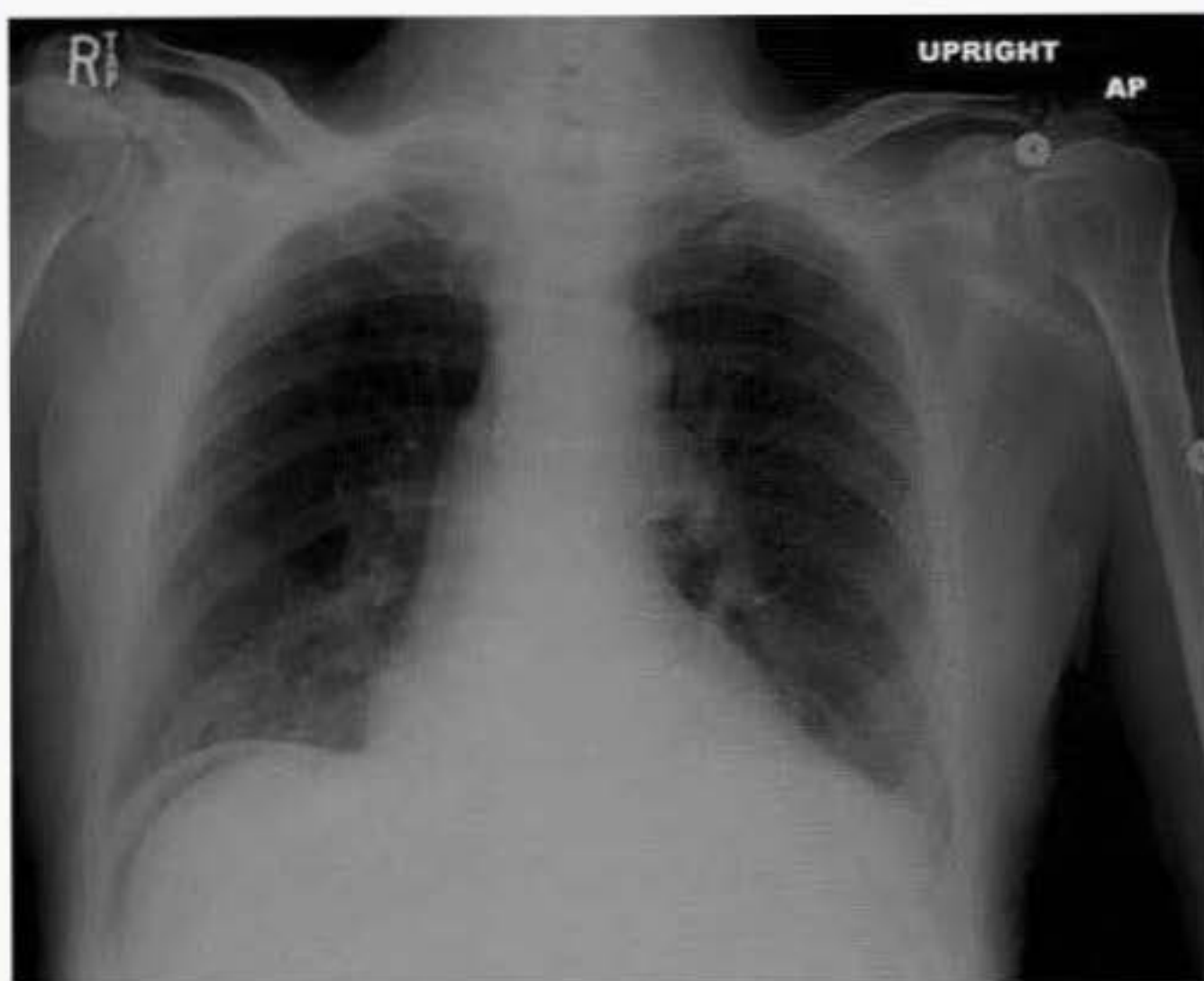


A 62-year-old man comes to the emergency department with severe epigastric pain lasting an hour. He has experienced episodic postprandial epigastric discomfort for several days, but today the pain is severe and constant. The patient also feels nauseated and has vomited once since the severe pain began. His medical history is significant for hypertension, diabetes mellitus type 2, hyperlipidemia, and coronary artery disease. The patient takes over-the-counter ibuprofen for osteoarthritis of the knee. He underwent coronary artery stenting a year ago. His temperature is 37.6 C (99.7 F), blood pressure is 116/70 mm Hg, and pulse is 102/min. ECG shows Q waves in the inferior leads. Chest x-ray is shown below.



Which of the following is the best next step in management of this patient?

- ☐ A. Cardiac catheterization
- ☐ B. CT scan of the abdomen with oral contrast
- ☐ C. Gallbladder ultrasonography
- ☐ D. Mesenteric angiography
- ☐ E. Nasogastric suction, bowel rest, and observation
- ☐ F. Upper gastrointestinal endoscopy

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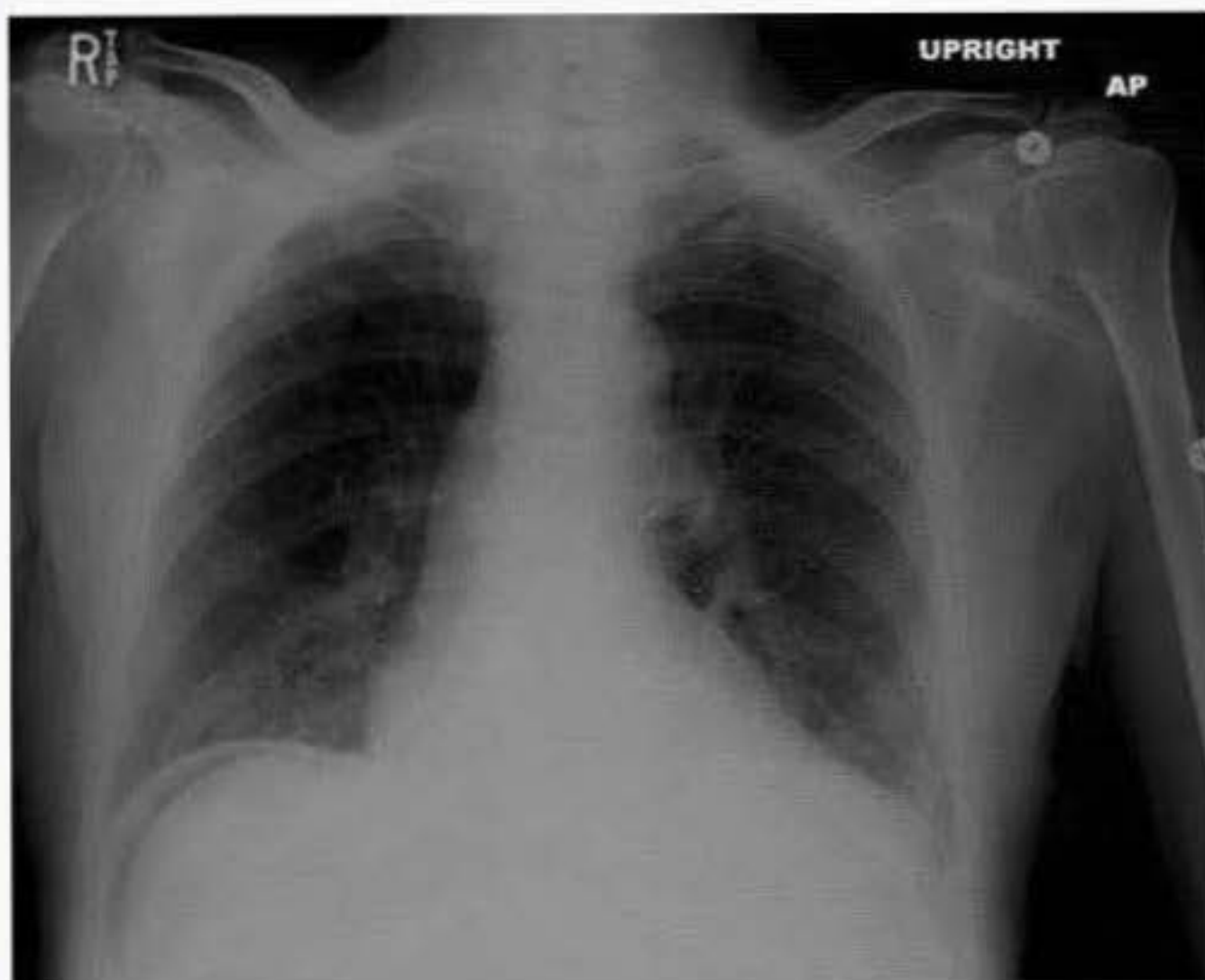


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- ☐ G. Urgent exploratory laparotomy

Submit

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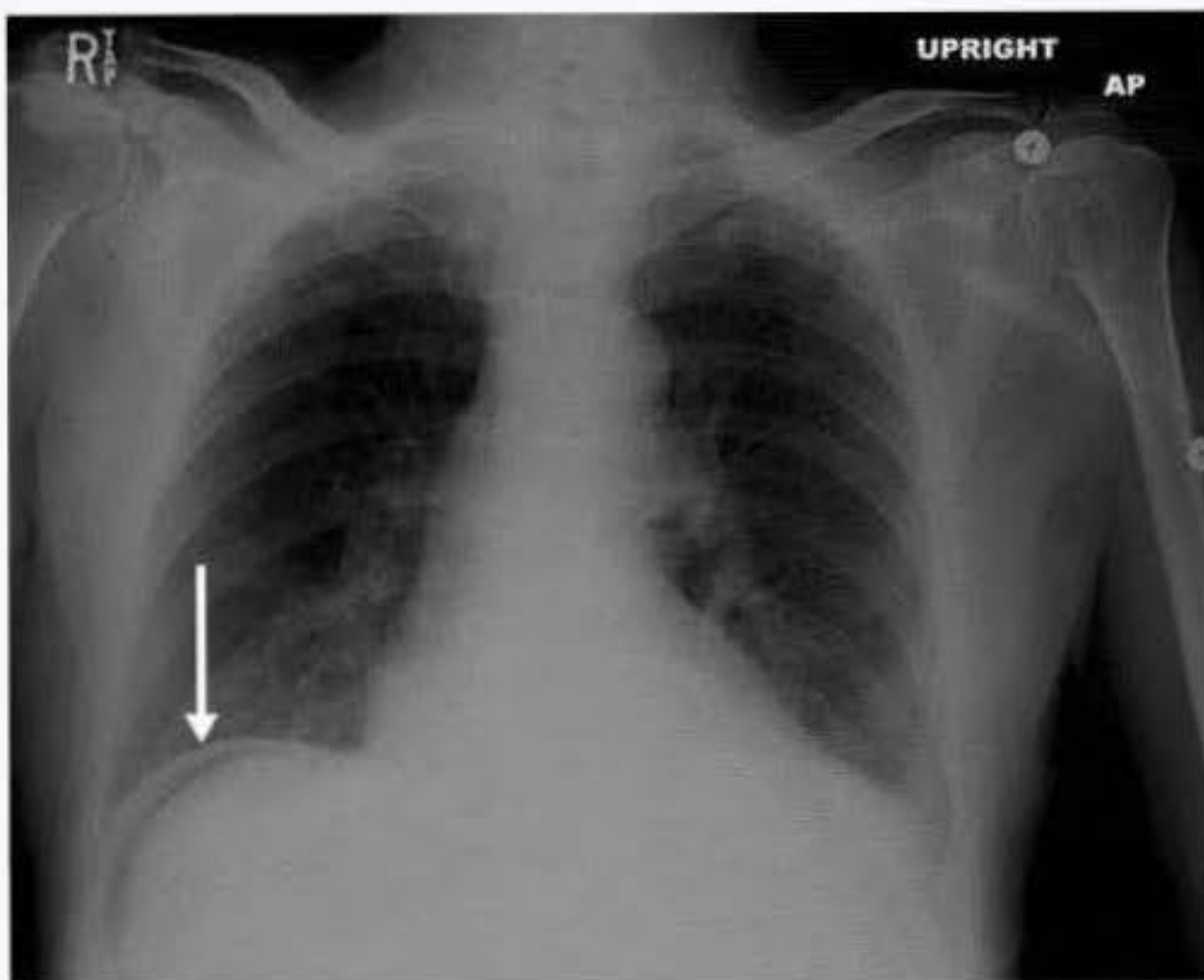
- ☐ A. Cardiac catheterization [4%]
- ☐ B. CT scan of the abdomen with oral contrast [5%]
- ☐ C. Gallbladder ultrasonography [3%]
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- ☐ F. Upper gastrointestinal endoscopy [12%]

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- ☐ F. Upper gastrointestinal endoscopy [12%]
- ☒ G. **Urgent exploratory laparotomy** [69%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]



This patient's chest x-ray reveals **intraperitoneal free air** (pneumoperitoneum), which is best seen between the liver and the diaphragm (white arrow). Given his **use of NSAIDs** and several-day history of episodic postprandial **epigastric pain** followed by acute-onset, severe, constant pain, the greatest concern is a **perforated peptic ulcer**. Initial medical management may include nasogastric suction, intravenous fluids, broad-spectrum antibiotics, and intravenous proton pump inhibitors; however, patients

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(Choice A) Cardiac catheterization may be considered in patients with acute myocardial infarction, which can present with epigastric pain and nausea/vomiting; however, this patient's Q waves on ECG indicate an old myocardial infarction.

(Choice B) Occasionally, evidence of free intraperitoneal air may not be confirmed on plain film in patients with a perforated viscus. CT scan of the abdomen with water-soluble oral contrast may detect leakage in patients with suspected perforation and normal plain films; however, this patient already has evidence of free air and does not require additional abdominal CT imaging.

(Choice C) Gallbladder ultrasonography should be considered in patients with suspected acute cholecystitis, which typically presents with right upper quadrant/epigastric abdominal pain, fever, leukocytosis, and Murphy sign (eg, inspiratory arrest during right upper quadrant palpation).

(Choice D) Mesenteric angiography is the gold standard for evaluating mesenteric ischemia. Although acute mesenteric ischemia often occurs in patients with cardiovascular risk factors, typical features include periumbilical pain out of proportion to examination findings and hematochezia.

(Choice E) Nasogastric suction, bowel rest, and observation may be considered in patients with uncomplicated small-bowel obstruction, which typically presents with abdominal pain and distension, vomiting, and obstipation.

(Choice F) Upper endoscopy should be considered in patients with acute upper gastrointestinal bleeding (eg, hematemesis, melena) or weeks after resolution of perforated peptic ulcer to evaluate for cancer, *Helicobacter pylori* infection, and healing. However, this patient has an acute perforation and should not undergo upper endoscopy at this time.

Educational objective:

Peptic ulcer disease often occurs with the use of NSAIDs and can be complicated by

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Educational objective:

Peptic ulcer disease often occurs with the use of NSAIDs and can be complicated by perforation, resulting in severe epigastric pain and intraperitoneal free air on plain film. Most patients with a perforated viscus require definitive management with urgent exploratory laparotomy.

References:

1. [An overview of history, pathogenesis and treatment of perforated peptic ulcer disease with evaluation of prognostic scoring in adults.](#)
2. [Peptic ulcer disease.](#)