

Emergency Surgery Board
Department of General Surgery
Rambam Health Care Campus

Surgical Complications of Peptic Ulcer Disease
Bleeding

Case Presentation and Review of the Literature



Case Presentation

- 78y male
- Chief complaint – chest pain along with melena
- PMH –
 - HTN
 - IHD
 - CRF
 - PVD, S/P recent BKA
- PSH – Hemicolectomy, Due to colon cancer oncological status unknown
- Family history – Unremarkable
- Medications – Cartia, Cadex, Normiten, Fusid, Lipitor
- Allergies – None

Case Presentation

- Complaints – chest pain along with melena
 - 1 month prior to current admission underwent BKA
 - During the admission Diagnosed with NSTEMI
 - Shortly thereafter passed melena NGT showed moderate amount of fresh blood
 - Hemodynamically stable
 - HB 5.8, PLT 164000
 - INR 1.18, PT PTT WNL
 - Cr 3.5 (baseline)

Differential Diagnosis?

- Stress gastritis
- Peptic Ulcer Disease
- Delafuoy Lesion
- Esophageal/ gastric varices

Next step?

 Gastroscopy

 Colonoscopy

 Angiography

 Operation

 Observation

Upper GI bleeding:

- The Best tool localize and treat Upper GI bleeding is EGD
- Only 1-2% of patients with upper GI bleeding the source cannot be identified
- Timing of:
 - Gastroscopy
 - PPIs
- Need for:
 - Lavage
 - Prokinetics
 - PPIs

Upper GI bleeding – Timing

- Early upper endoscopy (within 24 hours of presentation) is recommended in most patients as it confirms the dx and allows for targeted endoscopic treatment, including epinephrine injection, thermocoagulation, application of clips, and banding
- Early endoscopy (within 24 hours) for non-variceal UGIB has been shown in a systemic metaanalysis to reduce the length of hospitalization, costs, transfusion requirements, and lead to a better patient outcomes

¹Wilkins T, Khan N, Nabh A, Schade RR Department of Family Medicine, Georgia Health Sciences University, Augusta, GA 2012 Mar

²Loperfido S, Baldo V, Piovesana E, Bellina L, Rossi K, Groppo M, *et al.* Changing trends in acute upper-GI bleeding: A population-based study. *Gastrointest Endosc* 2009;70:212-24.

³Van Leerdaam ME. Epidemiology of acute upper gastrointestinal bleeding. *Best Pract Res Clin Gastroenterol* 2008

Upper GI Bleeding – PPIs

- PPI treatment initiated prior to endoscopy in UGI bleeding significantly reduces the proportion of patients with stigmata of recent hemorrhage at index endoscopy but does not reduce mortality, re-bleeding or the need for surgery.
- High-dose infusion PPI is believed to promote clot stability, facilitating homeostasis by raising the intragastric pH

¹GI Leontiadis, A Sreedharan, S Dorward, P Barton, B Delaney, CW Howden, M Orhewere, J Gisbert, VK Sharma, A Rostom, P Moayyedi and D Forman. Department of Gastroenterology, Queen Elizabeth Hospital, Tyne and Wear, UK. 2007

²Gastroenterology, Department of General Medicine, Khoo Teck Puat Hospital, Singapore Review article 2011

Upper GI bleeding – Gastric Lavage

- Large volume gastric lavage prior to esophagogastroduodenoscopy for acute upper gastrointestinal bleeding is safe and provides better visualization of the gastric fundus.
- The quality of visualization was not significantly different between groups for the esophagus, gastric antrum, or duodenum.
- There was no significant difference between groups for ability to define a bleeding source, achieve hemostasis, recurrent bleeding, need for repeat endoscopy

Upper GI bleeding – Prokinetics

- ✿ It is helpful in patients who have large amounts of blood clots in their stomach
- ✿ It is also useful in patients who have recently consumed food and require urgent endoscopy.
- ✿ Prokinetic therapy should be used only when indicated and not routinely
- ✿ Drugs such as intravenous metoclopramide or erythromycin may be administered it reduces the need for a second look endoscopy but not the other relevant outcome

Upper GI bleeding – Forrest Classification

Acute hemorrhage

Forrest I a - Spurting hemorrhage

Forrest I b - Oozing hemorrhage

Signs of recent hemorrhage

Forrest II a - Visible vessel

Forrest II b - Adherent clot

Forrest II c - Hematin on ulcer base

Lesions without active bleeding

Forrest III - Lesions without signs of recent hemorrhage

Case Presentation

- Started on high dose IV losec, 2 FFP, 2 PC .
- Gastrosocopy: Gastric ulcer with hemorrhage
Haemostatic clip placement x 2 on visible vessel.
(Forrest Ib)
- HGB 9.9
- Stable hemodynamically.

Upper GI bleeding – Endoscopic Therapy

- Endoscopic therapy is advocated in lesions which present with active bleeding (spurting or oozing), nonbleeding visible vessels, or adherent clots.
- These lesions carry a higher risk of rebleeding as compared with an ulcer with a hematin spot
- When an adherent clot is seen, it is advisable to inject epinephrine at 4 quadrants around the clot before removing it
- Clean base ulcers and ulcers with a flat red spot or necrotic base do not require endoscopic therapy, very low risk of rebleeding.
Treat with medical therapy alone

Epinephrine Injection

- A useful but temporary method to induce homeostasis for both arterial and venous bleeding
- Meta-analysis of randomized controlled trials has shown clearly that when epinephrine injection therapy is combined with a second haemostatic modality, the rebleeding, emergency surgery, and mortality rates are reduced
- It is recommended to combine epinephrine injection therapy together another haemostatic method
- This is performed in 4 quadrants. A response is indicated by temporary cessation of bleeding and accompanied with blanching of the surrounding mucosa into a pale whitish-red color
- The endoscopist should not inject epinephrine directly into a vessel or bleeding point, as this may cumulate in sudden tachycardia, hypertension, and a restless patient.

Endoscopic Clipping

- Useful and safe method of homeostasis
- The targeted vessel should always be visible
- Endoscopic clipping has been shown to be superior to epinephrine injection alone in treating nonvariceal upper gastrointestinal bleeding
- However, endoscopic clipping is neither superior nor inferior to thermal therapy in terms of rebleeding, surgical rates, or mortality

Thermal & Argon Therapy

Thermal

✿ Thermal therapy is particularly useful in treating lesions with oozing edges without a visible vessel.

Argon plasma coagulation

✿ Does not require tissue contact. Argon plasma coagulation causes tissue coagulation when electricity is conducted across argon gas emitted by the catheter

✿ Tissue damage is up to a depth of 2 to 3 mm only

✿ Argon plasma coagulation is useful for lesions which ooze, such as oozing from a raw surface of a gastric tumor, oozing from edges of ulcers or vascular lesions such as angiodysplasia or gastric antral vascular ectasia

✿ Argon plasma coagulation is also useful for homeostasis in areas where the gastrointestinal wall layer is thin, such as in the small bowel and colon

✿ cautious in patients with an implantable cardio-defibrillator or pacemaker.

Next step?

- Second gastroscopy
- Colonoscopy
- Angiography
- Definitive operation
- Continue medication (losec, anti H.Pylori)

Role of Second look EGD

- ¹There usually no need for a second look endoscopy
- ²But in the absence of high dose PPIs and and in patients at very high risk (active bleeding) second look endoscopy appears effective in changing the odds for a re-bleeding.
- In the era of diffuse use of PPIs the role of second look endoscopy is unclear

¹Barkun AN, Bardou M, Kuipers EJ, Sung J, Hunt RH, Martel M, *et al*. International Consensus Upper Gastrointestinal Bleeding Conference Group. International consensus recommendations on the management of patients with nonvariceal upper gastrointestinal bleeding. *Ann Intern Med* 2010

²Ouali SE, Barkun AN, Wyse J, Romagnuolo J, Sung JJ, Gralnek IM, Bardou M, Martel M. Is routine second-look endoscopy effective after endoscopic hemostasis in acute peptic ulcer bleeding? A meta-analysis. *Gastrointest Endosc.* 2012 Aug;76(2):283-92. Epub 2012 Jun 12.

PPIs

- The infusion is continued for 72 hours before it is converted to an oral formulation, which showed that patients receiving PPI had lower rebleeding rates, transfusion requirements, and hospitalization stay after endoscopic therapy
- High-risk lesions take 72 hours to become low-risk lesion
- In addition, the risk of rebleeding is highest in the first 72 hours. Therefore, if a patient has another episode of rebleeding, PPI infusion should not be stopped after the initial 72 hours

¹Hsu PI, Lin XZ, Chan SH, Lin CY, Chang TT, Shin JS, *et al.* Bleeding peptic ulcer-risk factors for rebleeding and sequential changes in endoscopic findings. *Gut* 1994

²Lau JY, Sung JJ, Lee KK, Yung MY, Wong SK, Wu JC, *et al.* Effect of intravenous omeprazole on recurrent bleeding after endoscopic treatment of bleeding peptic ulcers. *N Engl J Med* 2000

Case Presentation

- Patient presents with re-bleeding 6 days after the index gastroscopy

Next step?

- Second gastroscopy
- Colonoscopy
- Angiography
- Operation
- Conservative Treatment

Role of second gastroscopy:

- In patients who rebleed after the initial endoscopy (10-20%), there is a role to repeat endoscopy again
- A second attempt at endoscopic homeostasis is successful in 75% of patients, although this will fail in 25% of patients who will then require emergent surgery, there does not appear to be any increase in morbidity or mortality with such management policy
- Patients with persistent hypotension or large ulcers greater than 2 cm are likely to fail repeat endoscopy and may benefit from surgery.

Case Presentation

- Gastroscopy - Gastric ulcer with rebleeding, adrenalin was injected
- Patient stayed stable hemodynamically
- But presented with re-bleeding shortly thereafter

Case Presentation

- Due to the recent AMI and the risk of re-bleeding, the caring team opted for angiography and embolization of the left gastric artery

Role of Angiography

- In patients who are deemed unfit for surgery, an alternative is percutaneous angiogram and selective embolization
- Was associated with in-hospital rebleeding in almost half of the patients
- Angiographic failure can be predicted if embolization is performed late, following blood transfusion of more than 6 units, or for rehemorrhage from a previously suture-ligated duodenal ulcer
- Complications of embolization include bowel ischemia, infarction of the stomach, liver, and spleen, and subsequent duodenal stenosis

Case Presentation

- Embolization faced technical difficulties
- The caring team decided to opt for surgery

Indications for surgery

-  Hemodynamic instability despite Vigorous resuscitation (>6 units transfused)
-  Failure of endoscopy
-  Recurrent hemorrhage after initial stabilization
-  Shock associated with recurrent hemorrhage
-  Continued slow bleeding with a transfusion requirement exceeding 3 units/day

Case Presentation

- The caring team opted for surgery
- Gastrotomy and wedge resection of the stomach including the two ulcers

Surgery:

- About 10% of patients with bleeding ulcers still require surgical intervention for effective homeostasis
- The first priority at operation is control of the hemorrhage
- Gastrotomy and suture ligation, which, if no other procedure is performed, is associated with about a 30% risk for re-bleeding

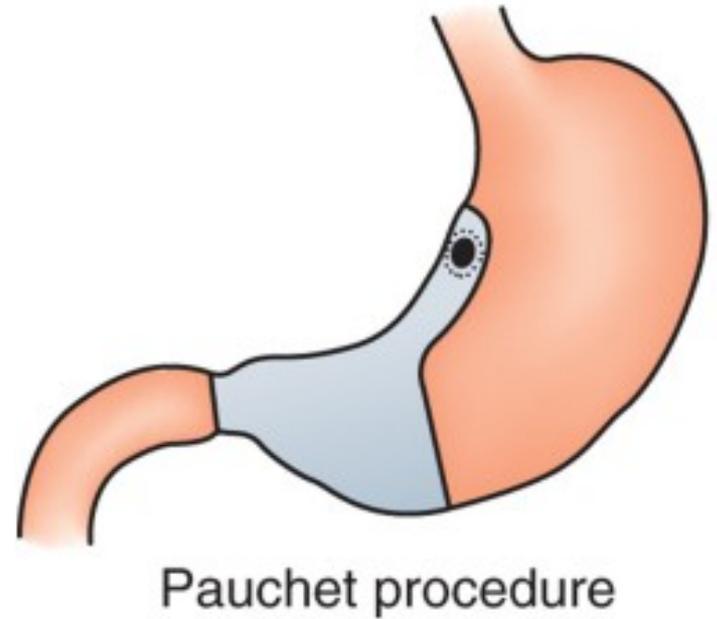
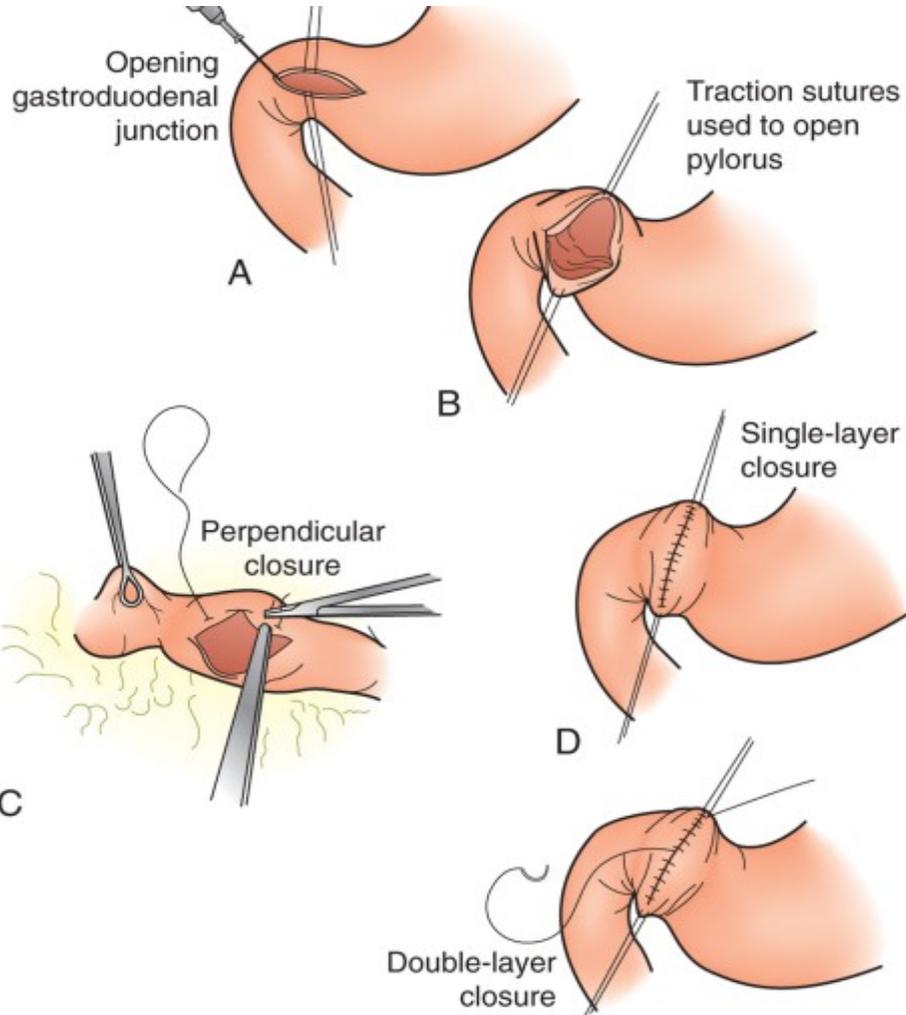
Surgery:

- Because of the approximate 10% incidence of malignancy, gastric ulcer resection is generally indicated
- Distal gastrectomy is generally preferred, although excision combined with vagotomy and pyloroplasty may be considered in the high-risk patient

Surgery – Other options

- Distal gastrectomy combined with resection of a tongue of proximal stomach to include the ulcer (Pouchet Procedure)
- Vagotomy and pyloroplasty combined with either wedge resection or simple oversewing of the ulcer.

Surgery :



Surgery:

