

Lymphangiograms and Lymphatic Interventions

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Symposium on Clinical
Interventional Oncology

DISCLOSURES AND ACKNOWLEDGEMENTS



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Anthony N. Hage, MD

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GOALS AND OBJECTIVES

Lymphatics, Injuries, and Diseases

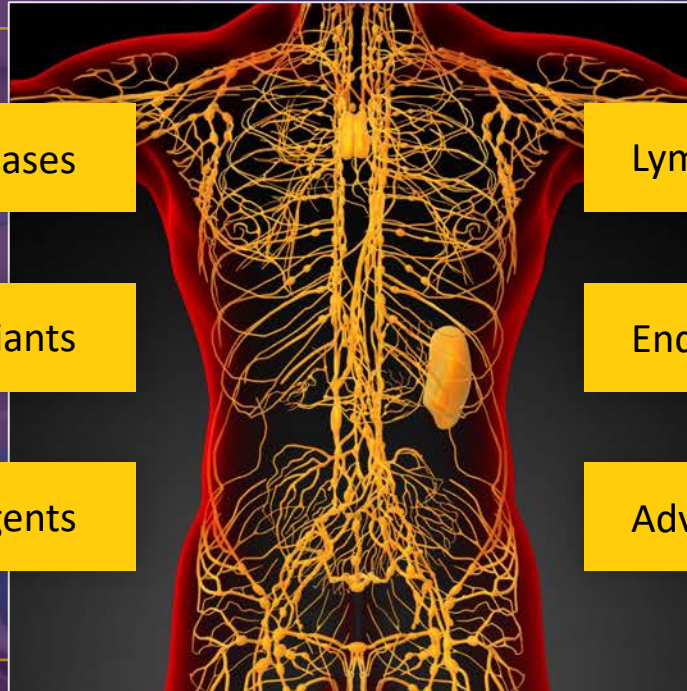
Lymphatic Variants

Lymphatic Imaging and Agents

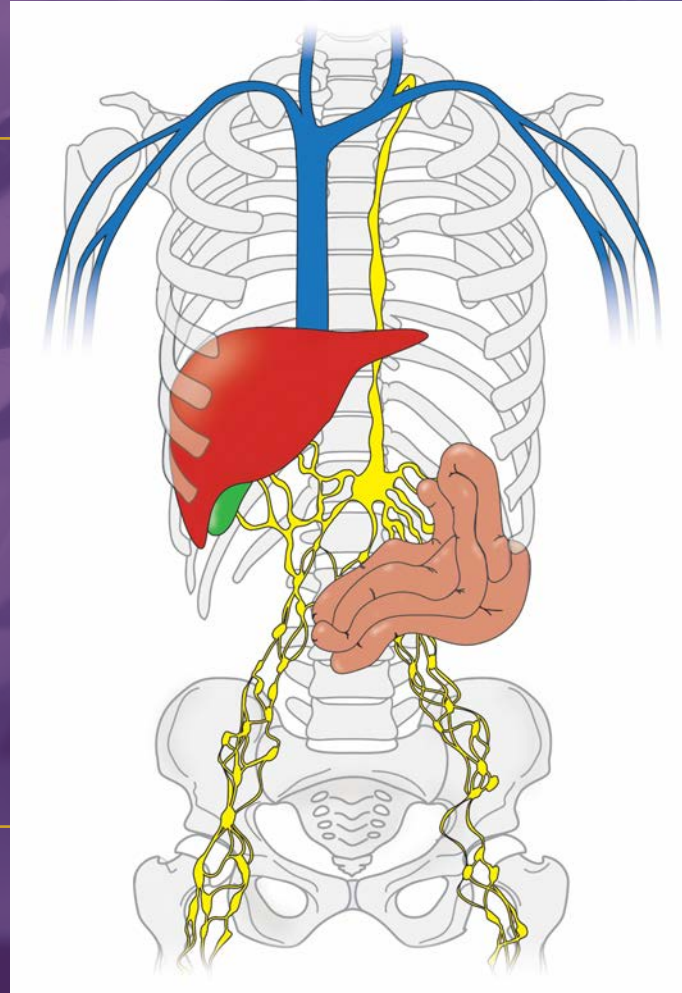
Lymphatic Embolization

Endolymphatic Reconstruction

Advanced Lymphatics and the Future



LYMPHATIC SYSTEM



LYMPHATIC INJURIES AND DISEASES

Thoracic Surgery

Abdominal and
Pelvic Surgery

Infection

Systemic

Primary
Malignancy

Congenital

Lymphoma



LYMPHATIC ALGORITHM

Above the Diaphragm

Chylothoraces

Chyloptysis

Lymphatic Malformations

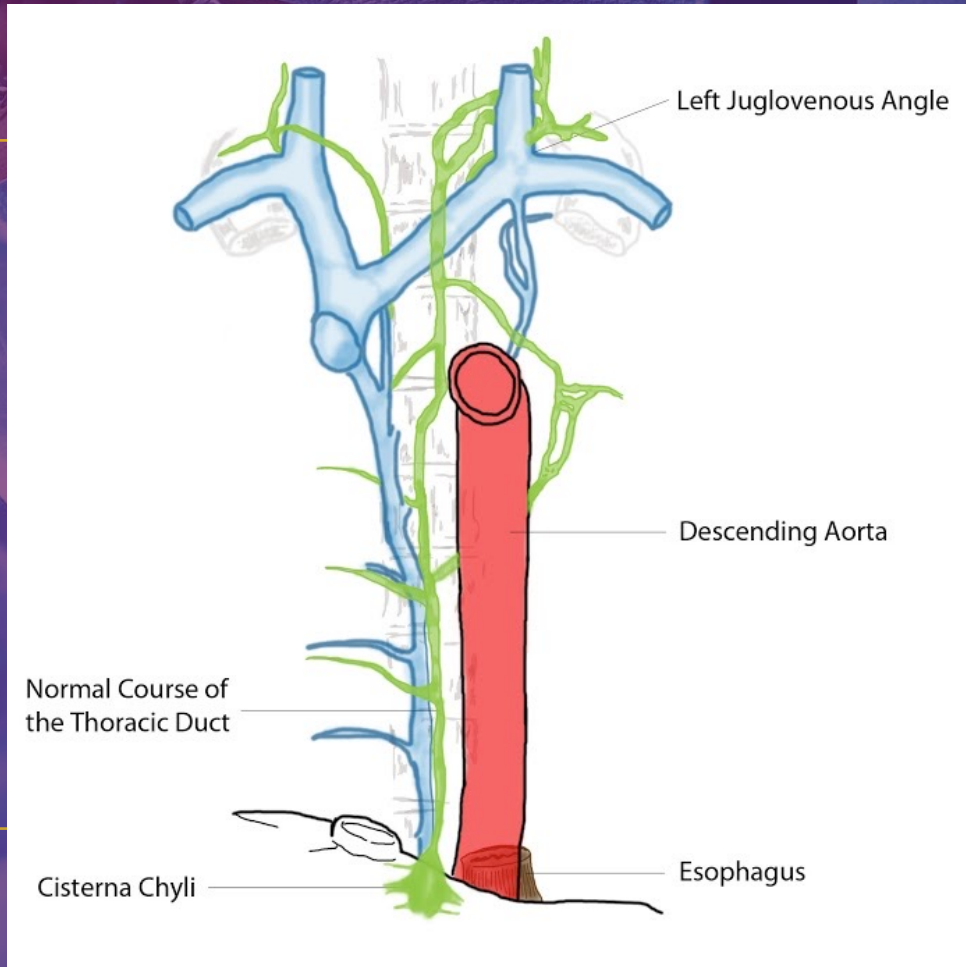
Below the Diaphragm

Chylous Ascites

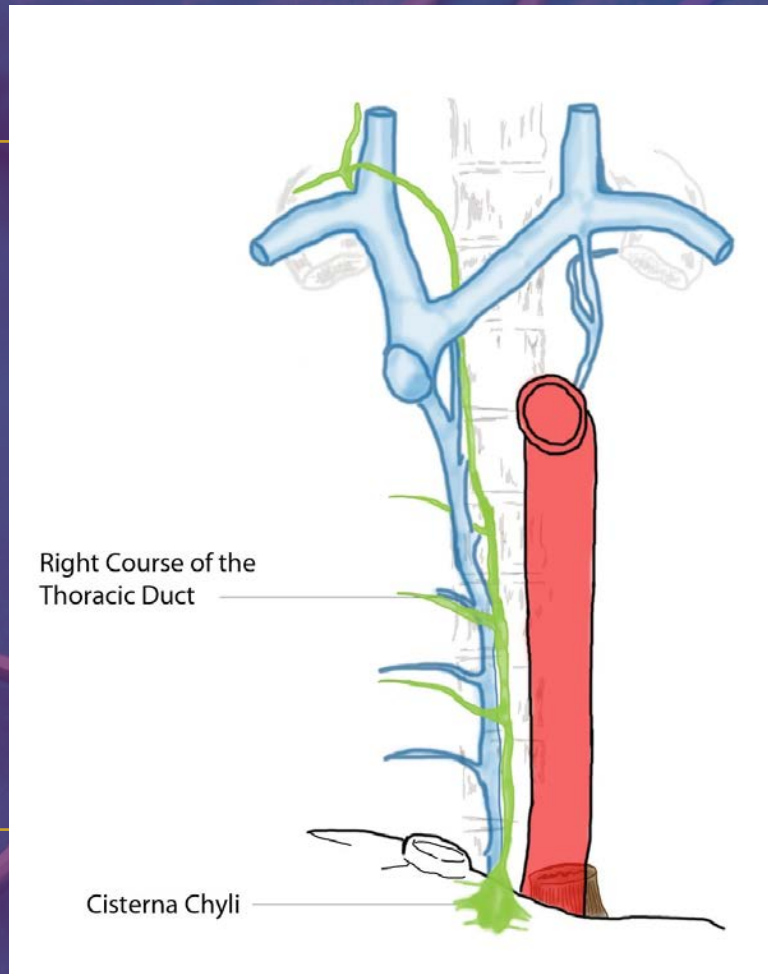
Lymphoenteric
Fistulae

Protein-Losing
Enteropathy

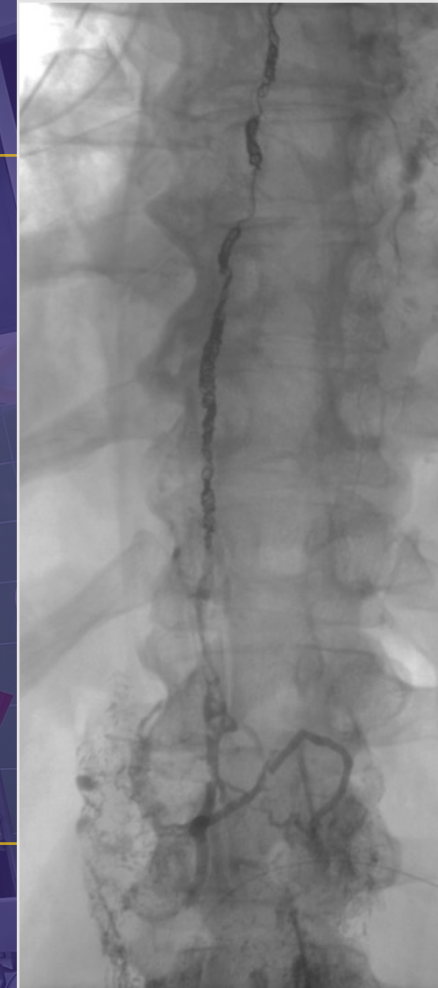
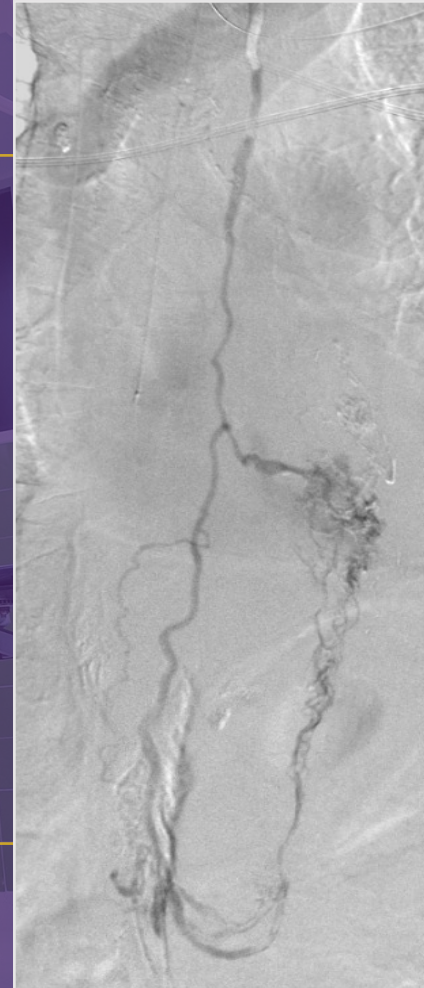
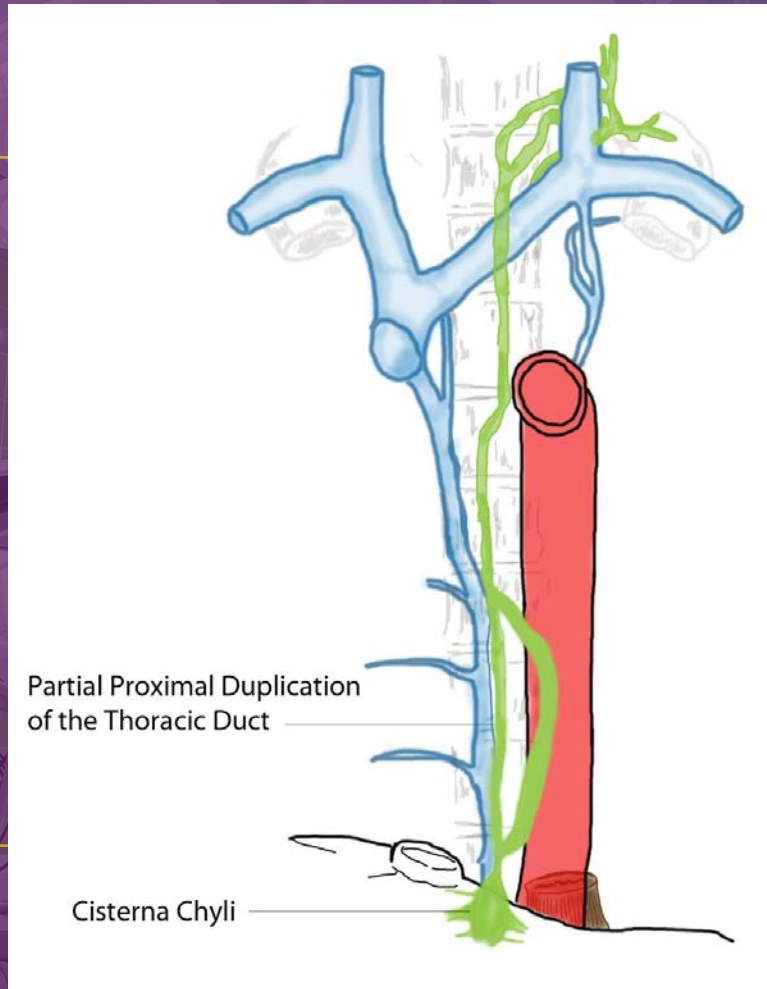
COMPLETE LEFT-SIDED LYMPHATICS



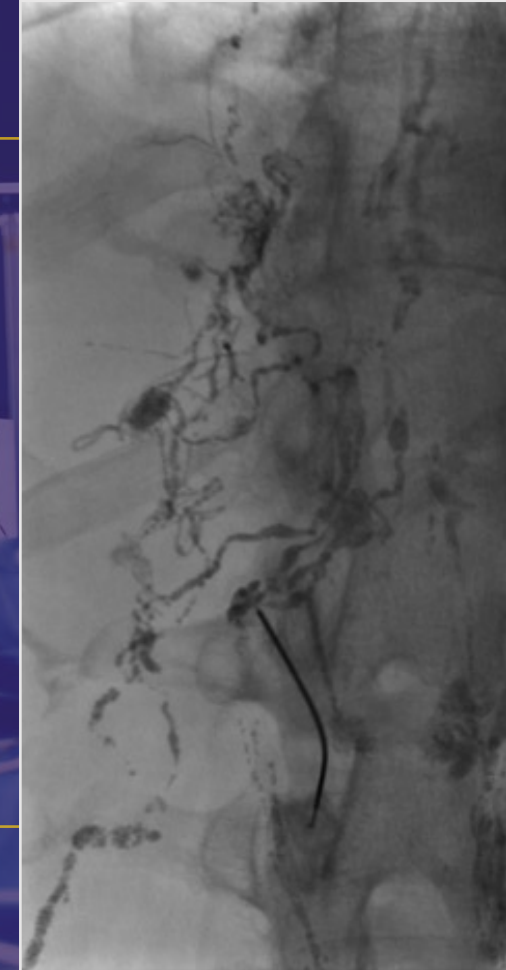
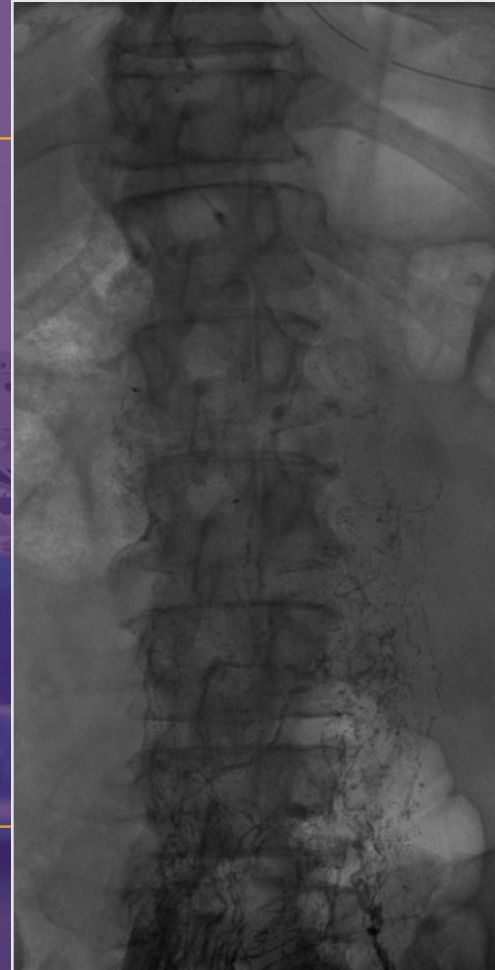
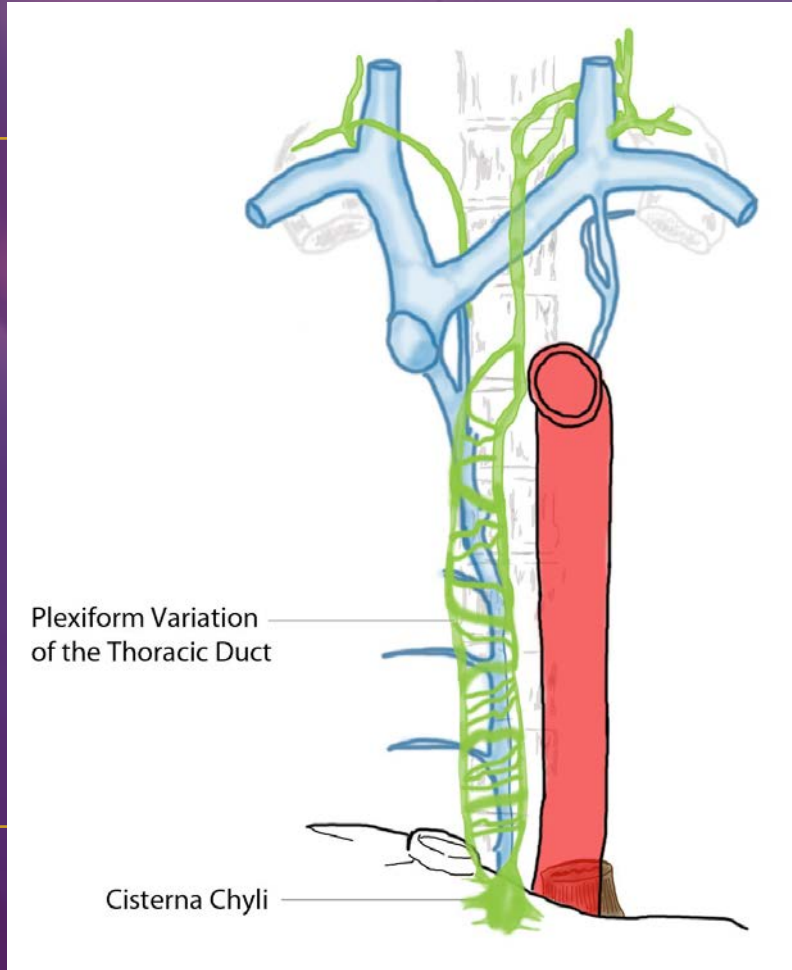
COMPLETE RIGHT-SIDED LYMPHATICS



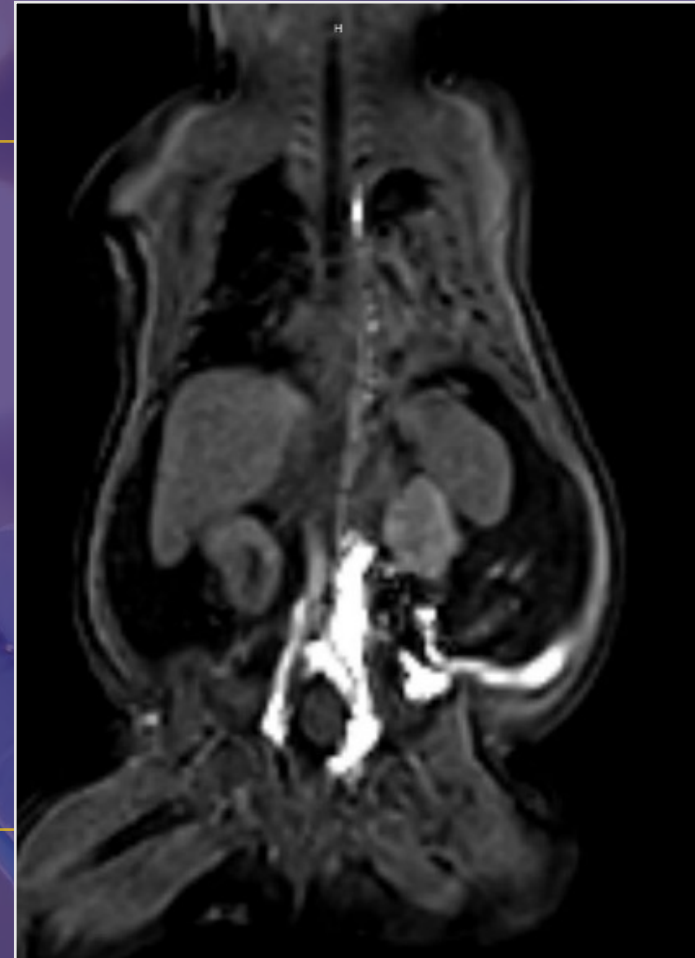
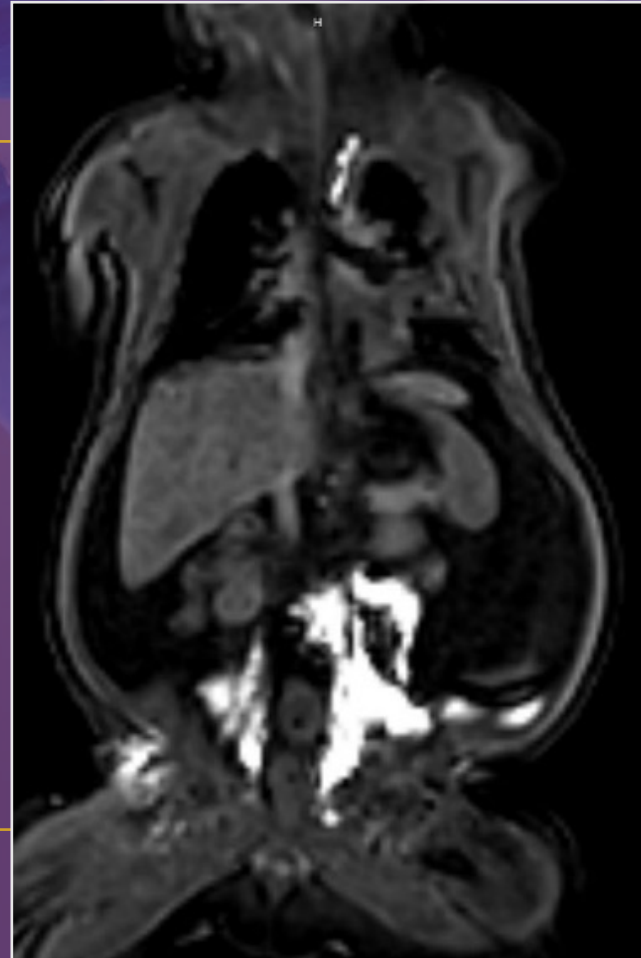
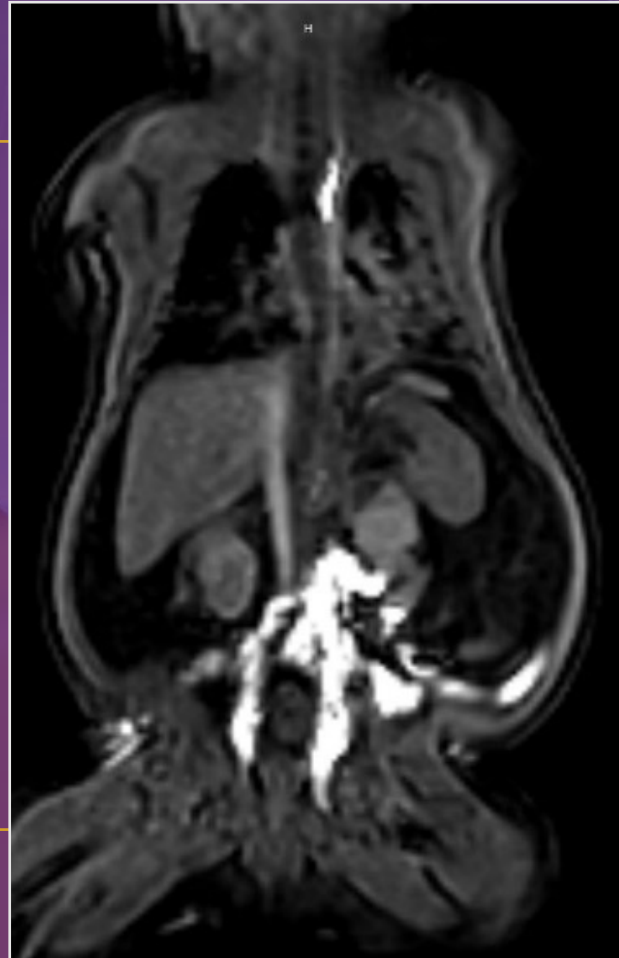
DUPLICATED LYMPHATICS



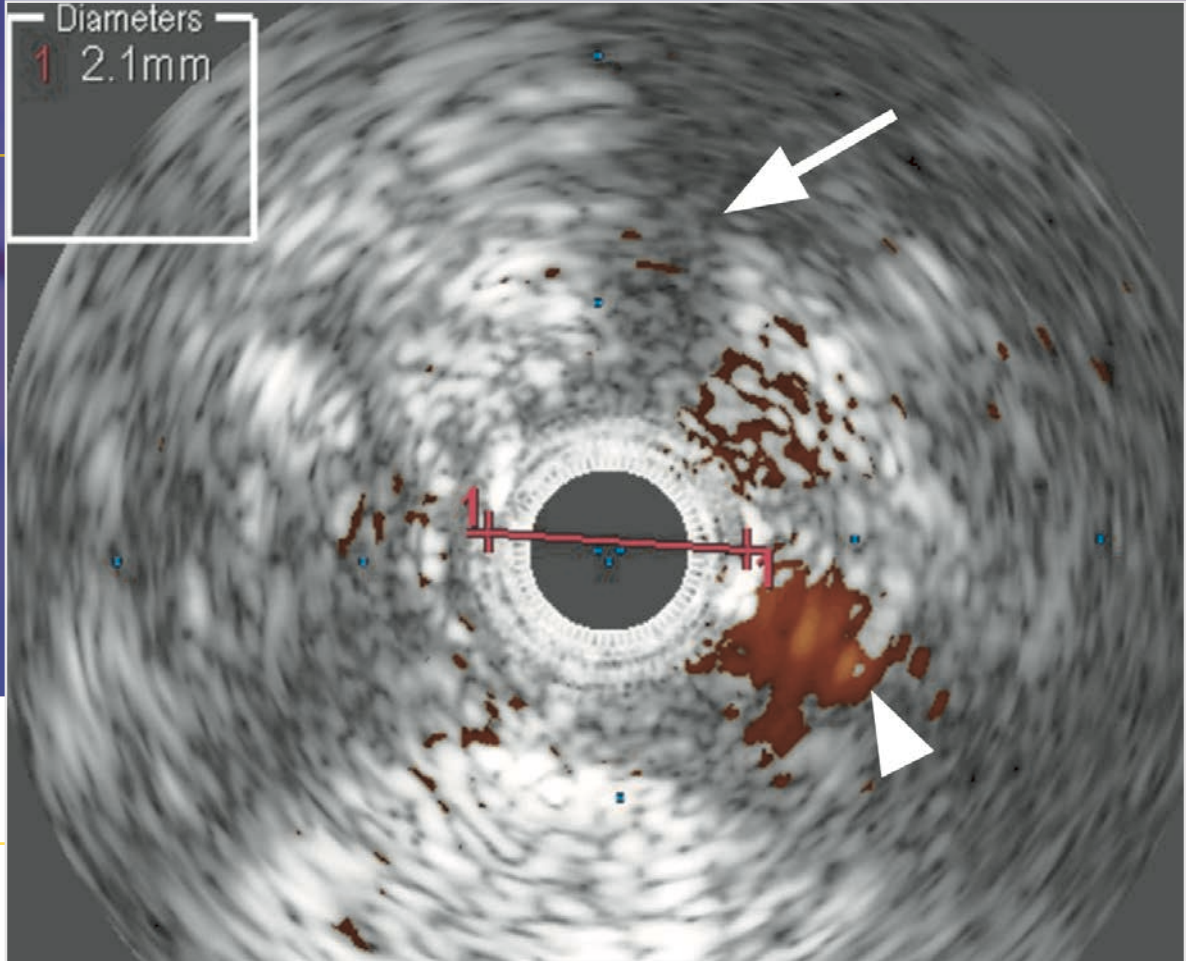
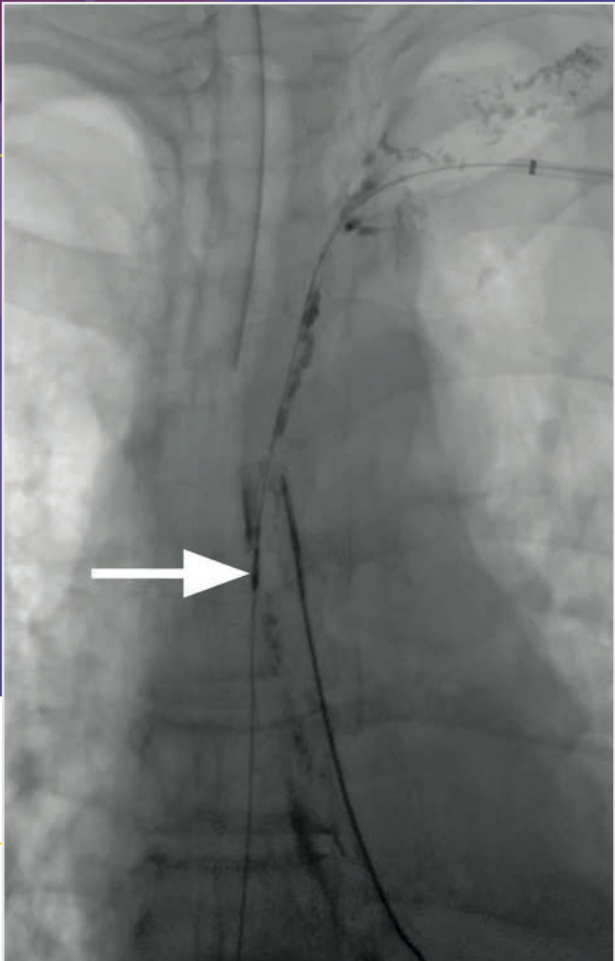
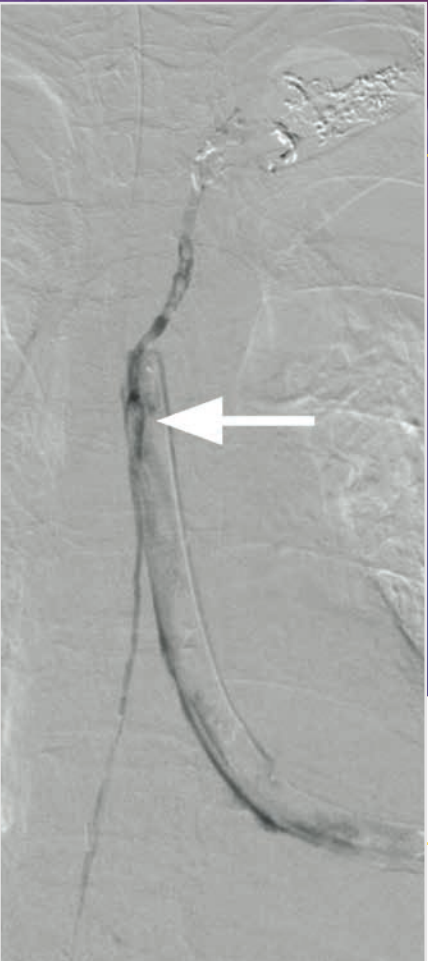
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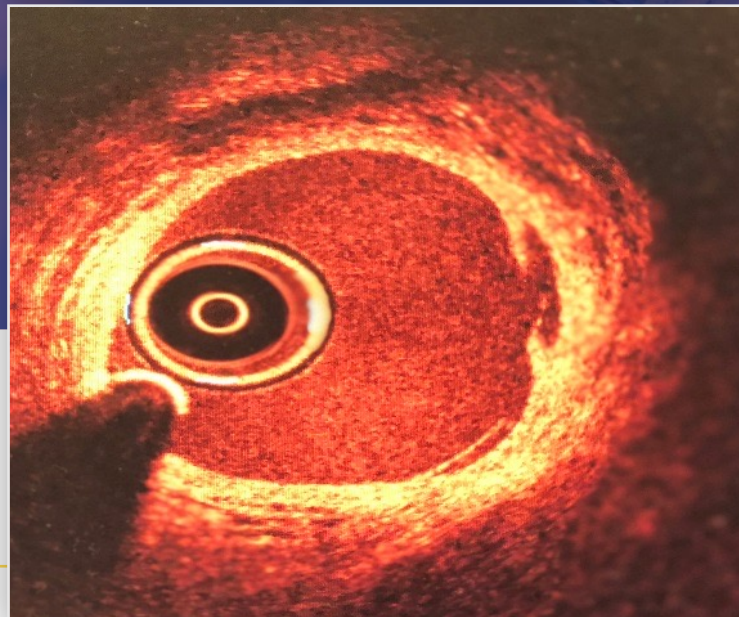
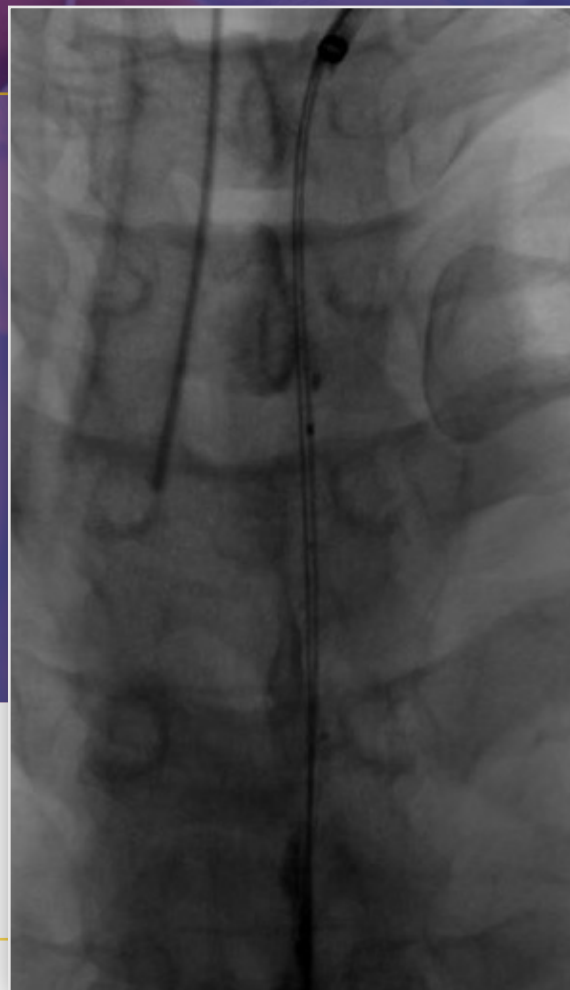
MAGNETIC RESONANCE LYMPHANGIOGRAPHY



ENDOLYMPHATIC ULTRASOUND



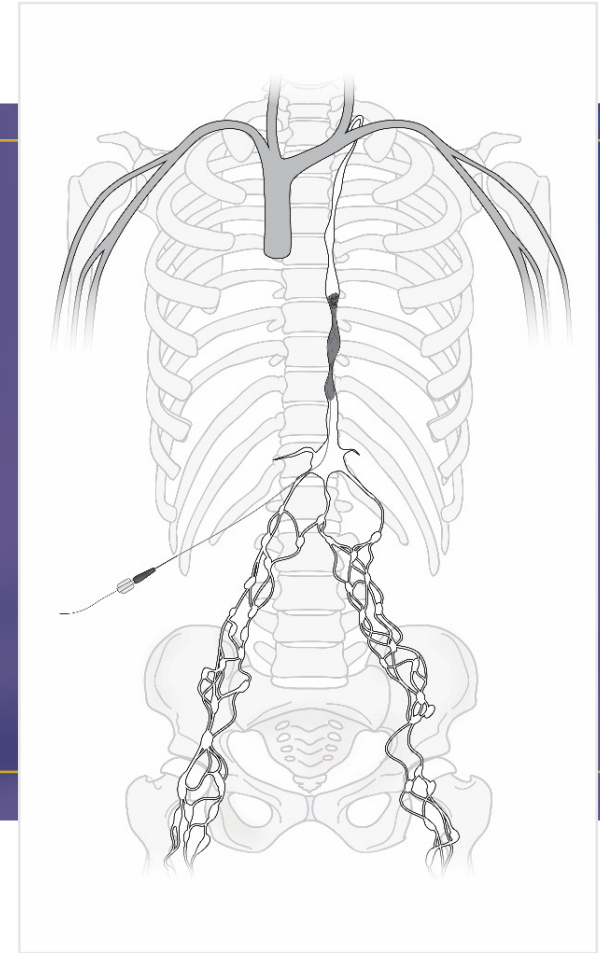
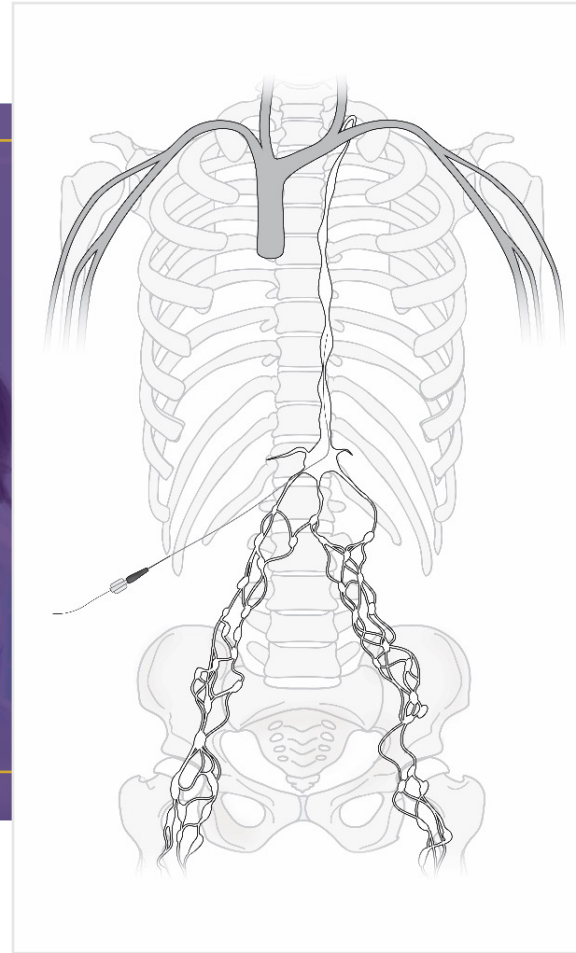
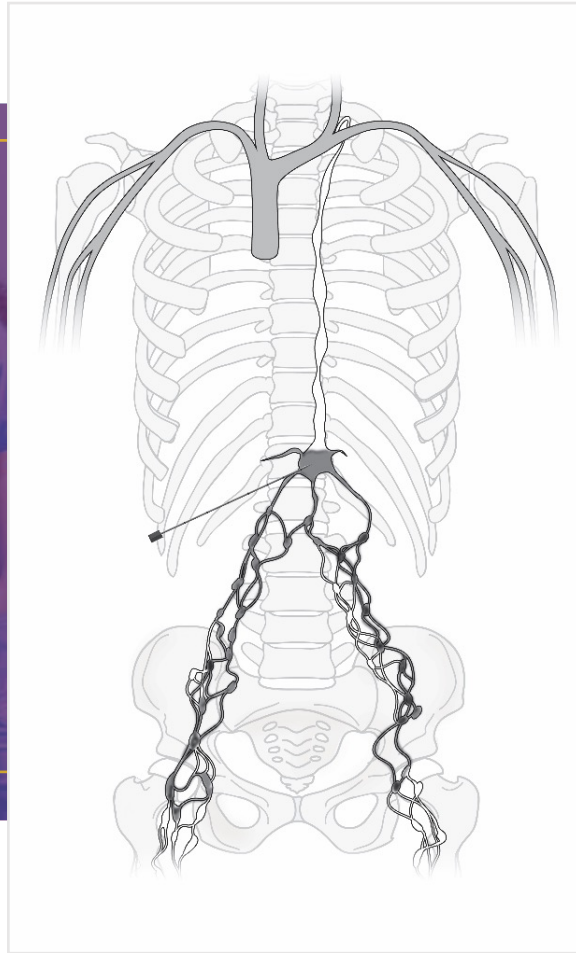
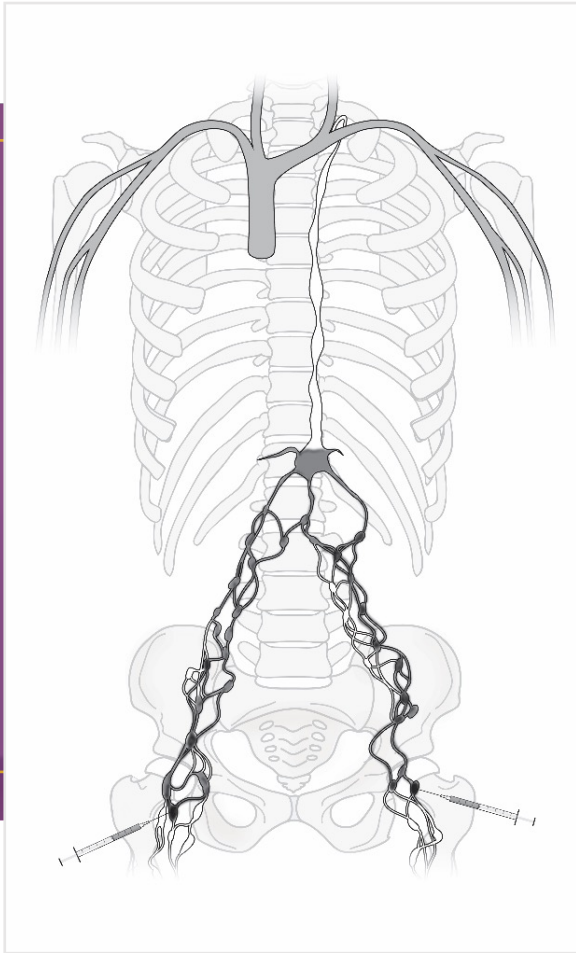
ENDOLYMPHATIC COHERENCE TOMOGRAPHY



LIPIODOL (ETHIODIZED OIL) INJECTION



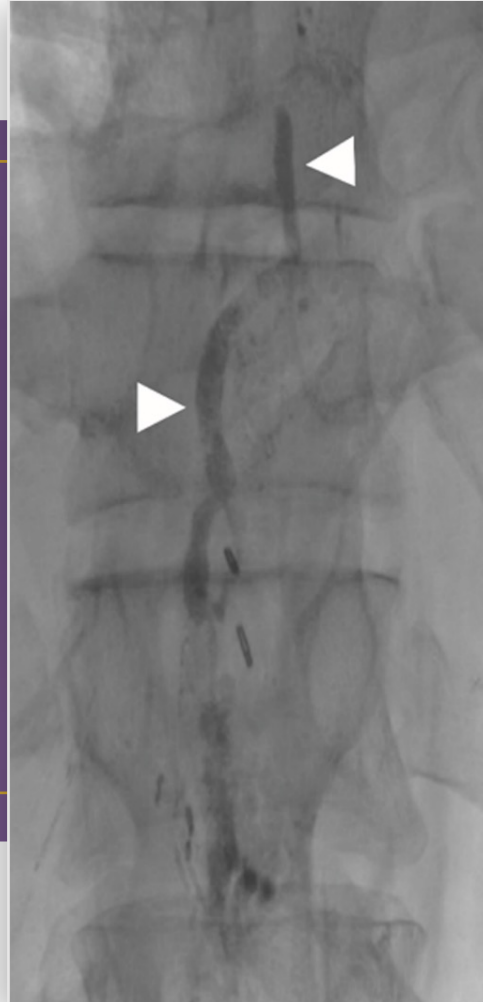
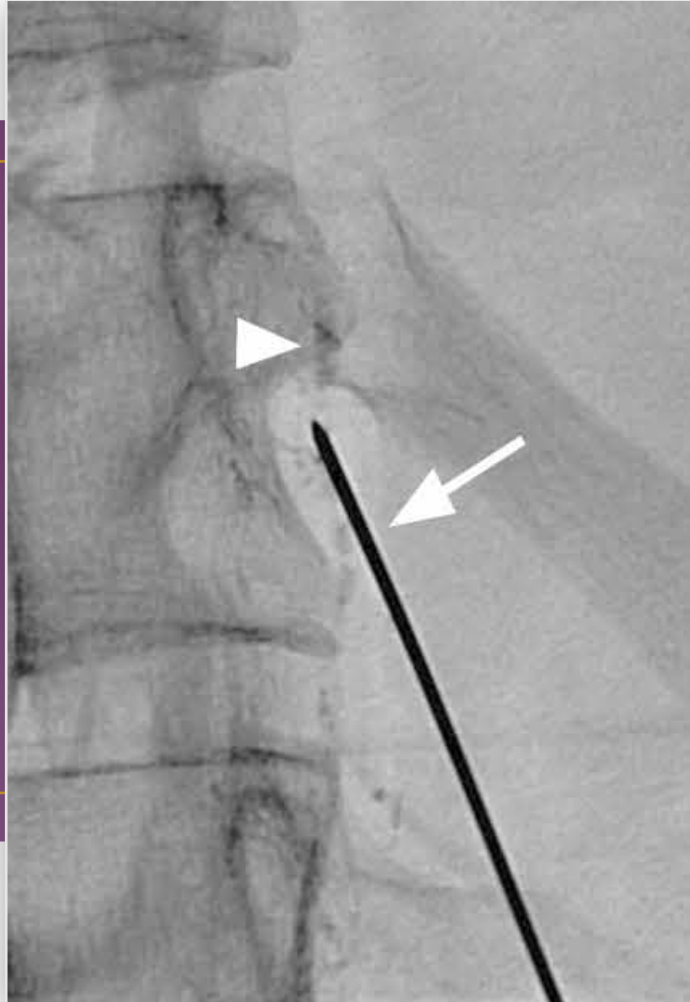
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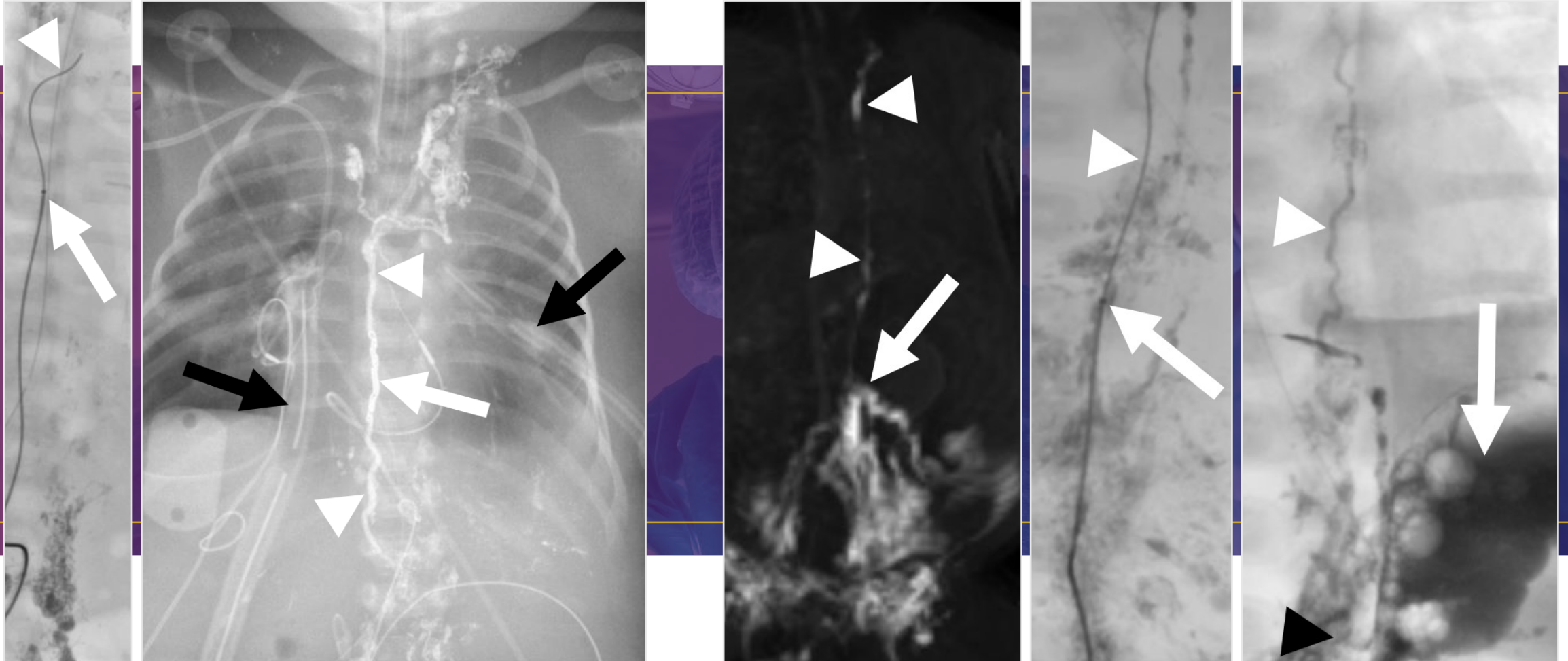
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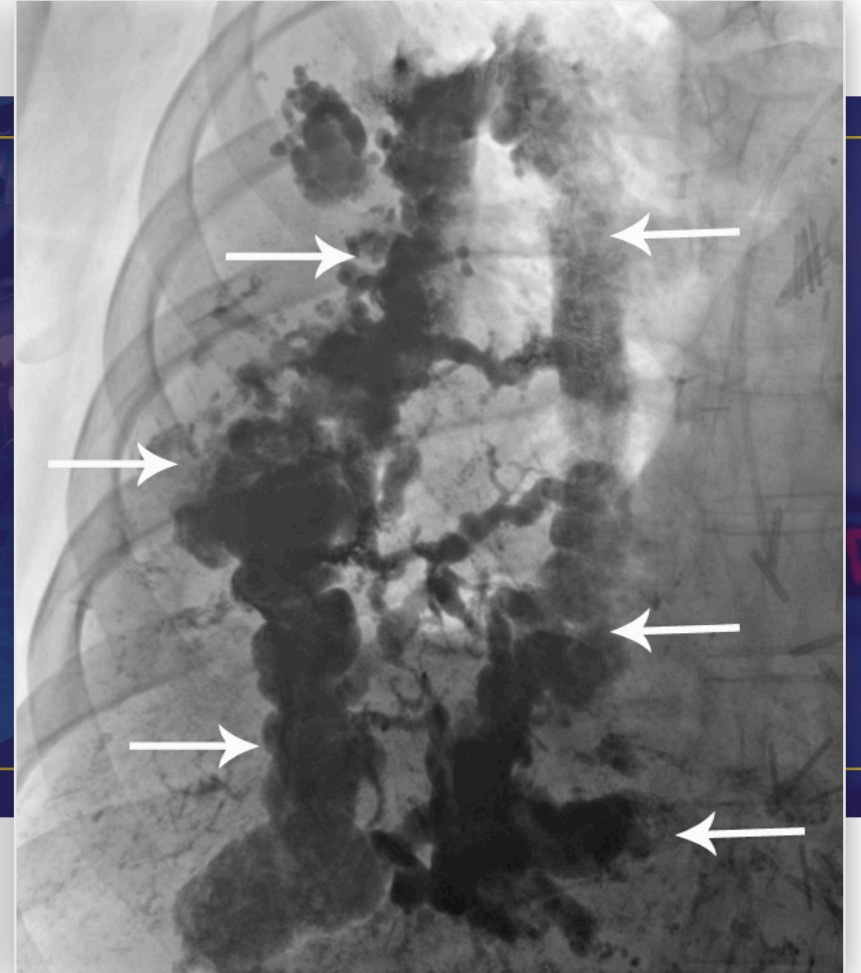
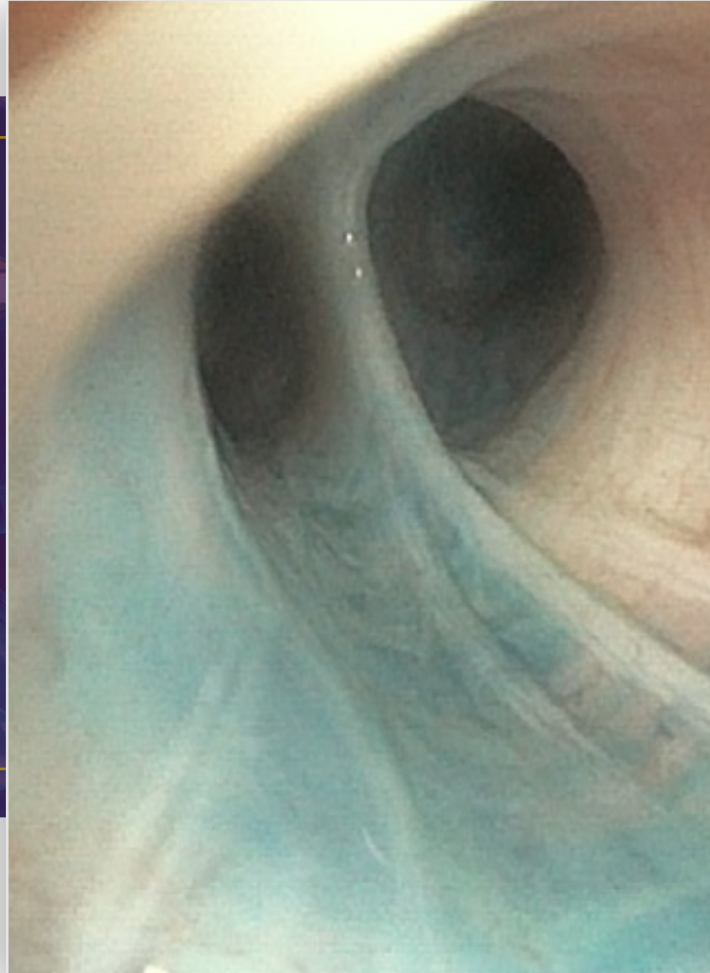
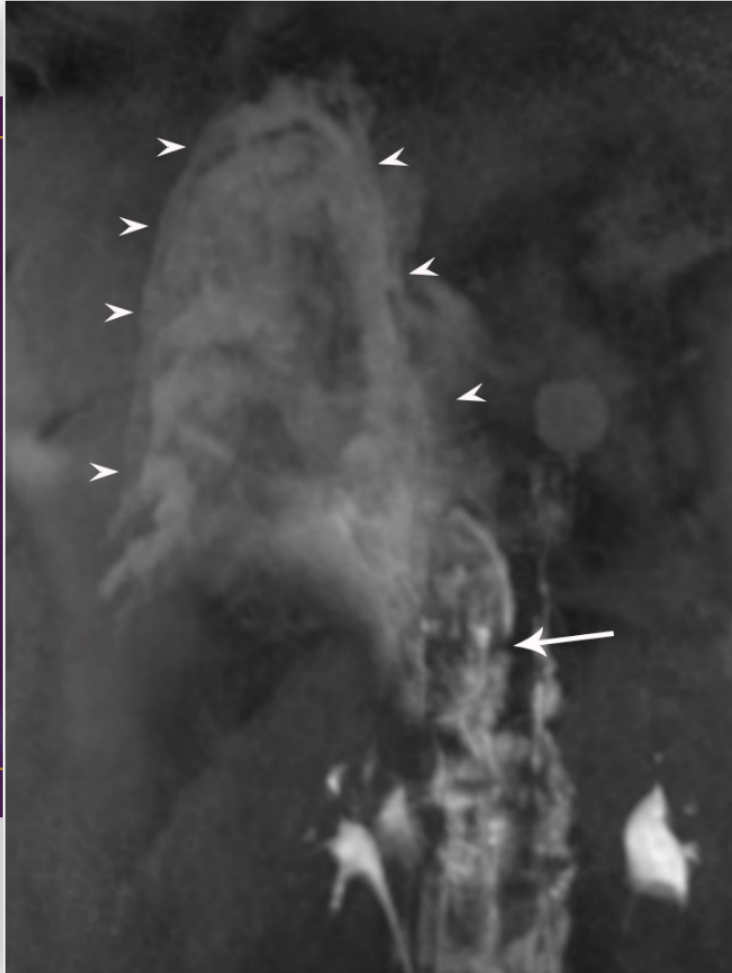
THORACIC DUCT EMBOLIZATION (ADULT)



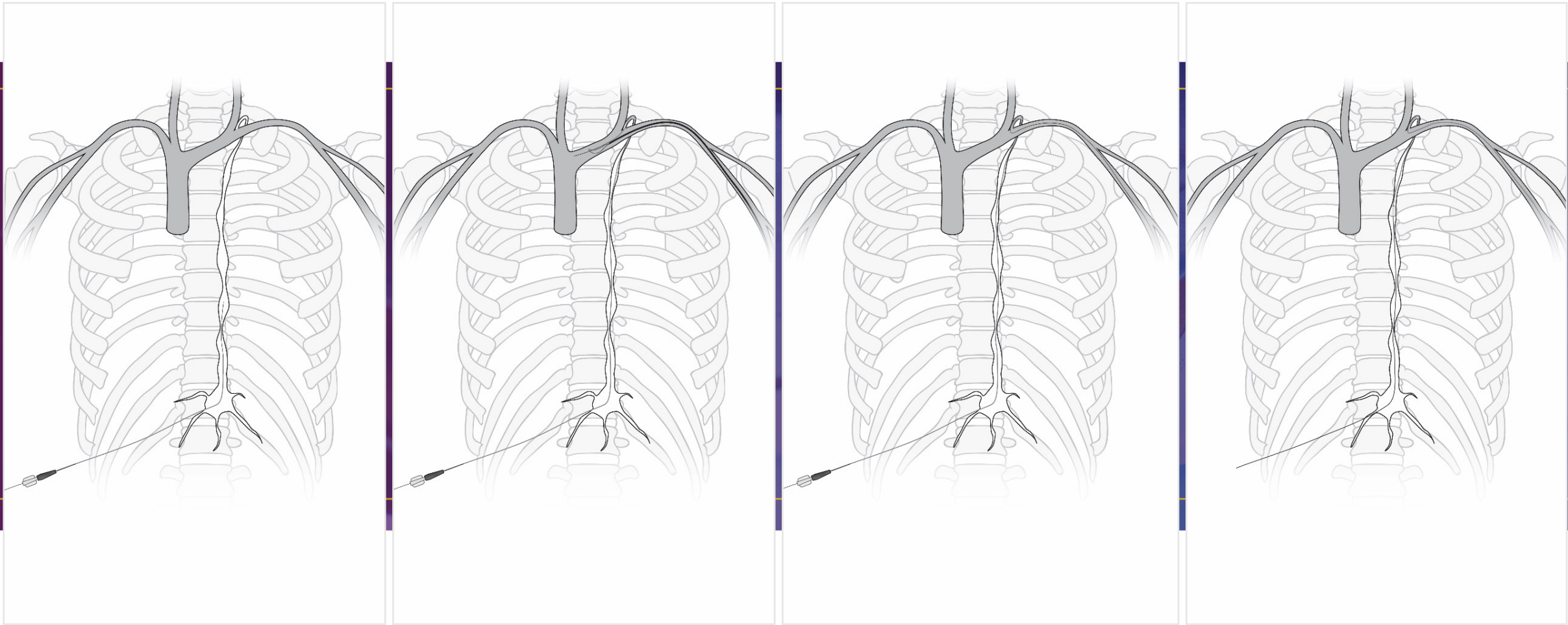
THORACIC DUCT EMBOLIZATION (NEONATE)



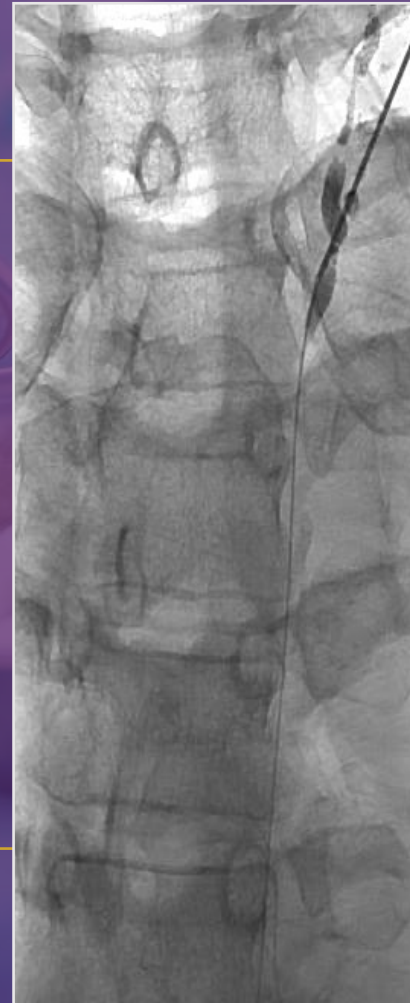
LYMPHATIC MALFORMATION EMBOLIZATION



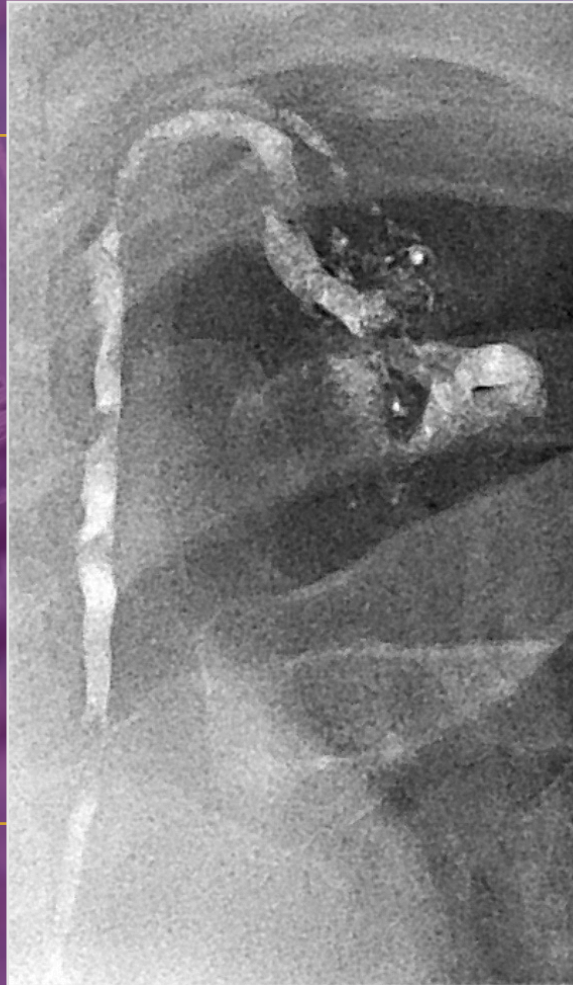
RETROGRADE LYMPHATIC EMBOLIZATION



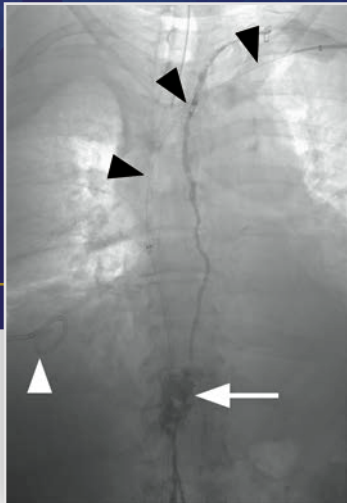
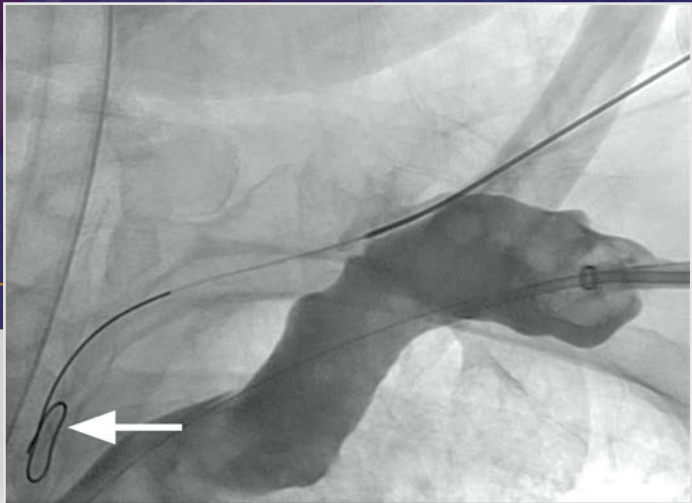
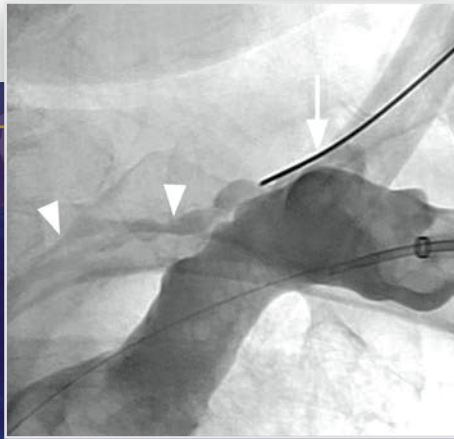
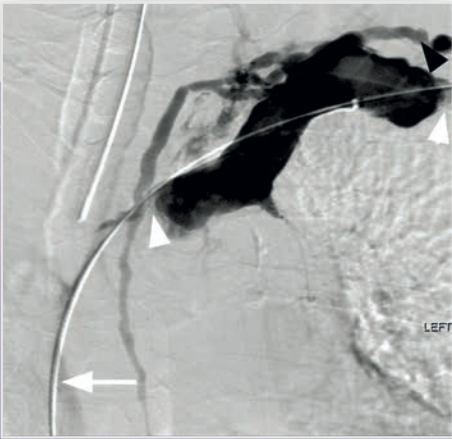
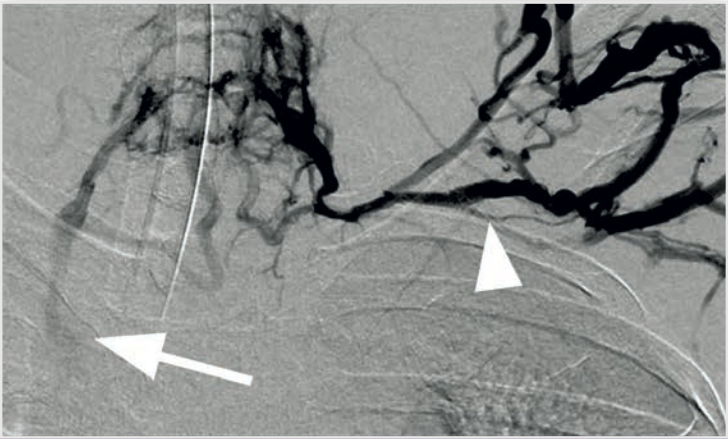
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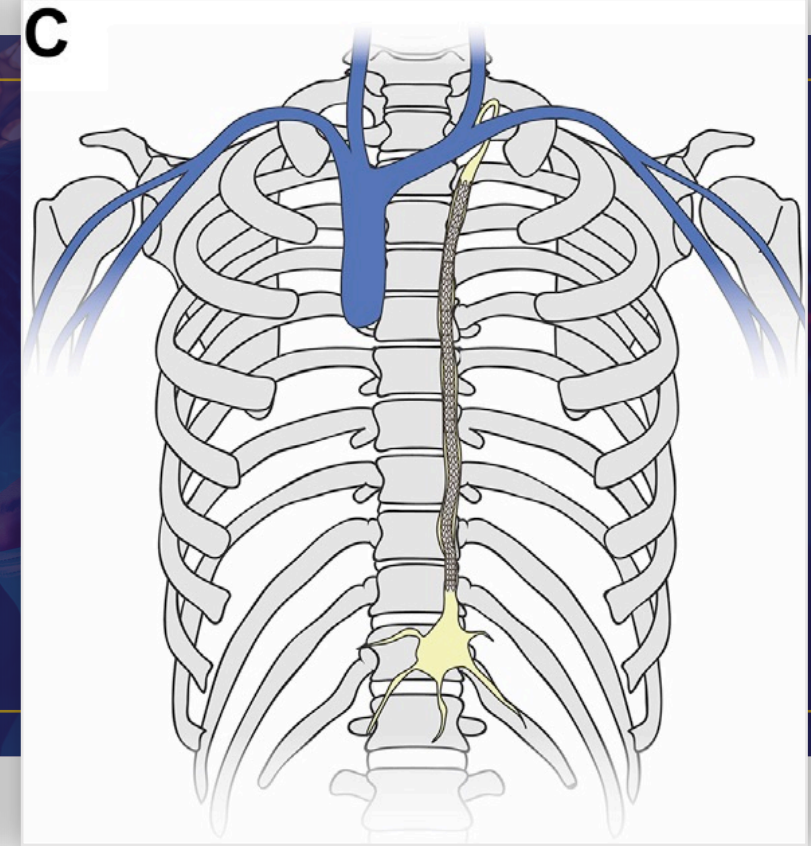
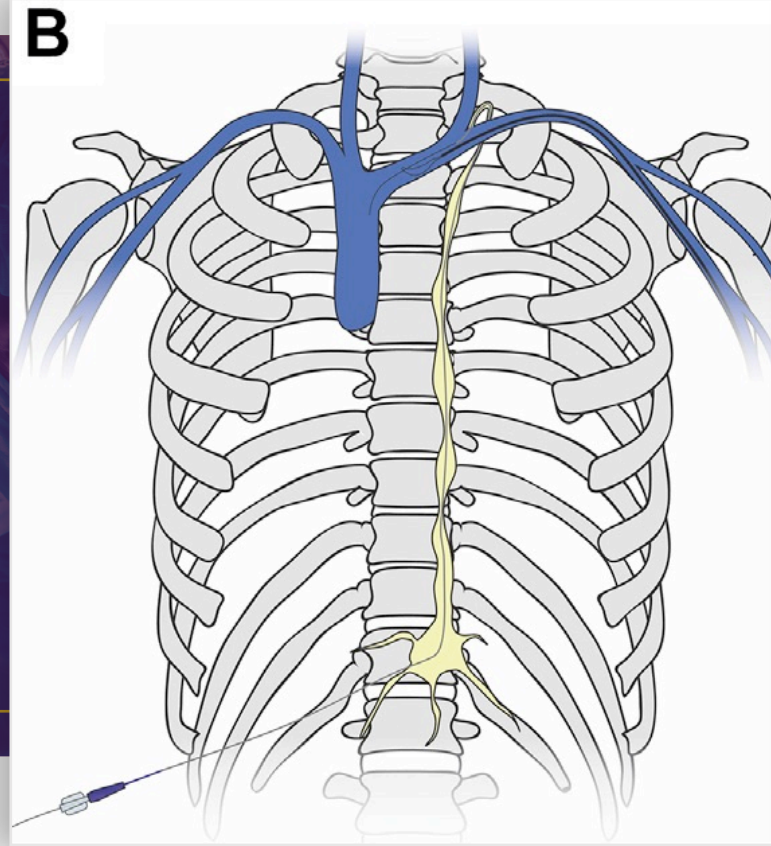
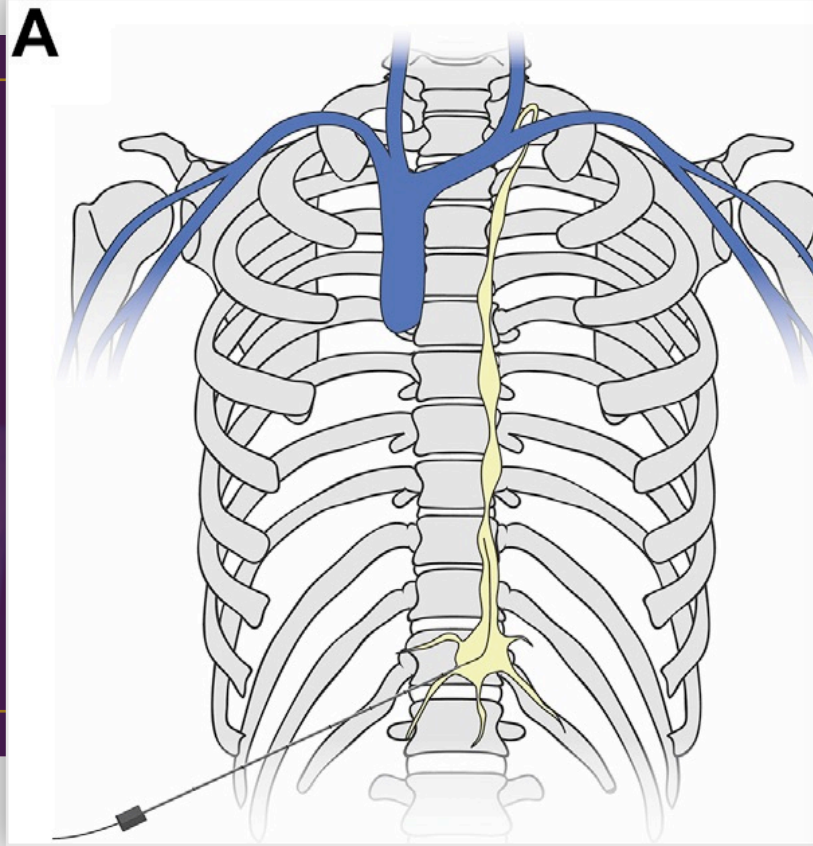
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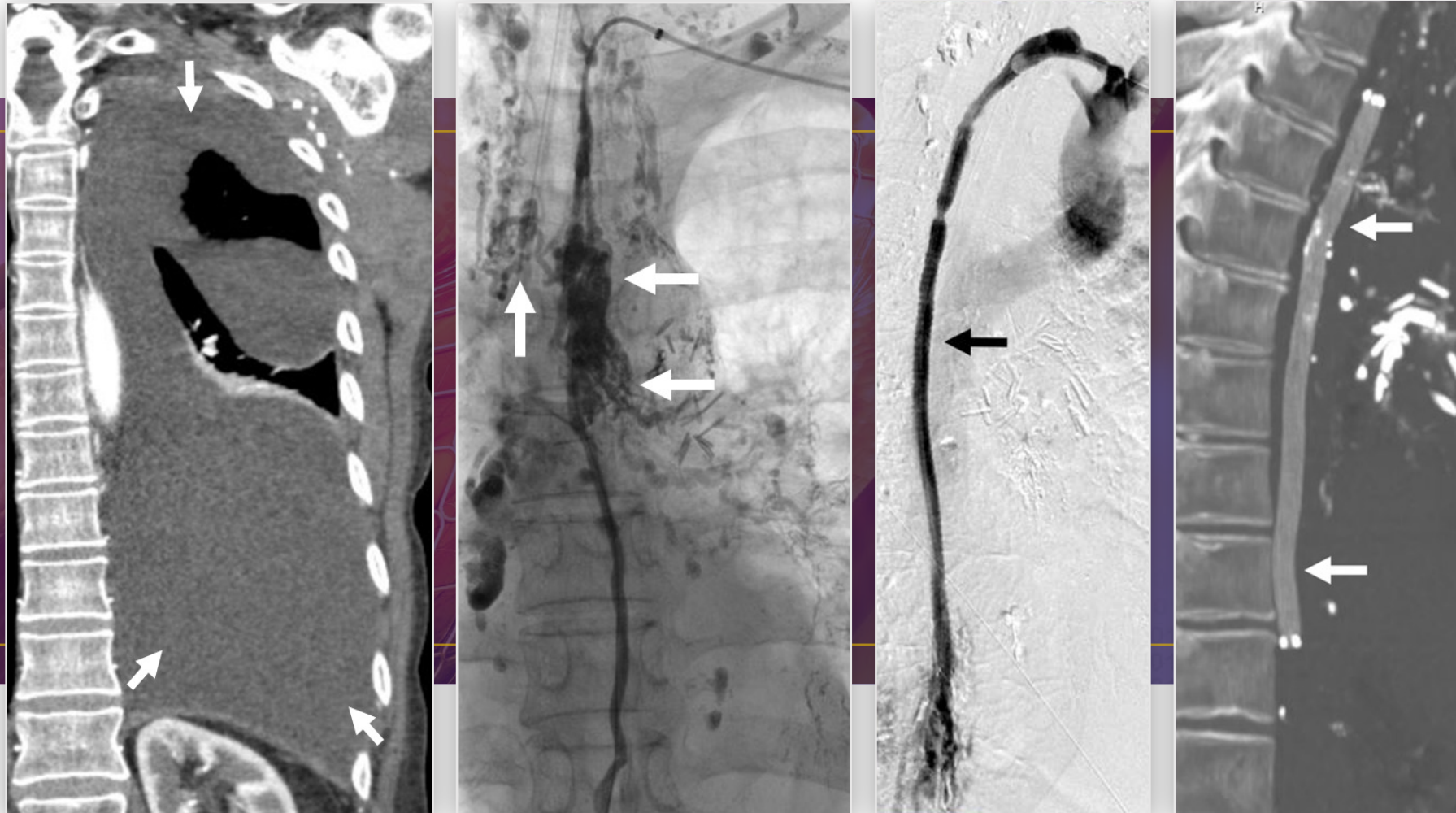
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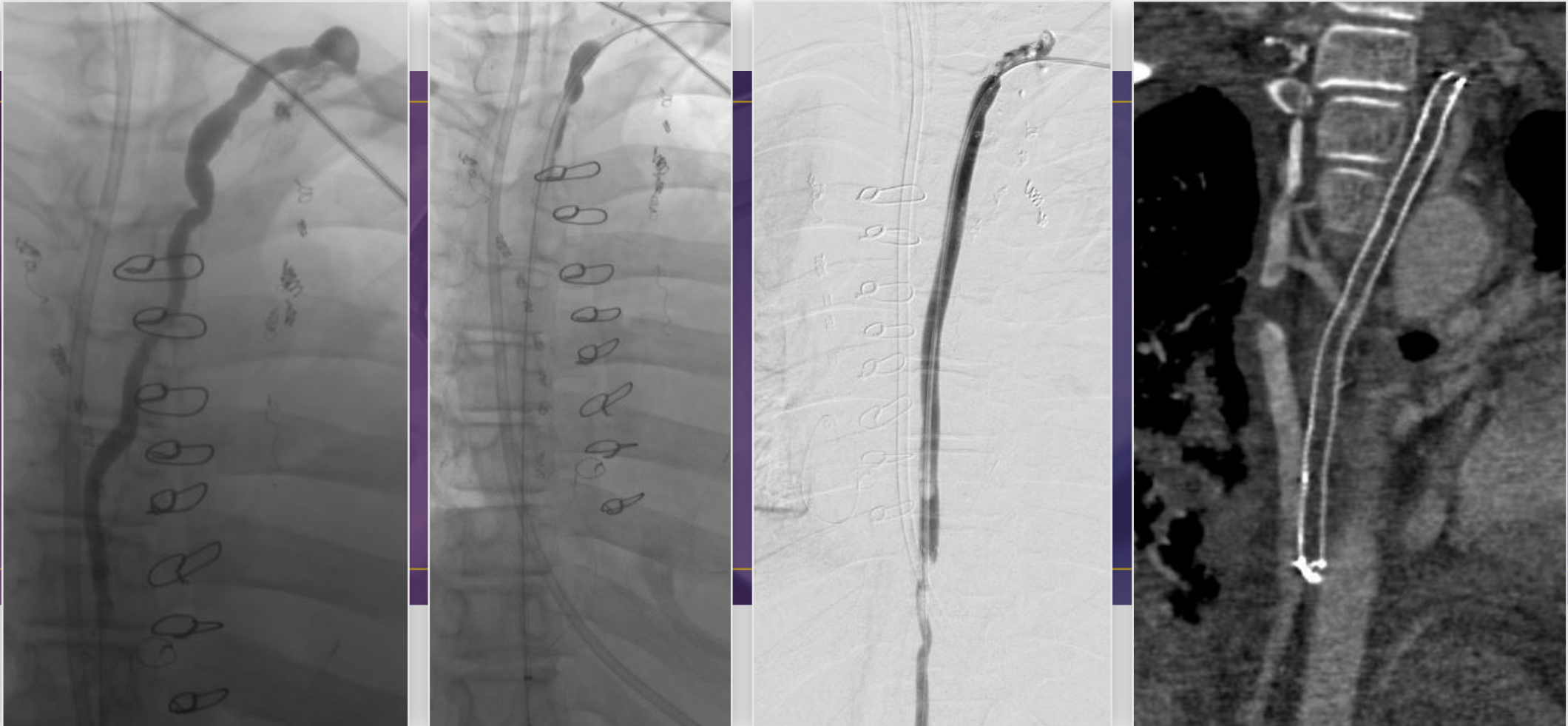
ENDOLYMPHATIC RECONSTRUCTION



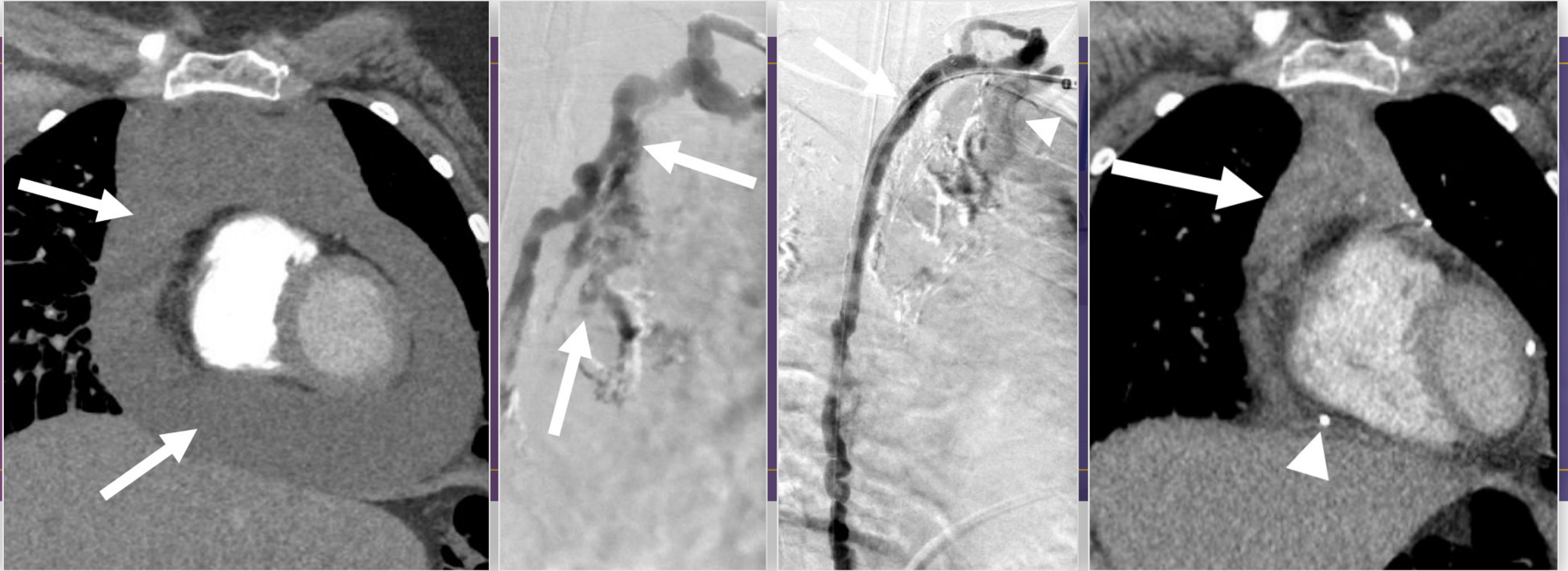
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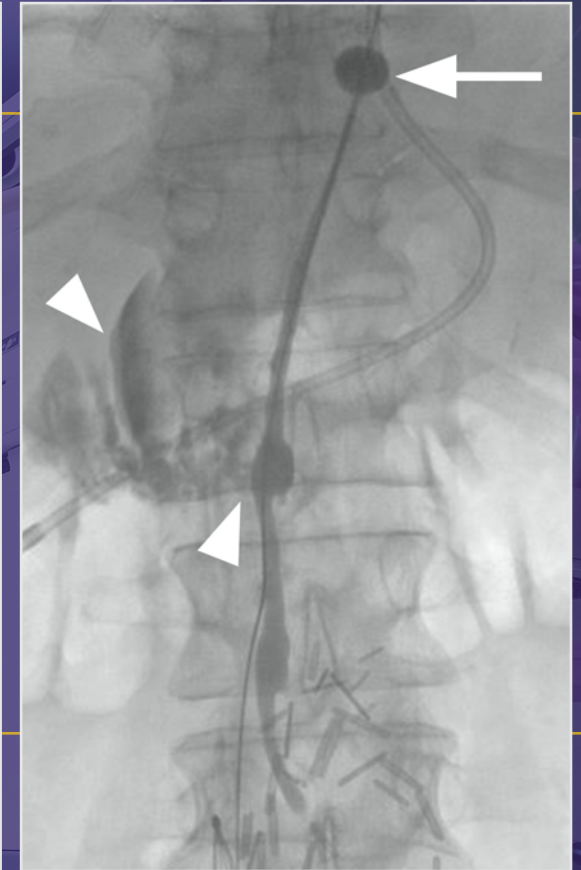
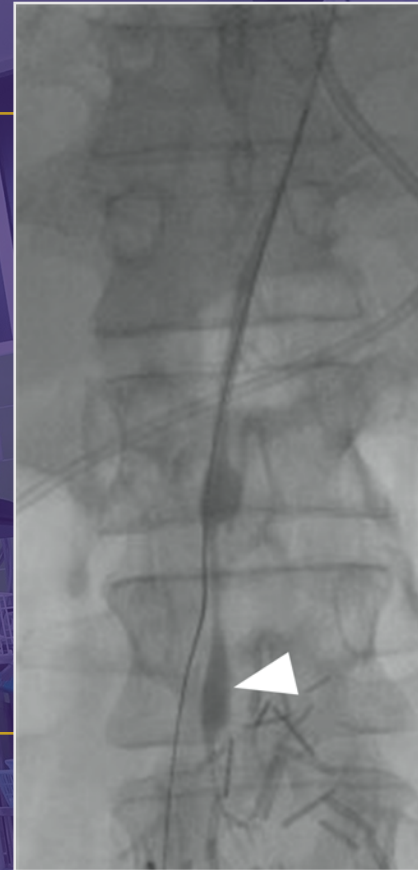
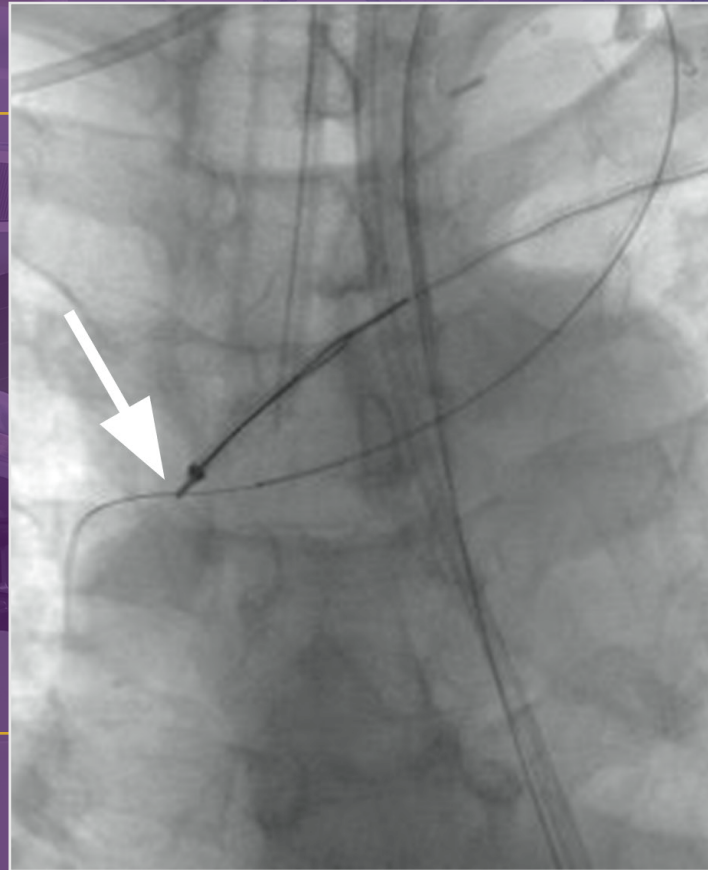
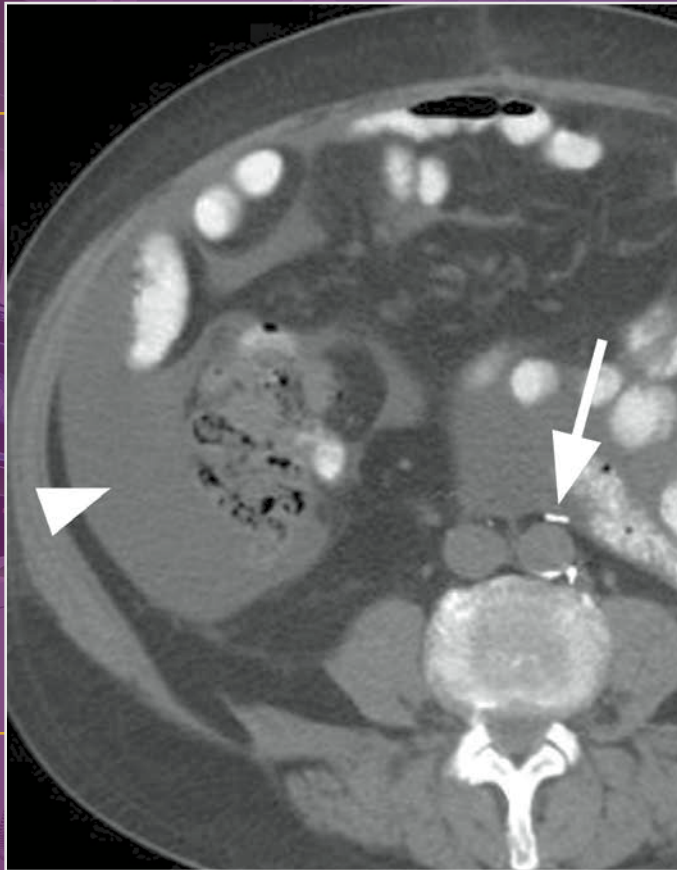
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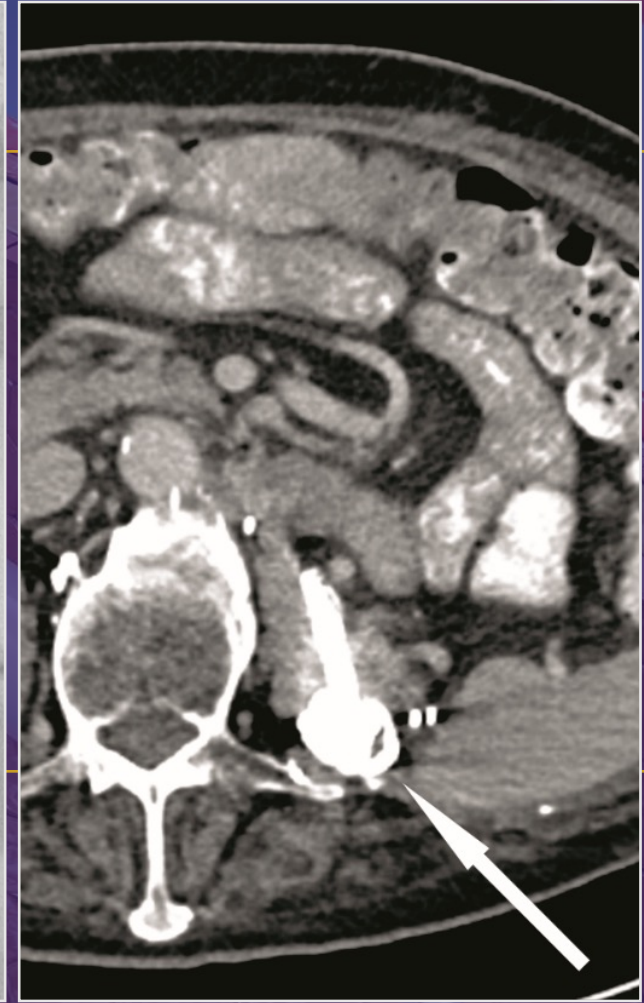
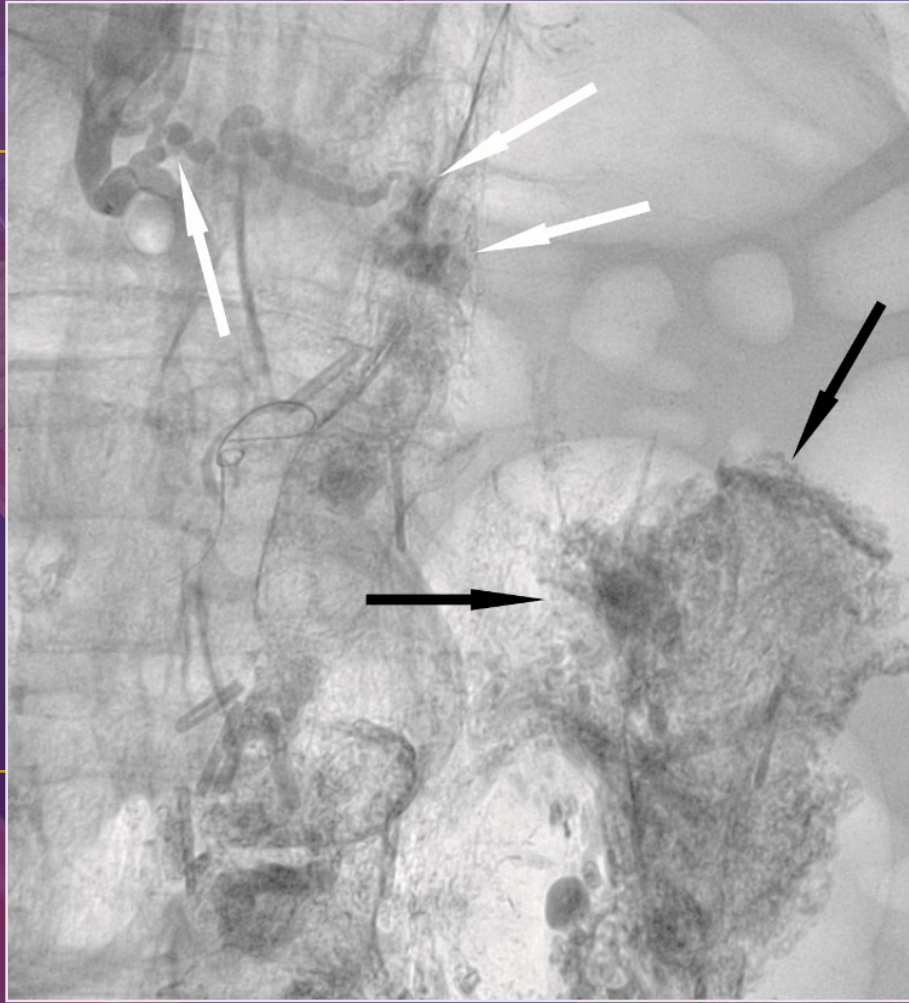
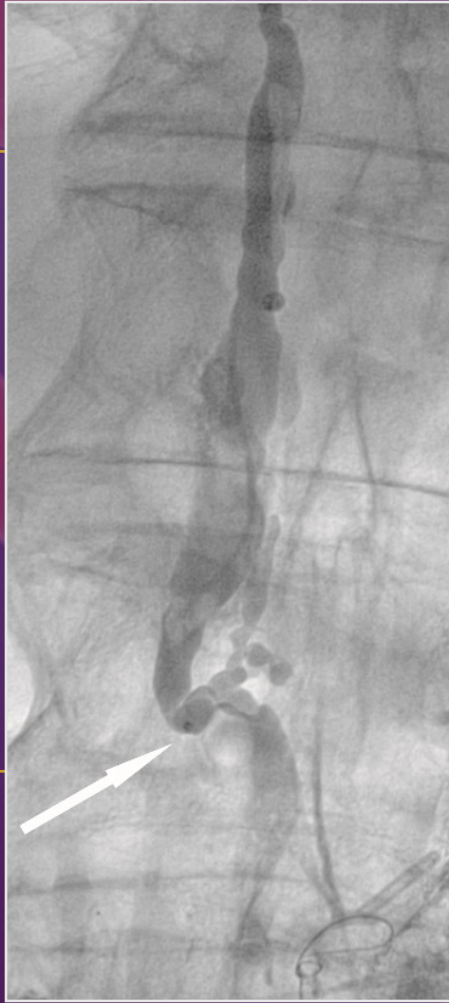
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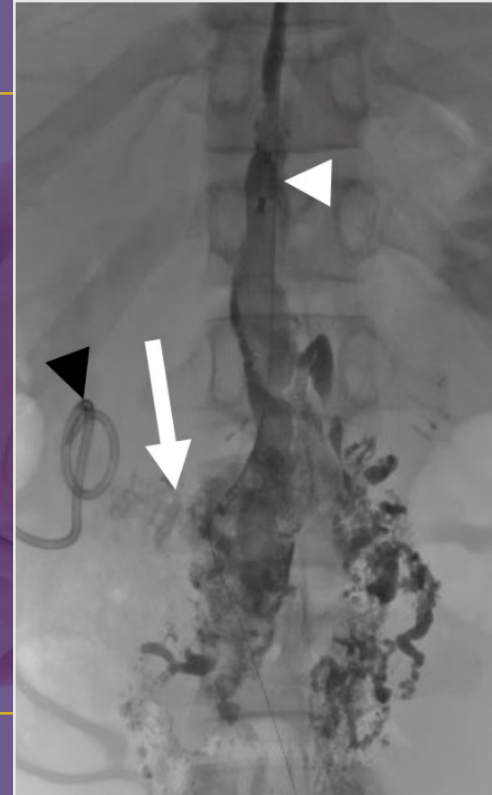
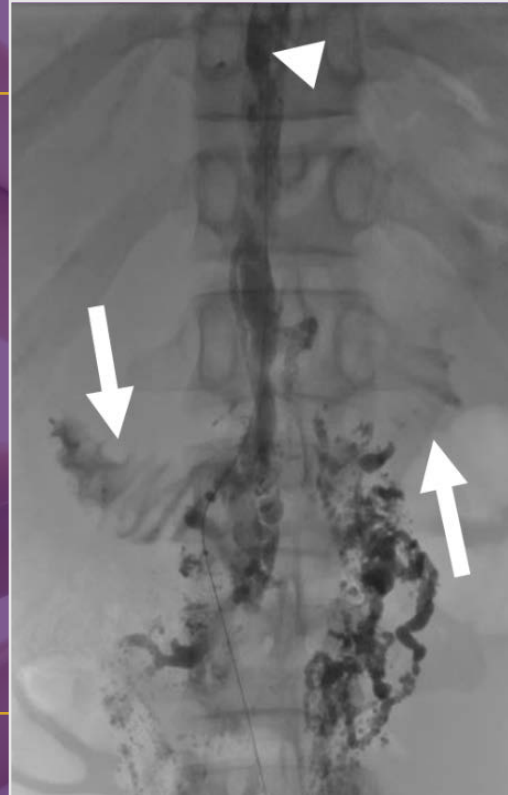
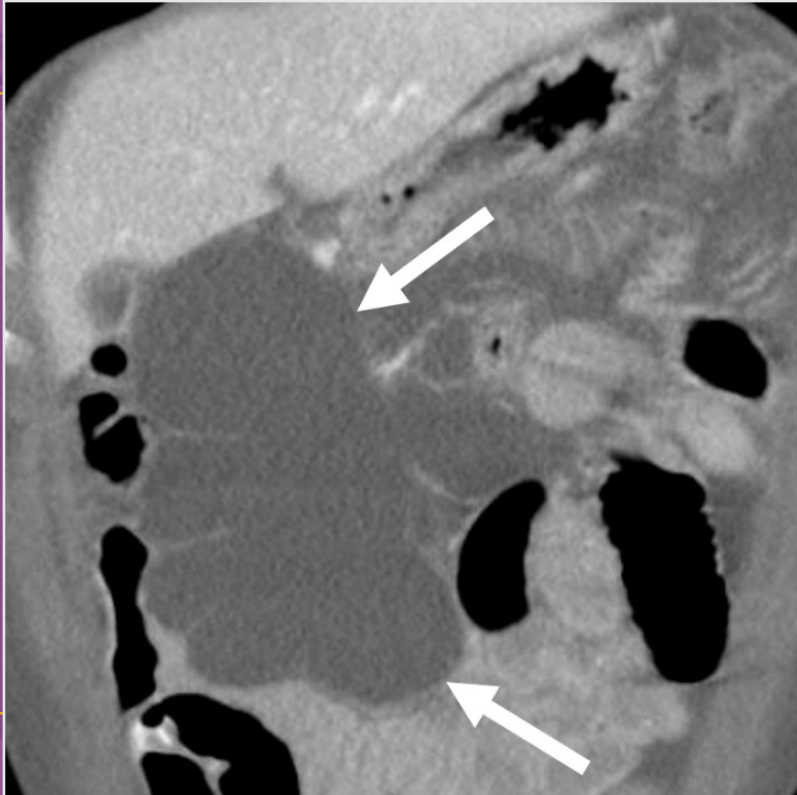
BALLOON-OCCLUDED RETROGRADE EMBOLIZATION



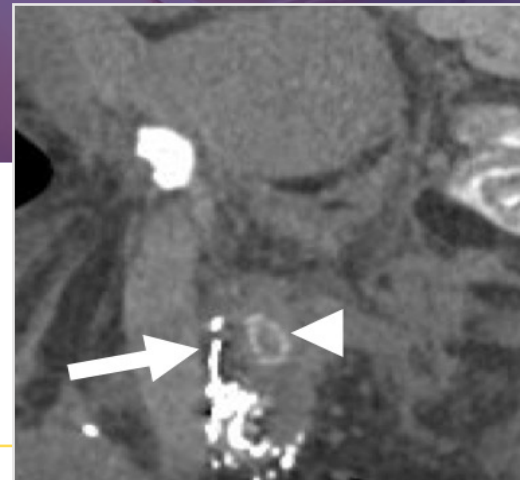
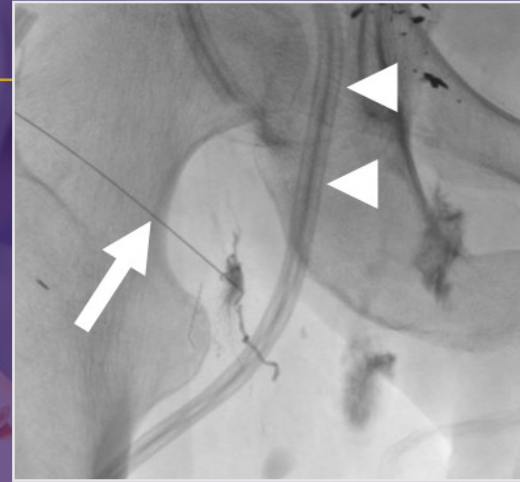
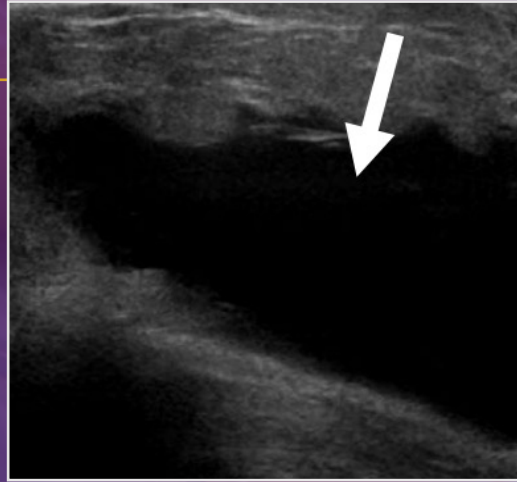
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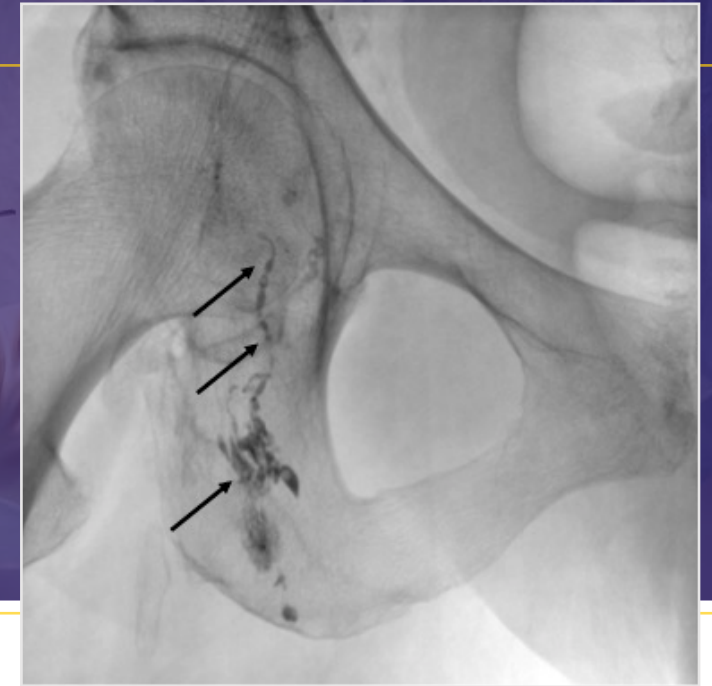
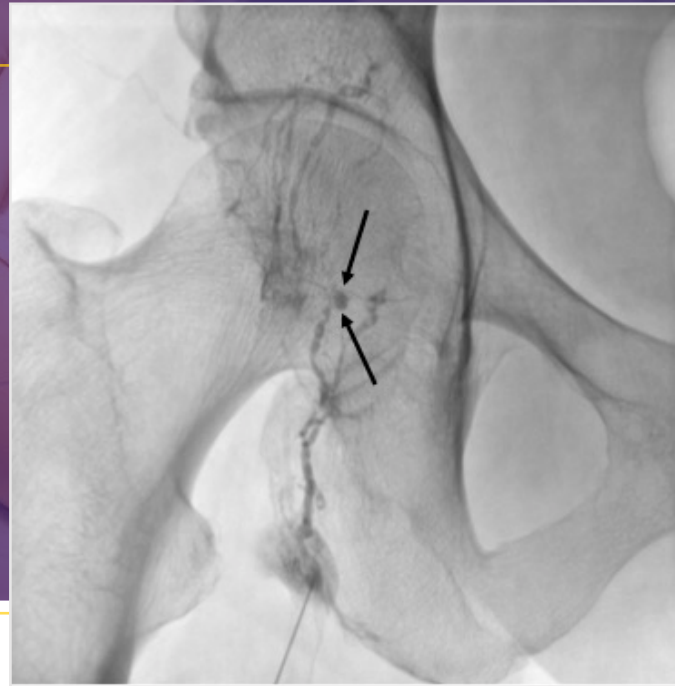
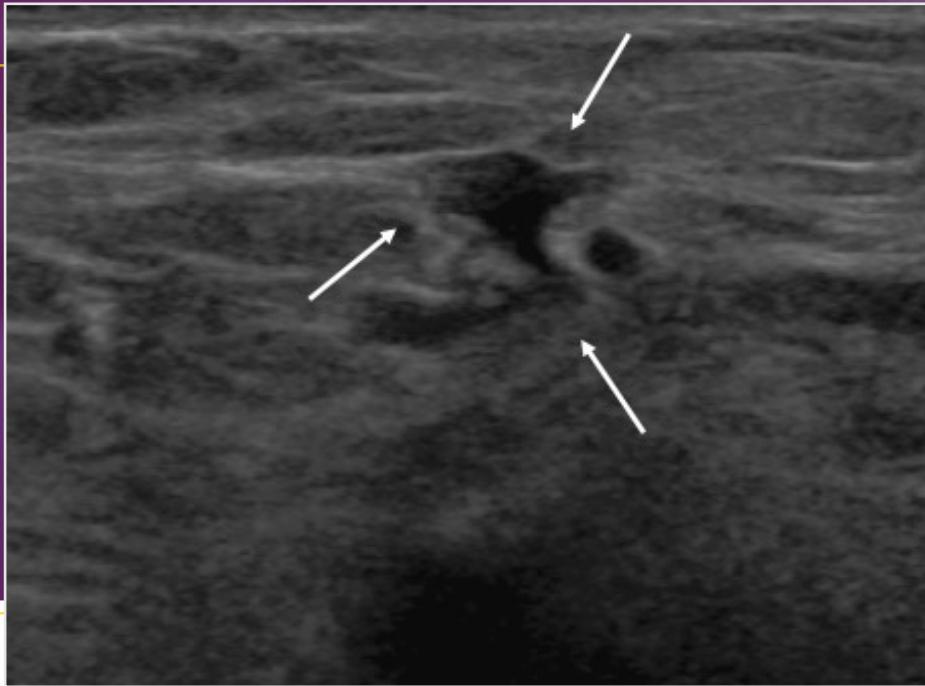
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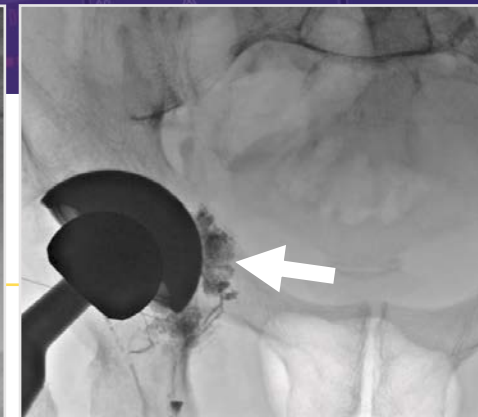
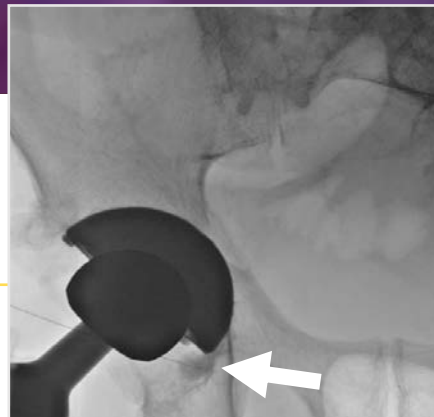
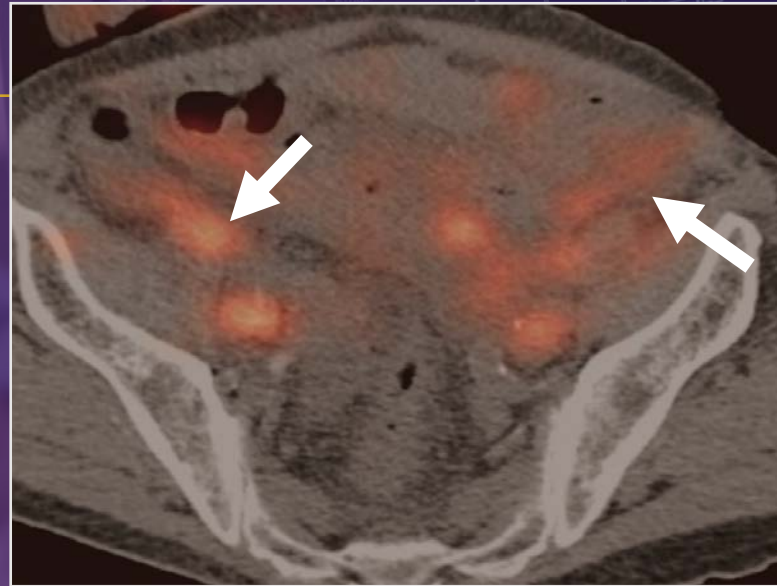
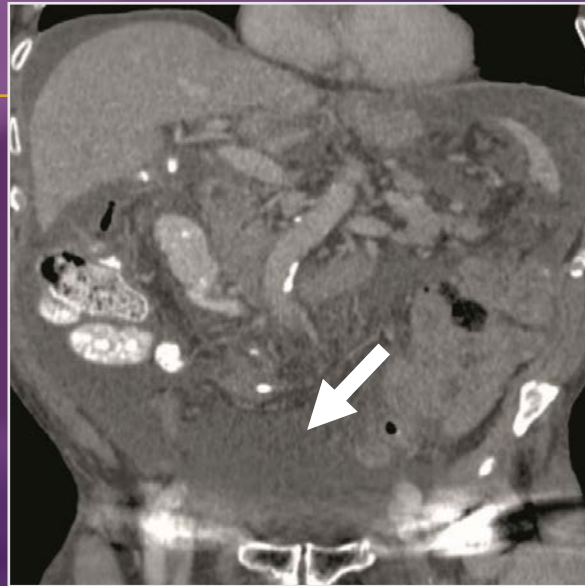
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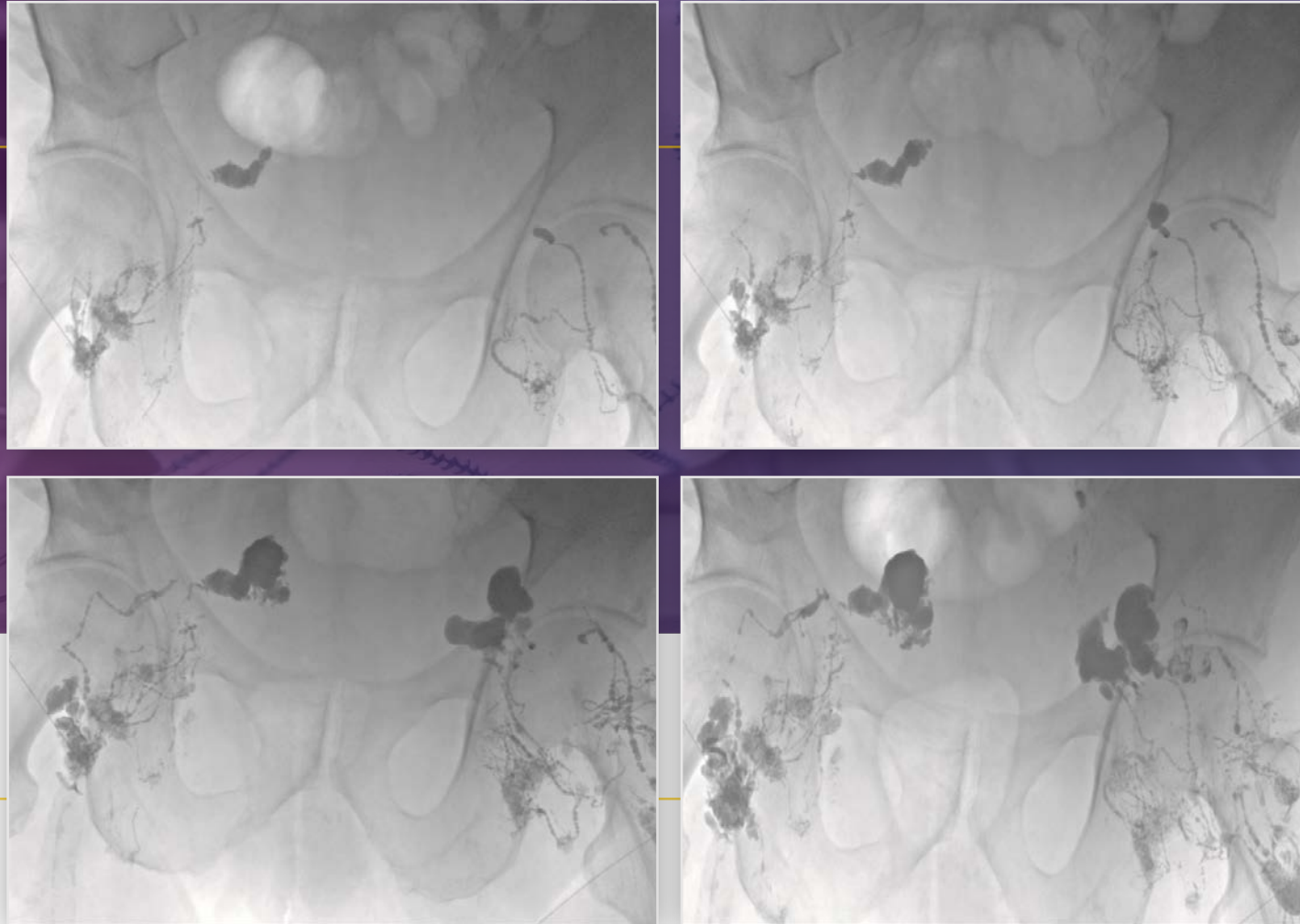
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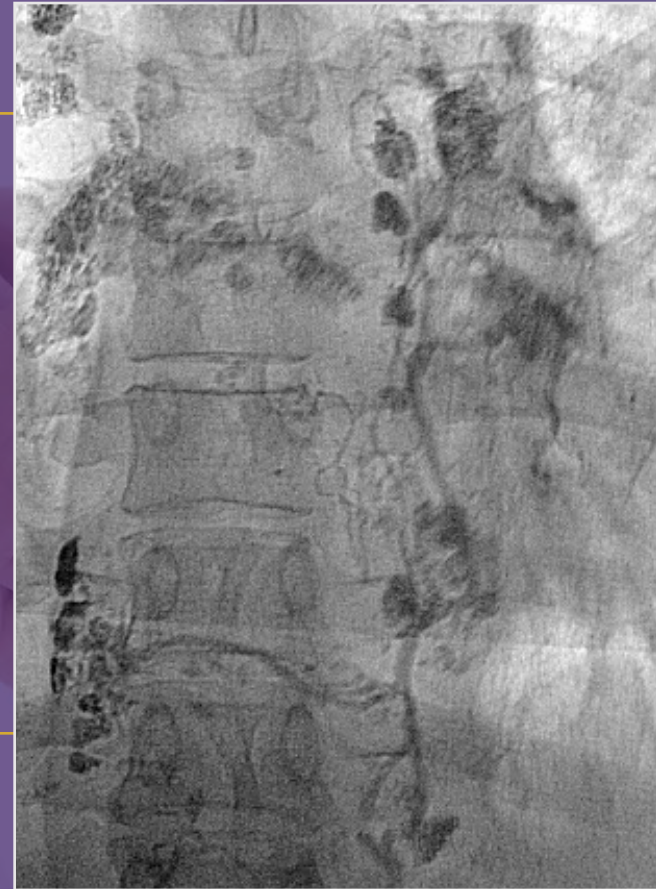
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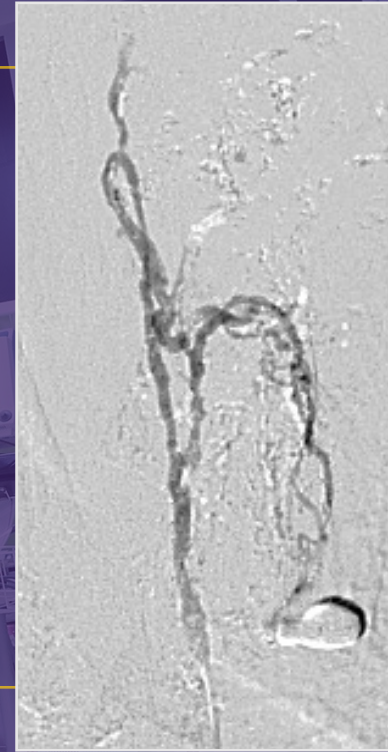
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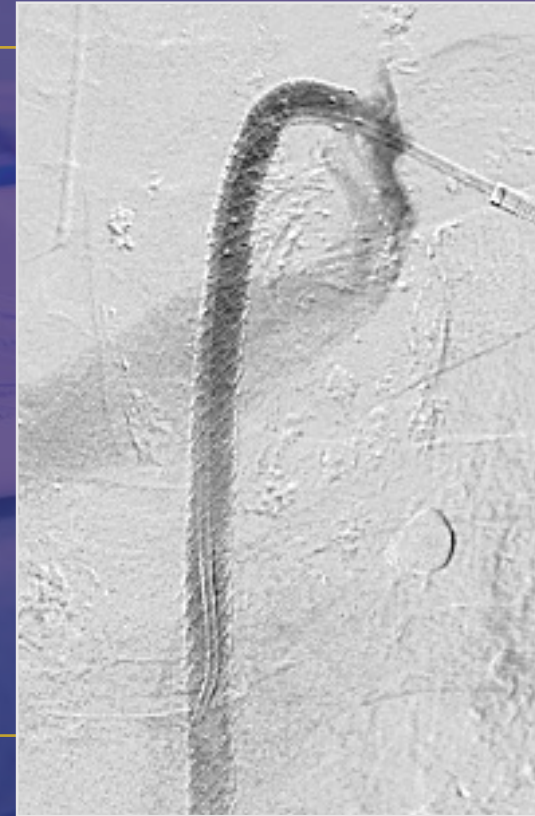
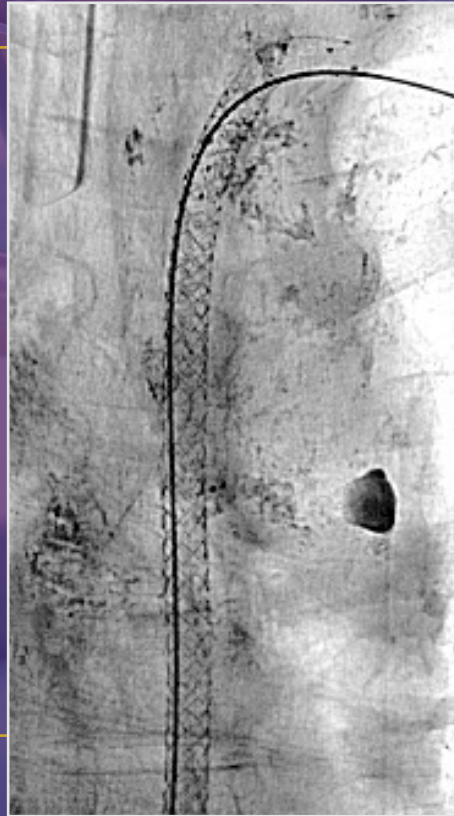
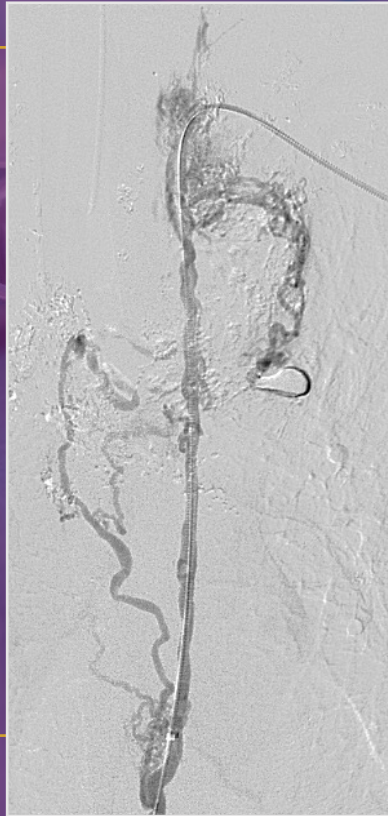
THE FUTURE: PLASTIC BRONCHITIS EMBOLIZATION



THE FUTURE: LYMPHOVENOUS BYPASS CREATION



THE FUTURE: LYMPHOVENOUS BYPASS CREATION



CONCLUSIONS

Lymphatics, Injuries, and Diseases

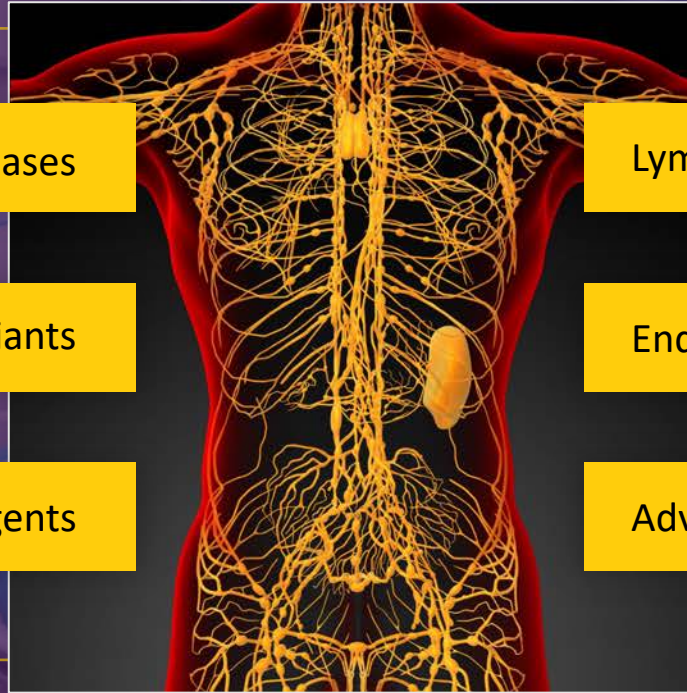
Lymphatic Variants

Lymphatic Imaging and Agents

Lymphatic Embolization

Endolymphatic Reconstruction

Advanced Lymphatics and the Future



REFERENCES AND RESOURCES

Chick JFB, Gemmete JJ, Romano N, Patel N, Meadows JM, Majdalany BS, Srinivasa RN. Endolymphatic Ultrasound-Assisted Microvascular Plug Placement in a Patient with Thoracic Duct Leak after Esophagectomy. *J Vasc Interv Radiol*. 2017 Sep;28(9):1327-1330.

Johnson OW, Chick JF, Chauhan NR, Fairchild AH, Fan CM, Stecker MS, Killoran TP, Suzuki-Han A. The thoracic duct: clinical importance, anatomic variation, imaging, and embolization. *Eur Radiol*. 2016 Aug;26(8):2482-93.

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Majdalany BS, Saad WA, Chick JFB, Khaja MS, Cooper KJ, Srinivasa RN. Pediatric lymphangiography, thoracic duct embolization, and thoracic duct disruption: a single-institution experience in 11 children with chylothorax. *Pediatr Radiol*. 2017 Sep 28.

Thank You

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