

# CT Esophagography

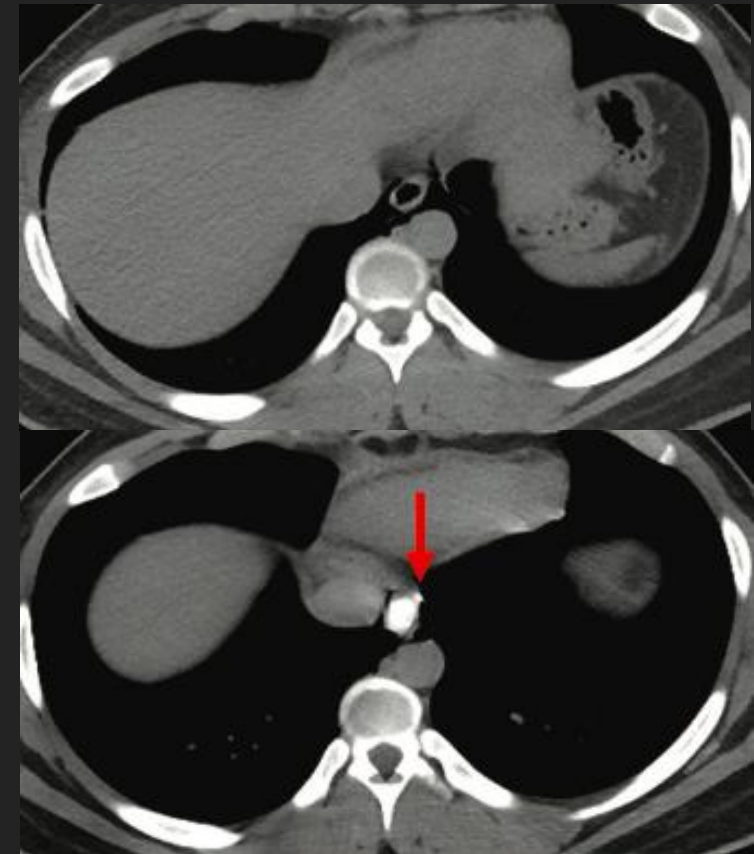


# What is it?

- Imaging modality/CT protocol to evaluate for esophageal injury whether iatrogenic (EGD, stent placement, etc.), foreign body ingestion, blunt or penetrating trauma to the chest or abdomen, or forceful retching (Boerhaave syndrome)

# What is it?

- CT of the chest and upper abdomen in supine positioning both before and after the administration of dilute oral contrast (Isovue 370, 7 mL in 100 mL sterile water ~ ratio 1:15)



# What is it?

- CT of the chest and upper abdomen in supine positioning both before and after the administration of dilute oral contrast (Isovue 370, 7 mL in 100 mL sterile water ~ ratio 1:15)
- May add IV contrast and/or prone positioning imaging if necessary
- If patient is unable to drink oral contrast, an NG tube may be placed (if not already placed):
  - Above the level of the cricopharyngeal sphincter if the area of leak is UNKNOWN
  - OR proximal to the suspected leak if location is KNOWN

University of Iowa's protocol for  
NON dual energy CT scanners



- 1<sup>st</sup> series: Non-contrast -single breath-full inspiration from mid- neck through the stomach
- 2<sup>nd</sup> series: Oral contrast- single breath- full inspiration from the bottom of the mandible through stomach
- Immediately before scout, with patient sitting on CT table, the patient drinks all the contrast (Dilute Iopamidol 370 mg I/ml (Isovue -370) 7ml in 100ml sterile water. Ratio 1:15)
    - Note: The shorter the period between swallowing oral contrast and imaging the better diagnostic value.

# Why?

- Allocation of resources
- Patient safety

# When?

- Weeknights 5pm – 8am
- Weekends
- If there remains high index of clinical concern RE a possible false negative CT esophagram, a follow up fluoroscopic study can be completed the subsequent morning after patient/spinal stabilization
  - This would allow for patient movement/change in positioning – the major significant benefit of FLUORO over CT in this clinical scenario

# When?

- Weeknights 5pm – 8am
- Weekends
- If there remains high index of clinical concern RE a possible false negative CT esophagram, a follow up fluoroscopic study can be completed the subsequent morning after patient/spinal stabilization
- Some may consider incorporating this into their workup during routine business hours

# Pros and Cons of CT over FL

## Pros

- Faster
- NOT radiologist dependent
- Allows the radiologist to continue at the view box – better allocation of resources during on call hours
- Higher sensitivity
- At least equivalent negative predictive value
- Lower patient physical demand (important in patients who may have spinal instability)
- Better anatomic delineation
- Helps diagnose extraesophageal pathology

## Cons

- Position limited (typically only supine)
- Decreased mucosal detail



# Pros and Cons of CT over FL

- Overall, improved workflow while maintaining high diagnostic quality

# CT vs FL sensitivity and NPV

## CT

- Sensitivity: 100%
- NPV: 100%

## FL

- Sensitivity: 77.8%
- NPV: 97.9%

# Case Example

- 74 yo F level 2 trauma, unrestrained back seat passenger, MVC, rear ended at highway speeds

# Case Example

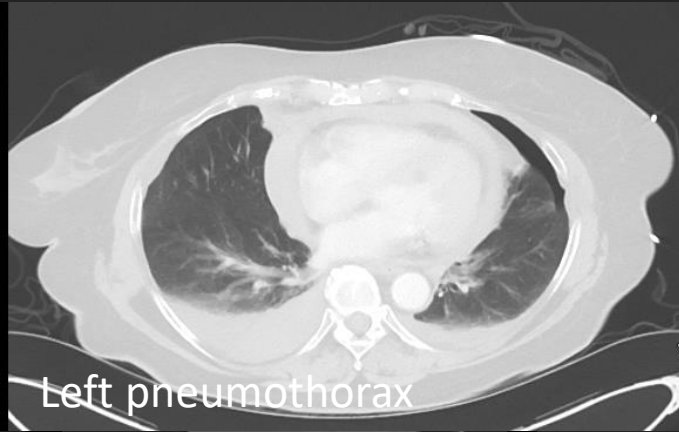
- 74 yo F level 2 trauma, unrestrained back seat passenger, MVC, rear ended at highway speeds



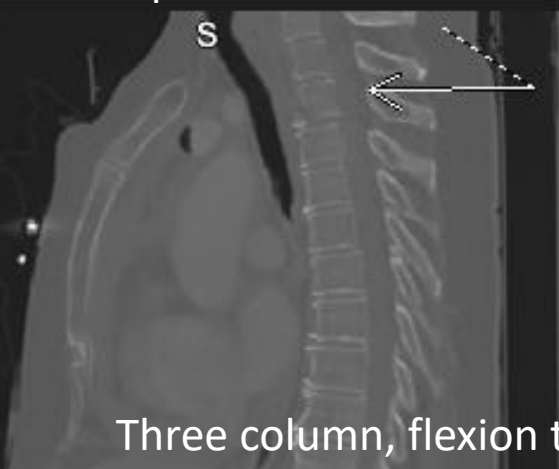
Hemopericardium



Bilateral hemothorax



Left pneumothorax



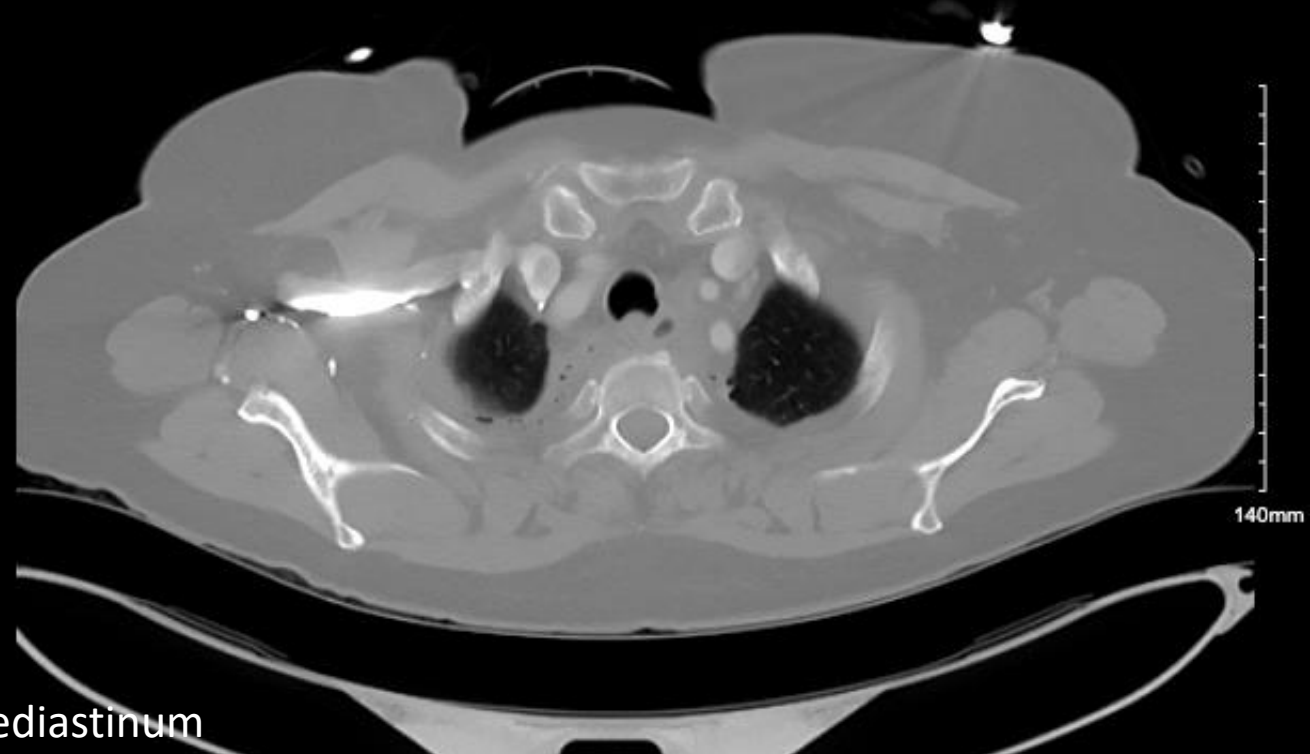
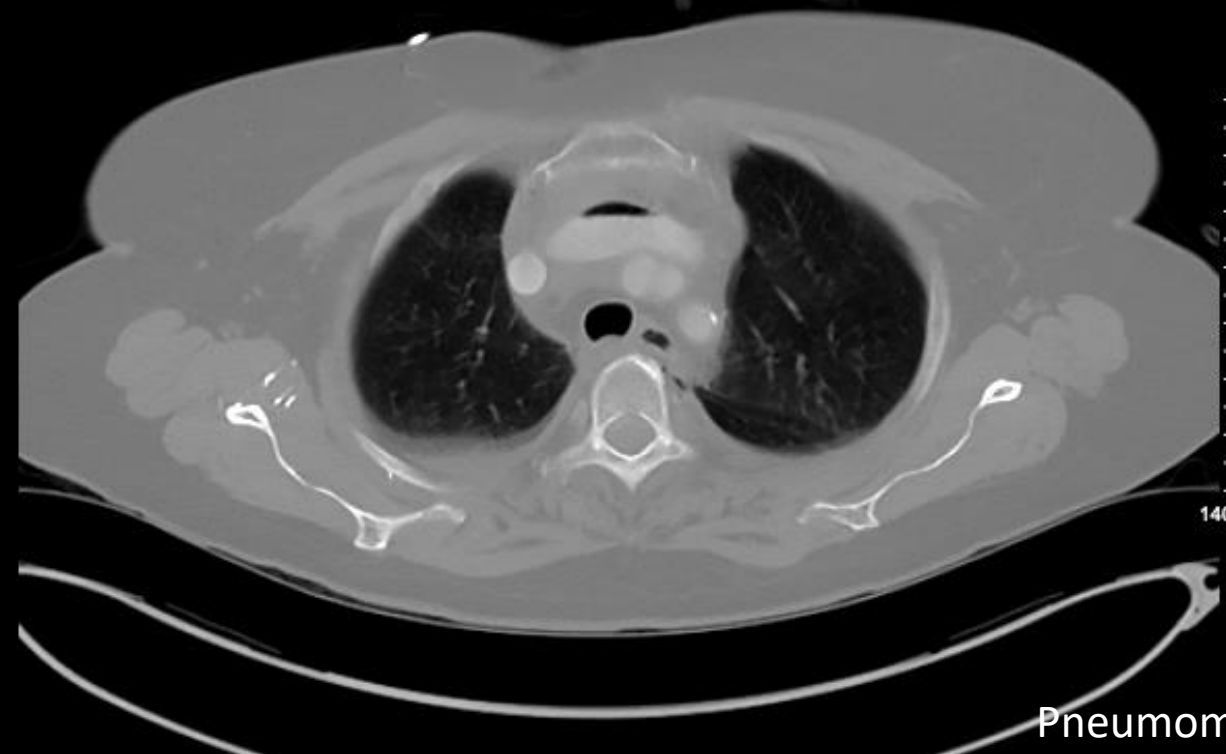
Three column, flexion tear drop fracture T2



Multi level left rib fractures

# Case Example

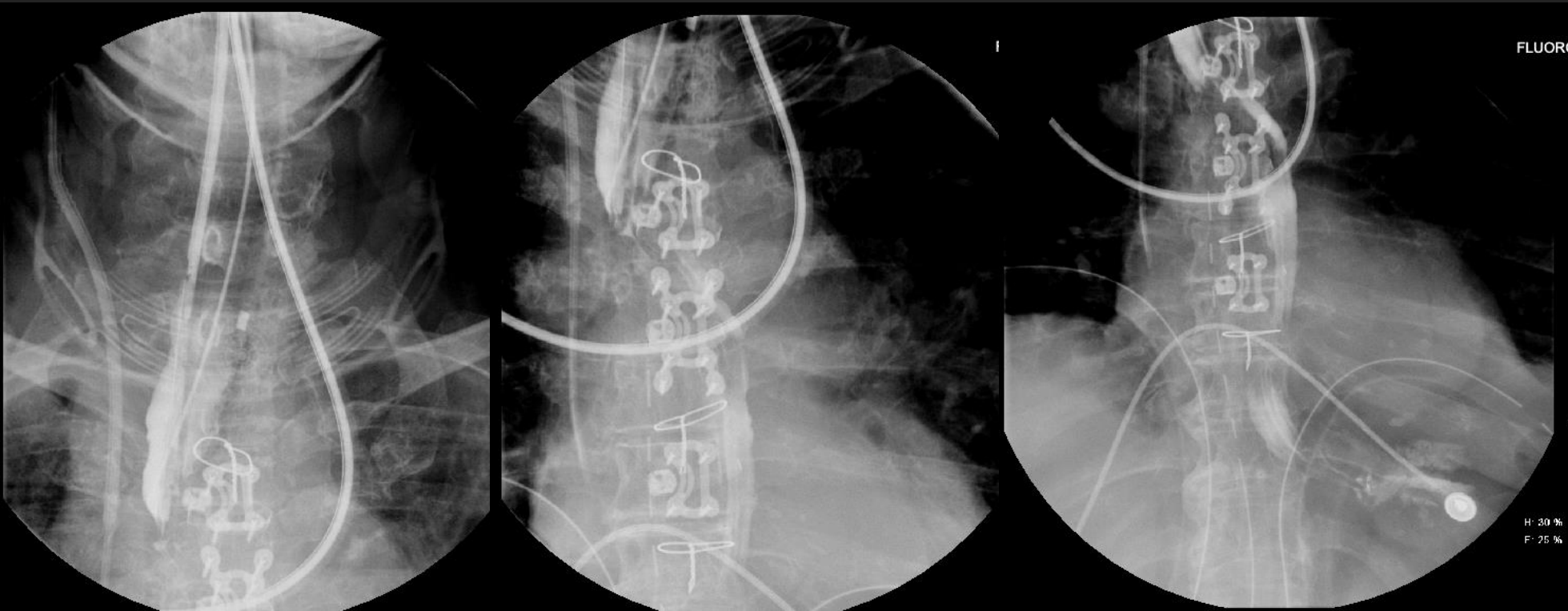
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Pneumomediastinum

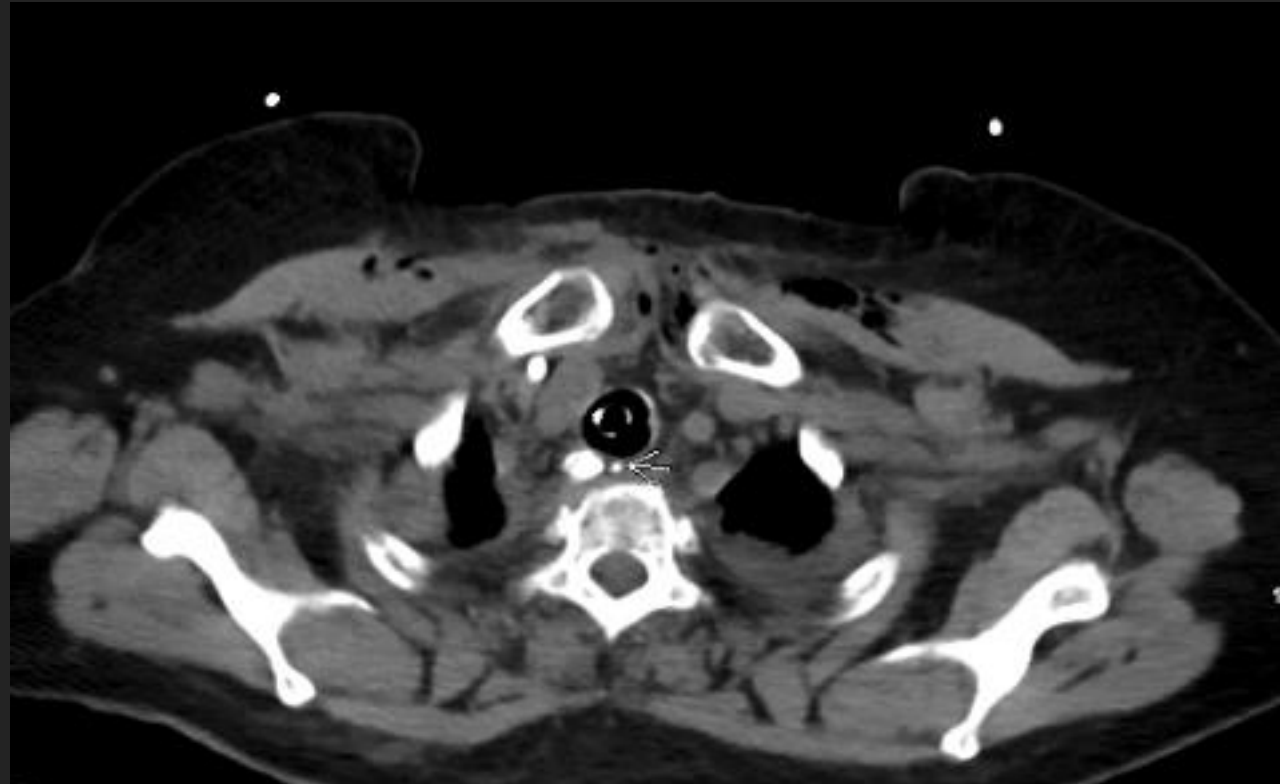
# Case Example

- 74 yo F level 2 trauma, unrestrained back seat passenger, MVC, rear ended at highway speeds
- Pneumomediastinum prompted this negative FL esophagram



# Case Example

- 74 yo F level 2 trauma, unrestrained back seat passenger, MVC, rear ended at highway speeds
- Subsequent CT esophagram



# Additional Recent Case Example

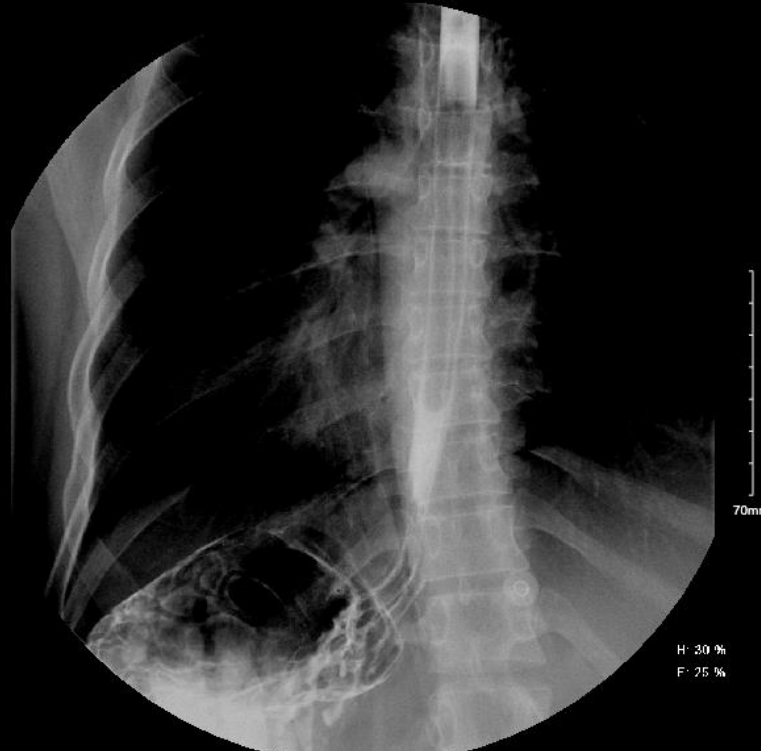
- 40 yo F with recurrent retching





# Additional Recent Case Example

- Both the on call FL esophogram and CT esophogram were negative



# QR Codes for further reading



*Radiographics 2021*



*AJR 2020*

End.