

CAIR Case of the Month

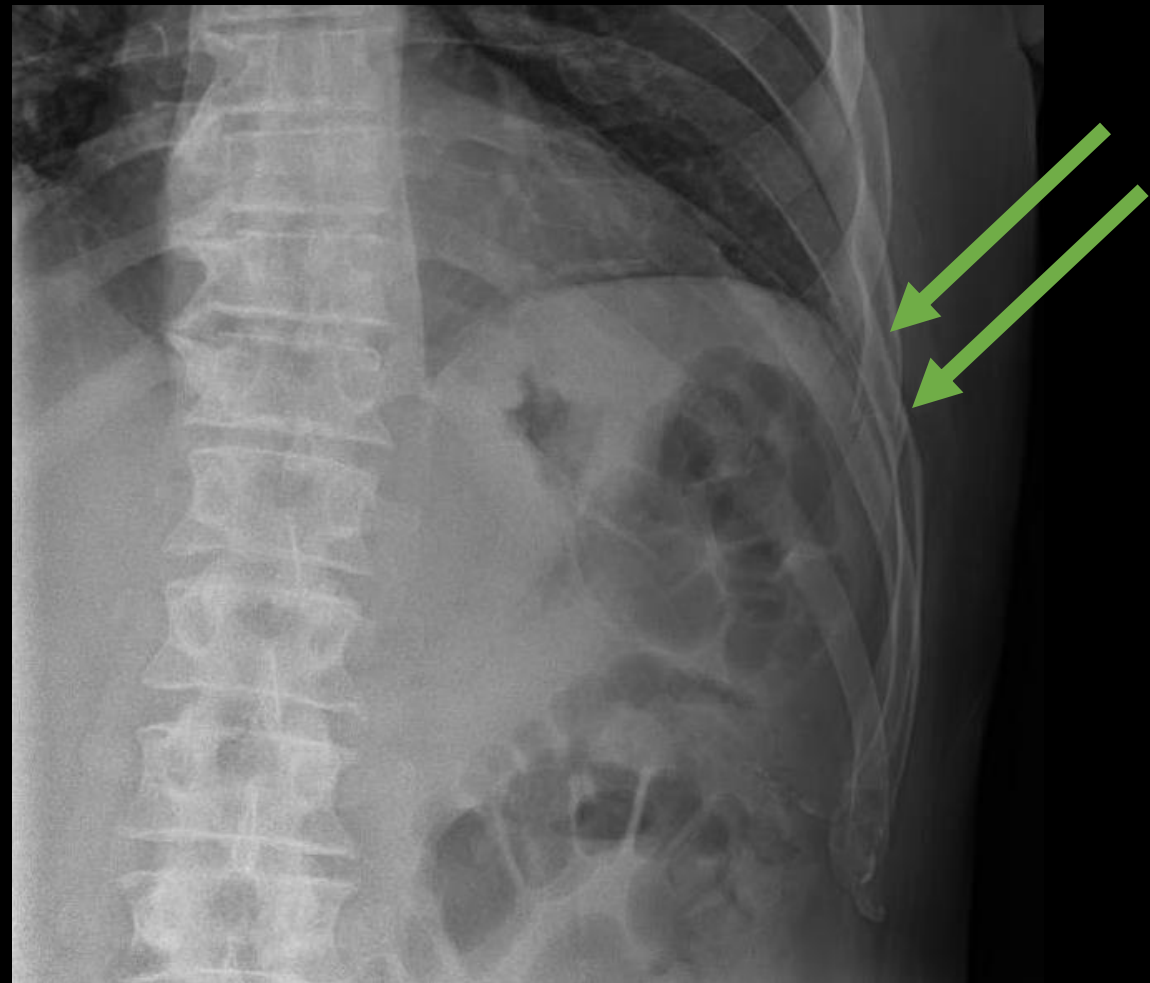
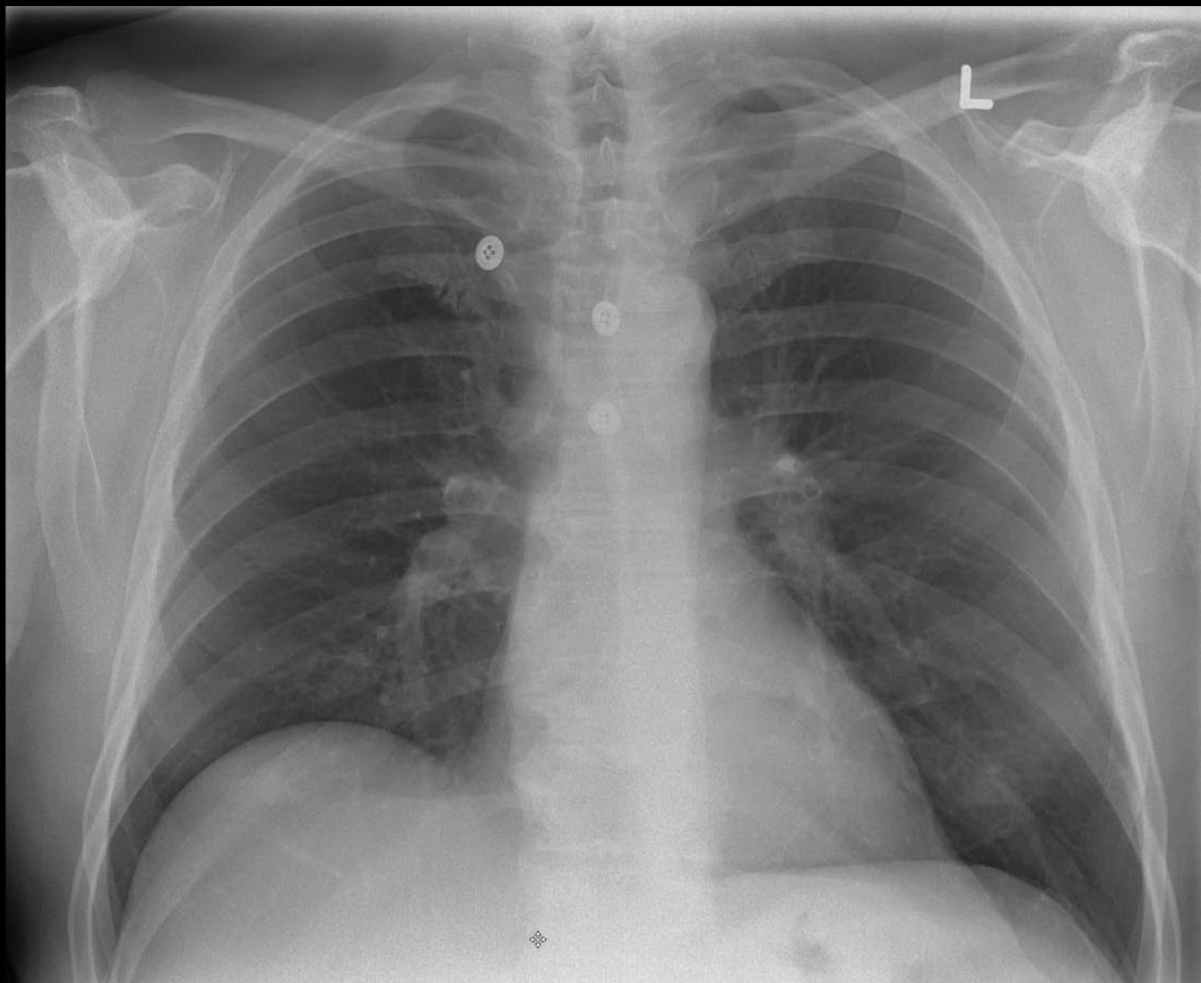
Case Courtesy of Drs. H. Kaka and O. Mironov

McMaster University

Clinical History

- 49 year old male with fall presents to ER
- Past medical history includes heavy alcohol use (15-16 drinks/day) and remote testicular cancer
- Chest radiograph showed left 7th and 8th rib fractures without pneumothorax or hemothorax
- Discharged home on pain medication

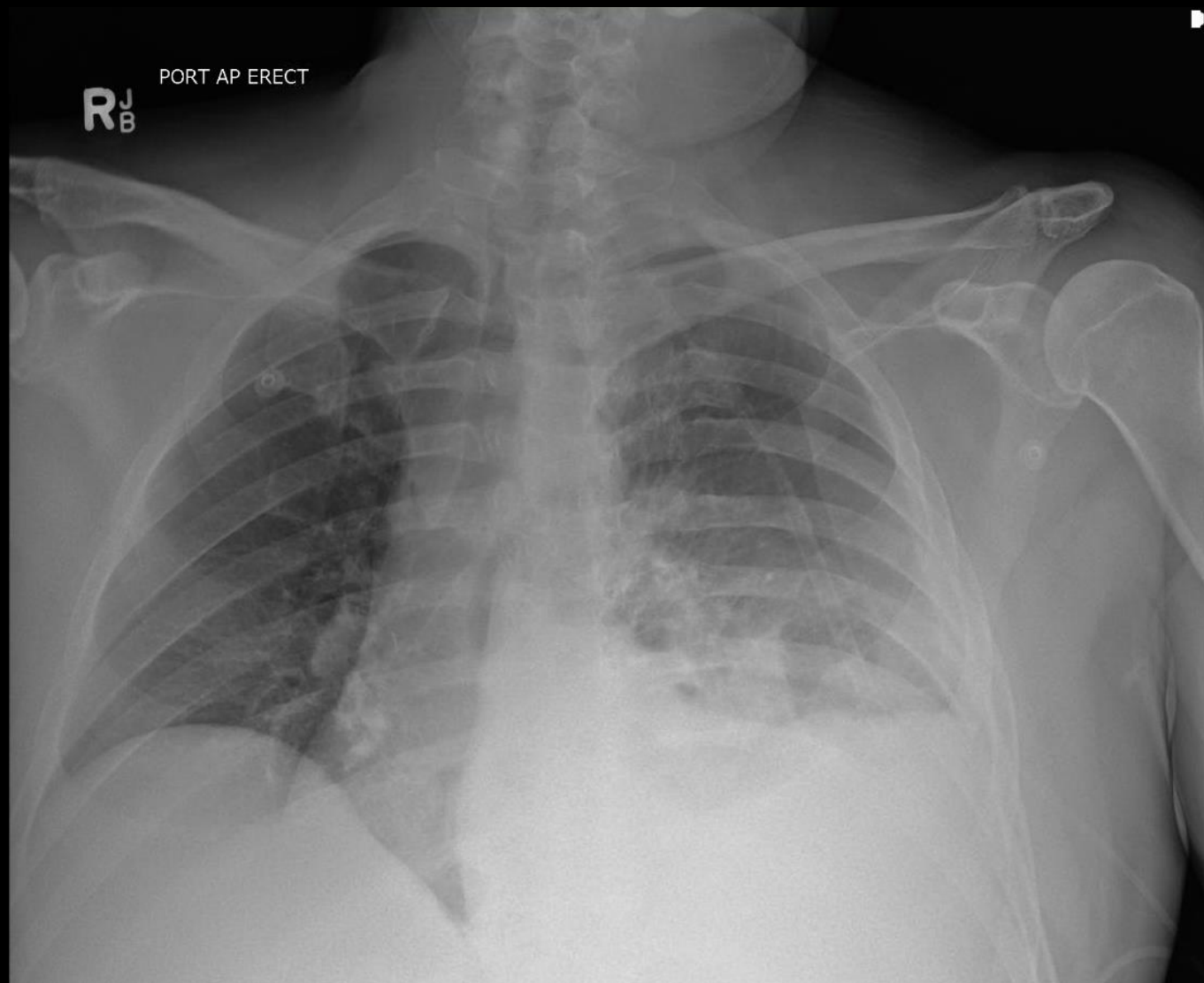
Initial Chest Radiograph



Return to ER

- 3 days later, the patient experienced significant shortness of breath followed by a syncopal episode
- EMS was called, and the patient was found hypotensive and diaphoretic
- He was rushed back to ER where BP was recorded at 53/23
- Chest radiograph showed a large left-sided hemothorax

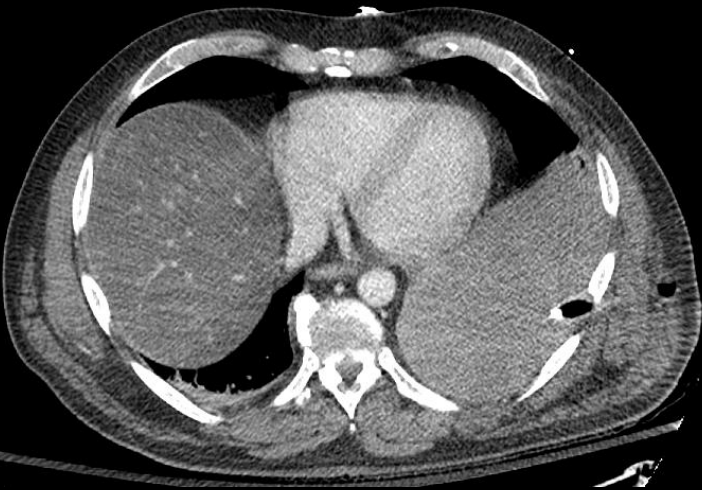
Repeat Chest Radiograph



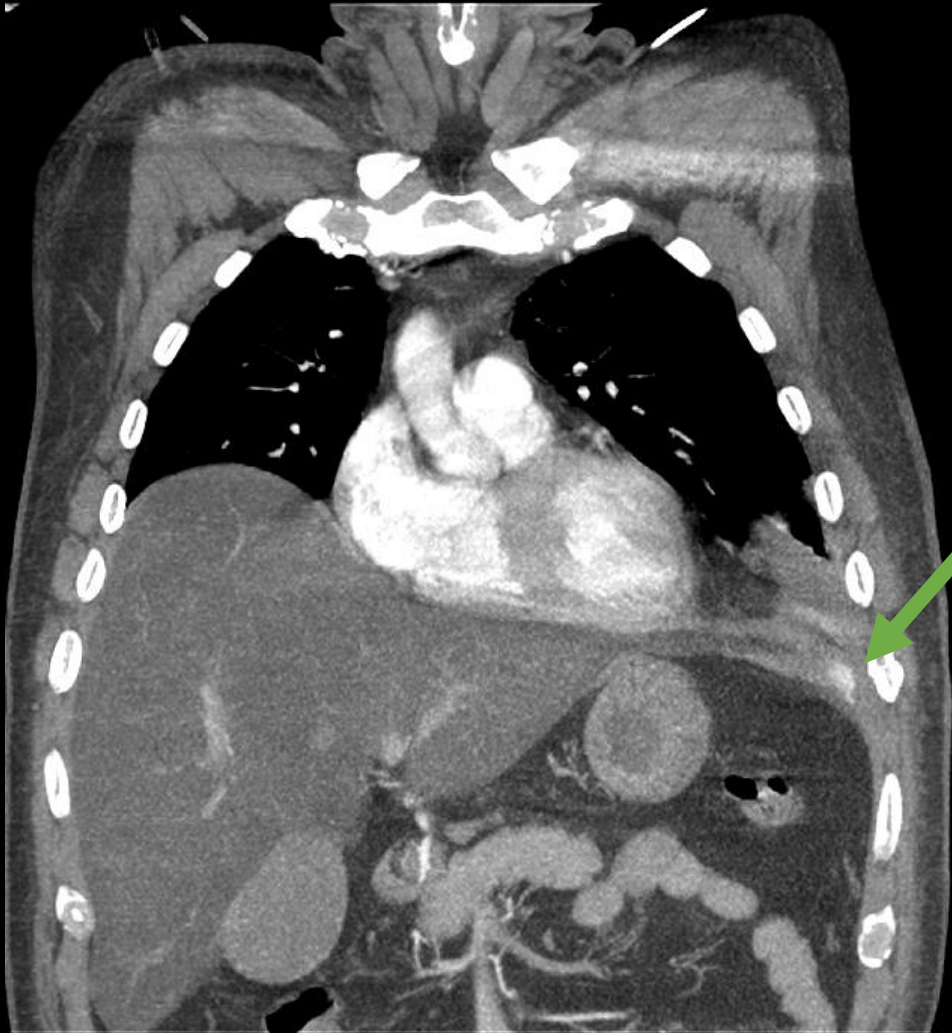
Repeat ER Visit Chest Radiograph

- A chest tube was inserted with difficulty
- Frank blood was noted at a rate of 500 mL/min
- Urgent transfer was requested to thoracic surgery in a tertiary center
- The patient received a massive transfusion in the interim (18 units pRBC, 12 units FFP, 2 adult doses of platelets) and was started on vasopressors
- CT angiogram was performed after transfer

CT Angiogram



CT Angiogram



CT Angiogram

- CT demonstrates a contrast blush along the lateral aspect of the left hemidiaphragm
- Contrast pooling is identified layering posteriorly in keeping with active hemorrhage
- Part of the blush remains unchanged on the portal venous phase, suggesting an underlying pseudoaneurysm
- A feeding vessel could not be identified

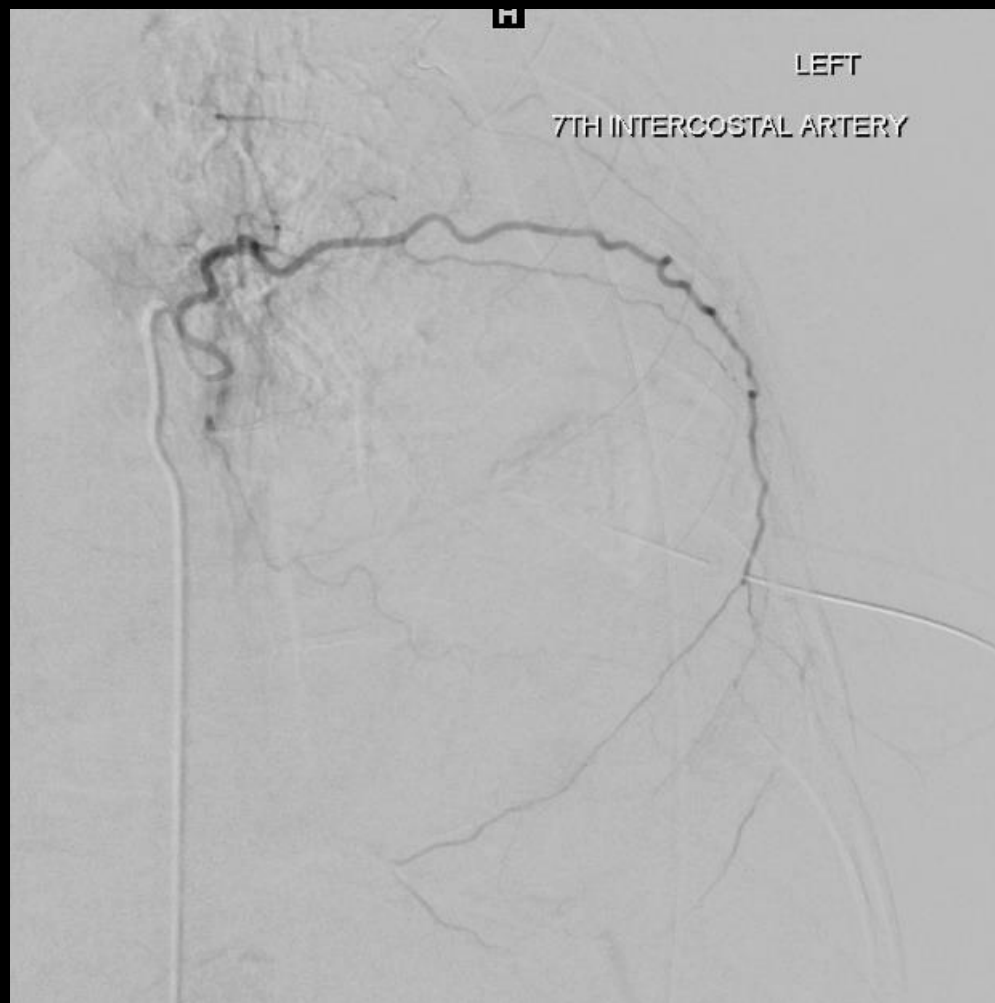
Coagulopathy Studies After Massive Transfusion

- INR = 1.1
- aPTT = 40
- Platelets = 68
- Hgb = 76

Management

- The patient was admitted to ICU and interventional radiology was consulted
- A plan was made for conventional angiography and possible embolization
- Access was obtained using a 5 Fr femoral sheath
- A Mickelson catheter was inserted over a Bentson wire

Angiography (7th and 8th Intercostals)



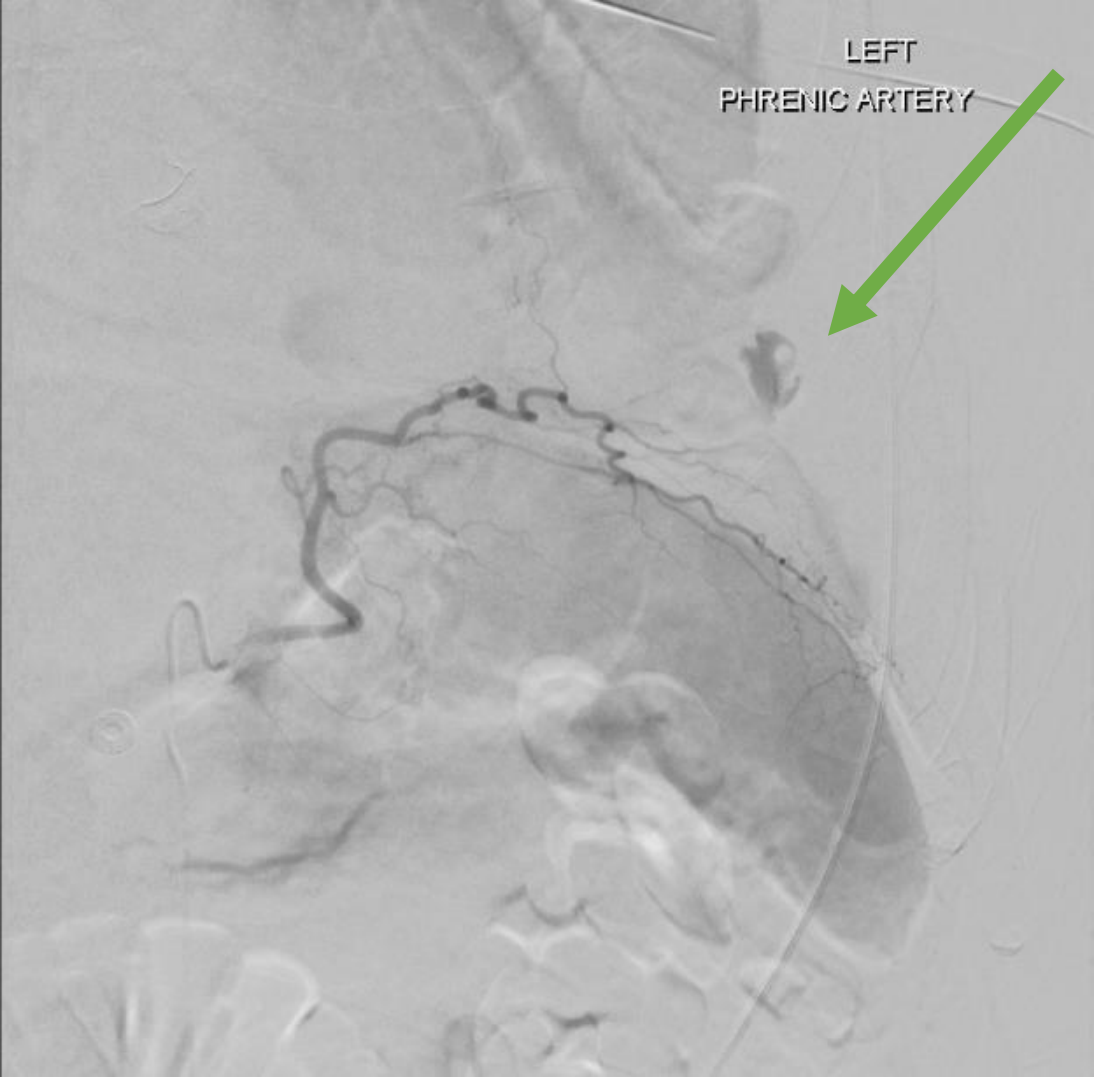
Angiography (9th and 10th Intercostals)



Angiography (Internal Mammary Artery)



Angiography (Left Inferior Phrenic Artery)



Angiographic Findings

- A blush of contrast with pooling is identified from the left inferior phrenic artery
- This corresponds to the CT findings, confirming the presence of a ruptured pseudoaneurysm
- The 7th through 10th intercostal arteries as well as the internal mammary artery are patent

Embolization



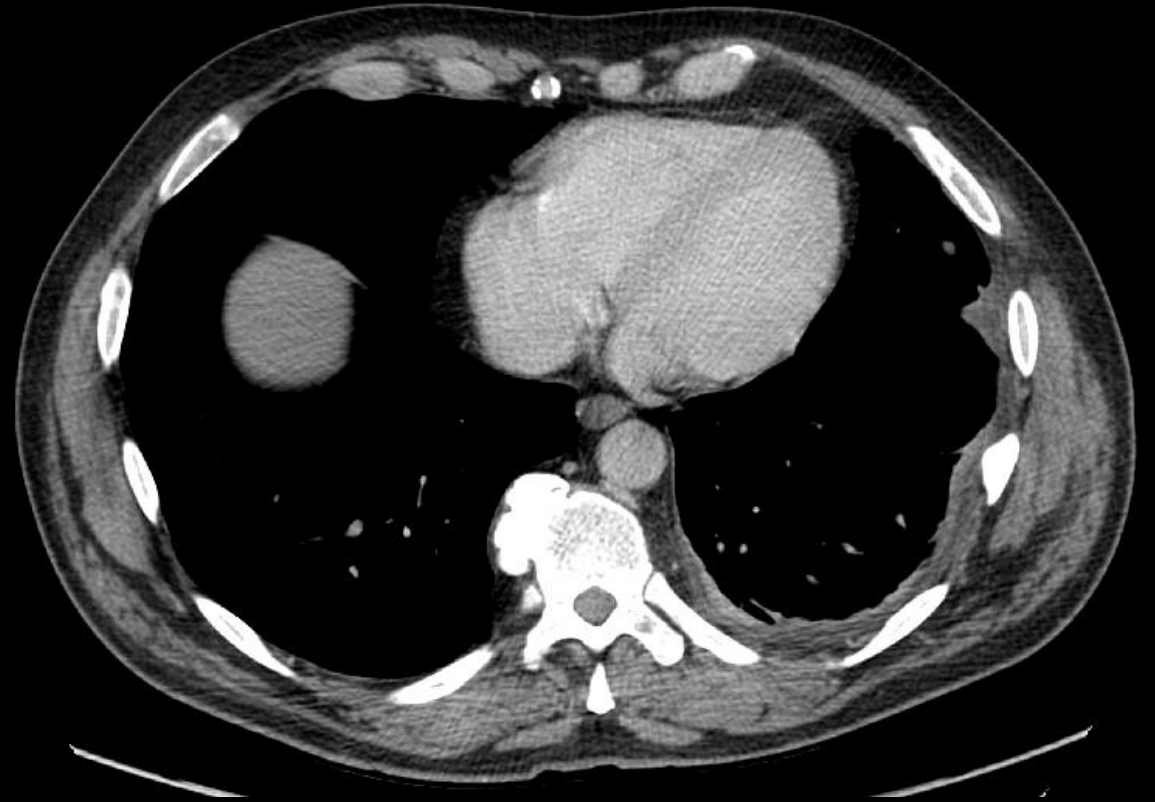
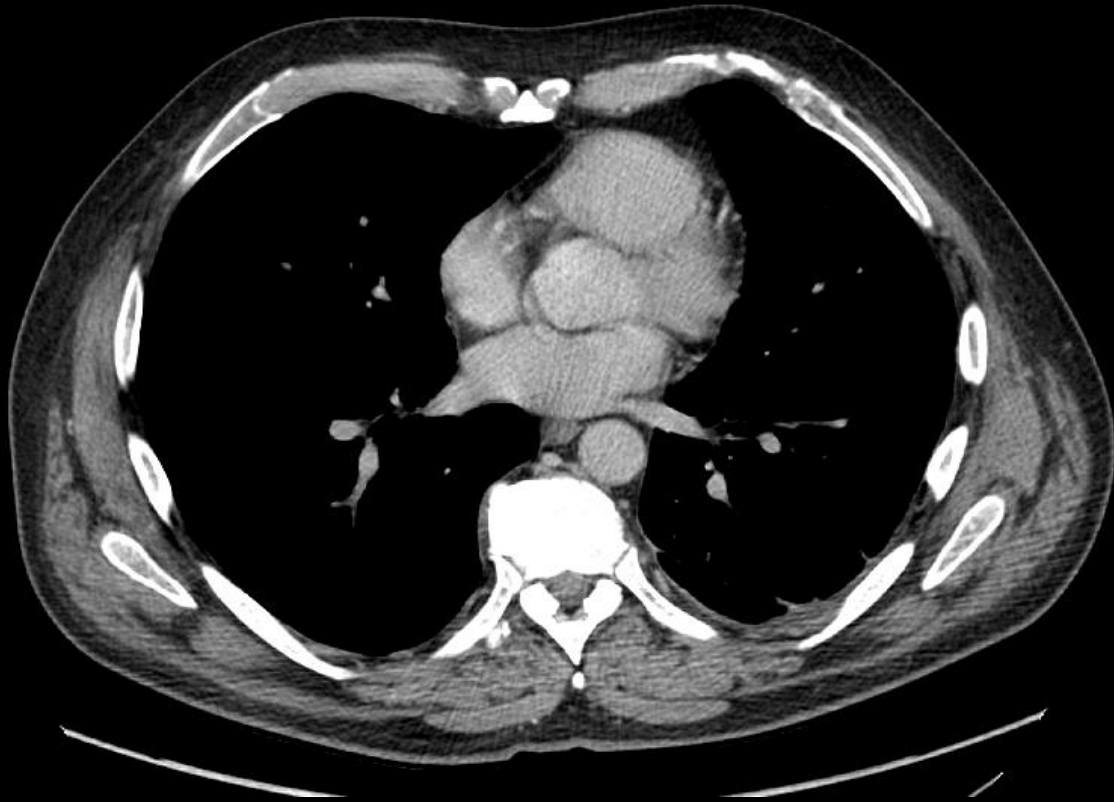
Embolization

- A 2.8 Progreat microcatheter and guidewire were advanced deeper into the inferior phrenic artery
- The artery was embolized with Gelfoam and 3 microcoils
- No further opacification of the pseudoaneurysm was detected

Outcome

- No further bleeding and no further transfusions were required
- The pleural hematoma was subsequently infected and required surgical debridement during the same hospital admission
- The patient tolerated the surgery and was subsequently discharged 2 weeks after embolization

2 Month Follow-Up CT



2 Month Follow-Up CT

- No recurrence of the hemothorax

Take Home Points

- Inferior phrenic artery injury following blunt trauma is uncommon and often unanticipated
- It has been reported in case reports [1-2]
- Typical targets for selective angiography following rib fractures and trauma are the intercostal and internal mammary arteries
- These vessels are often beyond the resolution of CT and conventional angiography is required for proper assessment
- As demonstrated in this case, the inferior phrenic artery can be a source of brisk active hemorrhage and should be assessed if a source is not otherwise found

References

1. Aoki M, Shibuya K, Kaneko M, et al. Massive hemothorax due to inferior phrenic artery injury after blunt trauma. *World J Emerg Surg.* 2015;10:58. Published 2015 Nov 24. doi:10.1186/s13017-015-0052-3
2. Mizobata Y, Yokota J, Yajima Y, et al. Two cases of blunt hepatic injury with active bleeding from the right inferior phrenic artery. *J Trauma.* 2000;48:6. Published 2000 June.