

Perforated Peptic Ulcer Disease



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A presentation by:

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“It’s your gut instincts that are causing your ulcers.”

Peptic ulcer

- A defect in the gastric or duodenal mucosa that extends through the **muscularis mucosa** into the deeper.

Conditions associated with peptic ulcer

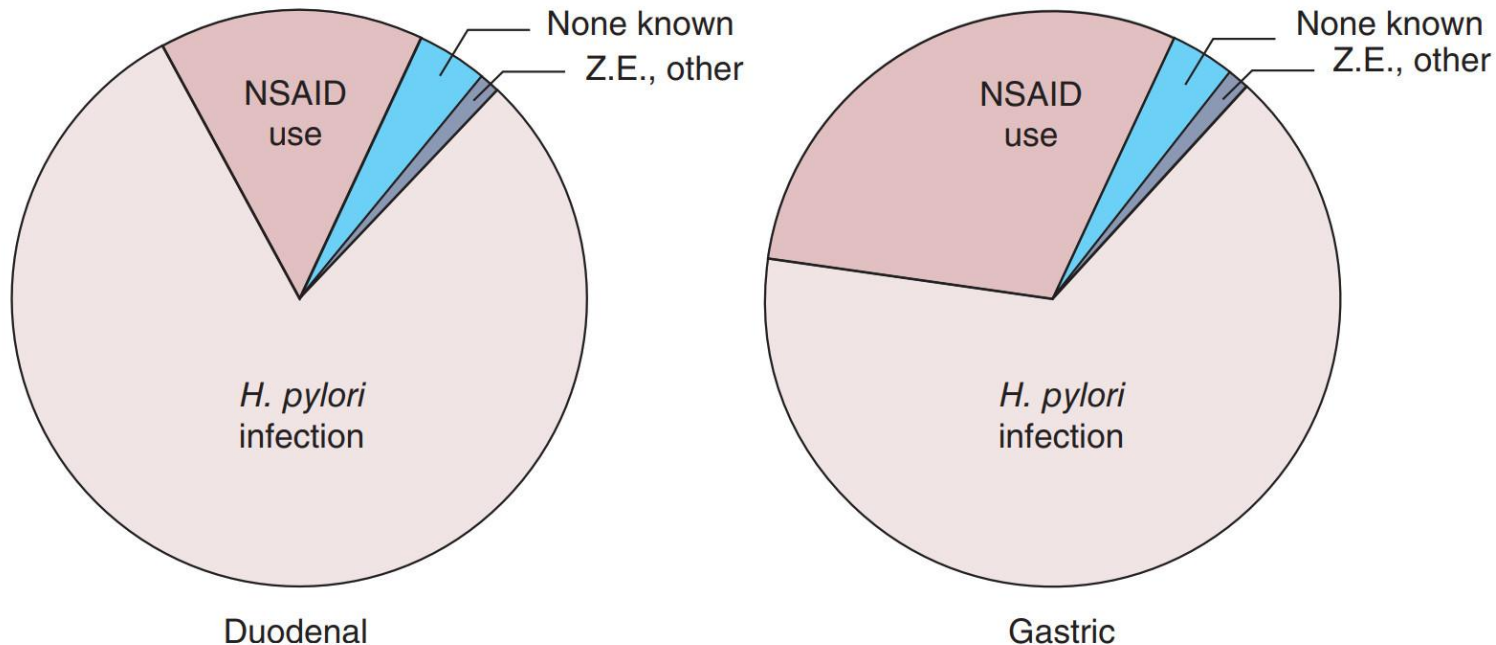


Figure 26-28. “Causes” of peptic ulcer disease. Z.E. = Zollinger-Ellison syndrome. (Data from Graham DY, Lew GM, Klein PD, et al. Effect of treatment of *Helicobacter pylori* infection on the long-term recurrence of gastric or duodenal ulcer. A randomized, controlled study, *Ann Intern Med.* 1992 May 1;116(9):705-708.)

Peptic ulcers

- **Duodenal ulcers:**

- Pain is Relieved by eating (hence patient may gain weight) and antacid
- Epigastric pain 2-5 hours after eating
- May awakens patient at night
- Rarely malignant in nature
- Vomiting is uncommon

- **Gastric ulcers:**

- Pain is exacerbated by eating (hence patient may lose weight)
- Not relieved by antacids
- Epigastric pain 2-5 hours after eating

- Malignancy must be inspected

Don't just count on you gut feeling

%70 asymptomatic (Elderly, Analgesics especially **NSAIDS**, Aspirin included, comorbidity)

- **More than half** of the complicated cases were **previously asymptomatic**

Clinical features of PUD

5 – 15% of western population

- | | |
|--------------------------|---|
| • Epigastric pain | Burning, ill-defined aching, hunger pain
2 – 3 h after meal relieved by antacid or food
Pain awakes patient from sleep (1 – 3 A.M.) |
| • Nausea | More common in GU |
| • Weight loss | More common in GU |
| • Asymptomatic | Seen in NSAID-induced ulcers |
| • Complications | Bleeding, perforation, obstruction
10% of patients present with complication |

It's complicated!

Complications include (in decreasing order of frequency):

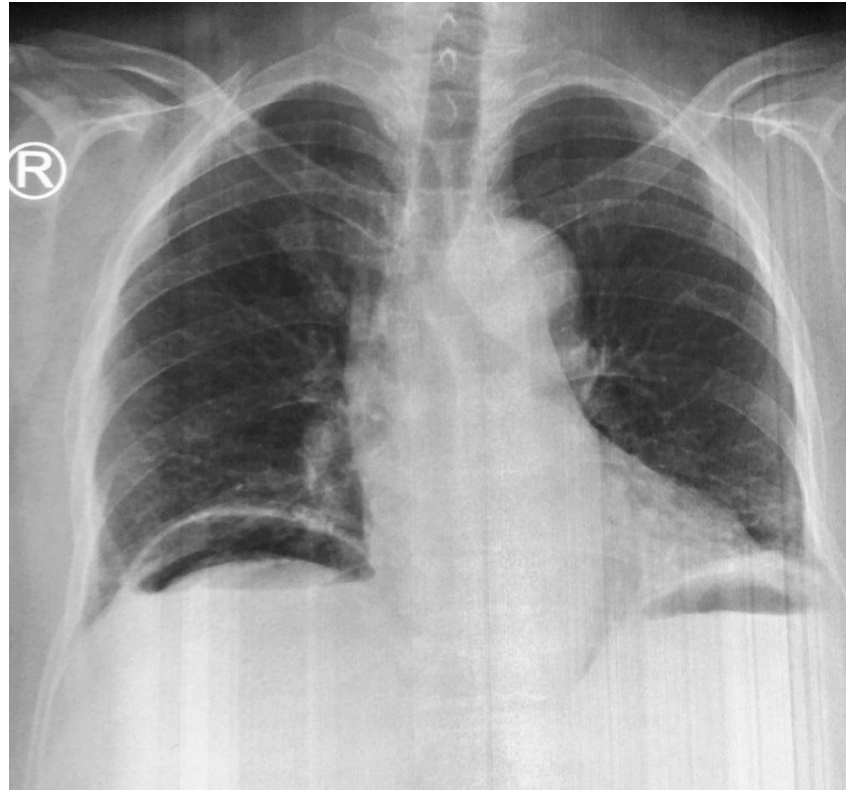
Hemorrhage (MCC of UGIB)

Melena/Hematochezia/
Hematemesis/shock



Perforation

Acute Abdomen



Obstruction

Nonbilious vomiting
Hypokalemic

Hypochloremic metabolic alkalosis.



Perforation

- Usually presents as an **Acute Abdomen**.
- Patient can often give the exact time of onset of the excruciating abdominal pain
- Initially, a chemical peritonitis
- **within hours** a **bacterial** peritonitis supervenes
- Patient in distress
- **Guarding** and **rebound tenderness** even with gentle examination.

Initial phase(within two hours of onset):

- Chemical Peritonitis
- **Sudden** onset of abdominal Pain
- may be **Epigastric** at first but quickly becomes **generalized**.
- may radiate to the top of the right shoulder or both shoulders.
- Severity depends upon how much fluid is released.
- Can be excruciating, may cause collapse or syncope.
- Abdominal rigidity begins to develop.

Second phase (usually 2 to 12 hours after onset)

- Pain may lessen
- **Worse upon movement**
- **Board-like rigidity** in abdomen
- **obliteration of liver dullness** to percussion due to Peritoneal air.

Third phase (usually >12 hours after onset)

- **Rise of Temperature**
- **Third-Spacing** of fluid into the inflamed peritoneum leading to:
 - Increasing **abdominal distention**
 - **Hypovolemia**, Cardiovascular collapse
- Pain, tenderness, and rigidity may be less evident at this stage.

Lesser pain is NOT necessarily a good sign!

- In Posterior (retroperitoneal) perforations, and walled-off perforations symptoms are less dramatic.
- Compared to free intraperitoneal perforations, the upper abdominal pain is more insidious, the presentation often delayed, and the abdominal examination is frequently equivocal.

Rapid diagnosis is essential

- Prognosis:
 - Excellent within the First six hours
 - Deteriorates with more than a 12-hour delay

Gastric ulcers have worse pr

metabolic acidosis, acute renal failure, or hypoalbuminemia

Acute abdomen?

Order **Chest X-Ray** & **Abdominal X-Ray** right away!

- **Upright chest X-ray** shows **free air** in about 80% of patient

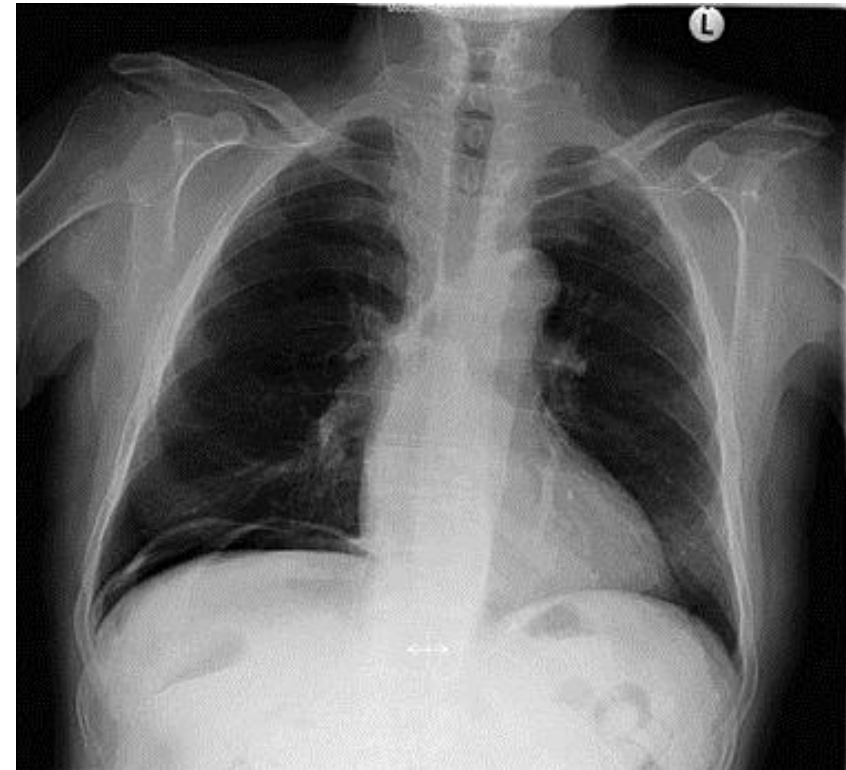
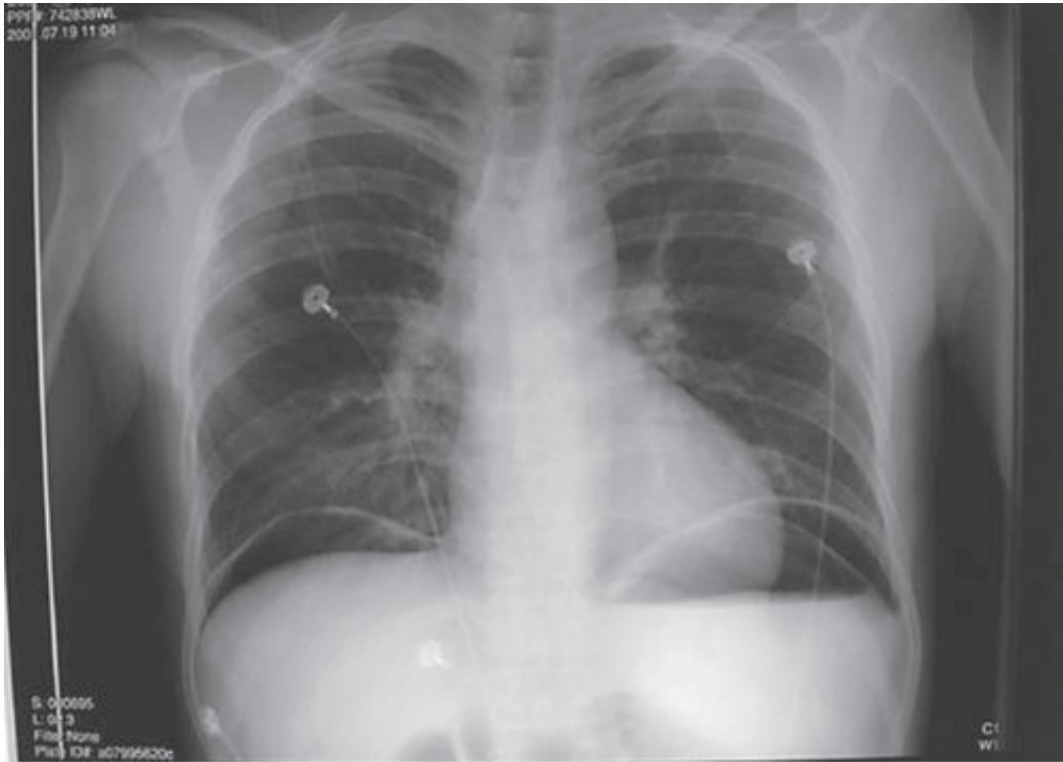



Figure 26-32. Pneumoperitoneum on upright chest X-ray in patient with perforated ulcer.

- 10 to 20 percent of patients with a perforated **duodenal** ulcer will not have free air
- Suspicious but CXR reveals no free air?  **CT-Scan with IV/Oral**
- Look for free air and fluid. In some cases only free fluid is seen



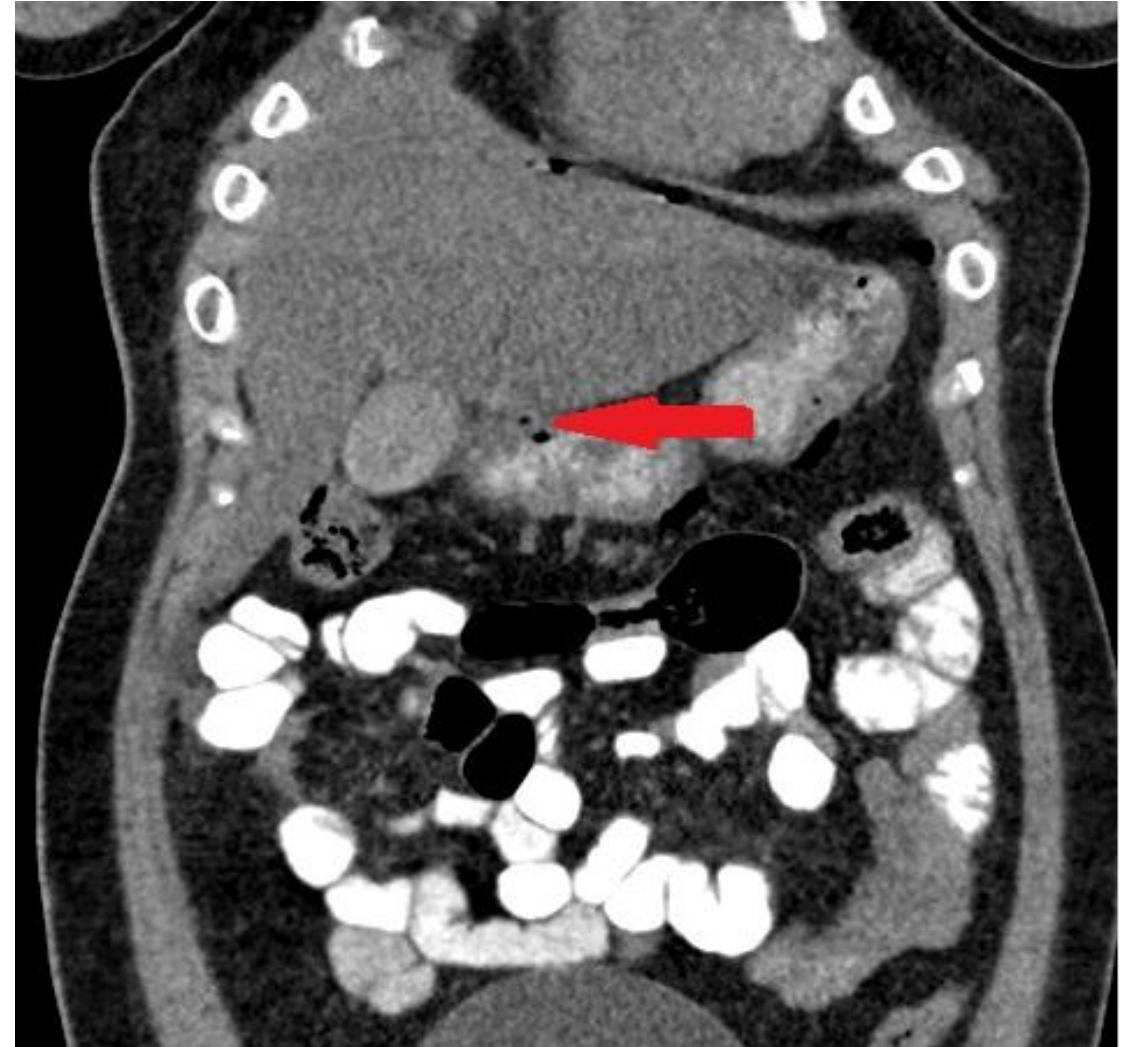
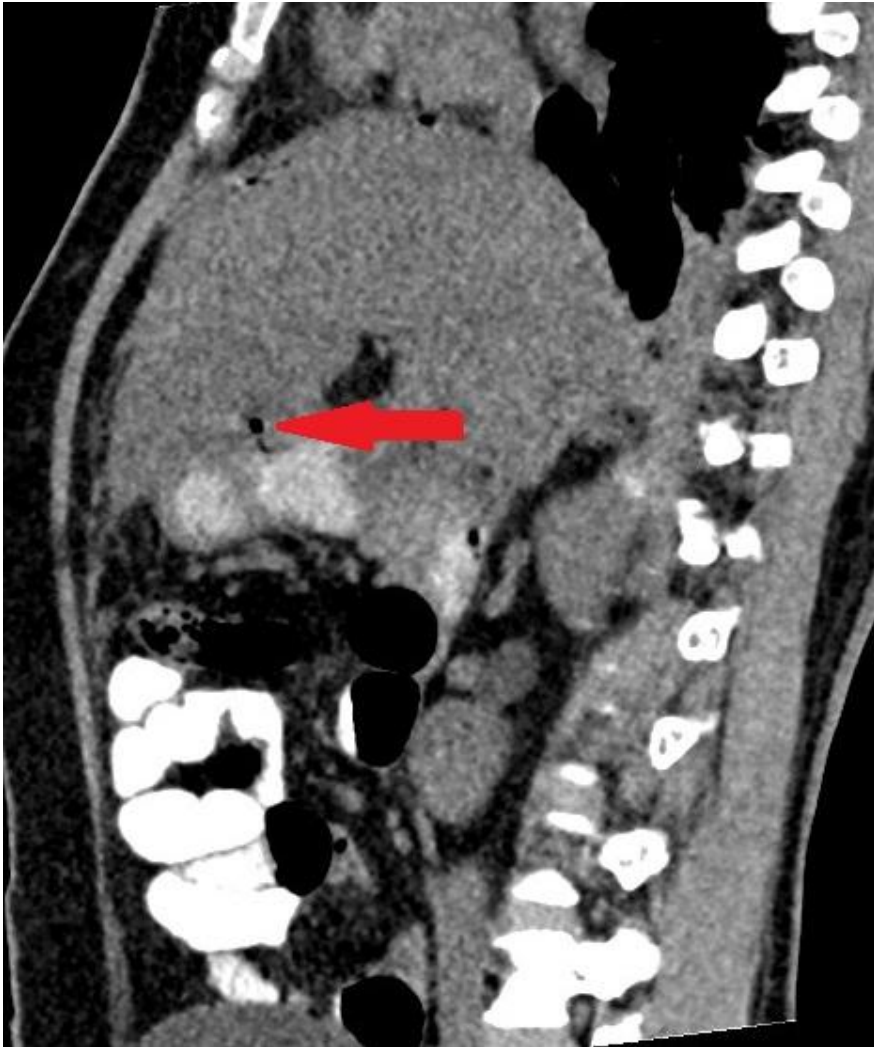
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W 370 : L 40



- A few percent of cases will have neither free air nor fluid



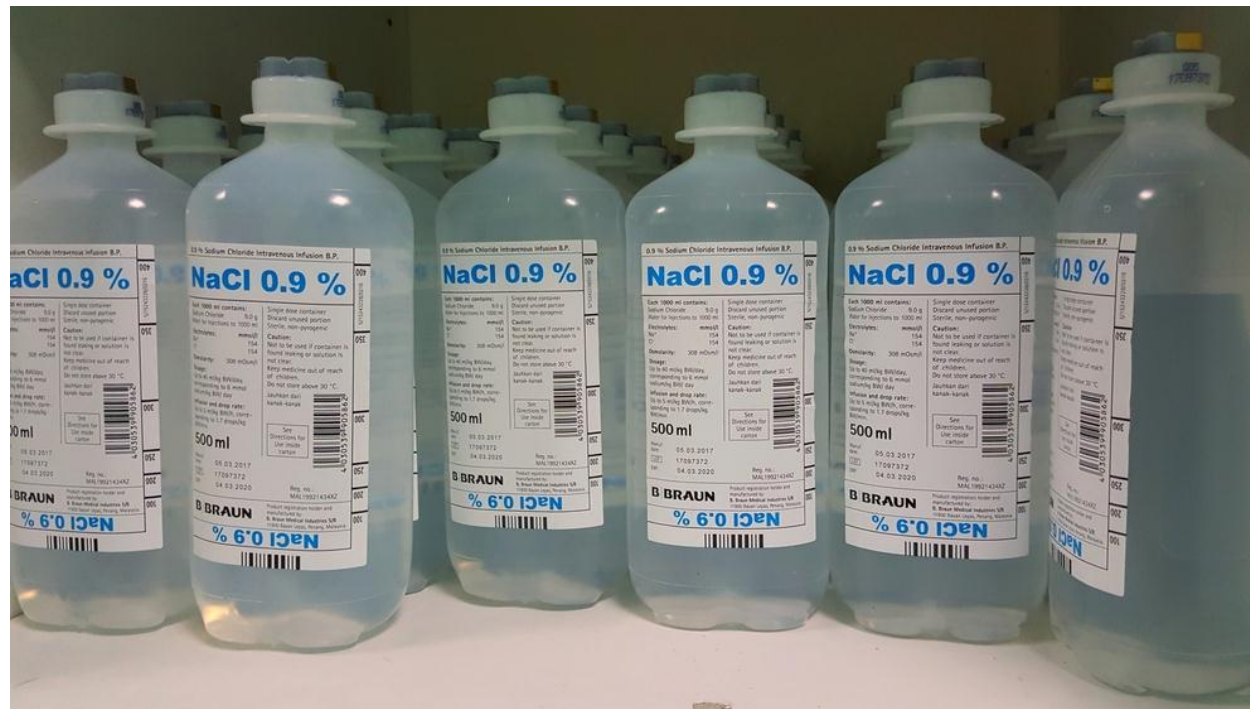
Annotated images showing the site of perforation, at the anterosuperior wall of the first part of duodenum with leaking air foci.

Management of Perforated PUD

- Initial management :
 - NG-tube
 - **IV Volume replacement**
 - IV PPII
 - Broad spectrum antibiotics
 - Decide whether surgery is required.

IV Volume replacement

- Resuscitated with **Isotonic fluid**
- Fluid sequestration into the third space of the inflamed peritoneum can be impressive, so **preoperative fluid resuscitation is mandatory.**



High-dose intravenous PPIs

- **80 mg loading dose** and **8 mg per hour** of the PPI
- Lower doses and twice daily bolus dosing may be equally effective



IV Antibiotics

should cover **enteric gram negative rods**, **anaerobes**, and **mouth Flora**.

A combination **Beta lactam + beta lactamase inhibitor**:

- Piperacillin-tazobactam
- Ticarcillin-clavulanic acid
- Ampicillin-sulbactam

Or a combination of a **Third-generation cephalosporin + metronidazole**

IV Antibiotics

In areas where the **extended spectrum beta-lactamase (ESBL)** producing organisms **and pathogenic E. coli is common:**

empiric monotherapy with a **carbapenem:**

- meropenem
- Imipenem
- Ertapenem

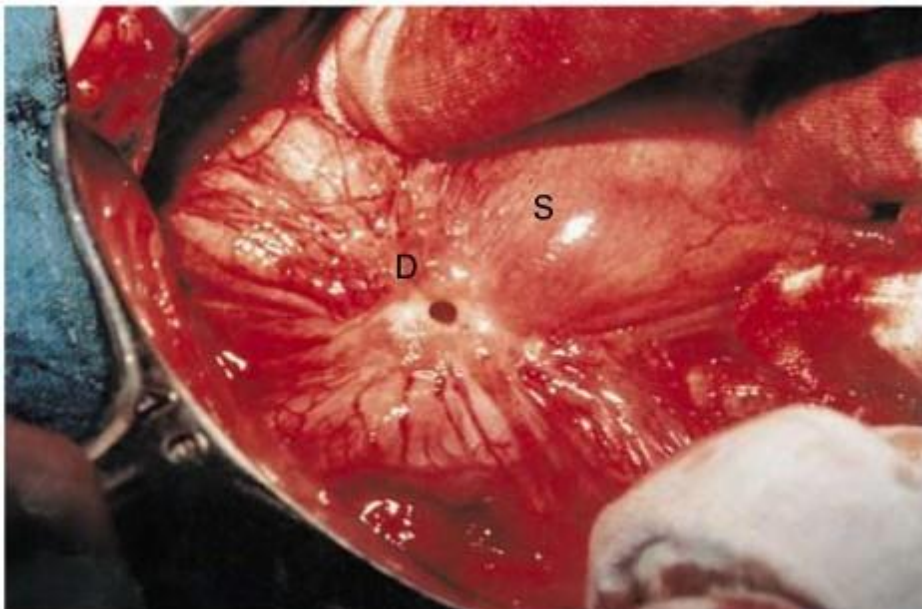
To operate or not to operate?

After resuscitation, in cases of:

Acute perforation / Rigid abdomen / Free intraperitoneal air /

Patient is deteriorating / Patient cannot be monitored /

Cause of an acute abdomen has not been established



Emergent operation

To operate or not to operate?

If the patient is stable or improving especially if spontaneous sealing of the perforation has been demonstrated,

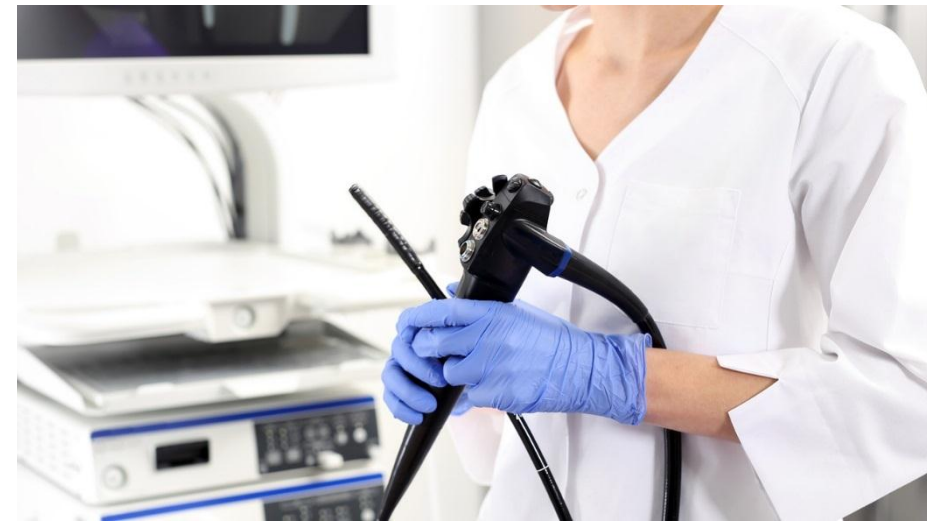


nonoperative management with close monitoring is a reasonable option.

Post-op care

- Continuation of High dose IV **PPIs**
- Switch to High dose oral PPI (40 mg Twice daily) when patient can tolerate oral intake
- Dosing should generally be reduced to once daily after four weeks
- for patients with giant ulcers, it is reasonable to continue twice daily dosing until a repeat endoscopy
- **Treatment for H.pylori**
- **Discontinuation of NSAIDs**

Upper endoscopy:



- Necessary to look for evidence of malignancy, to biopsy for *H. pylori*, and to assess for ulcer healing. To allow the perforation to heal
- Wait at least 2 weeks prior performing upper endoscopy
- If the procedure does not need to be done urgently: 6-8 weeks

Predictors of **poor prognosis**

- Advanced age
- Comorbidities
- Gastric Ulcer perforation
- Hypotension upon admission
- Metabolic acidosis
- Acute renal failure
- Hypoalbuminemia
- Persisting or advancing signs of peritonitis
- **preoperative delay of greater than 12 hours**



That's it!