

# Follow The Fluid: A Case of Spontaneous Thoracic Duct Rupture

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## Background / Context

- Rupture of the thoracic duct is a rare complication of trauma to the mediastinum or thoracic surgical procedures. The presentation ranges from chylothorax (most common) to acute soft tissue swelling in the neck and chest.
- Since 1955, there have only been a handful of reported cases detailing spontaneous or idiopathic rupture of the thoracic duct. Most had known associations with systemic infections or previously identified thoracic duct cysts.
- The majority of reported non-traumatic or non-surgical cases of thoracic duct rupture have been seen primarily in female patients.

## Case Presentation

- A previously healthy 39 year old female presented to our ED after waking up from sleep with acute swelling in her left neck. The area was tender to touch. She subsequently developed severe (9/10), bilateral, non-radiating, cramping flank pain.  
*(Of note, the patient reported initiating a weight-lifting routine 1 month prior to presentation. She noticed some soreness, but is uncertain if this is related.)*
- PMH/PSH: Right upper lobe lung resection at age 17 for localized cryptococcal infection.
- MEDS: None

## Hospital Course

### DAY 1

- Vital signs within normal limits
- LABS within normal range: CBC, CMP, Lipase, TSH, UA
- CT Abdomen/Pelvis WO contrast: "Significant volume of simple retroperitoneal fluid, origin uncertain."
- CT Neck W Contrast (Figure 1): "Abnormal fluid density in the left neck, unclear etiology."
- Radiologist: Likely transudative fluid, but nothing he has seen before. Recommends CT Chest to look for source of both neck and retroperitoneal fluid.
- CT Chest W Contrast: "Small bilateral pleural effusions, right greater than left."

## Hospital Course (Cont.)

### DAY 2

- IR right-sided thoracentesis performed with fluid analysis:
  - Color: Milky yellow, Glucose 112, LDH 79 (serum 126), Protein 1.0, Triglycerides 743, Cholesterol 42, Chylomicron Screen: Present
- NM Lymphoscintigraphy (Figure 2): "Abnormal holdup of activity in iliac chains and groins."
- Consulted CT Surgery: recommended conservative management with medium chain triglyceride (MCT) diet.

## Imaging Findings



Figure 1. CT imaging of the neck showing left-sided abnormal fluid density from level of hyoid bone inferiorly into the supraclavicular fossa and thoracic inlet.

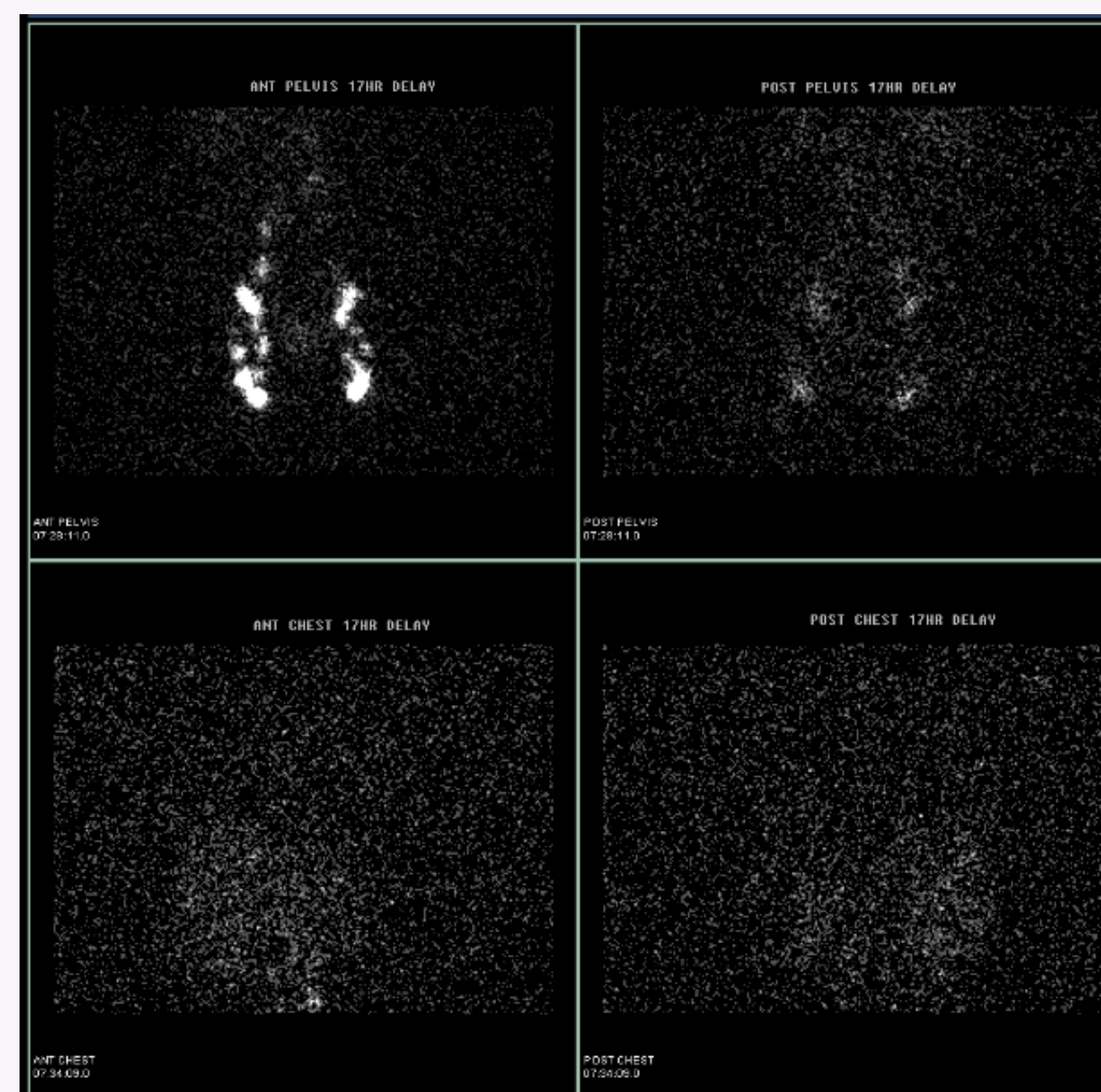


Figure 2. Images from NM Lymphoscintigraphy showing 17 hour filling delay in iliac chains and groins.

## Follow-Up

- Patient's symptoms improved with conservative management and she was discharged on Day 4 of admission.
- Follow-up High Resolution Helical CT Thorax, Abdomen, and Pelvis performed 10 days after initial presentation showed interval resolution of pleural effusions and retroperitoneal fluid.

## Discussion

- Thoracic cysts and malformations have a distinct bias in the literature toward female patients. It is unknown whether or not our patient had a predisposing cyst or malformation. Our patient's history of a new weightlifting routine also raises questions about the risks associated with strenuous weight bearing activity.
- Conservative management of thoracic duct rupture is usually satisfactory in stable, improving patients. The MCT diet reduces intake of long chain fatty acids which decreases chyle drainage and results in spontaneous leak closure. TPN is a potential alternative. Surgical intervention for severe or refractory cases involves ductal ligation or percutaneous embolization.
- Somatostatin and octreotide, which reduce the flow of gastric lymphatics, may aid in spontaneous closure.

## Conclusion

- Thoracic duct damage or rupture should be suspected in patients with idiopathic pleural effusions or abnormal fluid accumulation anywhere along the ductal tract. The risk appears to be higher in the female population. Thoracentesis to evaluate for chylothorax can be particularly high yield for establishing a diagnosis of thoracic duct rupture.

## References

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