Management of Acute Ulcer Bleeding

Matt Kutcher, MD FACS
University of Mississippi Medical Center

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

1

Objectives

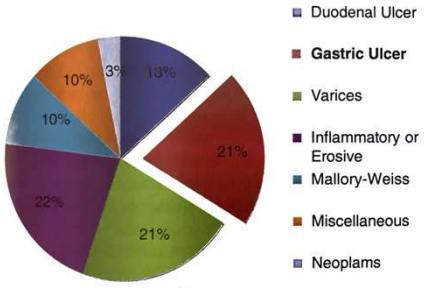
- Epidemiology
- Diagnosis and Resuscitation
- Management Options
- Algorithms
- Pitfalls

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

2

Epidemiology

- 'Peptic' ulcer: 33% (most common cause of UGIB)
- Case fatality rate: ~2.5%
  - 3-4x higher when hospitalized for another condition
  - Tachycardia, hypotension, age >60, comorbidities associated with mortality
- Most frequent causes:
  - NSAID use
  - H. pylori infection



Dimick JB, Upchurch GR, Sonnenday CJ. *Clinical Scenarios in Surgery.* Laine L. NEJM 2016;374:2367.

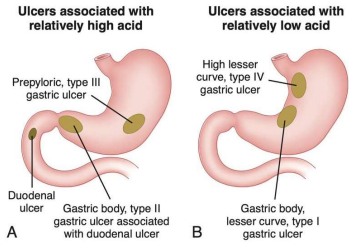
The University of Mississippi Medical Center

3

Modified Johnson Classification

Table 74-1. The Five Types of Gastric Ulcers by Location, Gastric Acid Secretory Status, Complications, and Incidence

TYPE	LOCATION	ACID HYPERSECRETION	COMPLICATIONS	INCIDENCE
I	Gastric body, lesser curvature	No	Bleeding uncommon	55%
II	Body of stomach + duodenal ulcer	Yes	Bleeding, perforation, obstruction	20%
III	Prepyloric	Yes	Bleeding, perforation	20%
IV	High on lesser curvature	No	Bleeding	<5%
V	Anywhere (medication induced)	No	Bleeding, perforation	<5%



Sabiston DC. *Textbook of surgery: The biologic basis of modern surgical practice.*

The University of Mississippi Medical Center

4

Diagnosis

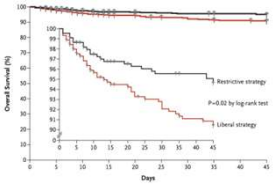
- Eyeball
- ET tube?
  - Hemodynamic stability
  - Response to resuscitation
- NG tube?
  - Red blood -> active (or very recent) bleeding
  - Coffee grounds -> bleeding that has stopped
  - Bile -> no bleeding (requires an open pylorus)
- Endoscope
  - Now? Soon?
  - You? Them?

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

5

Resuscitation: Blood Products

- YES: Restrictive transfusion goals[1]
  - Hgb threshold of 7 vs. 9 associated with lower rates of:
    - Death within 6 weeks (5 vs. 9%)
    - Rebleeding (10 vs. 16%)
    - Adverse events (40 vs. 48%)



- NO: Hemostatic resuscitation[2,3,4]
  - No benefit for high FFP:RBC or plt:RBC ratio transfusion

Group	PRBC		Plasma		Platelets	
	Odds ratio (95 % CI)	*p* value	Odds ratio (95 % CI)	*p* value	Odds ratio (95 % CI)	*p* value
Total group						
Risk of re-endoscopy	1.08 (1.06–1.09)	2.00×10^{-16}	0.99 (0.96–1.02)	0.59	0.93 (0.87–0.98)	0.02
Risk of surgery	1.05 (1.03–1.07)	7.94×10^{-8}	1.05 (1.02–1.08)	0.002	0.96 (0.87–1.03)	0.4
Risk of 30-day mortality	1.04 (1.01–1.06)	2.68×10^{-6}	1.04 (1.02–1.07)	0.001	1.02 (0.97–1.08)	0.37

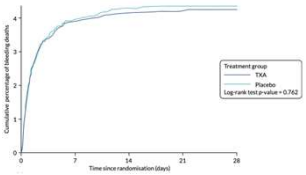
[1]Villanueva C et al. NEJM 2013;368:11.
[2]Etchill EW et al. Crit Care Med 2017;45:1311.
[3]Fabricius R et al. World J Surg 2016;40:1129.
[4]Subramanian K et al. Transfusion 2016;56:816.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

6

Resuscitation: Hemostatic Adjuncts

- YES: Targeted anticoagulant reversal
- NO: Empiric TXA[1]
  - TXA treatment associated with:
    - No difference in mortality
    - Increased DVT/PE (0.8 vs. 0.4%), seizure (0.6 vs. 0.4%) risks



- NO: 'Antiplatelet reversal'[2]
  - Empiric platelet transfusions associated with:
    - No change in rebleeding risk; higher mortality (OR 5.57)

[1]Roberts I et al. Health Technol Assessment 2021;25(58).
[2]Zakko L et al. Clin Gastroenterol Hepatol 2017;15:46.

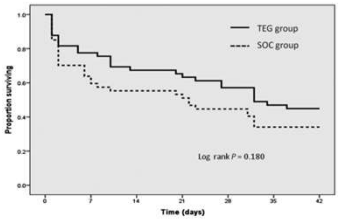
THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

7

Resuscitation: Hemostatic Adjuncts

- MAYBE: Thromboelastography (for cirrhotics)[3]
  - Reduction in transfusions in cirrhotic patients with coagulopathy (INR >1.8 and/or platelet count <50)

Variable	TEG Group (n = 49)	SOC Group (n = 47)	*P* Value
Total amount of FFP infused (mL)	20,860	40,300	< 0.001
FFP (mL) infused/patient	440 (0-1,320)	880 (0-1,640)	< 0.001
Total amount of platelet pools infused (U)	26	71	< 0.001
Platelet pools (U) infused/patient	1 (0-1)	2 (0-3)	< 0.001
Total amount of cryoprecipitate infused (U)	278	814	< 0.001
Cryoprecipitate (U) infused/patient	4 (0-24)	16 (4-36)	< 0.001



[1]Kumar M et al. Hepatol 2020;71:235.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

8

Resuscitation: Medications

- SURE, WHY NOT: Proton pump inhibitors[1]
  - No good evidence that high-dose is better than standard
  - Does: reduce rebleeding (OR 0.81) and need for endoscopic intervention (OR 0.68)
  - Does not: reduce mortality or need for surgery
- YES: Erythromycin 250mg IV x1[2]
  - Improved endoscopic visualization (OR 3.43), reduced need for repeat endoscopy (OR 0.47), fewer RBC units transfused

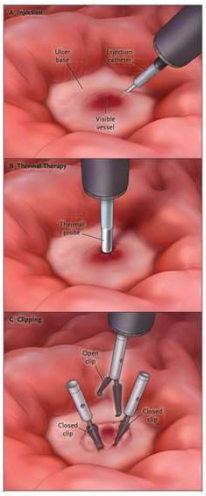
[1]Kanno T et al. Cochrane Database 2022;1:CD005415.
[2]Theivanayagam S et al. Saudi J Gastroenterol 2013;19:205.

The University of Mississippi Medical Center

9

Management: Endoscopy

- Timing:
  - Within 24h if stable
  - Within 12h if high-risk
- Diagnostic
  - 95% source identification
- Therapeutic
  - 90% success at initial hemostasis
  - Options:
    - Injection (dilute epinephrine)
    - Thermal ablation
    - Clipping (through- vs. over-the-scope)

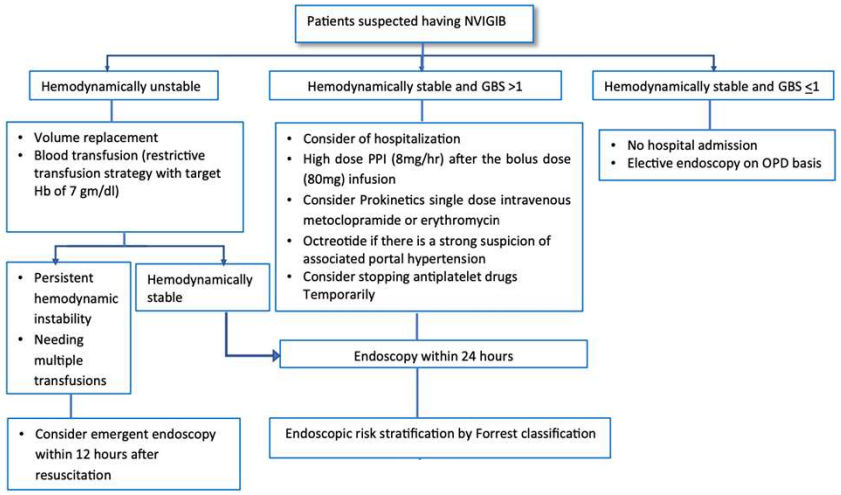


Dimick JB, Upchurch GR, Sonnenday CJ. *Clinical Scenarios in Surgery*. Laine L. NEJM 2016;374:2367.

The University of Mississippi Medical Center

10

Endoscopic Algorithm (Part 1/2)



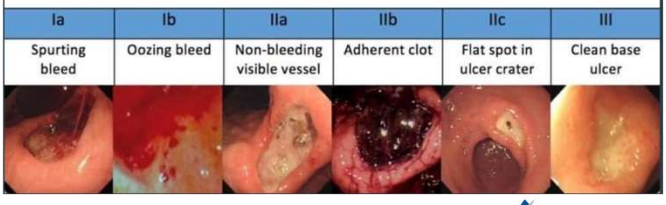
Kate V et al. J Gastroenterol Surg 2022;26:932.

The University of Mississippi Medical Center

11

Management: Endoscopy

Forrest Classification		
Stage	**Characteristics**	**Re-bleeding**
Ia	Spurting Bleed	60 - 100 %
Ib	Oozing Bleed	50%
IIa	Non-Bleeding Visible Vessel	40 - 50 %
IIb	Adherent Clot	20 - 30 %
IIc	Flat Spot in ulcer crater	7 - 10 %
III	Clean Base Ulcer	3 -5 %

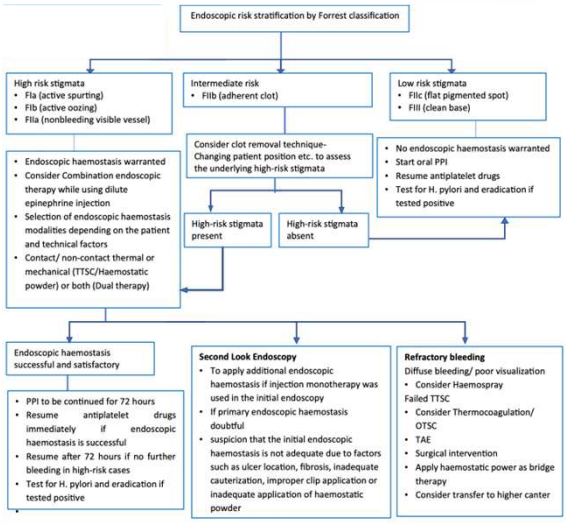


Alzoubaidi D et al. Frontline Gastroenterol 2019;10:35.

The University of Mississippi Medical Center

12

Endoscopic Algorithm (Part 2/2)



- Rebleeding:
  - 11% within 30d
    - 66% within 3d
    - 44% after 3d
    - 24% after 7d

Kate V et al. J Gastroenterol Surg 2022;26:932.
Laine L. NEJM 2016;374:2367.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

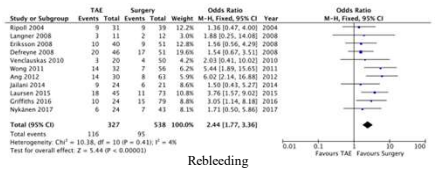
13

Refractory Bleeding: Angioembolization

- No randomized trials of AE vs. surgery
- Meta-analysis 13 studies:
  - Trend towards lower mortality (OR 0.77) and fewer complications (OR 0.45) vs. surgery

Mortality

  - Higher rate of re-bleeding (OR 2.44) and need for re-intervention (OR 2.13) compared to surgery



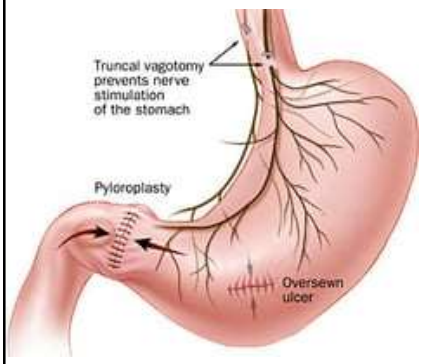
Rebleeding

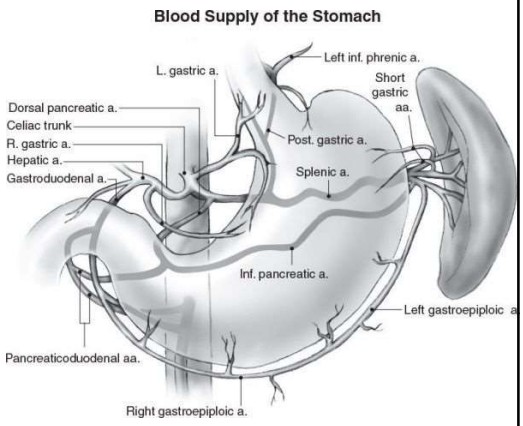
Tarasconi A et al. World J Emerg Surg 2019;14:3.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

14

Refractory Bleeding: Surgery

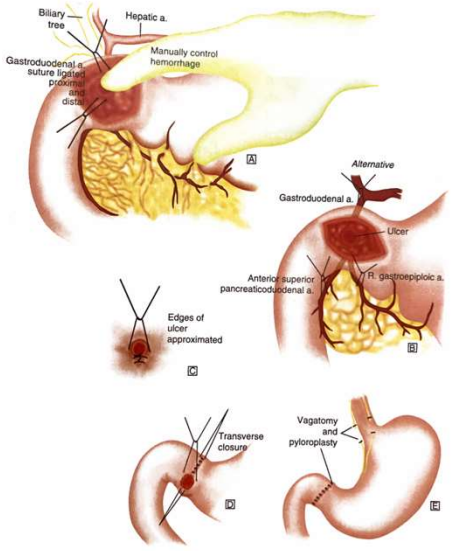


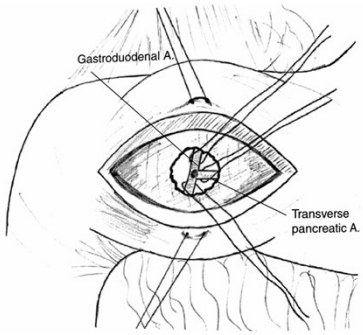


THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

15

Refractory Bleeding: Surgery



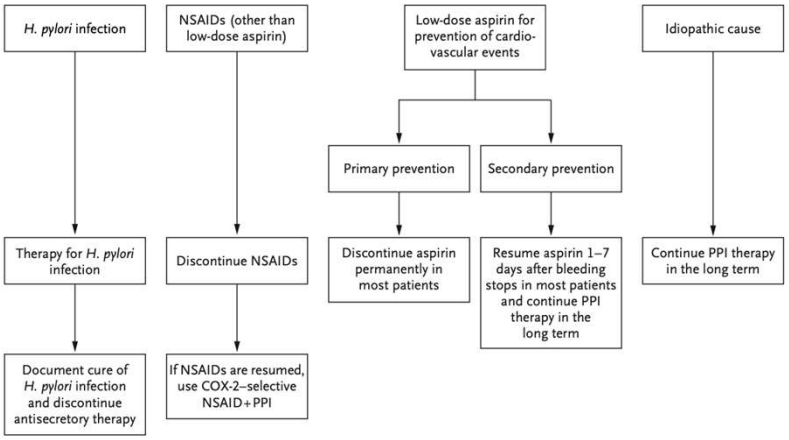


Dimick JB, Upchurch GR, Sonnenday CJ. *Clinical Scenarios in Surgery*.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

16

Long-Term Treatment



Laine L. NEJM 2016;374:2367.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

17

Key Points & Pitfalls

- Resuscitation is important.
- Don't operate on esophageal varices.
- Be present for (or do your own) endoscopy.
- Acid suppression can usually be done medically.

THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

18

Thank You

19