Lower GI Bleeding: Interventional Radiology or Colonoscopy?

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Goals

• General approach to LGIB
• To define early predictors of Severe LGIB
• Timing of Colonoscopy and its Impacts
• Endoscopic Hemostasis techniques.
A 68 year old man presented to the ER with several episodes of hematochezia and passing clots per rectum.

PMHX: CAD  
Med: Aspirin

On Exam, the patient was pale. The blood pressure was 90/60mmHg and the pulse 110/min.

DRE revealed fresh blood and clots.

HCT: 33%
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Estimation of blood loss based on vital signs


• \( \leq 200\text{ml} \): No effect on blood pressure or heart rate.
• \( \geq 800\text{ml} \): A drop of blood pressure by 10mmHg and/or an increase of pulse by 10bpm
• Orthostasis: Loss of at least 15% of blood volume
• \( > 1500\text{ml} \): Shock
Correction Fluid Losses—
Restore Hemodynamic Stability

• Venous access
  - 2 “large-bore” peripheral IVs
  - Central line if Necessary

Initiate volume replacement
  -Saline, PRBCs

• Correct coagulopathy
  -FFP, platelets.
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Villaneuva et al. NEJM 2013; 368
Correction Fluid Losses-
Restore Hemodynamic Stability

• Venous access

PRBC transfusion threshold = Hgb <7g/dl
Higher threshold Hgb in volume depleted, CAD?
Target Hgb 8-9g/dl

Resuscitation first

• Correct coagulopathy
  -FFP, platelets.

Villaneuva et al. NEJM 2013; 368
Sources of Hematochezia in the literature


- Diverticulosis: 17-40%
- Angiodysplasia: 09-21%
- Cotitis (ischemic, infect, IBD, rad..): 02-30%
- Neoplasia: 11-14%
- Anorectal disease (including rectal varices): 04-10%
- UGIB: 0-11%
- Small bowel bleeding: 2-9%
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Early predictors of Severe LGIB


- Heart rate ≥100/min
- Systolic blood pressure ≤ 115mmHg
- Syncope
- Non tender abdominal examination
- Bleeding in the 1st 4 hrs of evaluation
- Aspirin
- >2 active comorbid conditions
Early Predictions of Severe LGIB


- Initial hematocrit ≤ 35%
- Abnormal Vital signs  
  - SBP < 100 mmHg
  - H.R > 100/min
- Gross Blood on initial rectal examination.
Risk for Ongoing or Recurrent Bleed

strate et al, CGH, 2010, 8: 333-343

- 3 risk factors ⇒ 79%
- 2 risk factors ⇒ 54%
- 1 risk factor ⇒ 17%
- No risk factor ⇒ 0%
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Is Urgent Colonoscopy Indicated!?
Timing of Colonoscopy in LGIB

Jensen et al. Urgent Colonoscopy for the diagnosis and treatment of severe diverticular hemorrhage NEJM 2000; 342: 78-82

Two-arm Study

<table>
<thead>
<tr>
<th></th>
<th>Urgent Colonoscopy with Endoscopic Therapy</th>
<th>Urgent Colonoscopy without Therapy</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebleeding</td>
<td>0%</td>
<td>53%</td>
<td>0.005</td>
</tr>
<tr>
<td>Need of Surgery</td>
<td>0%</td>
<td>35%</td>
<td>0.03</td>
</tr>
<tr>
<td>Complication</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
**Timing of Colonoscopy in LGIB (2)**

Green et al. Urgent Colonoscopy for evaluation and management of acute LGI hemorrhage. AJG 2005; 100: 2395-2402

**Randomized Controlled Trial**

<table>
<thead>
<tr>
<th></th>
<th>Colonoscopy within 8 hrs</th>
<th>Elective Colonoscopy</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitive source of bleeding</td>
<td>42%</td>
<td>22%</td>
<td>0.03</td>
</tr>
<tr>
<td>Rebleeding</td>
<td>22%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>14%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>2%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Blood Trasfusion</td>
<td>4.2 U</td>
<td>5 U</td>
<td></td>
</tr>
</tbody>
</table>

NB Complications < 2%

**Definitive source of bleeding**

- **Elective Colonoscopy**
  - Rebleeding: 30%
  - Surgery: 12%
  - Mortality: 4%
  - Blood Transfusion: 5 U

**P-Value**

- Definitive source of bleeding: 0.03
- No statistical difference
# Timing of Colonoscopy

## Urgent Colonoscopy

<table>
<thead>
<tr>
<th>Positive Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify source of Bleeding</td>
<td>rebleeding</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
</tr>
<tr>
<td>Therapeutic intervention</td>
<td>Surgery</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
</tr>
<tr>
<td>Homeostasis</td>
<td>Blood Transfusion</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
</tr>
<tr>
<td>Complications rate</td>
<td>Mortality</td>
</tr>
<tr>
<td>(%)</td>
<td></td>
</tr>
</tbody>
</table>
Colon Preparation

• Is a must for completion of procedure
• Unprepared colon completion 55 ⇒ 70%
• Most patients need NG Tube
  - 5-6 liters of PEG
  - 3-4 hours
    - Monitor risk of aspiration and congestion
• No risk on clot dislodge or bleed activation
• Can’t be done in actively bleeding patient
Urgent Colonoscopy
Comparing to Angiography

• High diagnostic yield (SRH) (75-100%)
  Angiography (25-70%)
• High therapeutic capabilities (50-100%)
  Angiography (80%)
• Low complication rate 0.6%
  Angiography (17%)
Colonoscopy is the preferred initial test of choice in patient who can be stabilized and can be prepared.
Endoscopic Hemostasis Techniques
### Table 1. Sources of Lower Intestinal Hemorrhage

<table>
<thead>
<tr>
<th>Source</th>
<th>Frequency</th>
<th>Endoscopic treatment</th>
<th>Painless hematochezia&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Other comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverticulosis</td>
<td>30%–65%</td>
<td>Yes</td>
<td>Yes</td>
<td>Large volume, intermittent bleeding</td>
</tr>
<tr>
<td>Angiodysplasia</td>
<td>4%–15%</td>
<td>Yes</td>
<td>Yes</td>
<td>Occult blood loss more common than acute</td>
</tr>
<tr>
<td>Hemorrhoids</td>
<td>4%–12%</td>
<td>Yes</td>
<td>Yes</td>
<td>Can result in significant hemorrhage</td>
</tr>
<tr>
<td>Ischemic colitis</td>
<td>4%–11%</td>
<td>No</td>
<td>No</td>
<td>Mild bleeding with diarrhea</td>
</tr>
<tr>
<td>Colitis, other</td>
<td>3%–15%</td>
<td>Sometimes&lt;sup&gt;a&lt;/sup&gt;</td>
<td>No</td>
<td>Mild bleeding with diarrhea</td>
</tr>
<tr>
<td>Neoplasia</td>
<td>2%–11%</td>
<td>Sometimes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Postpolypectomy</td>
<td>2%–7%</td>
<td>Yes</td>
<td>Yes</td>
<td>Can be delayed 3–4 weeks</td>
</tr>
<tr>
<td>Rectal ulcer</td>
<td>0%–8%</td>
<td>Yes</td>
<td>Yes</td>
<td>Anticoagulants and poor functional status are associated with bleeding&lt;sup&gt;118&lt;/sup&gt;</td>
</tr>
<tr>
<td>Dieulafoy lesion</td>
<td>Rare</td>
<td>Yes</td>
<td>Yes</td>
<td>Usually located in the rectum</td>
</tr>
<tr>
<td>Rectal varices</td>
<td>Rare</td>
<td>Sometimes</td>
<td>Yes</td>
<td>Usually stigmata of chronic liver disease</td>
</tr>
</tbody>
</table>

<sup>Note.</sup> Data from references<sup>2,8,10,14,15,26,117</sup>

<sup>a</sup>The abdominal examination can help differentiate inflammatory disorders such as ischemic colitis, which present with tenderness but generally result in mild blood loss from vascular disorders such as diverticula, which produce no tenderness but significant blood loss (hence the distinction painless hematochezia)<sup>36</sup>

<sup>b</sup>Radiation proctopathy is amenable to endoscopic therapy. Ulcers with stigmata of hemorrhage also can be treated.

<sup>c</sup>Banding or sclerotherapy for rectal varices is possible but transjugular intrahepatic portosystemic shunt procedures more commonly are recommended.
Diverticular Bleeding
Jensen et al, NEJM, 2000; 342: 78-82

• Definitive: SRH in a diverticulum
• Presumptive: Diverticulosis in a patient with LGIB and negative work up for other sources
• Incidental: Diverticulosis in a patient with LGIB and work up reveal other source.
Importance of the Locations of the SRH in a Diverticular


• SRH was in the neck 50%
• The rest 50% in the base
• Active bleeding more common in the base
• Non Bleeding visible vessel in the neck

Large impact on type of Treatment
How Do You Apply Endoscopic Treatment for a Bleeding Diverticulum


• If SRH at edge of diverticulum
  - Injected diluted epinephrine 1 in 20000
  - Apply thermal power 10-15 watts for 1-2 sec OR hemoclip

• IF SRH at base of diverticulum
  - Inject epinephrine
  - Apply hemoclip

• In both cases, tattoo the area in 3 to 4 areas
Endoscopic Band ligation for Colonic Diverticular Hemorrhage(2):

Ishii Net al, GIE, 2012

- Do colonoscopy
- Mark the diverticulum with SRH with a clip
- Withdraw, apply a cap and re scope
- Suction and band the diverticulum with SRH
  - Success 87%
  - Failure for initial hemostasis 24%
  - Surgery in 1 of 29 patients.
Hemorrhoidal Bleeding

Internal Hemorrhoids Classifications:

- **Grade I**: The hemorrhoid do not prolapse
- **Grade II**: The hemorrhoids prolapse upon defecations but reduce spontaneously.
- **Grade III**: The hemorrhoids prolapse upon defecations and must be reduced manually.
- **Grade IV**: The hemorrhoids prolapse and can’t be reduced manually.
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Treatment of Bleeding Hemorrhoids

- Conservative ⇒ Fiber Supplement
  ⇒ Hydroxyethylrutoside (Daflo)
- Office based procedures:
  - Banding ⇒ endoscopic suction ligator
    ⇒ wall suction ligator or forceps
  - Sclerotherapy ⇒ endoscopic injections of hemorrhoids appex
  - Infrared coagulations
Angiodysplasia

- 80% located in RT colon + cecum
- Two third of patients seen are over 70 years.
- 90% of hemorrhagic AD cease spontaneously
- Risk of overt rebleeding is 26%.
Endoscopic Treatment of GI Angio Dysplasia

- Argon plasma coagulations (APC)
  - Complication rate 1.7%
  - 1-year recurrence free survival 98%

  Kwom v et al, AJG 2006; 101: 58-63

- To decrease risk of perforation in proximal colon sub mucosal injection with saline solution is recommended.

  Suzuki N et al GIE 2006; 64 424-7
GIAD(2)

- Laser applications
  - High efficacy
  - High risk of perforation
- Cryotherapy
  - Need further evaluations
- Electrocoagulations
  - Monopolar coagulations
  - Bipolar coagulations
- Elastic band ligation
How Do We Manage Post Polypectomy Bleeding

Management of immediate bleeding (1.5-2.8%):

• Application of pressure by regrasping the pedicle with a snare
• Injection with epinephrine (preferably combined with other hemostatic techniques)
• Cautery with thermal probe, bipolar, or the tip of a polypectomy snare
• Hemoclips
  - Safe and effective
  - If position is difficult cap device help to apply clips.
• Loops or band ligation.
Post Polypectomy Bleeding

Management of delayed bleeding (2%) occurs few hours up to 30 days.

- Epinehrine injections
- Thermal therapy
- Hemoclips
- Loops or band ligation
Few hours after stabilization our patient developed 4 episodes of fresh blood per rectum + clots.

BP: 95/60  H/R: 105
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Thank You