

# AMSER Case of the Month: July 2020

Nine month old female with right-sided neck swelling

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# Patient Presentation

HPI: Nine month old normally developing female with no significant past medical history presented for right-sided neck swelling and mild respiratory distress beginning the previous evening following a 4 day history of fever, malaise, and poor feeding.

## Physical Exam:

VS: Temp: 99.9 °F, HR: 154, RR: 55, BP:118/53, SpO2: 99 %

Significant right-sided neck swelling and erythema which is tender to touch but not taut, mild tachycardia in the setting of agitation, no stridor, mucous membranes moist, oropharynx clear

# Patient Presentation



# Pertinent Labs

RBC	3.70 - 5.30 M/uL	3.73
<b>Hemoglobin</b>	<b>11.5 - 13.5 g/dL</b>	<b>9.8 (L)</b>
<b>Hct</b>	<b>33.0 - 39.0 %</b>	<b>29.8 (L)</b>
MCV	70.0 - 86.0 fL	79.9
MCH	23.0 - 31.0 pg	26.3
MCHC	30.0 - 36.0 g/dL	32.9
RDW-CV	11.0 - 16.0 %	15.6
Platelet Count	250 - 600 K/uL	356
<b>MPV</b>	<b>9.3 - 12.7 fL</b>	<b>8.8 (L)</b>
% Segmented Neutrophils	15.0 - 70.0 %	25.0
<b>% Bands</b>	<b>0.0 - 9.0 %</b>	<b>55.0 (H)</b>
<b>% Lymphocytes</b>	<b>46.0 - 76.0 %</b>	<b>17.0 (L)</b>
<b>% Monocytes</b>	<b>1.0 - 9.0 %</b>	<b>0.0 (L)</b>
% Eosinophils	0.0 - 7.0 %	0.0
% Basophils	0.0 - 2.0 %	0.0
% Variant Lymphocytes	0.0 - 6.0 %	2.0
<b>% Metamyelocytes</b>	<b>&lt;=0.0 %</b>	<b>1.0 (H)</b>
Absolute Segmented Neutrophils	1.50 - 5.00 K/uL	4.20
<b>Absolute Bands</b>	<b>0.00 - 0.35 K/uL</b>	<b>9.25 (H)</b>
<b>Absolute Lymphocytes</b>	<b>4.00 - 13.50 K/uL</b>	<b>2.86 (L)</b>
<b>Absolute Monocytes</b>	<b>0.40 - 0.80 K/uL</b>	<b>0.00 (L)</b>
Absolute Eosinophils	0.00 - 0.50 K/uL	0.00
Absolute Basophils	0.00 - 0.10 K/uL	0.00
Absolute Lymphocytes Variant	K/uL	0.34
Toxic Granulation		1+
Vacuolated Neutrophils		1+
Platelet Estimate		Adequate

What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

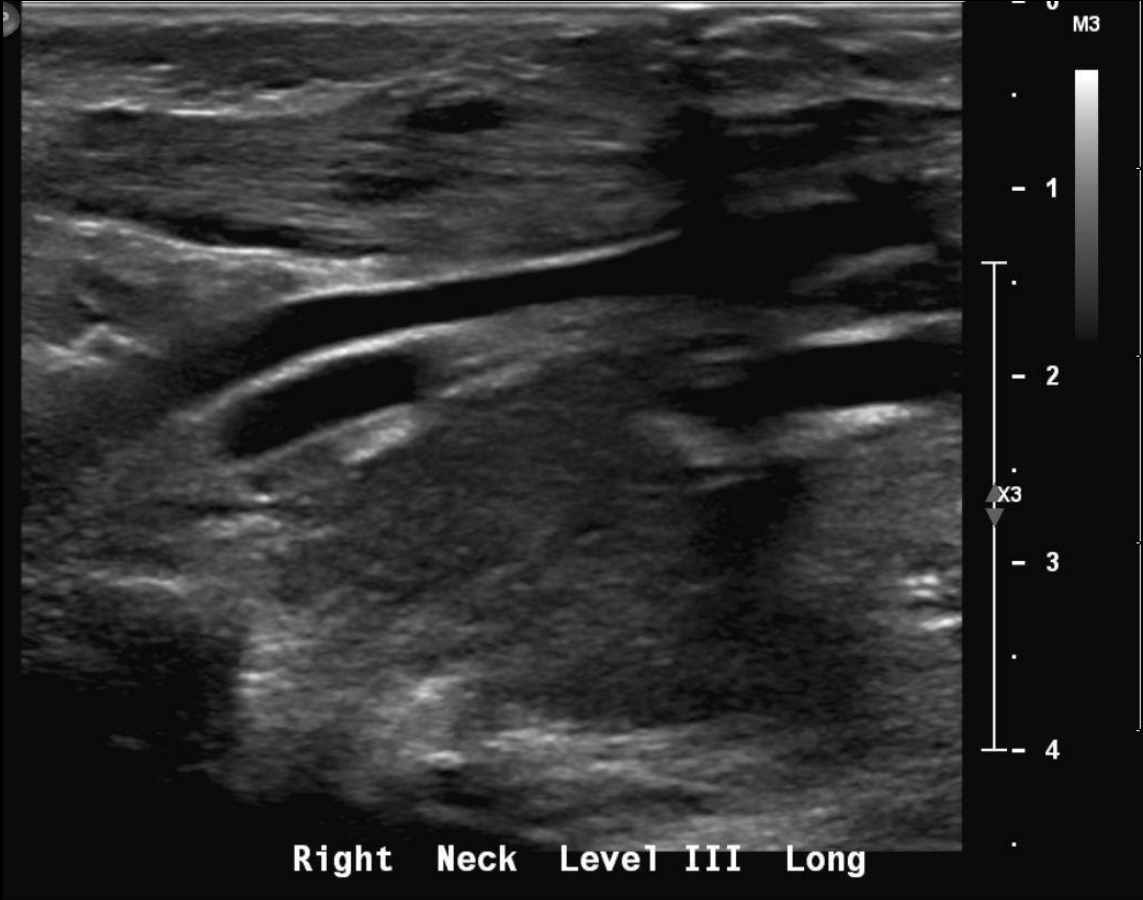
**Variant 4: Child. Neck mass(es). Not parotid region or thyroid. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
CT neck with IV contrast	Usually Appropriate	⊕ ⊕ ⊕
MRI neck without and with IV contrast	Usually Appropriate	○
US neck	Usually Appropriate	○
MRI neck without IV contrast	Usually Appropriate	○
CT neck without IV contrast	May Be Appropriate (Disagreement)	⊕ ⊕ ⊕
MRA neck without and with IV contrast	Usually Not Appropriate	○
MRA neck without IV contrast	Usually Not Appropriate	○
CT neck without and with IV contrast	Usually Not Appropriate	⊕ ⊕ ⊕ ⊕
CTA neck with IV contrast	Usually Not Appropriate	⊕ ⊕ ⊕
Arteriography cervicocerebral	Usually Not Appropriate	⊕ ⊕ ⊕ ⊕
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	⊕ ⊕ ⊕ ⊕ ⊕
FDG-PET/MRI skull base to mid-thigh	Usually Not Appropriate	⊕ ⊕ ⊕

This imaging modality was ordered following U/S

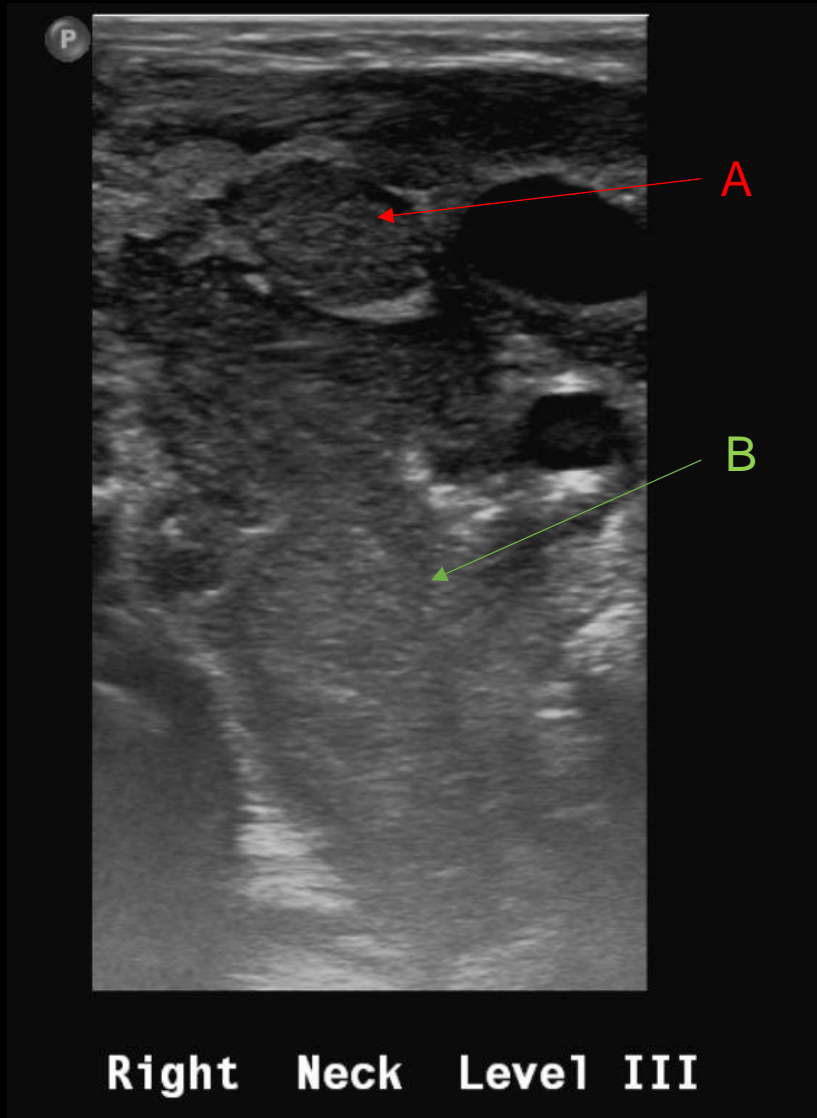
This imaging modality was ordered by the ER physician

# Findings: (unlabeled)



# Findings: (labeled)

Transverse



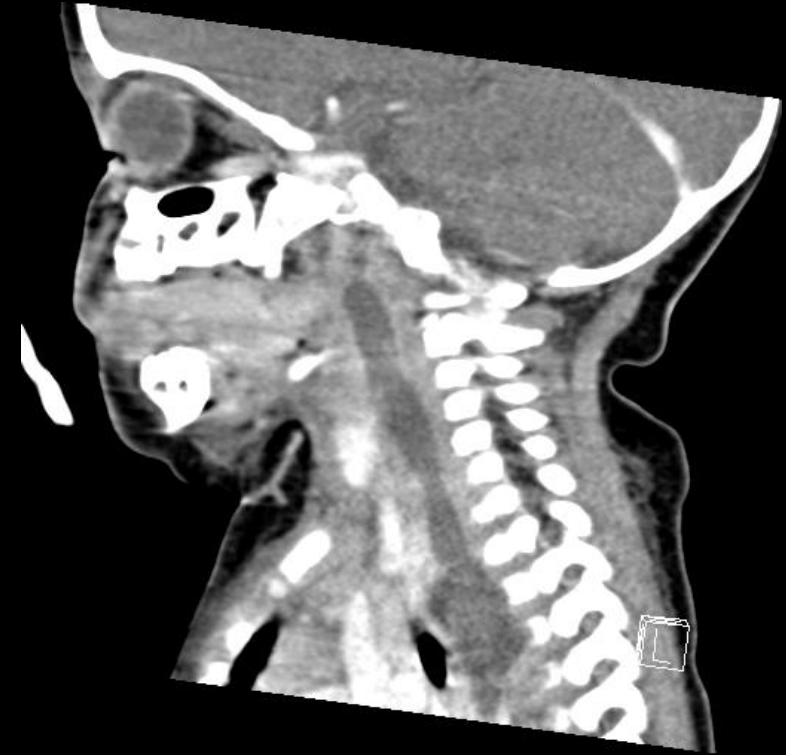
Longitudinal



- A) Enlarged LN
- B) Fluid collection deep to carotid a. and jugular v. in right neck, with echogenic material suggestive of cellular material/pus.



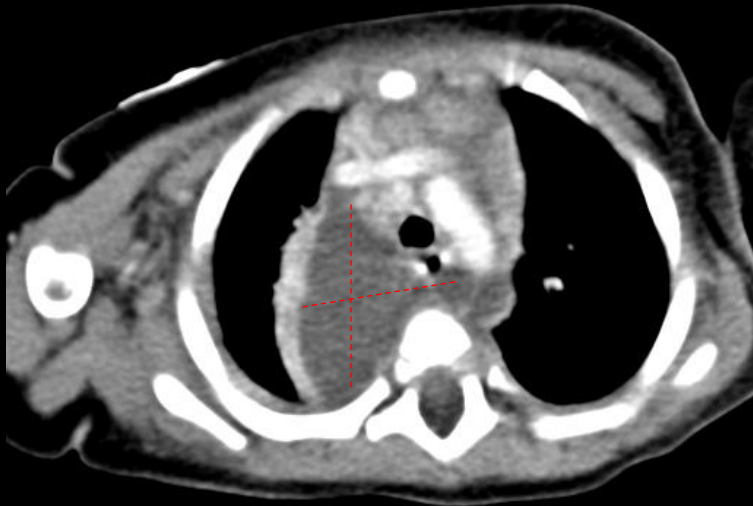
# Findings: (unlabeled)



A

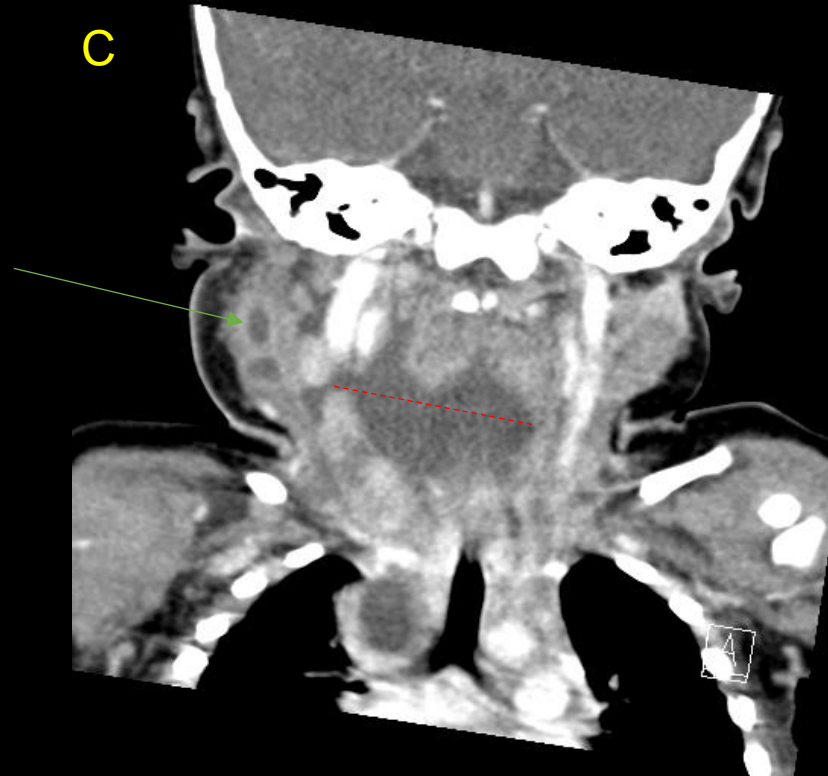


B

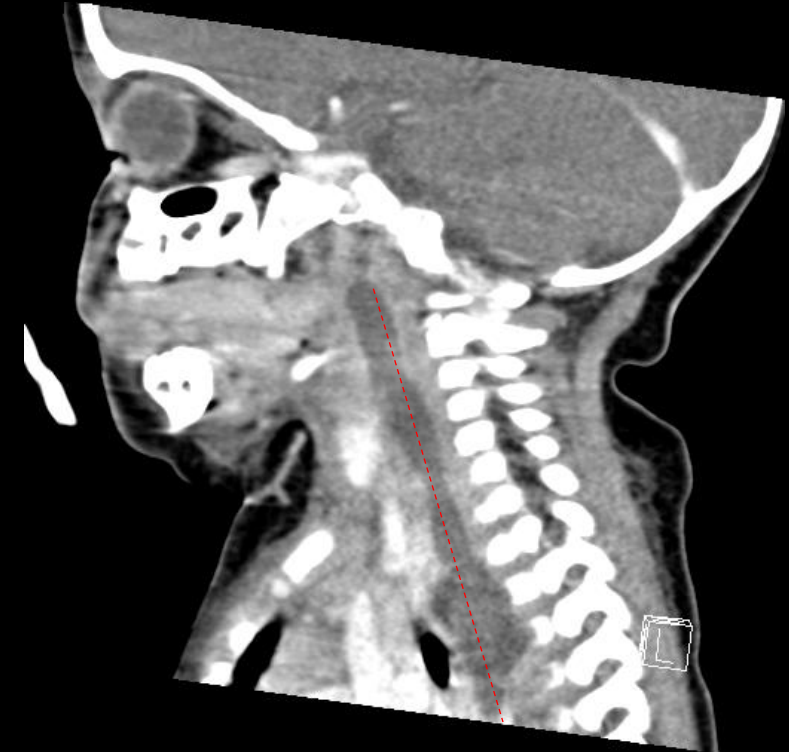


## Findings: (labeled)

C



D



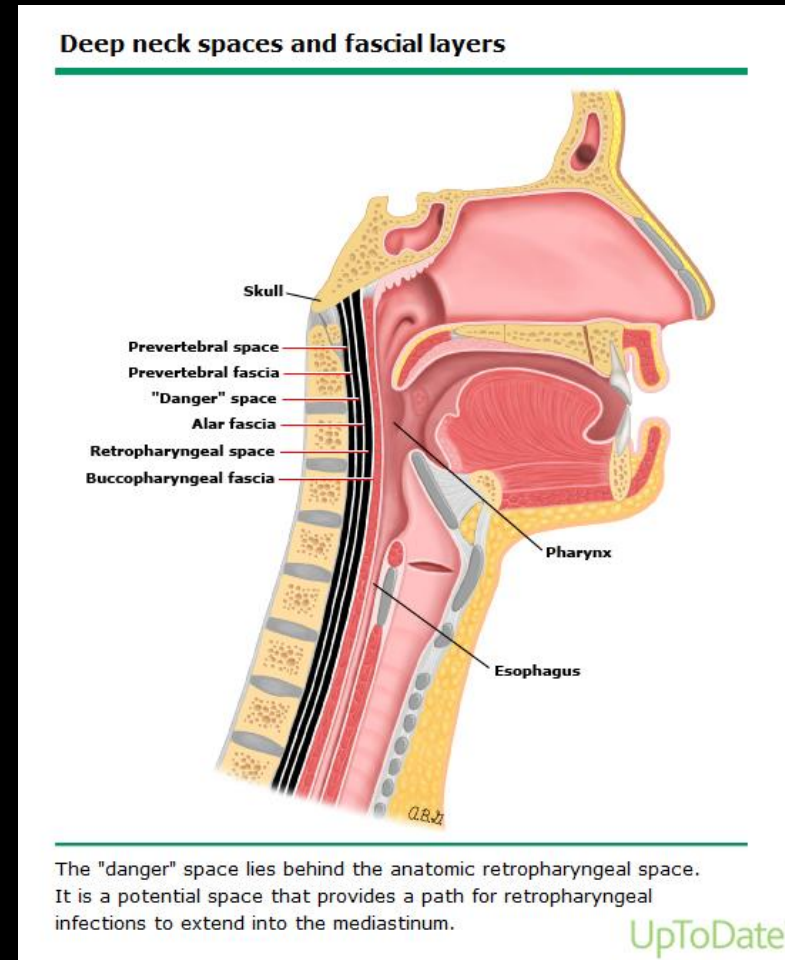
CT soft tissue neck showing a large low density rim enhancing collection in the retropharyngeal space (dashed lines), beginning at the level of C1 (Image A) and extending into the upper posterior mediastinum (Image B, D). The collection also extends to the right (Image C) to involve the carotid space, right sternocleidomastoid, and superficial subcutaneous soft tissues. Image C also shows intramuscular abscesses of the right sternocleidomastoid (arrow) .

Final Diagnosis:

Retropharyngeal Abscess

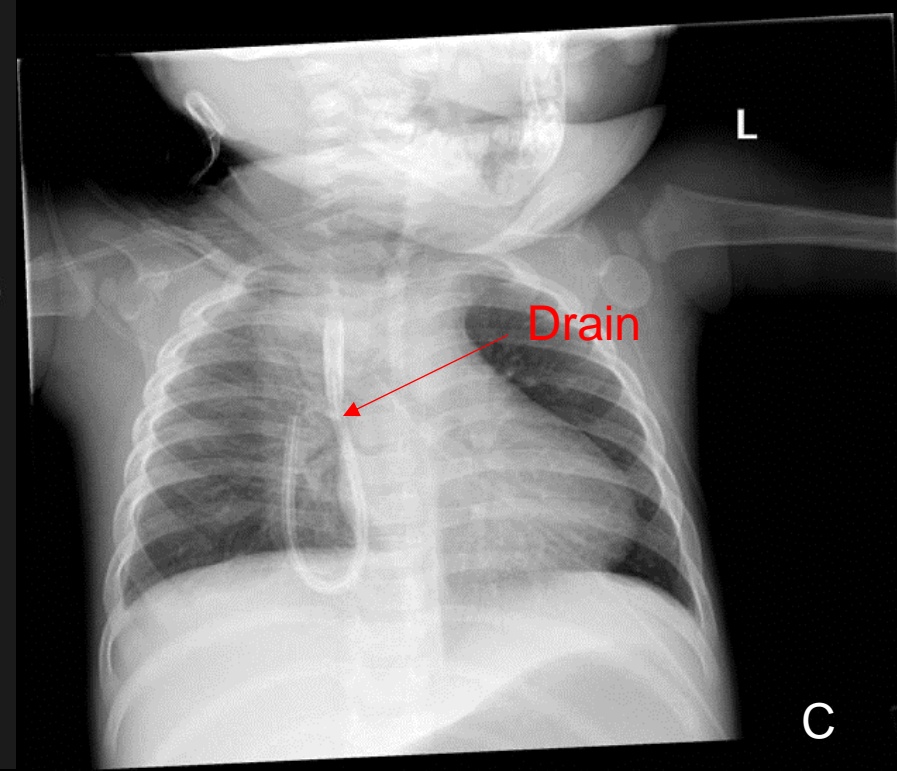
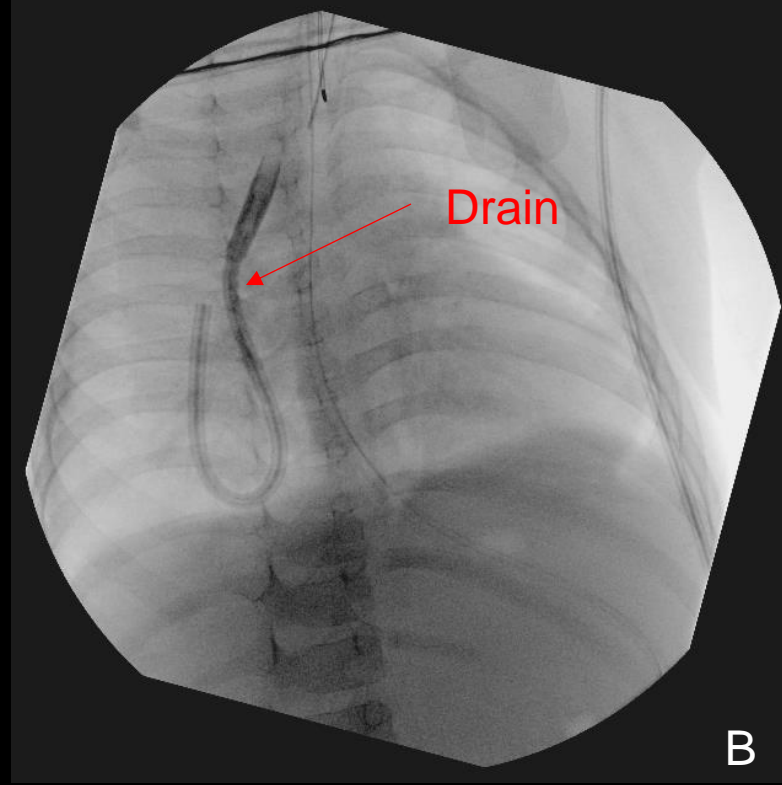
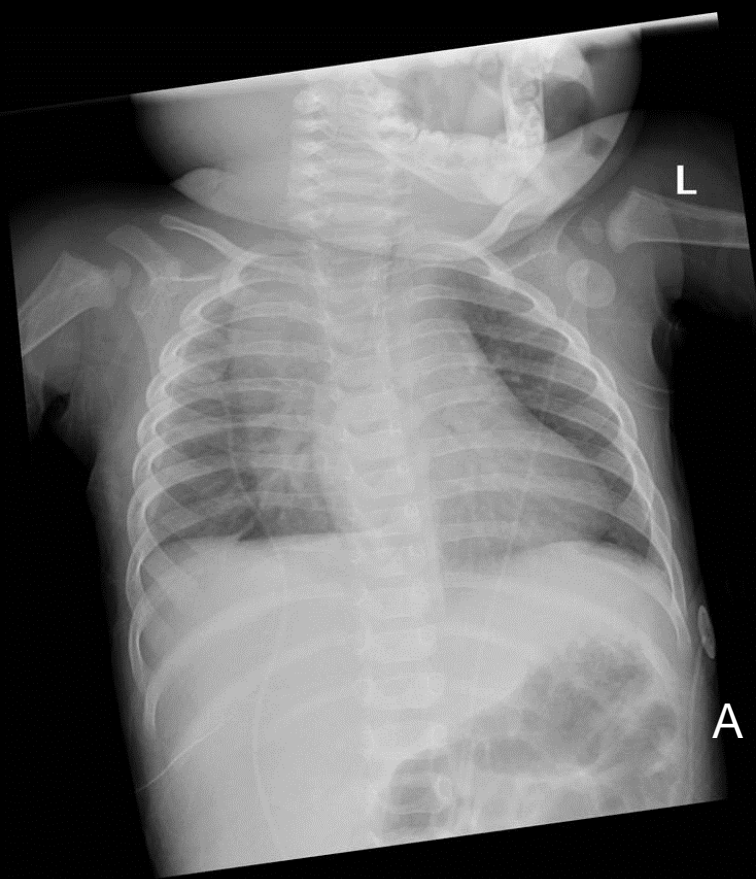
# Retropharyngeal Abscess

- Overall retropharyngeal abscesses are uncommon but they can occur at any age, most often occurring in children between the ages of 2 to 4.
- Abscesses can extend laterally to involve the carotid space leading to potential complications of carotid space involvement such as internal jugular v. thrombophlebitis or internal carotid a. pseudoaneurysm, among others.
- Abscesses also can extend inferiorly into the mediastinum if they move posterior to the anatomic retropharyngeal space in what is called the “danger space.”



# Retropharyngeal Abscess

- Retropharyngeal abscesses are associated with antecedent upper respiratory infections in approximately 50% of cases and may also occur after pharyngeal trauma.
- Usually a polymicrobial infection consisting of *S. aureus* (including MRSA), *S. pyogenes*, and respiratory anaerobes.
- Empiric antibiotic therapy targets the pathogens listed above initially using ampicillin-sulbactam or clindamycin with modification based upon culture results.
- Surgical drainage may be necessary, based on airway compromise, a  $\geq 2.5$  cm<sup>2</sup> hypodense area on CT consistent with mature abscess, failure to respond to antibiotics, or other life-threatening complications.
- Prognosis is typically favorable with rare long-term consequences when diagnosed and treated early. Hospitalization typically lasts about 3-5 days.



This patient was treated surgically with incision and drainage by ENT and Pediatric Surgery. Pre-operative CXR (A) revealed fullness in the right neck and mediastinum. Surgical incisions were made in the upper and lower neck, all fluid was evacuated and sent for culture and a drain was placed in the right hemithorax, with placement confirmed by intraoperative fluoroscopy (B). A post-operative CXR (C) was obtained to again confirm placement of drain in the right hemithorax. The patient was initially started on amoxicillin and vancomycin, however post-operative cultures revealed the presence of MRSA and therapy was modified to a 2-week course of vancomycin and Unasyn. The patient is recovering.

# References:

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Brinjikji W, Diehn FE, Lindsay CW, Morris JM. Endovascular treatment of an infected pseudoaneurysm secondary to retropharyngeal abscess in a child. *Interv Neuroradiol.* 2015;21(4):538-542. doi:10.1177/1591019915590073

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