008
NEJM 1995;333:555
AJGI 2009;104:617
Antibiotics

• Bacterial infection occurs in up to 66% of patients with cirrhosis and variceal bleed

• Prophylactic antibiotics reduces incidence of bacterial infection, significantly reduces early rebleeding
Restrictive Resuscitation

Goal = maintain hemodynamic stability, Hgb ~7-8, CVP 4-8 mmHg

NEJM paper demonstrated restrictive transfusion therapy of benefit in Child’s A and B but not Child’s C
**Banding**

Bleeding controlled in 90%

Rebleeding rate reduced to 30%

Compared with sclerotherapy:
- less rebleeding
- lower mortality
- less complications
- fewer treatment sessions
Endoscopic Banding
Endoscopic Findings: Red Wales and White Nipples
Alternative/Rescue therapies

- TIPS – Transjugular Intrahepatic Portosystemic Shunt
- Early placement of shunt (within 24-72hrs) associated with improved survival among high-risk patients
- Preferred treatment for gastric variceal bleeding (rule out splenic vein thrombosis first)


Hepatology 2004;40:793
Hepatology 2008;48:Suppl:373A
Sengstaken-Blakemore Tube

- Very effective for immediate, temporary control
- High complication rate – aspiration, migration, necrosis + perforation of esophagus
- Use as bridge to TIPS within 24 hours
- Airway protection strongly recommended
Alternative/Rescue therapies

Self-Expanding Metal Stent

- Specially designed covered metal stent
- Tamponades distal esophageal varices
- Removable; does not require airway protection
- Very limited data

Gastrointest Endosc 2010;71:71
LGIB

- Overall mortality is low
- About 4% in one large series
- Mortality higher in older adults, those with intestinal ischemia and those with comorbid illness
- 13% of hematochezia patients bleeding from an upper source (proximal to ligament of Treitz)
Acute Hematochezia: 1559 Pts

- Diverticulosis: 5-42%
- Ischemia: 6-18%
- Anorectal (Hemorrhoids, Anal fissures, Rectal ulcers): 6-16%
- Neoplasia (Polyps and cancer): 3-11%
- Angiodysplasia: 0-3%
- Postpolypectomy: 0-13%
- IBD: 2-4%
- Radiation colitis: 1-3%
- Other colitis (Infectious, antibiotic associated): 3-29%
- Small bowel/UGIB: 3-13%
- Other causes: 1-9%
- Unknown cause: 6-23%

Strate et al Gastro Clinc NA 2005
Colonoscopy in Lower GI Bleeding

• Advantages:
  – Potential to precisely localize the site of bleeding regardless of the etiology or rate of bleeding,
  – Ability to collect specimens and
  – Potential for therapeutic intervention

• Disadvantages:
  – Need for bowel preparation,
  – Poor visualization in unprepped or poorly prepped colon
  – Risks of sedation in an acutely bleeding patient
Data conflicting on Urgent Colonoscopy

- Jensen study found that colonoscopy <12 hrs from admission **CAN** reduce risk of rebleeding and surgery in patients with diverticular bleeding vs conservative rx
- RCT of LGIB found that urgent colonoscopy improved detection of source but did **NOT** ↓ mortality, hospital stay, transfusion requirement or need for surgery
- Third trial found **NO** difference in outcomes between urgent and delayed colonoscopy

Jensen et al NEJM 2000
Green et al Am J Gastro 2005
Laine et al AM J Gastro 2010
Background and Aims: Lower GI bleeding (LGIB) is a common cause of morbidity and mortality. Colonoscopy is indicated in all hospitalized patients with LGIB, yet the time frame for performing colonoscopy remains unclear. Prior studies of outcomes in urgent versus elective colonoscopy have yielded conflicting results and were often underpowered. Our study objective was to compare several outcomes between urgent and elective colonoscopy in patients hospitalized for LGIB.

Methods: Systematic review and meta-analysis were performed on studies that compared urgent and elective colonoscopy in patients with LGIB. Pooled rates were calculated for specific outcomes, and rate ratios were determined for selected comparison groups.

Results: Twelve studies met inclusion criteria, with a total sample size of 10,172 patients in the urgent colonoscopy arm and 14,224 patients in the elective colonoscopy arm. Urgent colonoscopy was associated with increased use of endoscopic therapeutic intervention (RR, 1.70; 95% CI, 1.08-2.67). There were no significant differences in bleeding source localization (RR, 1.08; 95% CI, .92-1.25), adverse event rates (RR, 1.05; 95% CI, .65-1.71), rebleeding rates (RR, 1.14; 95% CI, .74-1.78), transfusion requirement (RR, 1.02; 95% CI, .73-1.41), or mortality (RR, 1.17; 95% CI, .45-3.02).

Conclusions: Urgent colonoscopy appears to be safe and well tolerated, but there is no clear evidence that it alters important clinical outcomes. (Gastrointest Endosc 2017;86:107-17.)
Colonoscopy in LGIB

• Patients unable to take the prep may require NGT
• Metoclopramide can be used
• A definitive or potential bleeding source visualized in 45-90% of patients undergoing colonoscopy for LGIB
Other tests in LGIB

- Tagged red blood cell scan (radionuclide imaging with technetium (99mTc) sulfur colloid is most sensitive radiographic test
- Can detect bleeding at a rate of 0.1-0.5 mL/min
- Requires ACTIVE bleeding to detect a source
- Not very accurate as to site
Angiography in LGIB

- Requires active blood loss of 1 to 1.5 mL/min
- SMA first, then IMA and celiac
- Success varies from 25-70%
- Therapeutic and diagnostic (vasopressin has been replaced by embolization)
- Intestinal infarction is a risk
Conclusions

• **Upper GI Bleed**
  – Attempt to risk stratify before procedure
  – Don’t cave to pressure on doing something but don’t delay too much either
  – Assess hemodynamic and respiratory status very carefully in advance
  – Be prepared for anything
  – Know your equipment
  – You CAN save a life

• **Lower GI Bleed**
  – Uncertain if you can save a life in the acute setting
  – Involve other services (surgery, IR) early
Quotes to remember when dealing with GIB

“The Enemy of Good is Better”

“Good judgment comes from experience. Experience comes from bad judgment.”