

AMSER Case of the Month: September 2019

77 year-old female with complication after parathyroidectomy

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Patient Presentation

- CC: 77 year-old Caucasian female status post left parathyroidectomy presents two days postoperatively with increased swelling in left neck and dysphagia
- PMHx: Hypertension, arthritis
- SHx: 2 ppw smoking history x 30 years, no alcohol use
- FHx: Hypertension
- BP 129/85 | P 102 | T 37.1 | RR 18 | SpO2 95%
- Physical Exam: mild mid-epigastric tenderness on palpation, 1+ edema bilaterally

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1
Chylothorax treatment planning: traumatic etiology.

Radiologic Procedure	Rating	Comments	RRL
X-ray chest	8	This procedure is the initial examination to screen for pleural effusion or an alternative cause of dyspnea or chest pain.	☹️
Lymphangiography chest and abdomen	8	If further evaluation and minimally invasive treatment is warranted, this procedure is the test of choice for traumatic chylothorax and can include diagnostic and therapeutic embolization.	☹️☹️☹️
MRI chest and abdomen without IV contrast	6	This procedure is particularly helpful if lymphangiography does not delineate an abnormality.	○
MRI chest and abdomen without and with IV contrast	5	This procedure is particularly helpful if lymphangiography does not delineate an abnormality.	○

This imaging modality was ordered by thoracic surgery



Findings (unlabeled)

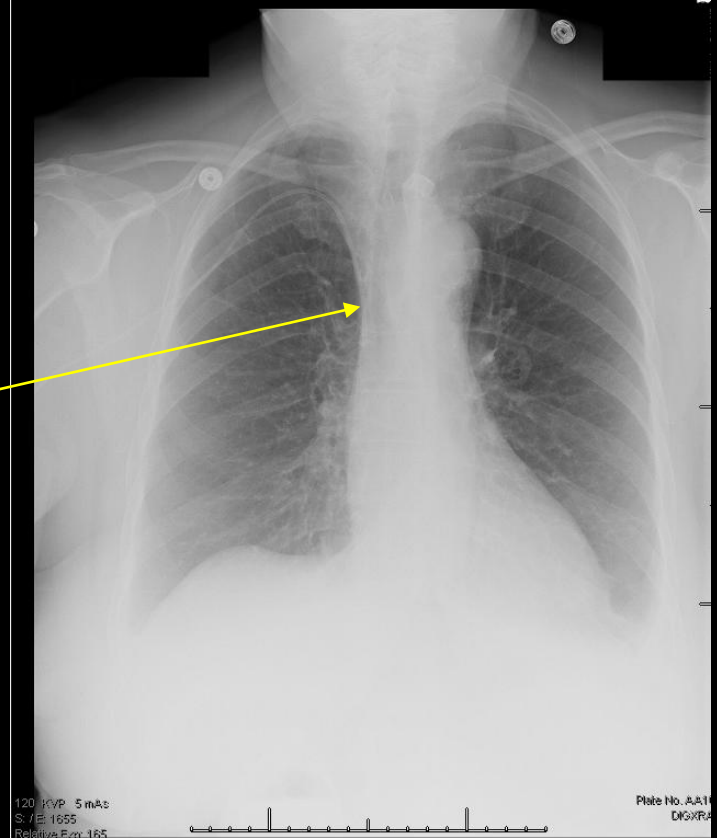


Findings: (labeled)



Cardiomeastinal silhouette WNL

Right PICC line with
Tip in mid SVC



Surgical team was suspicious for a chylothorax based on symptoms

Chylothorax

- Diagnosis
 - Triglyceride rich, milky fluid with >100 mg/dl triglycerides, $>$ serum triglycerides, presence of chylomicrons
 - Neck may have erythema or palpable fluid collection in supraclavicular region
- Conservative management
 - Dietary modification – low fat, high medium chain fatty acids diet; consider TPN
 - High dose Octreotide
- Interventions
 - Reoperation with leak suturing
 - Sclerosing agents
 - Embolization

Select the applicable ACR Appropriateness Criteria

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This imaging modality was ordered by IR

Conventional Lymphangiography

PROS:

- Gold standard for visualizing lymphatic system
- Detect site of lymphatic leakage
- Minimally invasive
- Diagnostic and/or therapeutic

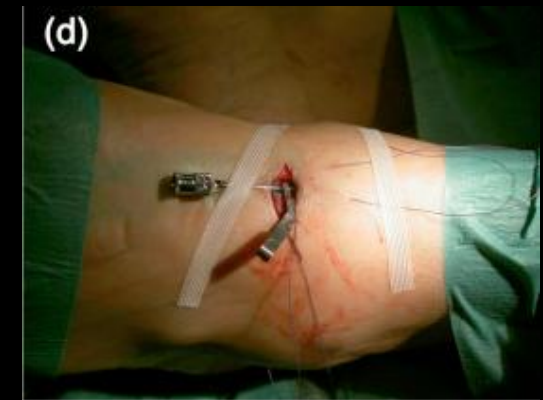
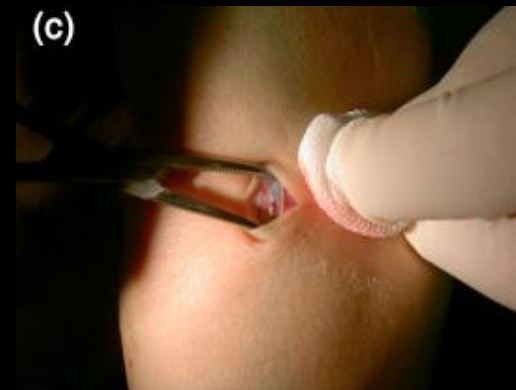
CONTRAINDICATIONS:

- Cardiac disease - increased risk of embolization
 - Presence of PFO, R → L shunt
- Pulmonary disease - increased risk of pulmonary infarction
 - Pulmonary insufficiency
- Oil/Dye Hypersensitivity

RADIATION: 1-10 mSv

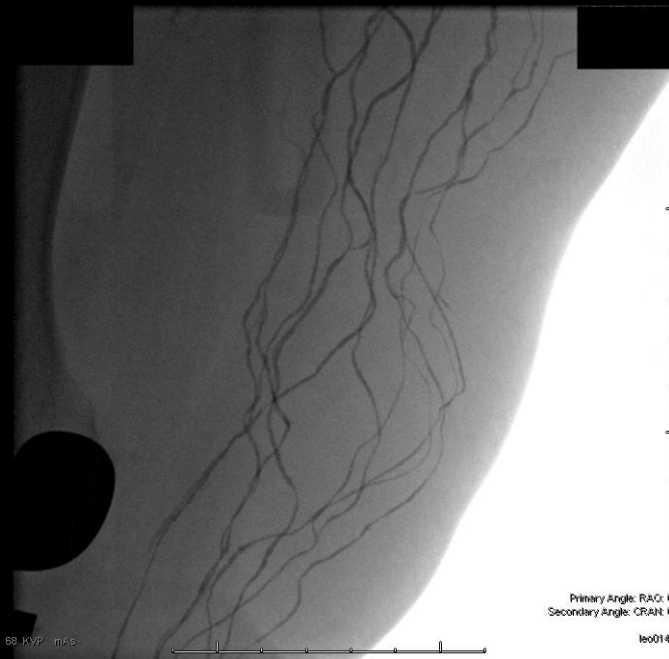
Pedal Lymphangiography Procedure

- a. Inject dye at web spaces between toes to stain foot lymphatics
- b. Find and incise appropriate lymphatic vessel in foot
- c-d. Cannulate dissected vessel with special lymphangiography needle



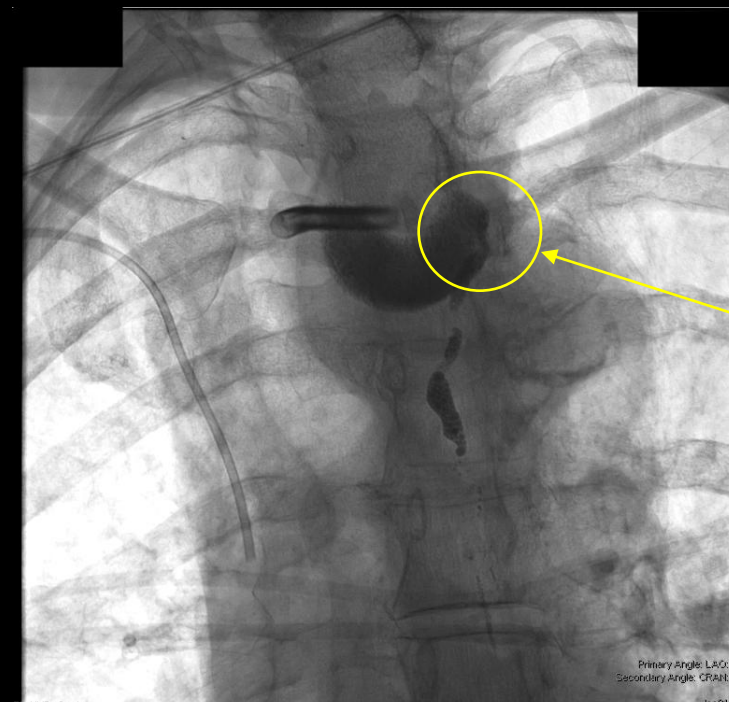
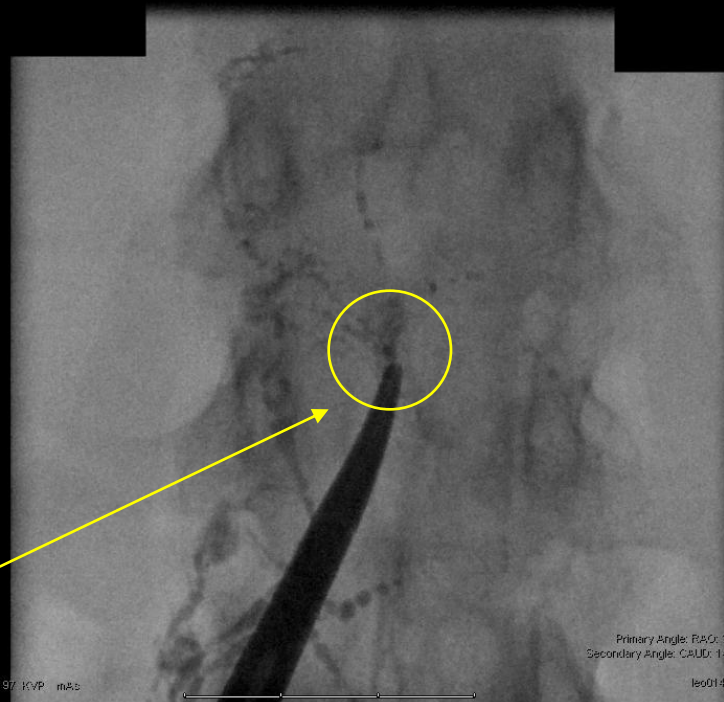
Pedal Lymphangiography Procedure

e. Infuse ethiodized oil and acquire serial fluoroscopic spot images to follow cephalad progression of oil



Pedal Lymphangiography Procedure

- f. Needle access the lymphatic system via cisterna chyli under fluoroscopic guidance
- g. Advance wire followed by microcatheter from cisterna chyli to thoracic duct
- h. Inject contrast through microcatheter
- i. Thoracic duct embolization with Tru-Fill biological glue and platinum coil embolization



Thoracic duct
leak near
thoracic outlet

References:

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2. Direct lymphangiography as treatment option of lymphatic leakage: Indications, outcomes and role in patient's management- ClinicalKey. <https://www-clinicalkey-com.ezaccess.libraries.psu.edu/#!/content/playContent/1-s2.0-S0720048X14004562>. Accessed June 7, 2019.
3. Inoue M, Nakatsuka S, Yashiro H, et al. Lymphatic Intervention for Various Types of Lymphorrhea: Access and Treatment. *Radiographics*. 2016;36(7):2199-2211. doi:[10.1148/rg.2016160053](https://doi.org/10.1148/rg.2016160053)
4. Delaney SW, Shi H, Shokrani A, Sinha UK. Management of Chyle Leak after Head and Neck Surgery: Review of Current Treatment Strategies. *International Journal of Otolaryngology*. doi:[10.1155/2017/8362874](https://doi.org/10.1155/2017/8362874)
5. Itkin M, Nadolski GJ. Modern Techniques of Lymphangiography and Interventions: Current Status and Future Development. *Cardiovasc Intervent Radiol*. 2018;41(3):366-376. doi:[10.1007/s00270-017-1863-2](https://doi.org/10.1007/s00270-017-1863-2)
6. Chen E, Itkin M. Thoracic Duct Embolization for Chylous Leaks. *Semin Intervent Radiol*. 2011;28(1):63-74. doi:[10.1055/s-0031-1273941](https://doi.org/10.1055/s-0031-1273941)