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Dynamic Practice Guidelines for Emergency General Surgery

Committee on Acute Care Surgery, Canadian Association of General Surgeons

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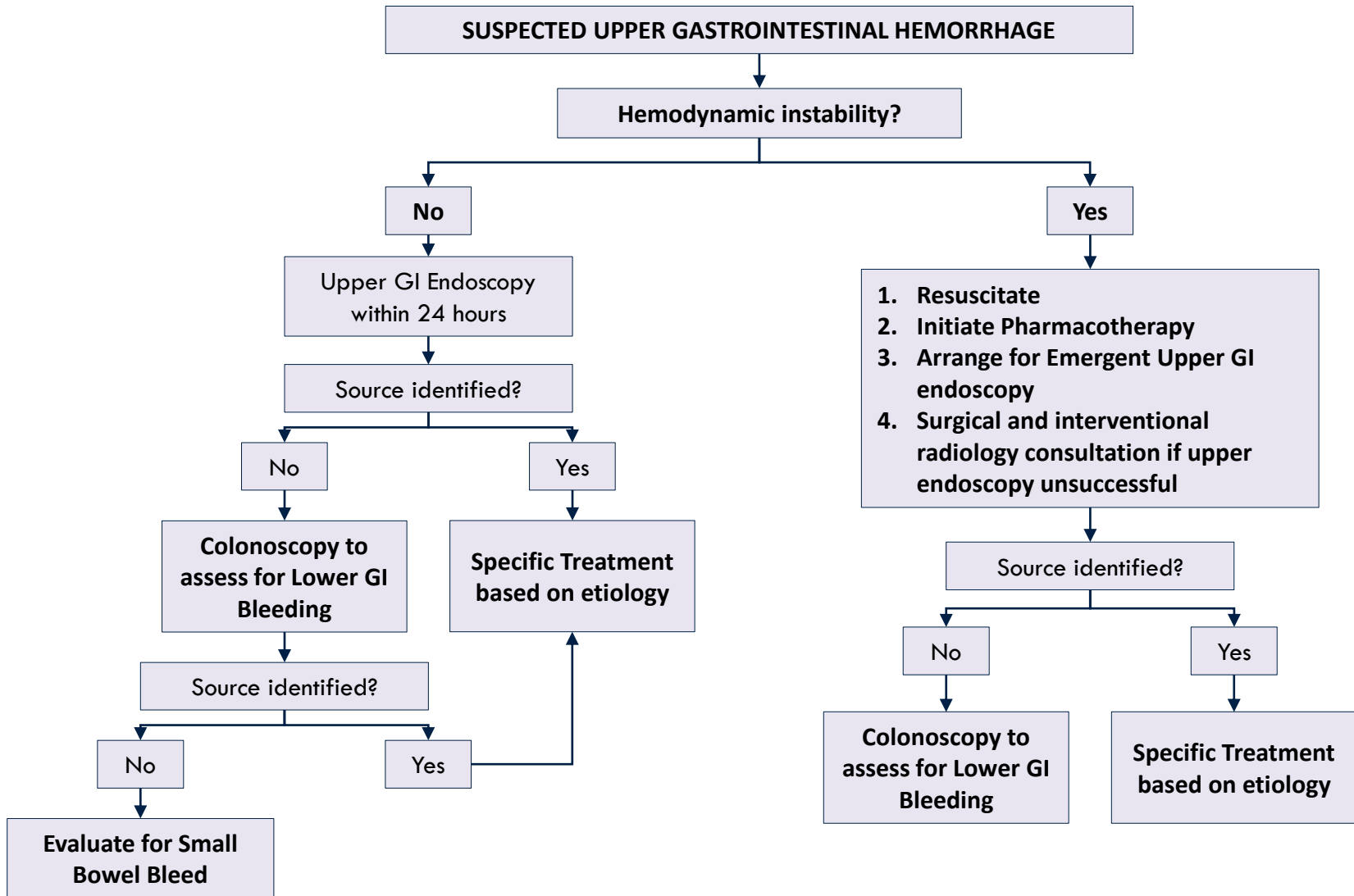
UPPER GASTROINTESTINAL HEMORRHAGE

Dynamic Practice Guidelines for Emergency General Surgery

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UPPER GASTROINTESTINAL HEMORRHAGE



Overview:

- Defined as bleeding from a source proximal to the ligament of Treitz
 - Most common cause: Peptic ulcer disease (H. pylori \pm NSAID related)
 - Other causes include:
 - Esophagogastric varices
 - Arteriovenous malformation
 - Tumor
 - Esophageal (Mallory-Weiss) tear
 - Vascular enteric fistula (uncommon but important to consider)
 - Spectrum from slow intermittent bleed to brisk life threatening hemorrhage
 - General surgeons tend to manage the more life threatening bleeds
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Risk Assessment:

- Risk assessment/scoring tools can be used to predict re-bleed rate and mortality (more useful for hemodynamically stable patients)
- Glasgow-Blatchford, Rockall and Addenbrooke scores incorporate biochemistry, patient co-morbidities and endoscopic findings
 - Helpful in determining who needs endoscopy or admission
- Essentially, the following are associated with increased risk of re-bleeding and mortality:
 - Tachycardia (heart rate >100 bpm)
 - Hypotension (blood pressure <100 mmHg)
 - Age >60
 - Significant co-morbidities
 - Active bleeding/visible vessel on endoscopy

Resuscitation

- Early consultation with intensive care is prudent
- Hemodynamically unstable patients should be resuscitated in a monitored setting
- Airway often needs to be definitively controlled
- Transfuse blood, platelets and clotting factors as per local massive transfusion protocols. A level one infuser can be used to warm and rapidly administer blood products
- Target hemoglobin of 70 – 90g/L*
- Correct all coagulopathies (including low fibrinogen) – should not delay endoscopy however
- Other: IV erythromycin (prokinetic) and IV proton pump inhibitor for patients with active nonvariceal upper gastrointestinal hemorrhage

Variceal Bleed

- Prophylactic antibiotics (Ceftriaxone or a Fluoroquinolone) should be offered to known cirrhotics.
 - Somatostatin or analogues are given to cause splanchnic vasoconstriction.
 - Vasopressin is generally not used as a splanchnic vasoconstrictor due to its significant systemic side effects – synthetic analogue, terlipressin, can be used as it has longer biologic activity and fewer side effects.
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Endoscopy

- Should be performed immediately after, or even during resuscitation in any hemodynamically unstable patient with massive upper gastrointestinal bleeding.
- Otherwise, should be performed within 24 hours of admission for any acute upper gastrointestinal bleed.
- Endoscopic treatment modalities include injection/spray (adrenaline, thrombin), thermal (electrocautery) and mechanical (clips, bands).
- Ideally the surgeon will be present during endoscopy if not the primary operator in order ascertain the etiology and location of the bleed, while in addition expediting transfer to the operating theatre is case of endoscopic failure .

Endoscopy

- Endoscopic therapy should be offered if actively bleeding vessel, non bleeding visible vessel and/or adherent clot are seen. Adherent clots are removed in order to determine and manage the source of bleeding.
 - Combination therapy with adrenaline is superior to adrenaline alone for nonvariceal upper gastrointestinal bleeding.
 - Endoscopic variceal ligation is superior to sclerotherapy for variceal bleeding. May attempt injection of N-butyl-2-cyanoacrylate for gastric varices.
 - Endoscopic variceal ligation in combination with pharmacotherapy is superior to ligation alone
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Forrest Classification and Risk of Re-Bleeding

Grade	Endoscopic Picture	Risk of Re-bleed
<i>I: Active Bleeding</i>		
Ia	Spurting	90%
Ib	Oozing without visible vessel	10%
<i>II: Signs of Recent Bleed</i>		
IIa	Non-bleeding visible vessel	50%
IIb	Adherent clot	25-30%
IIc	Hematin covered flat spot	7-10%
<i>III: No Bleed</i>	Clean based ulcer	3-5%

Endoscopic Findings

Stigmata of recent hemorrhage and average rates (with ranges) of further bleeding, surgery, and mortality in prospective trials without endoscopic therapy

Stigmata	Further Bleeding (N=2,994)	Surgery for Bleeding (N=1,499)	Mortality (N=1,387)
Active Bleeding	55% (17-100%)	35% (20-69%)	11% (0-23%)
Non-bleeding Visible Vessel	43% (0-81%)	34% (0-56%)	11% (0-21%)
Adherent Clot	22% (14-36%)	10% (5-12%)	7% (0-10%)
Flat Pigmented Spot	10% (0-13%)	6% (0-10%)	3% (0-10%)
Clean Ulcer Base	5% (0-10%)	0.5% (0-3%)	2% (0-3%)

Post-Endoscopy Management

Non-Variceal Bleed

- Should be treated with IV PPI bolus (Pantoprazole 80mg) followed by continuous infusion (8mg/h for 72 hours).

Variceal Bleed

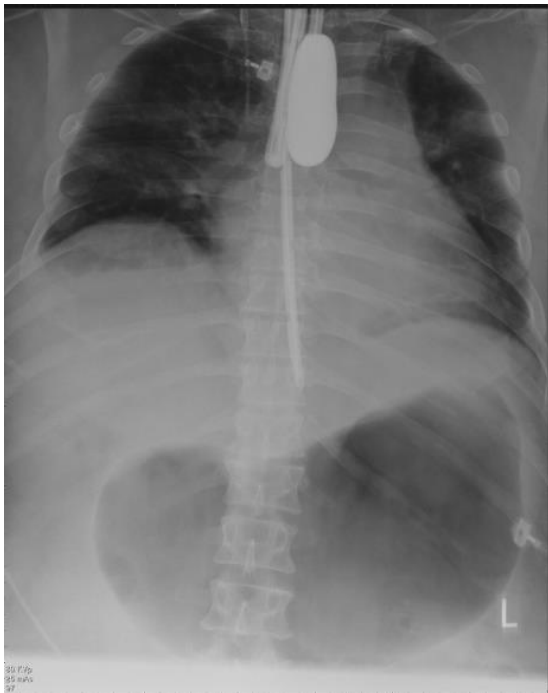
- Should receive octreotide 50ug IV bolus followed by infusion (50ug/h) for 3 – 5 days.
 - Should continue prophylactic antibiotics.
 - Balloon tamponade can be used as a temporizing measure
 - Tracheal intubation is required.
 - Must confirm balloon is in the proper place before inflating in order to avoid esophageal rupture.
 - Consider transjugular intrahepatic portosystemic shunt (TIPS) if bleeding not controlled endoscopically.
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UPPER GI HEMORRHAGE

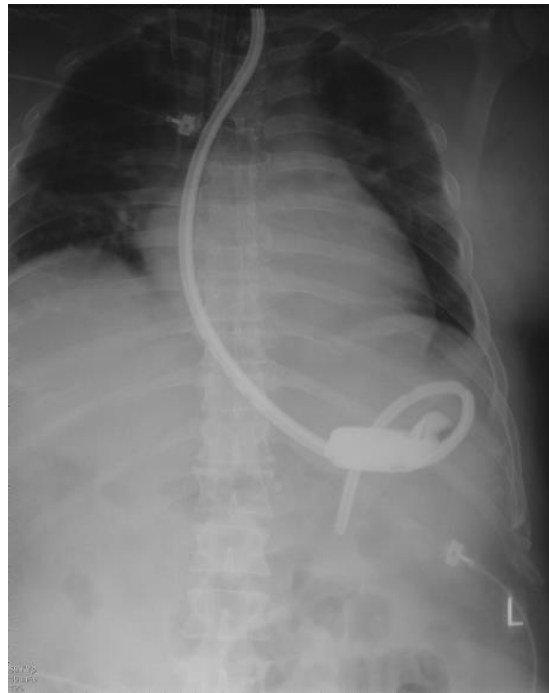
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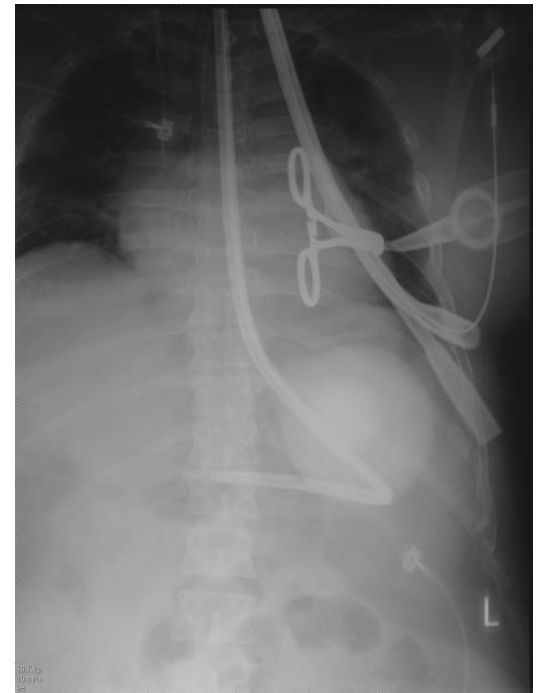
Article providing instructions for balloon tamponade insertion



Blakemore Tube



Linton Tube



**Linton Tube
inflated in stomach**

Images courtesy of Dr. P Engels

Endoscopic Failure or Re-Bleed

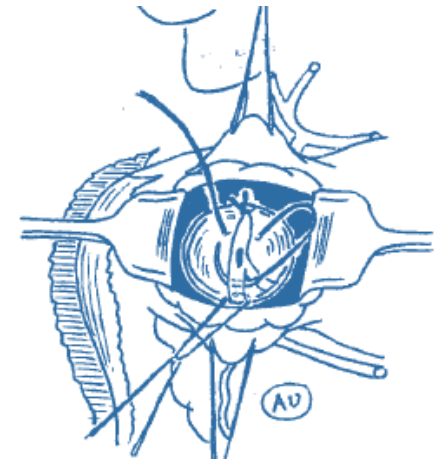
- Routine repeat endoscopy is not recommended.
 - Repeat endoscopy should be performed if evidence of recurrent bleeding.
 - Surgery should be offered when nonvariceal bleeding cannot be controlled after endoscopy (maximum 2 endoscopies).
 - Interventional radiology *may* be offered if readily available and if patient has “hostile” abdomen or significant medical comorbidities.
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Surgery for Non-Variceal Bleed

- Surgical tenants for upper gastrointestinal hemorrhage now suggest performing “minimal” surgery to confirm diagnosis and control the bleeding (suture ligation or wedge resection).
 - Preferred operative approach depends on location of the bleed.
 - “Definitive” ulcer surgery is rarely done in emergent settings given medical treatment of *H. pylori* and acid suppression with proton pump inhibitors.
 - Anatomic resection is generally reserved for bleeding neoplasms; however the physiologic status of the patient will determine the extent of the operation in such instances, and again “minimal” surgical interventions may be required
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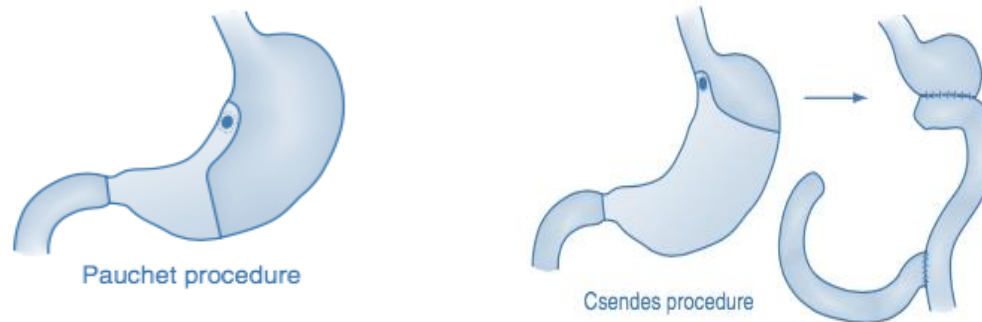
Surgery for Duodenal Ulcer Bleed

- After mobilization, the duodenum is opened longitudinally (not necessary to go through the pylorus as vagotomy is rarely performed).
- Non absorbable suture on stout needle is used to ligate gastroduodenal artery (e.g. 2-0 Ethibond on MO-6 needle) with figure of eights in classic 2 or 3 point fixation.
- Duodenum can be closed in single layer (not necessary to close transversely)



Surgery for Gastric Ulcer Bleed

- Best treated with wedge resection due to potential malignancy (5%).
- Proximal lesser curve or gastroesophageal (GE) junction ulcers are more problematic as wedge resection may not be feasible – compromise GE junction and higher leak rate.
- They may be controlled with direct suture ligation after gastrotomy or Pauchet or Csendes procedure.



Summary

- Hemodynamically unstable patients have higher likelihood of operative intervention.
 - Management of upper gastrointestinal bleeding requires a dedicated multidisciplinary approach.
 - Vast majority of bleeds can be controlled with endoscopy and surgery has shifted from “definitive” ulcer surgery to direct control of bleed.
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Additional Resources

International Practice Guidelines

1. Laine L, Jensen DM. Management of patients with ulcer bleeding. *Am J Gastroenterol* 2012;107:345-60.
 2. Gralnek IM, Dumonceau JM, Kuipers EJ, et al. Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. *Endoscopy* 2015;47(10):a1-46
 3. Barkun AN, Bardou M, Kuipers EJ, et al. International consensus recommendations on the management of patients with nonvariceal upper gastrointestinal bleeding. *Ann Intern Med* 2010;152:101-13.
 4. National Institute for Health and Clinical Excellence. Acute upper gastrointestinal bleeding: management. London: National Clinical Guideline Centre at the Royal College of Physicians, 2012.
 5. Garcia-Tsao G, Sanyal AJ, Grace ND et al. Prevention and management of gastroesophageal varices and variceal hemorrhage in cirrhosis. *Am J Gastroenterol* 2007;102:2086-2102.
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