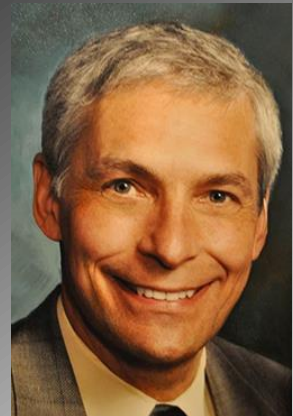


Carotid Stenosis



Robert L. Falk MD
Chief Medical Officer
3DR Laboratories
Louisville, Ky



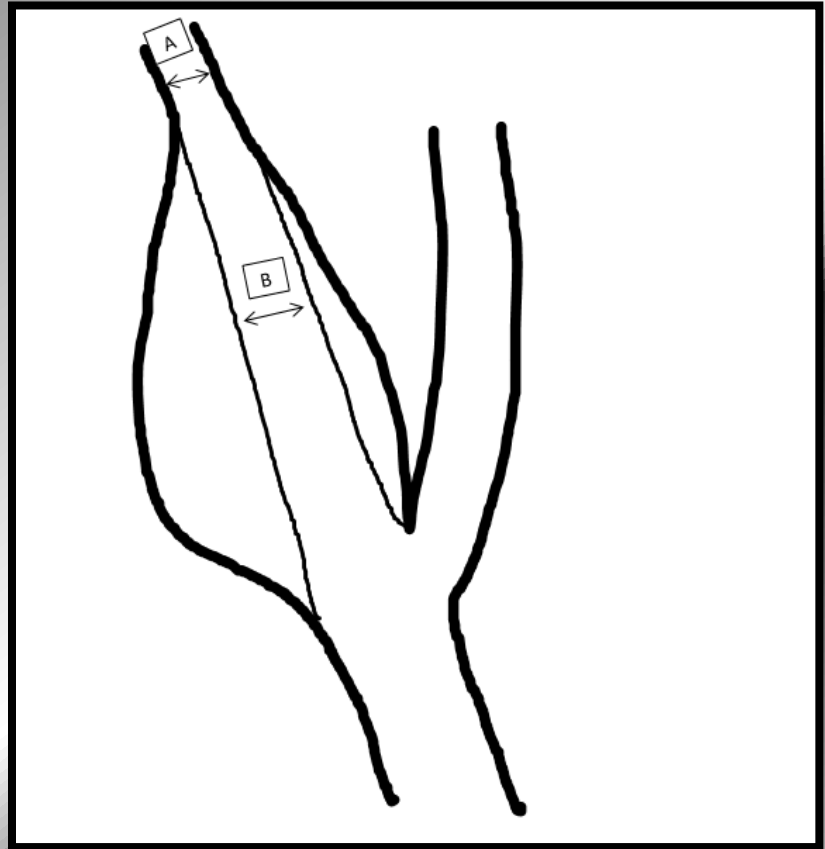
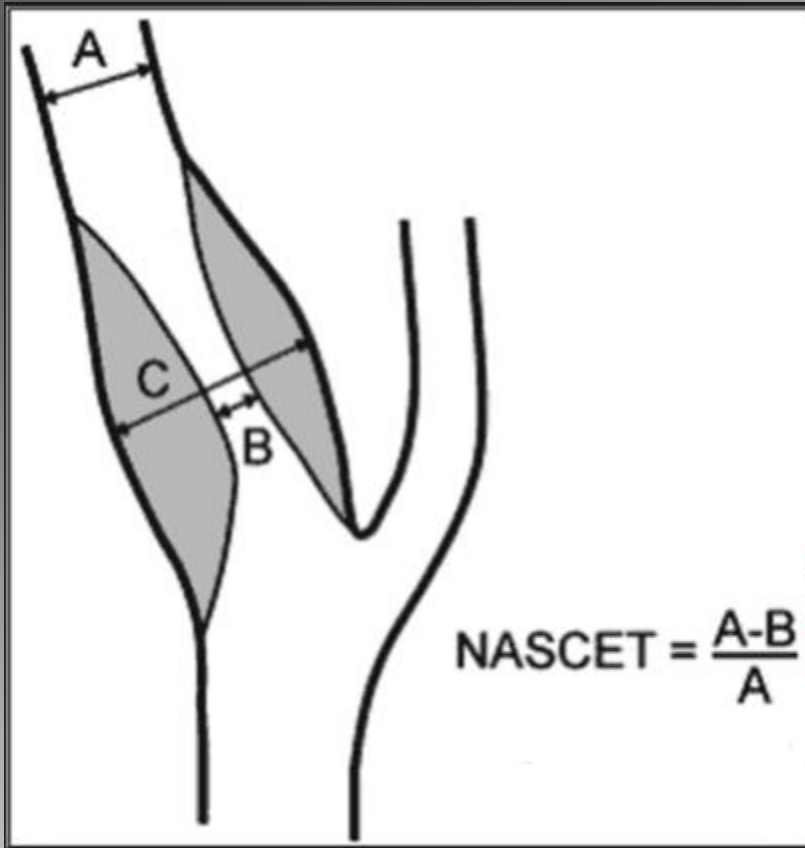
Disclaimer

Dr. Rob Falk is the CMO, founder,
board member and stockholder for
3DR Laboratories, LLC

Learning Objectives

- At the end of this presentation, participants will have gained increased knowledge of carotid occlusive disease and the proper evaluation of this common entity using carotid CT angiography

NASCET Overview



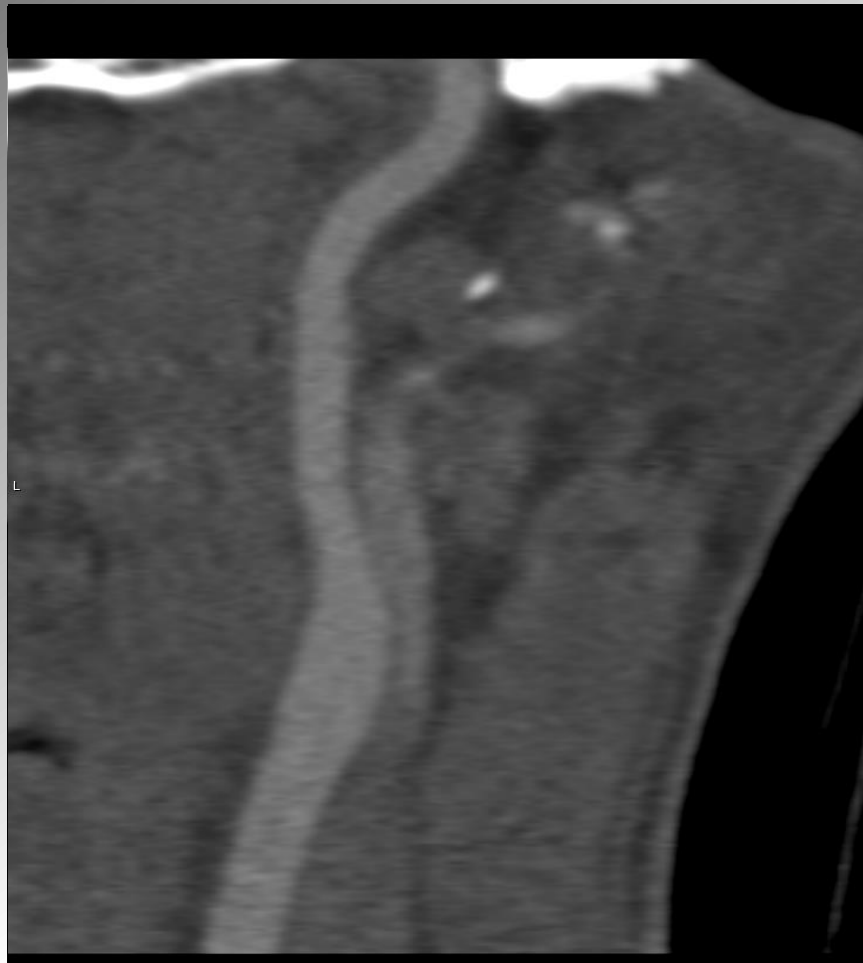
Significance of Lesions/Stenosis Values

- 0-50 percent (low risk)
- 50-80 percent (high risk)
- 80-99 percent (severe risk)

NASCET Stenosis

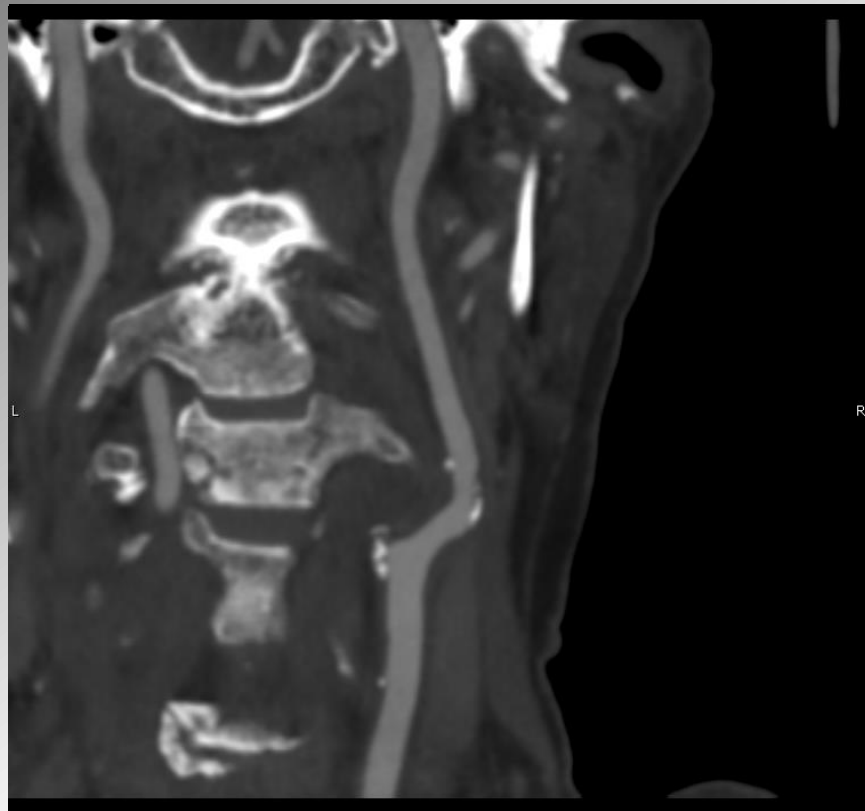
Zero Percent Stenosis

Healthy and open

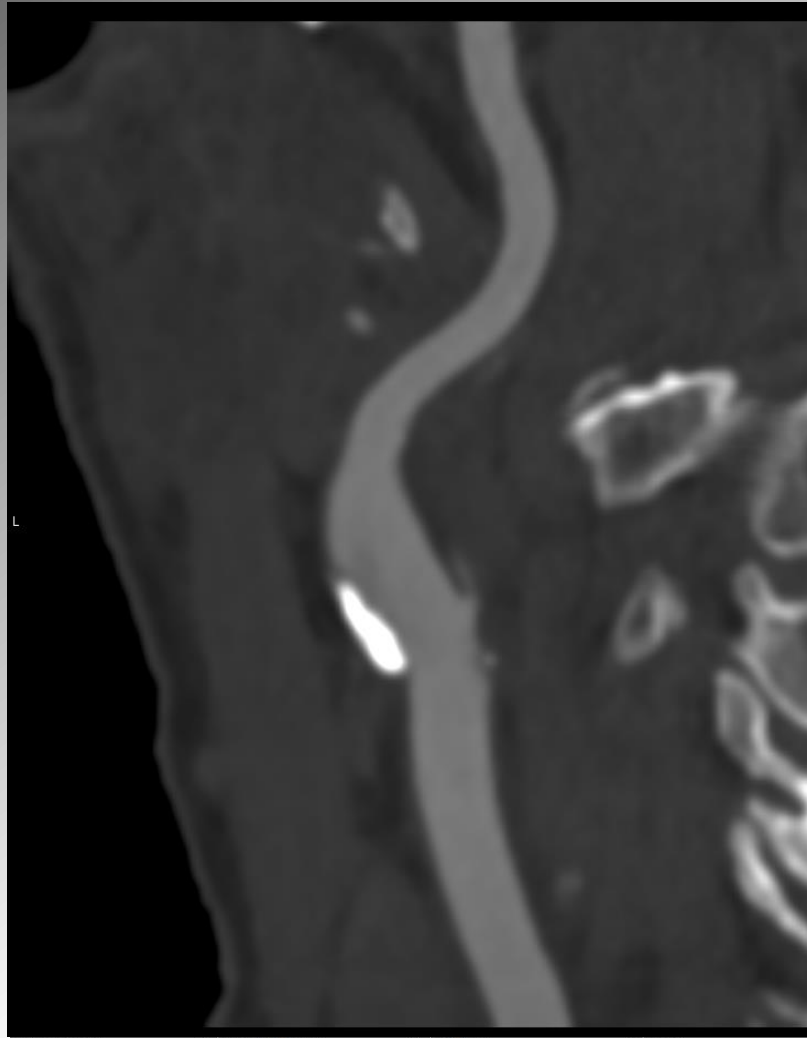


NASCET Stenosis

10-20 percent

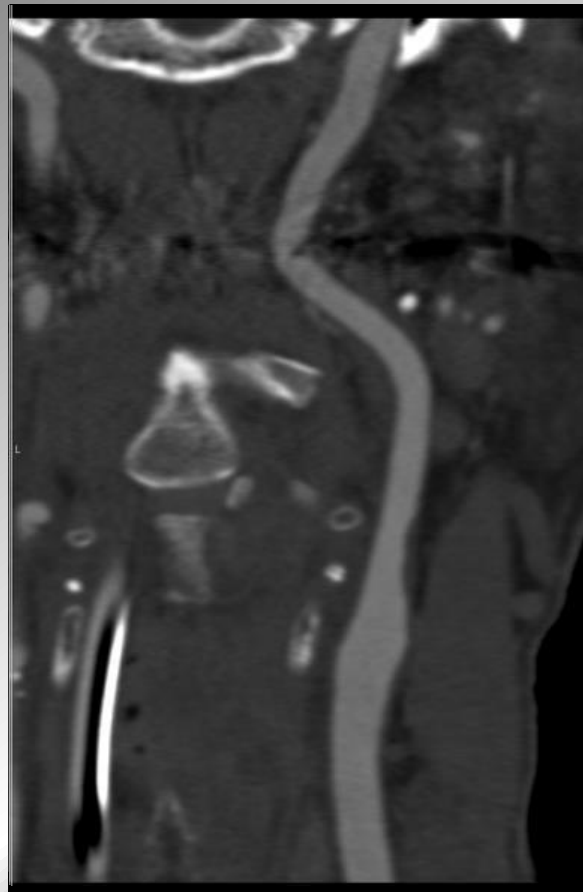


NASCET Stenosis – Zero Percent (Dilated with calcium)



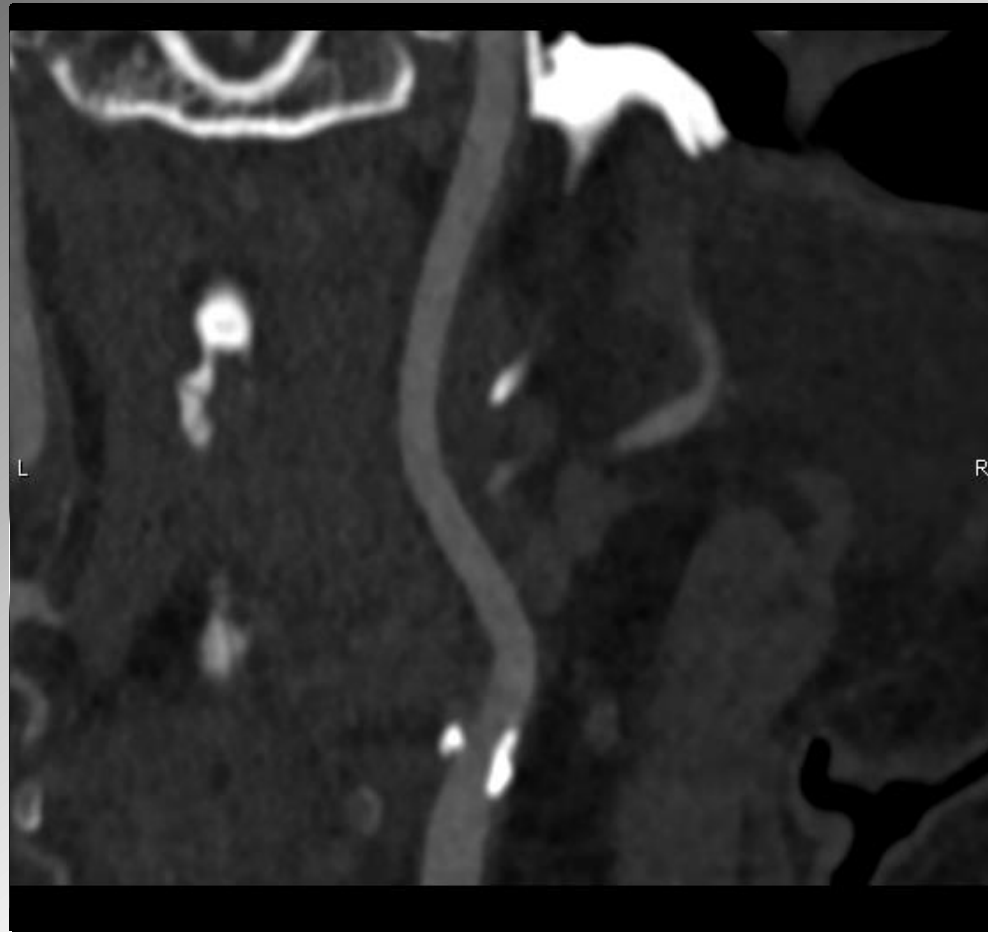
NASCET Stenosis

- 20-30 percent

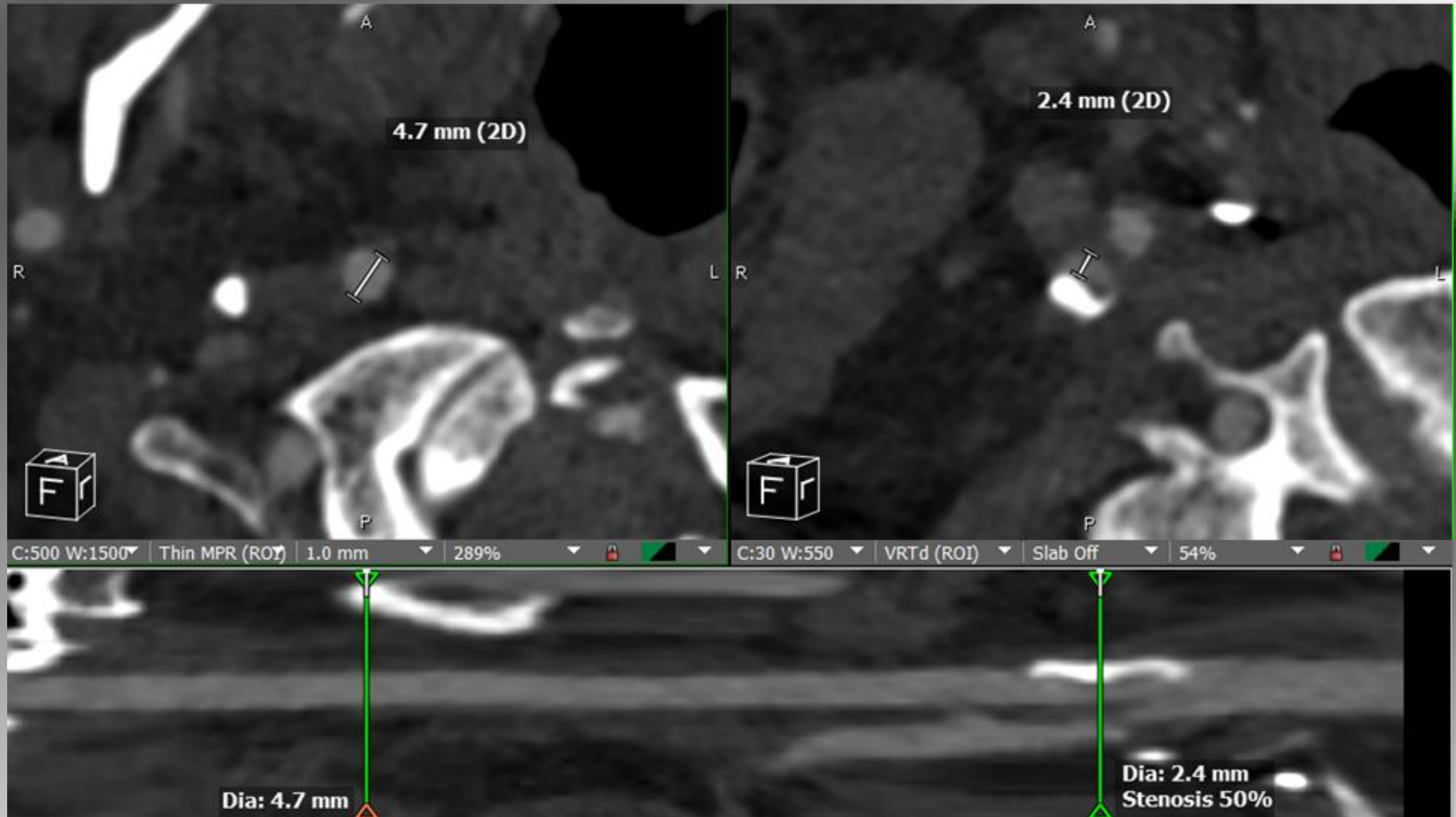


NASCET Stenosis

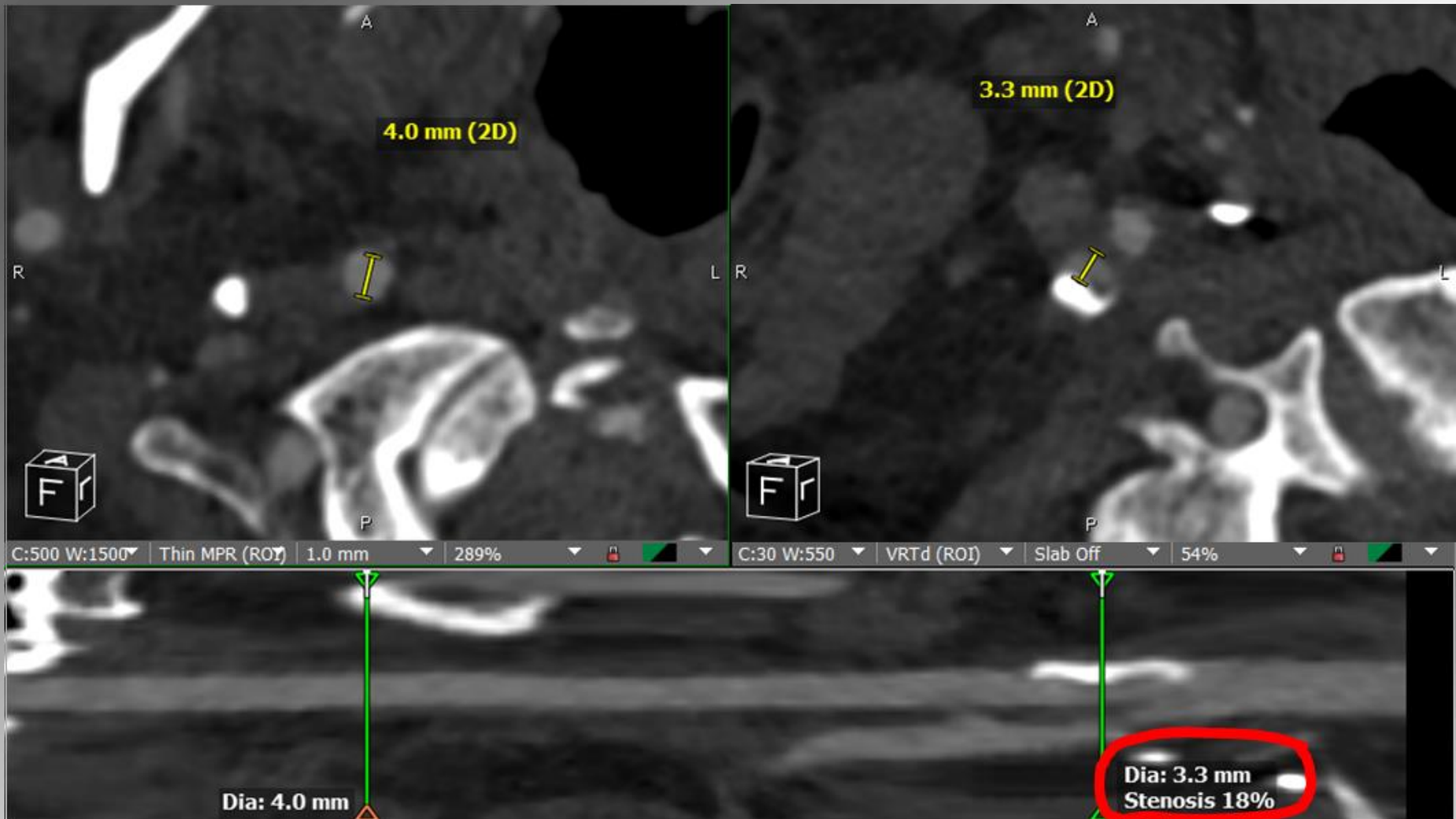
- 50 percent



50 Percent Stenosis, Critical To Measure Correctly

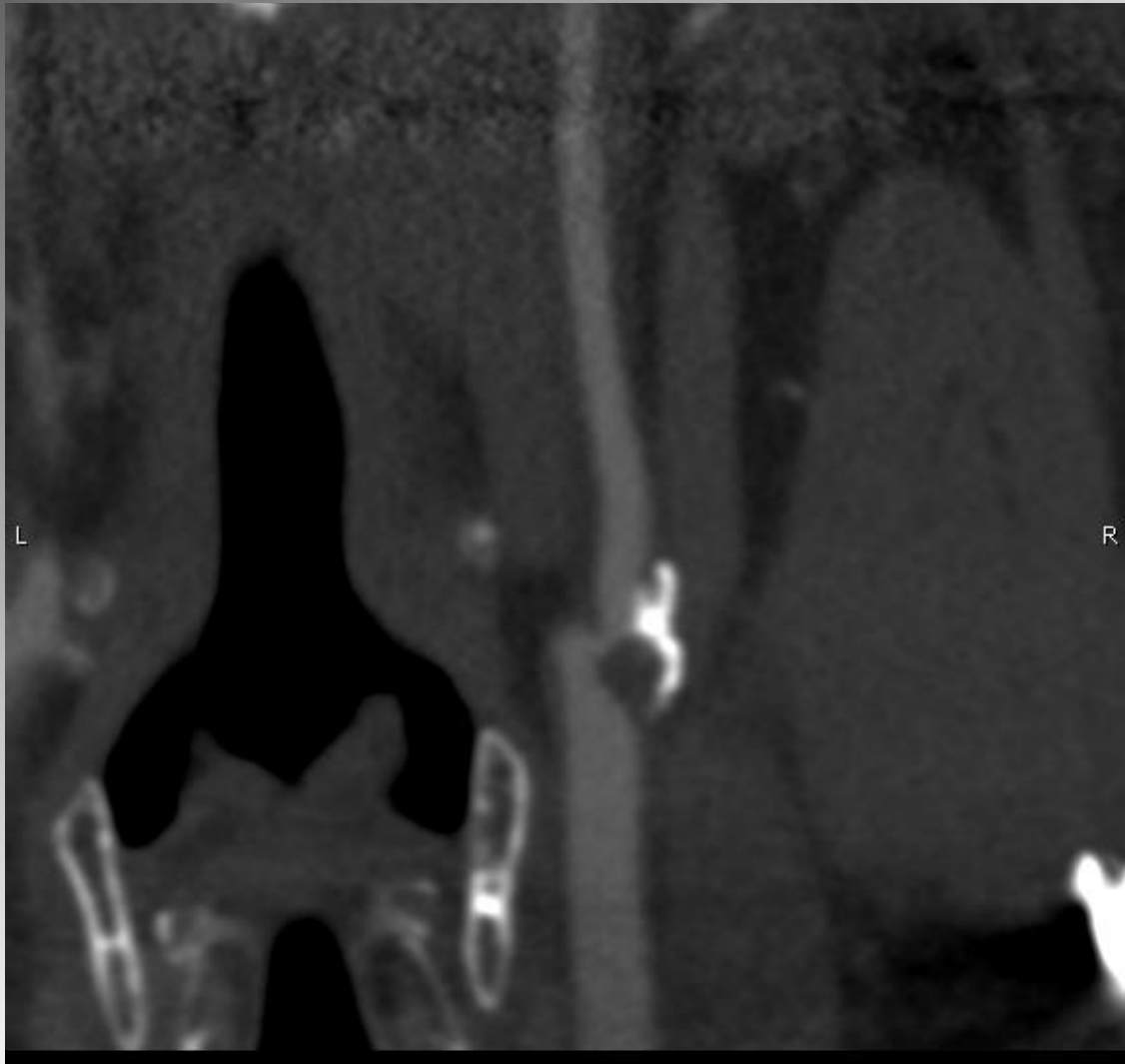


50 Percent Stenosis, Critical To Measure Correctly

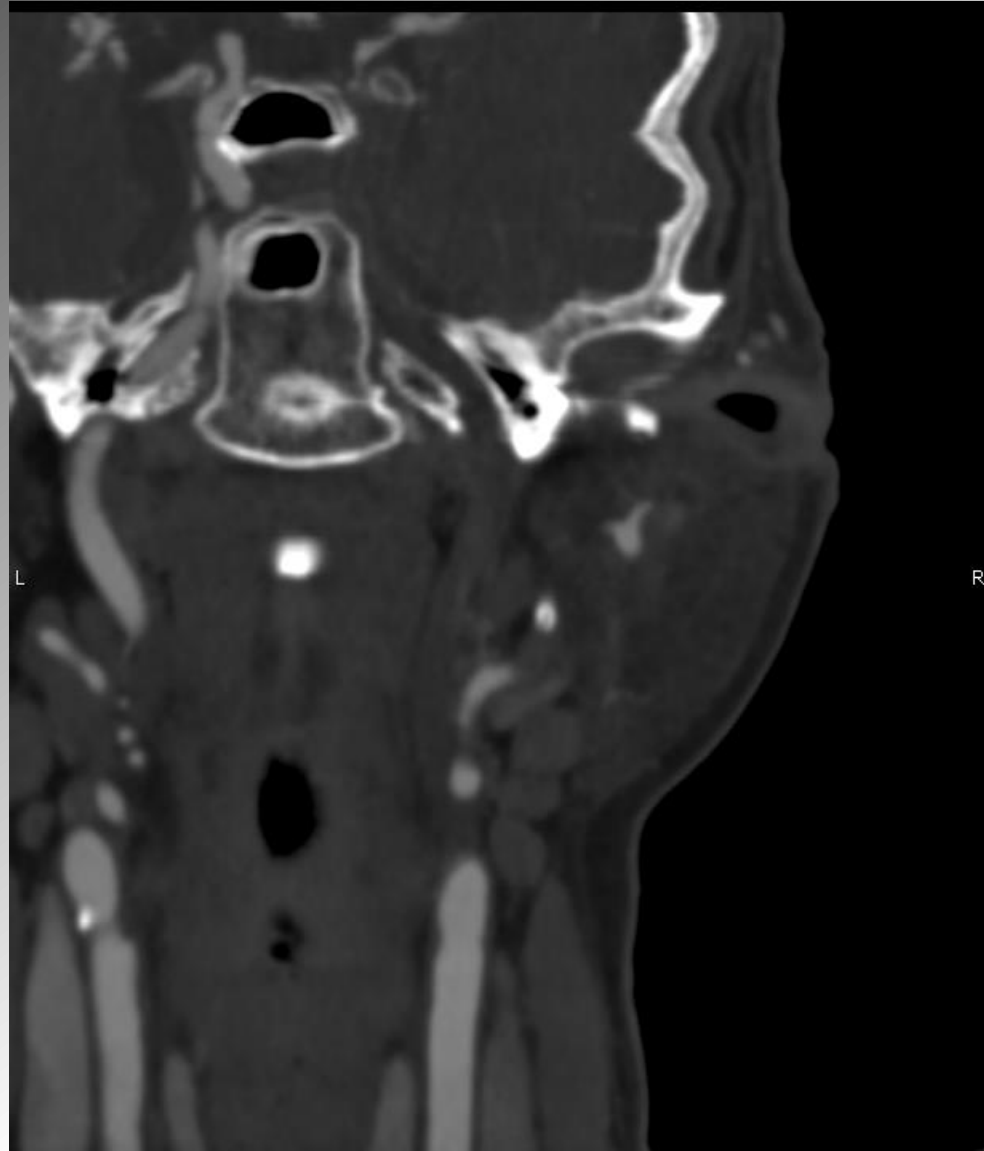


NASCET Stenosis

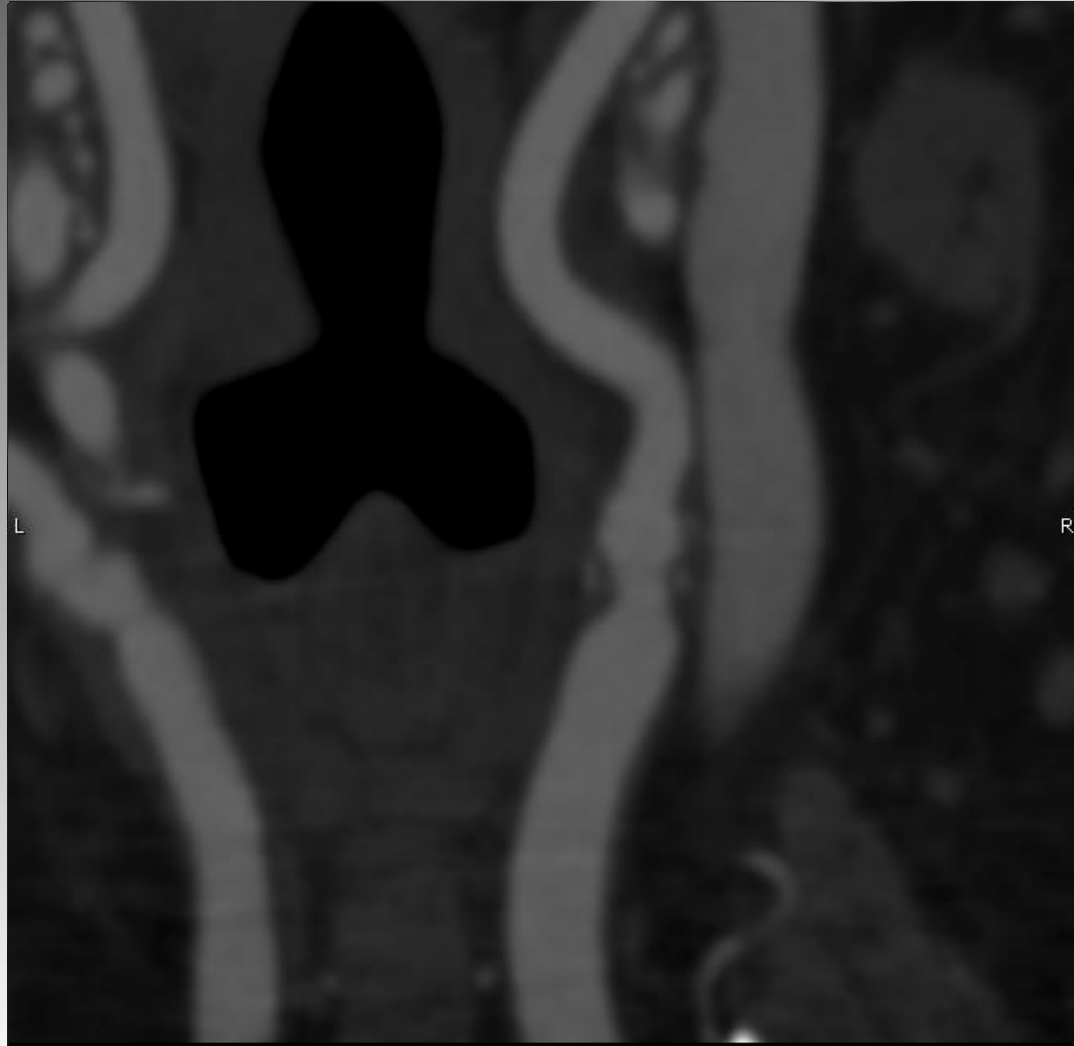
85-95 percent



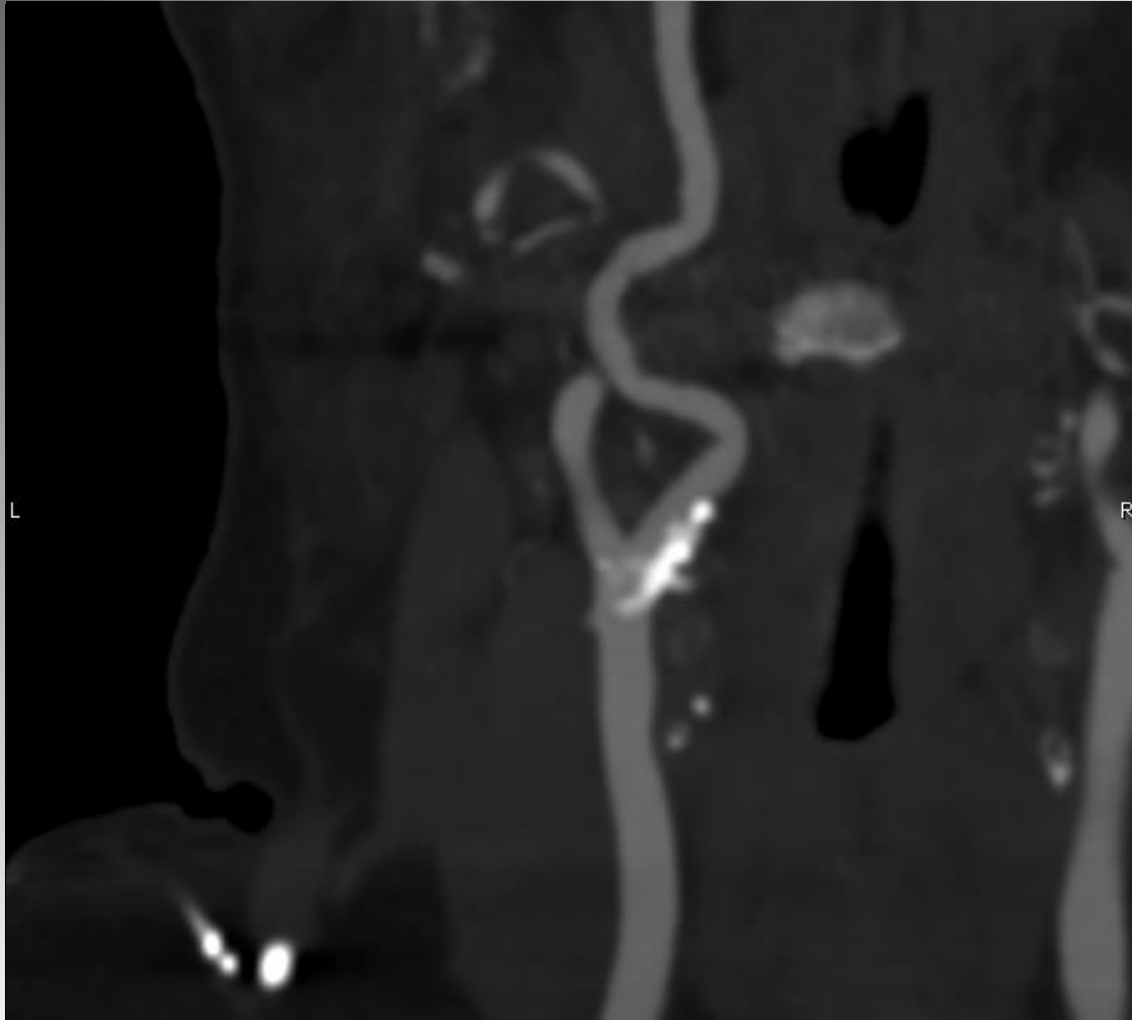
Internal Carotid Artery Occlusion



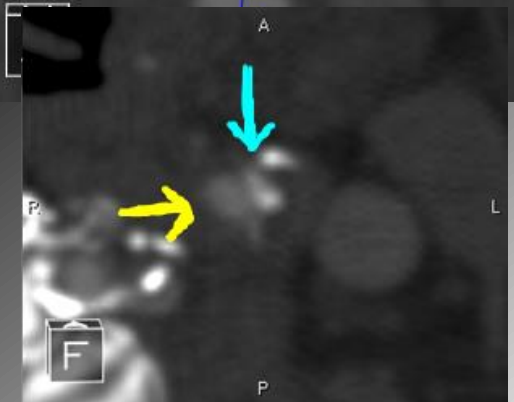
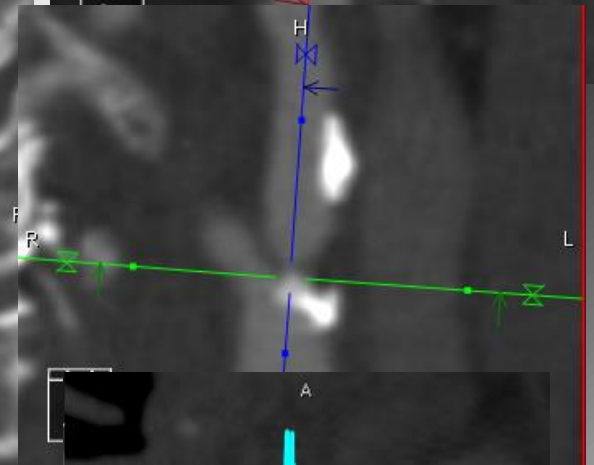
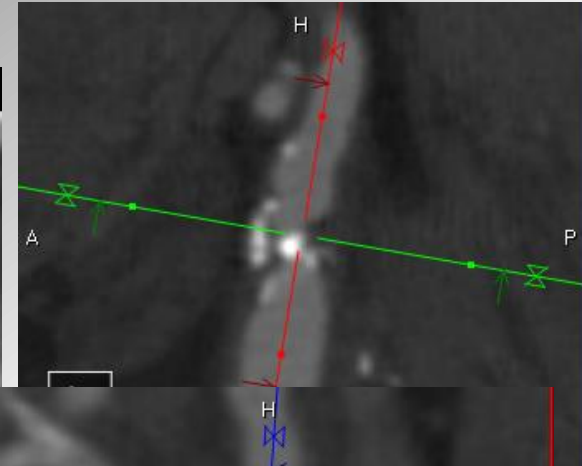
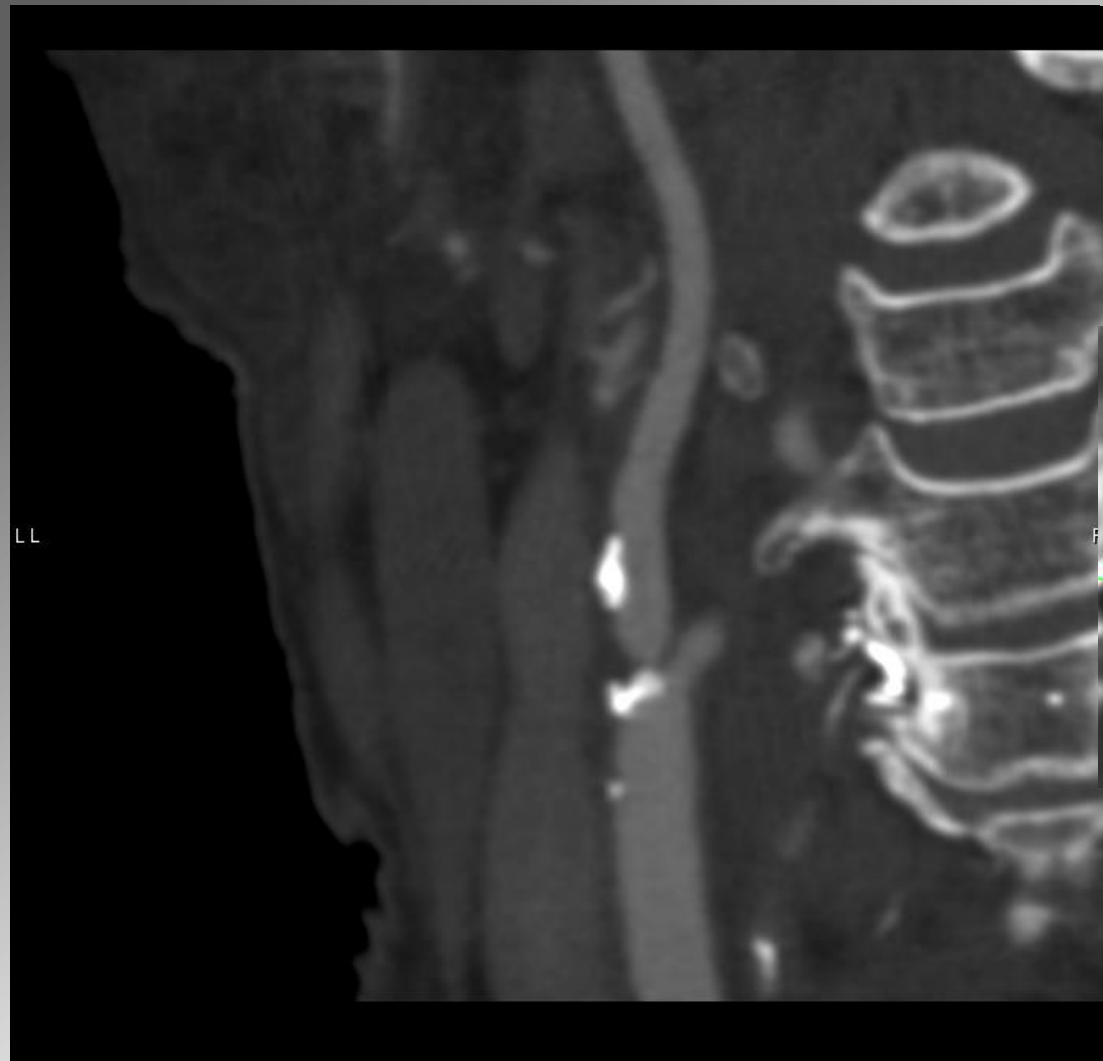
Below Bifurcation (still within the bulb = NASCET) Minor Stenosis



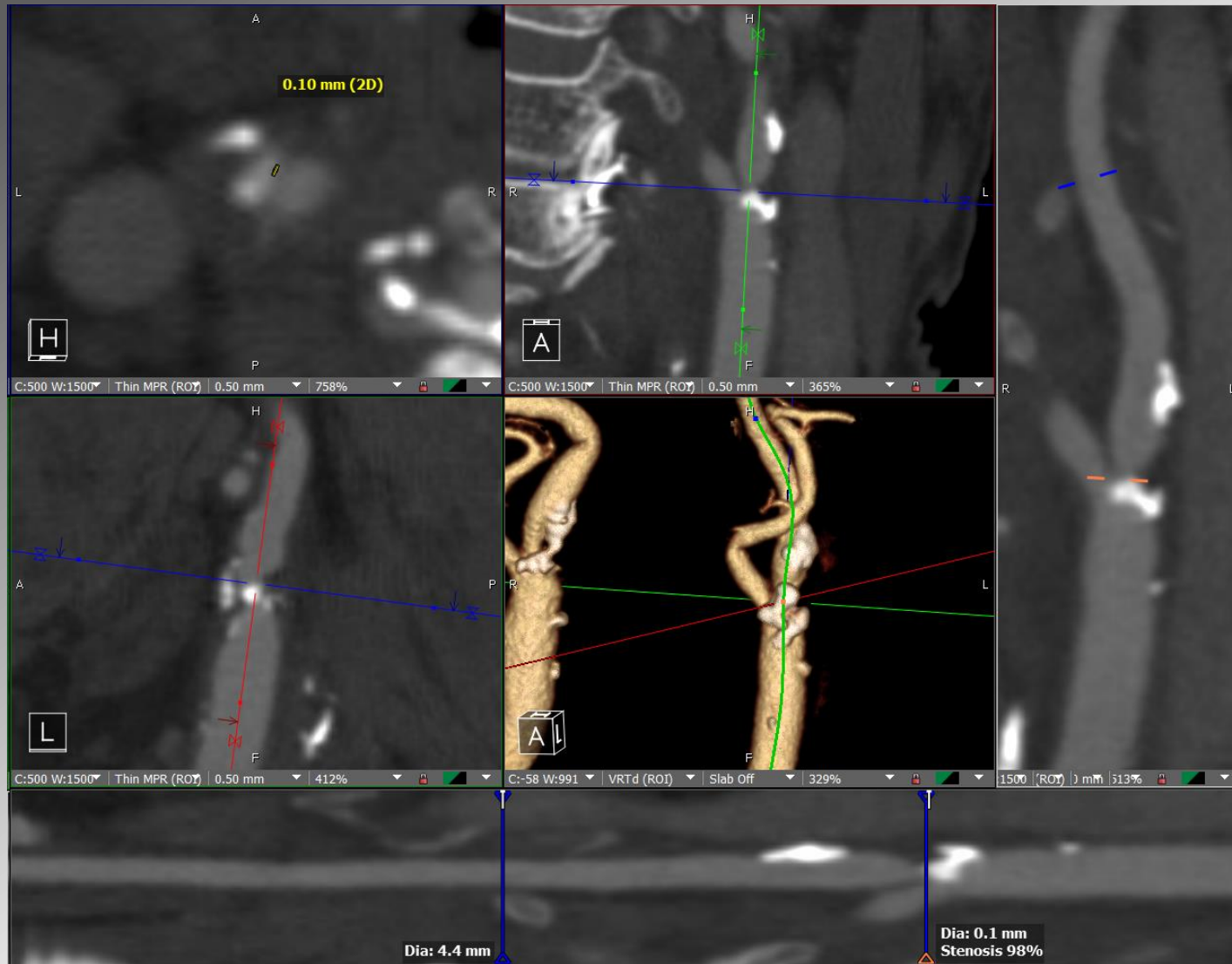
Below Bifurcation (still within the bulb = NASCET) Major Stenosis



Stenosis Below/At Bifurcation Difficult To Accurately Measure

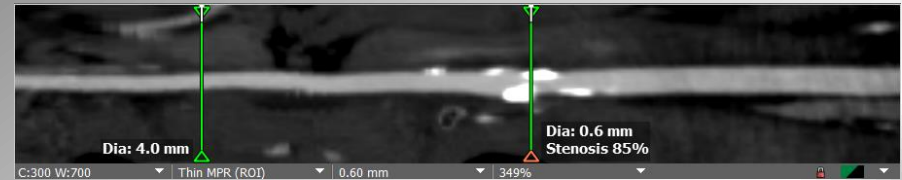
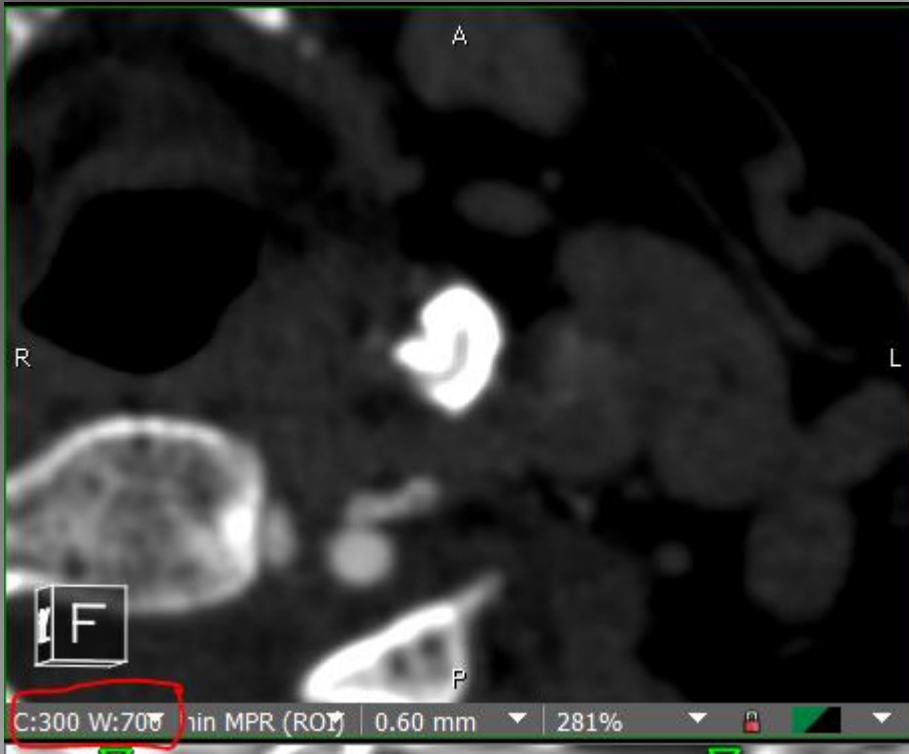


Stenosis Below/At Bifurcation Difficult To Measure



Artifacts

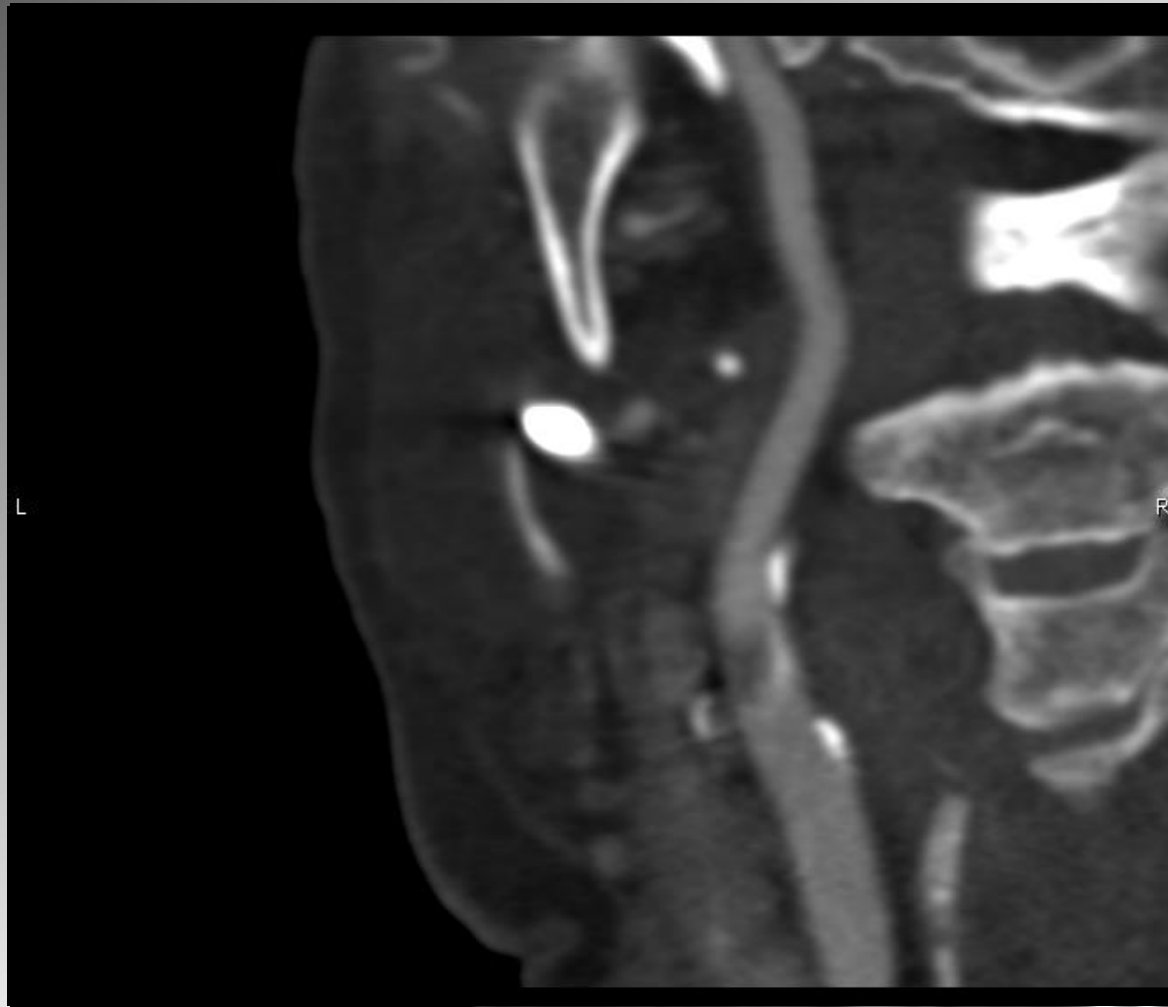
BLOOMING ARTIFACT



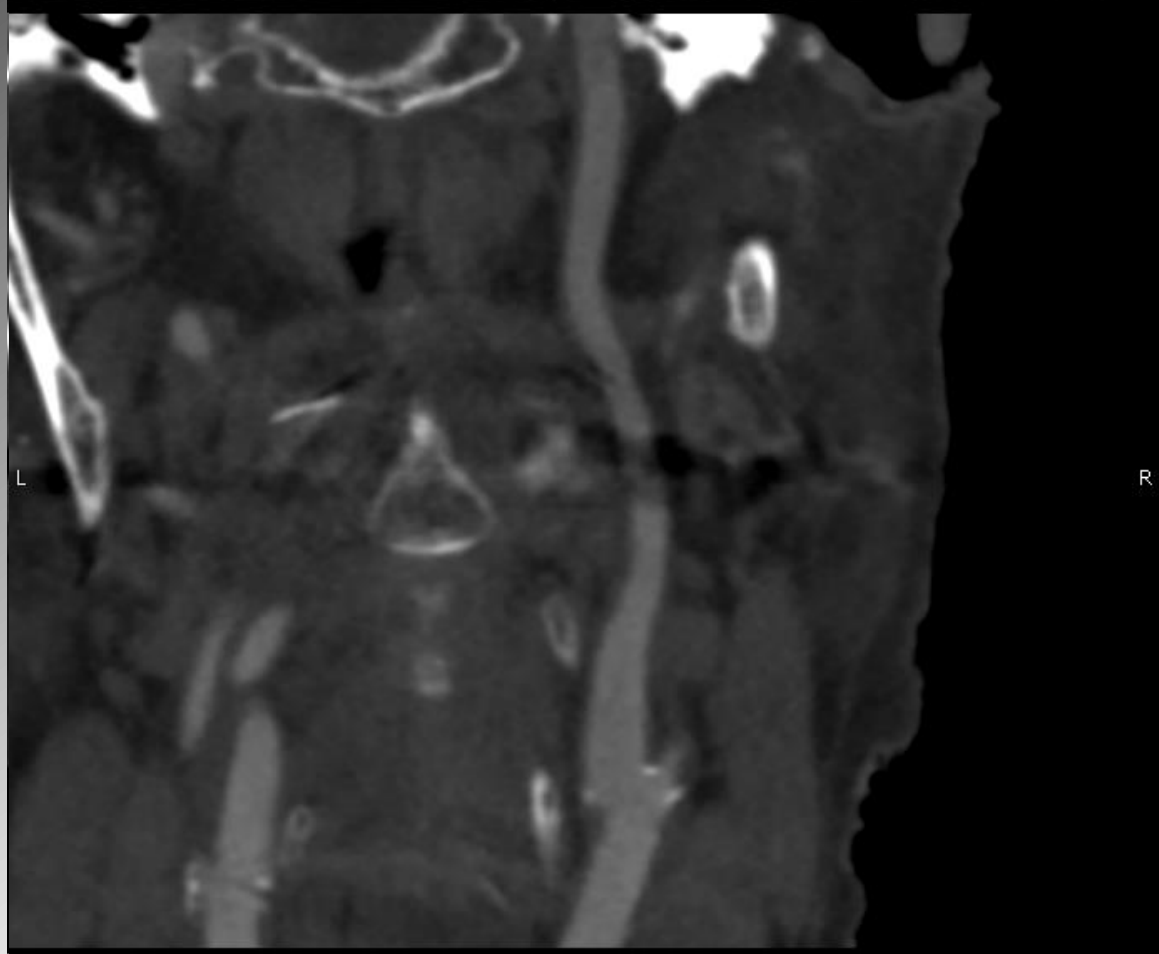
* CAN MAKE A DIFFERENCE OF 20 PERCENT OR MORE



Artifact Example (From Jugular)

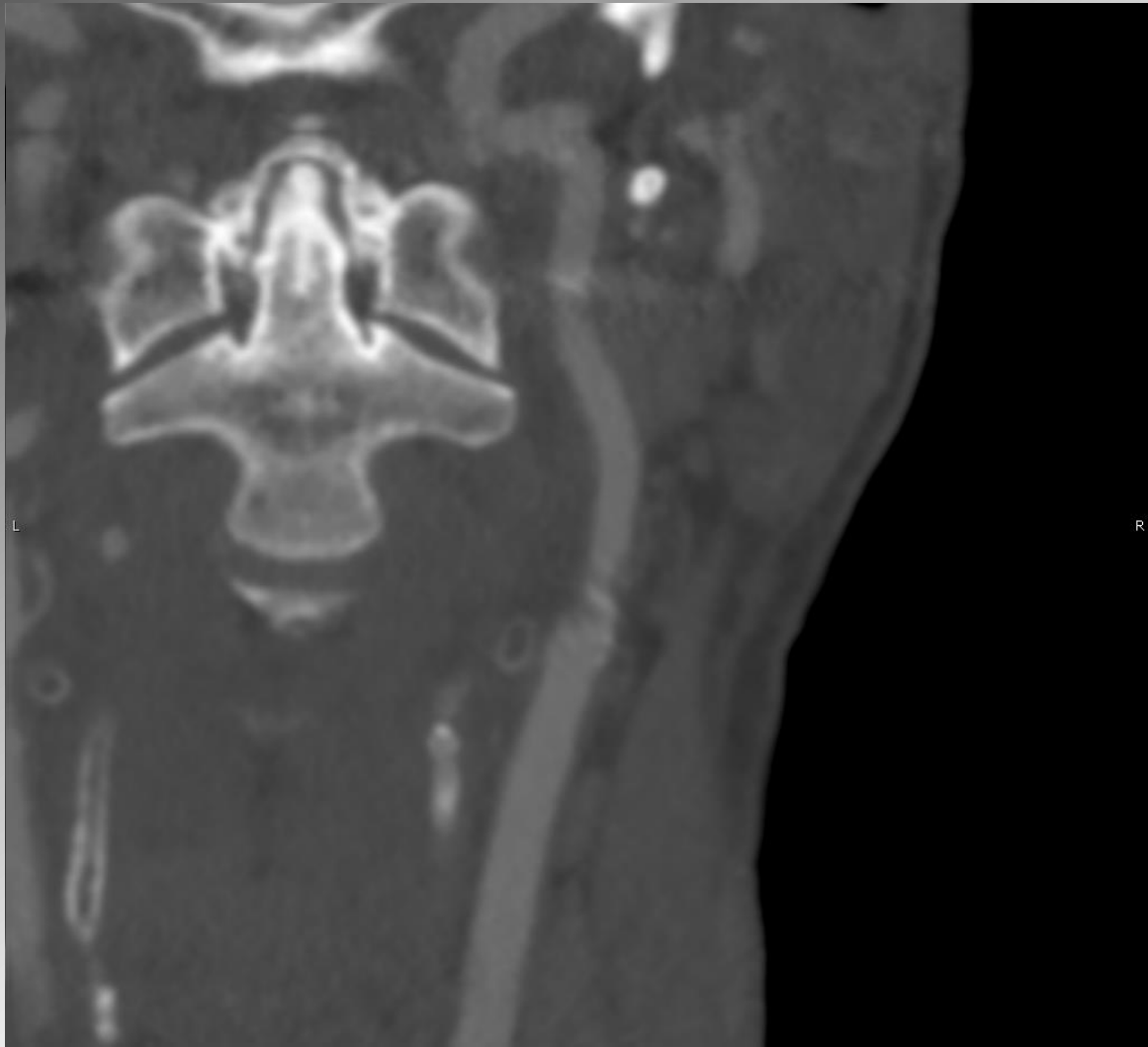


Artifact Example (From Dental Work)



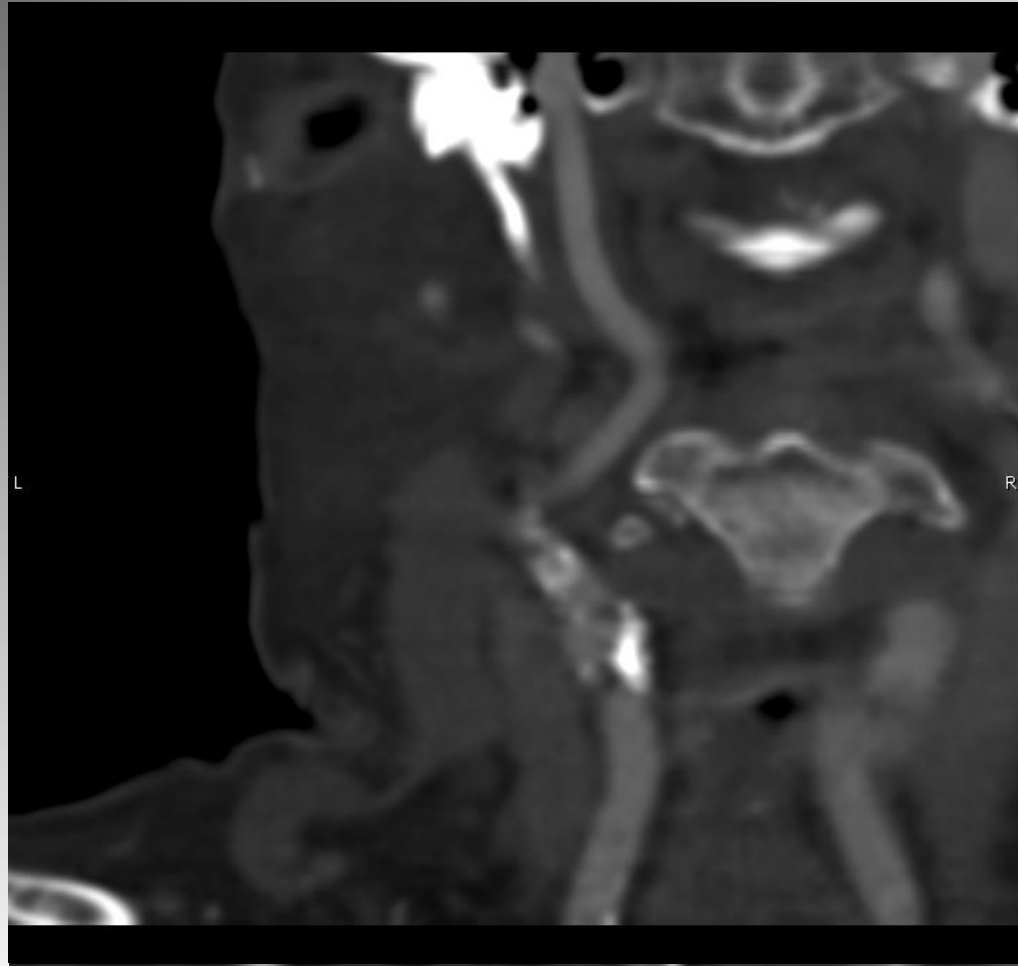
Artifacts

still possible to measure



Artifacts

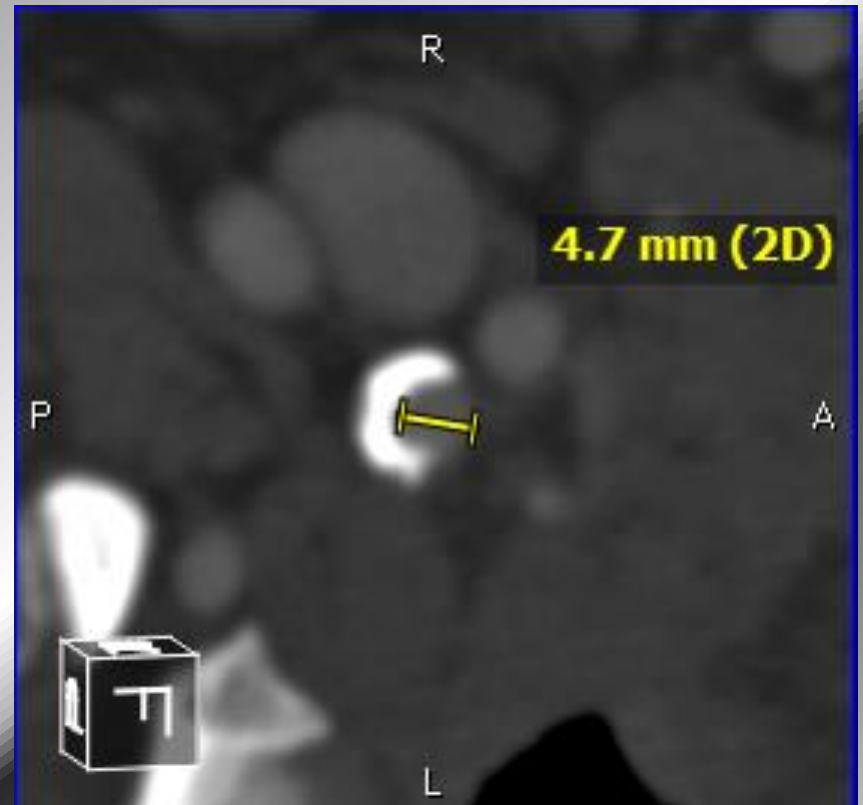
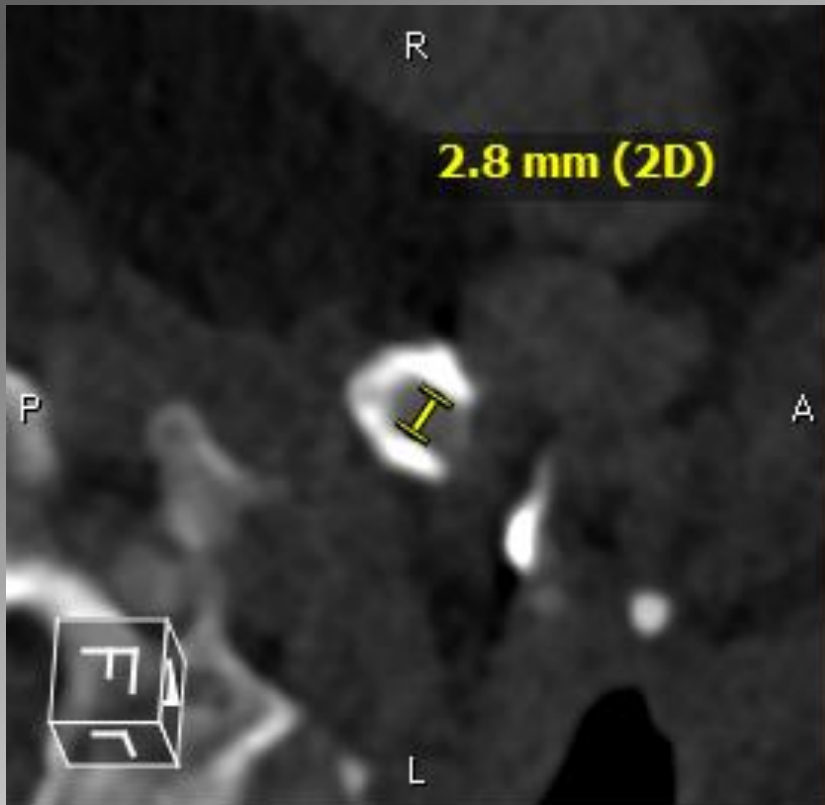
not possible to measure



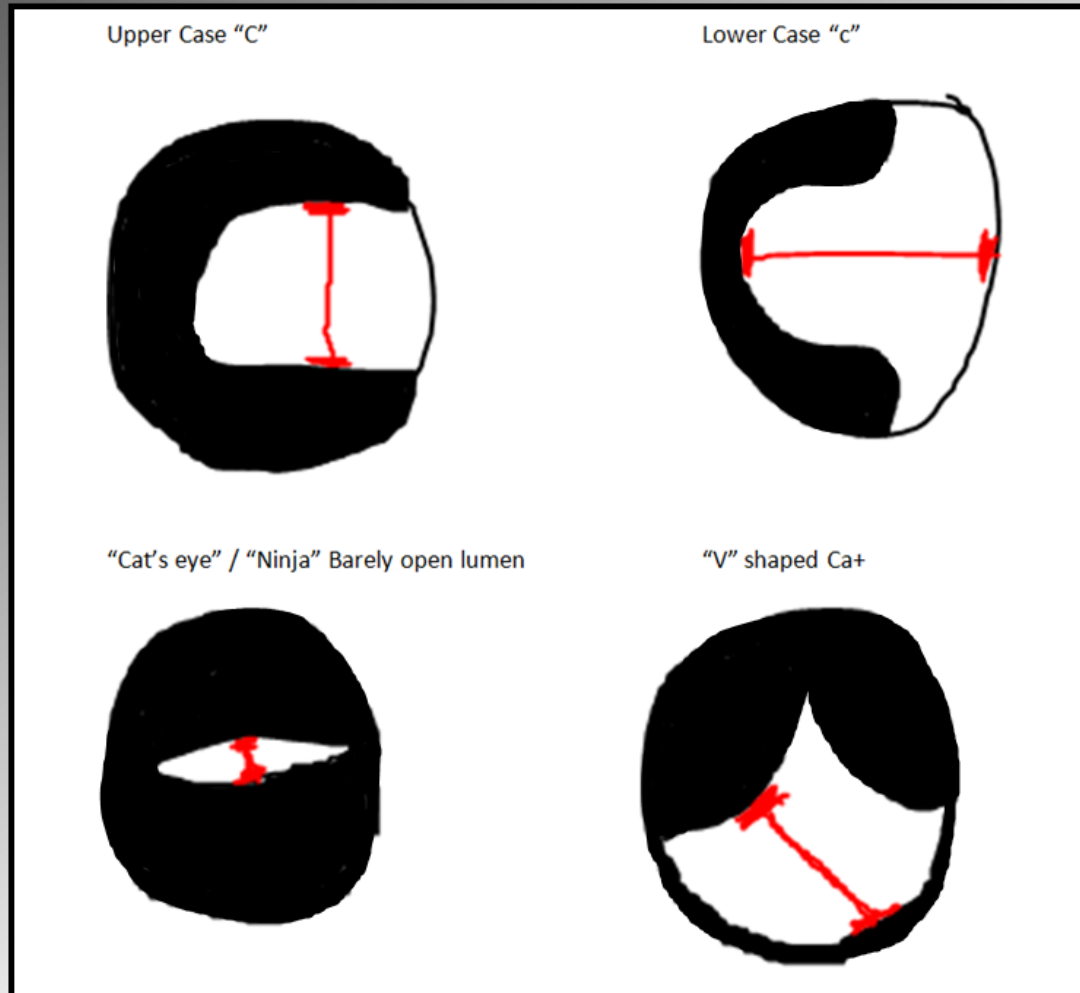
“C” Shaped Lesions

Upper case “C”

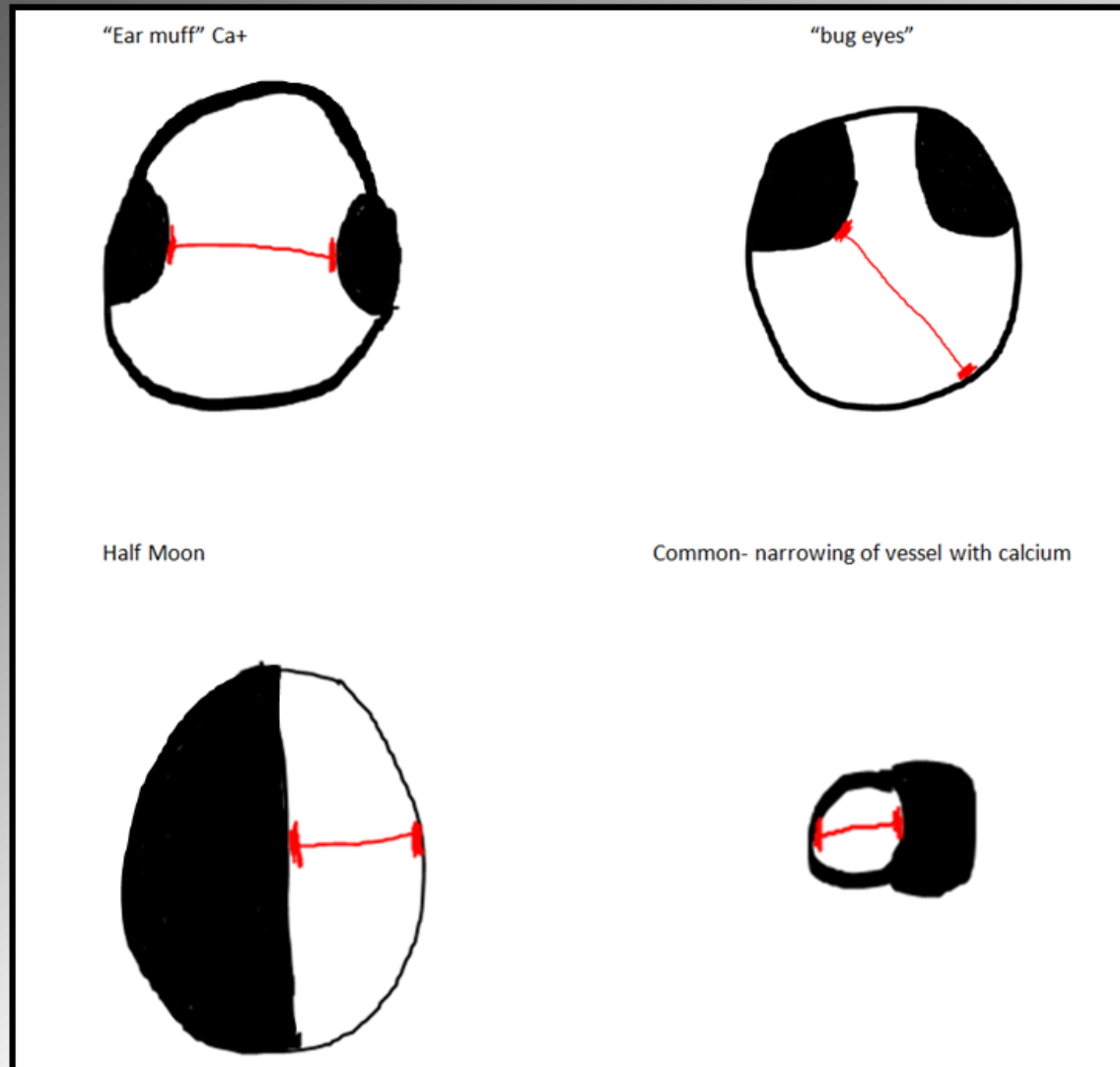
Lower case “c”



Common Lesion Shapes and How To Measure

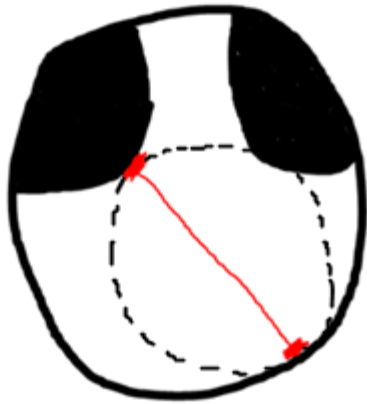


Common Lesion Shapes and How To Measure, *continued*

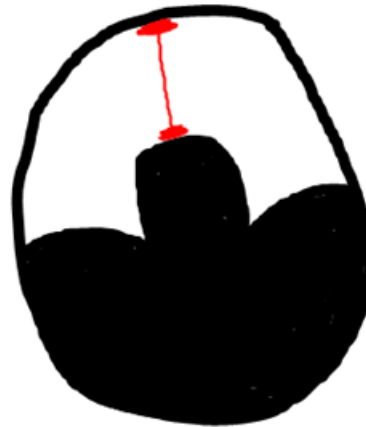


Common Lesion Shapes and How To Measure, *continued*

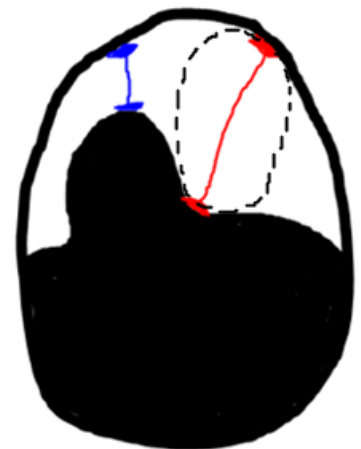
"bug eyes"



"The Mountain"

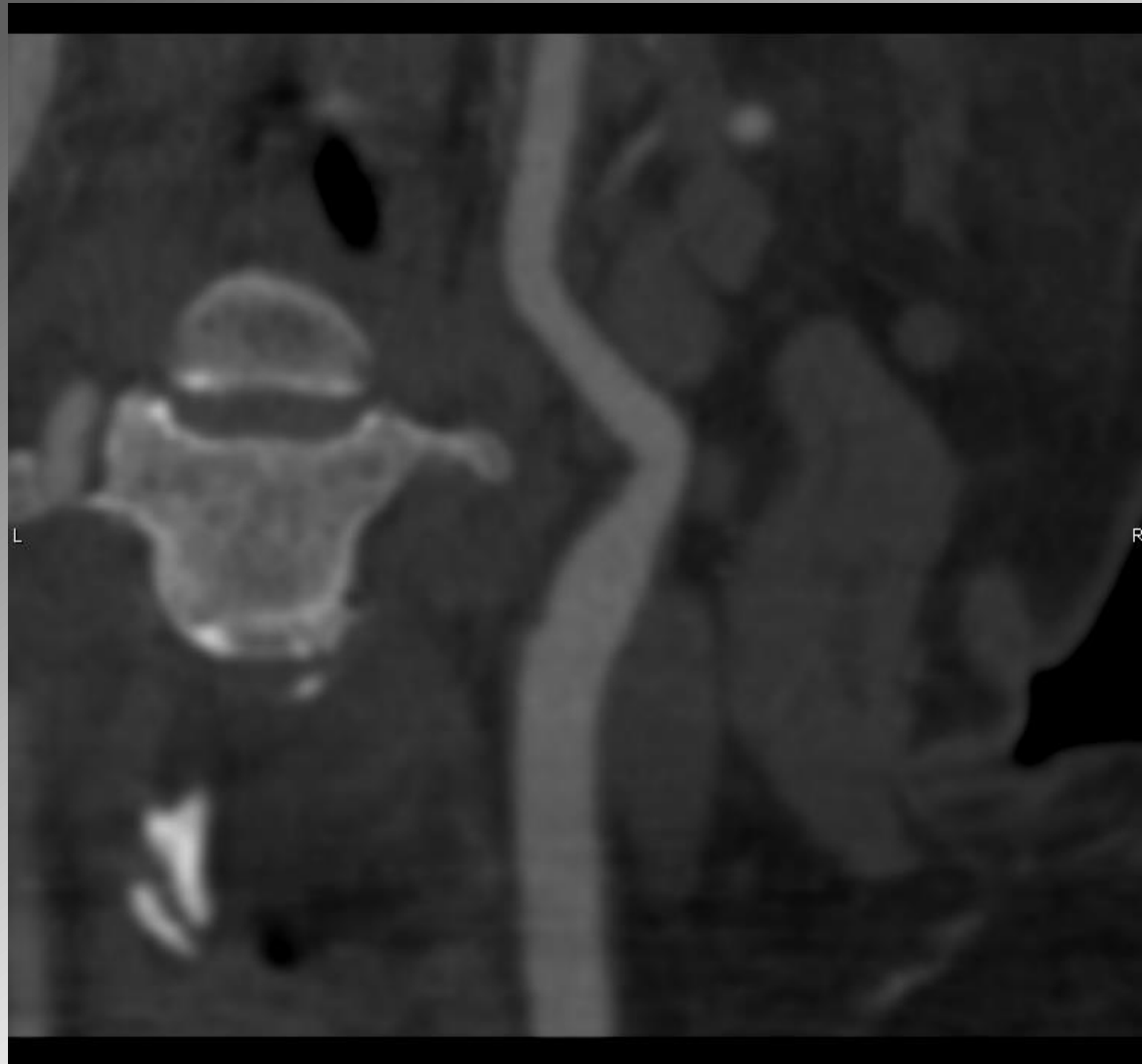


"Offset Mountain"



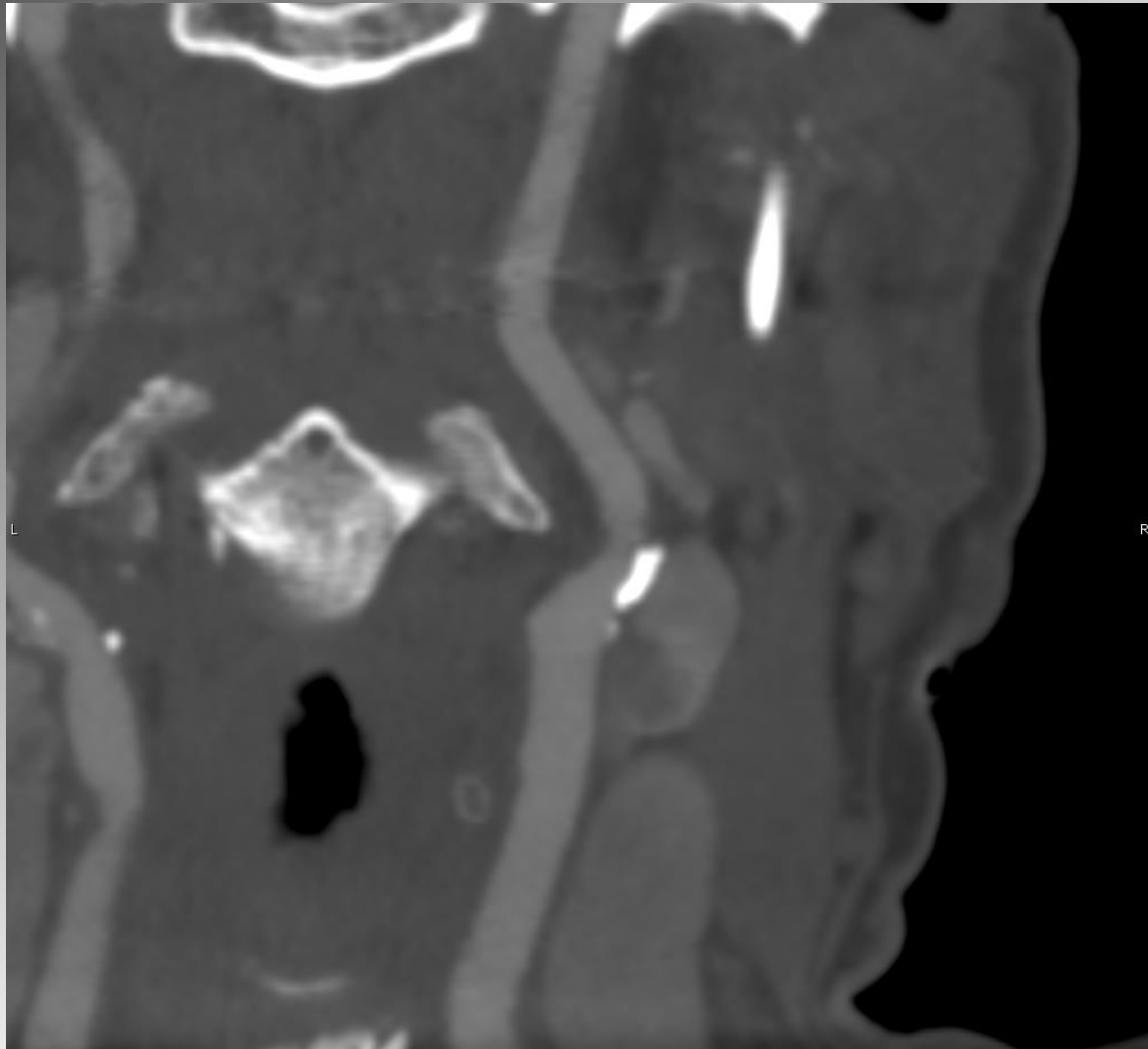
Vessel Kink vs. Stenosis

below vessel bend – do not measure

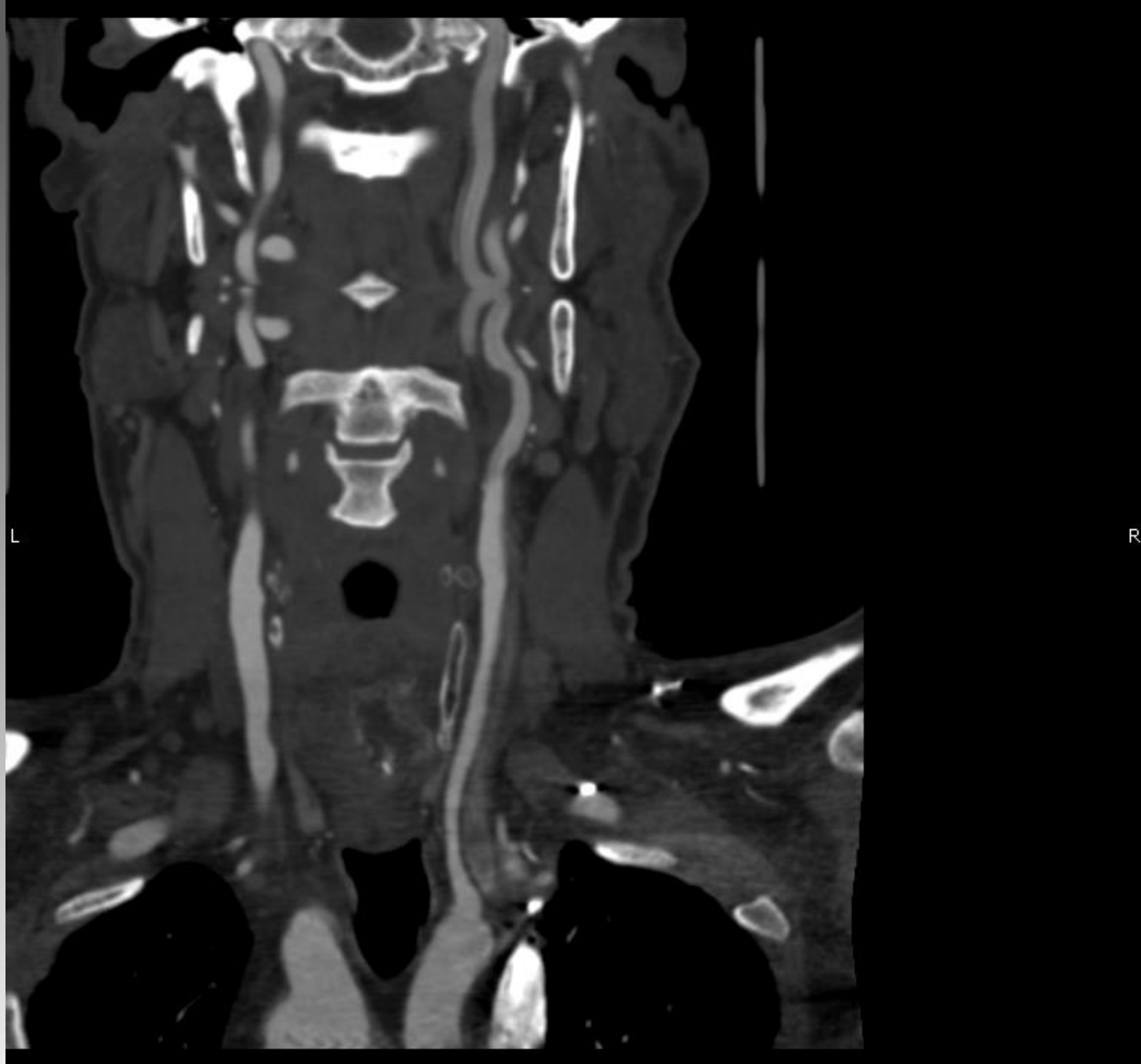


Vessel Kink vs. Stenosis

Stenosis very close to vessel bend

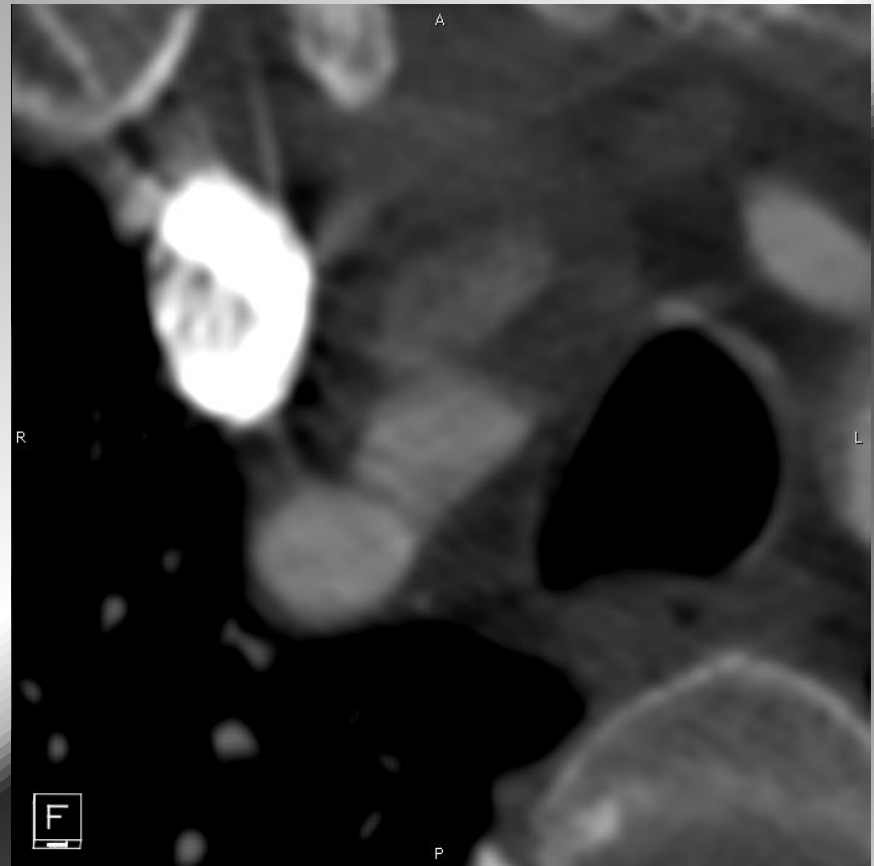


Carotid Dissection



Carotid/Vertebral Dissection

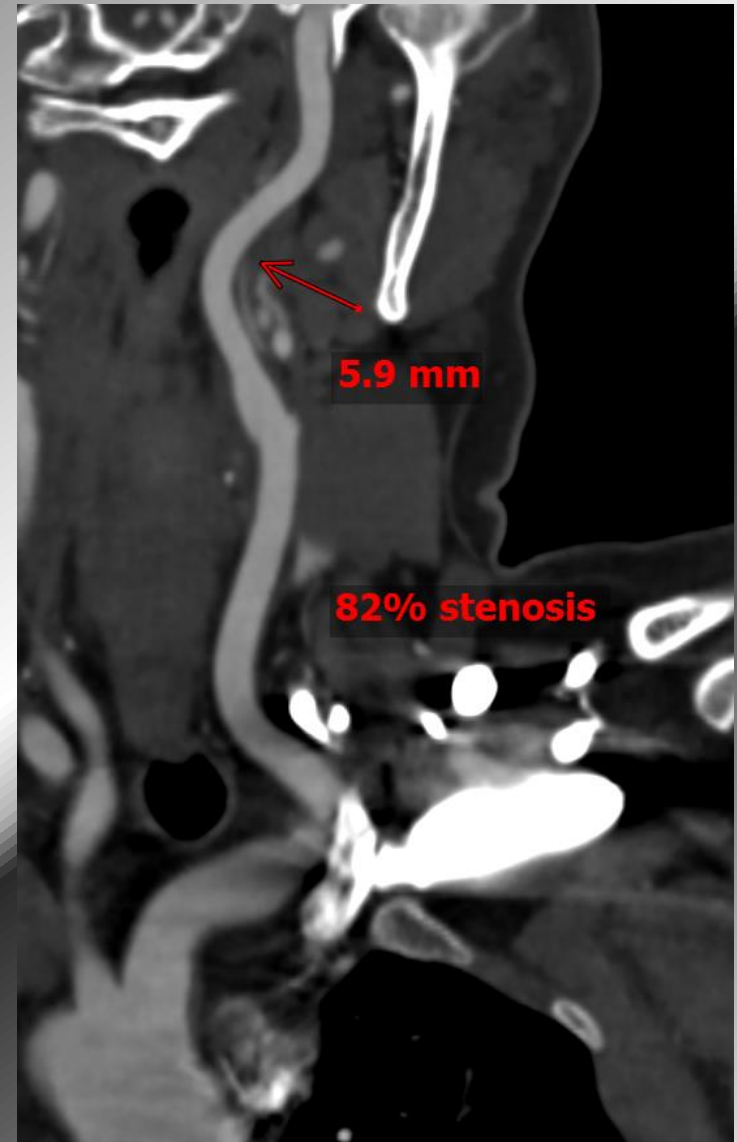
- Causes
 - Spontaneous
 - Blunt trauma
 - Propagation from AO
 - Dissection
 - Neck manipulation
- Clinical information
 - Pain
 - Good prognosis



Cross-Referencing Stenosis

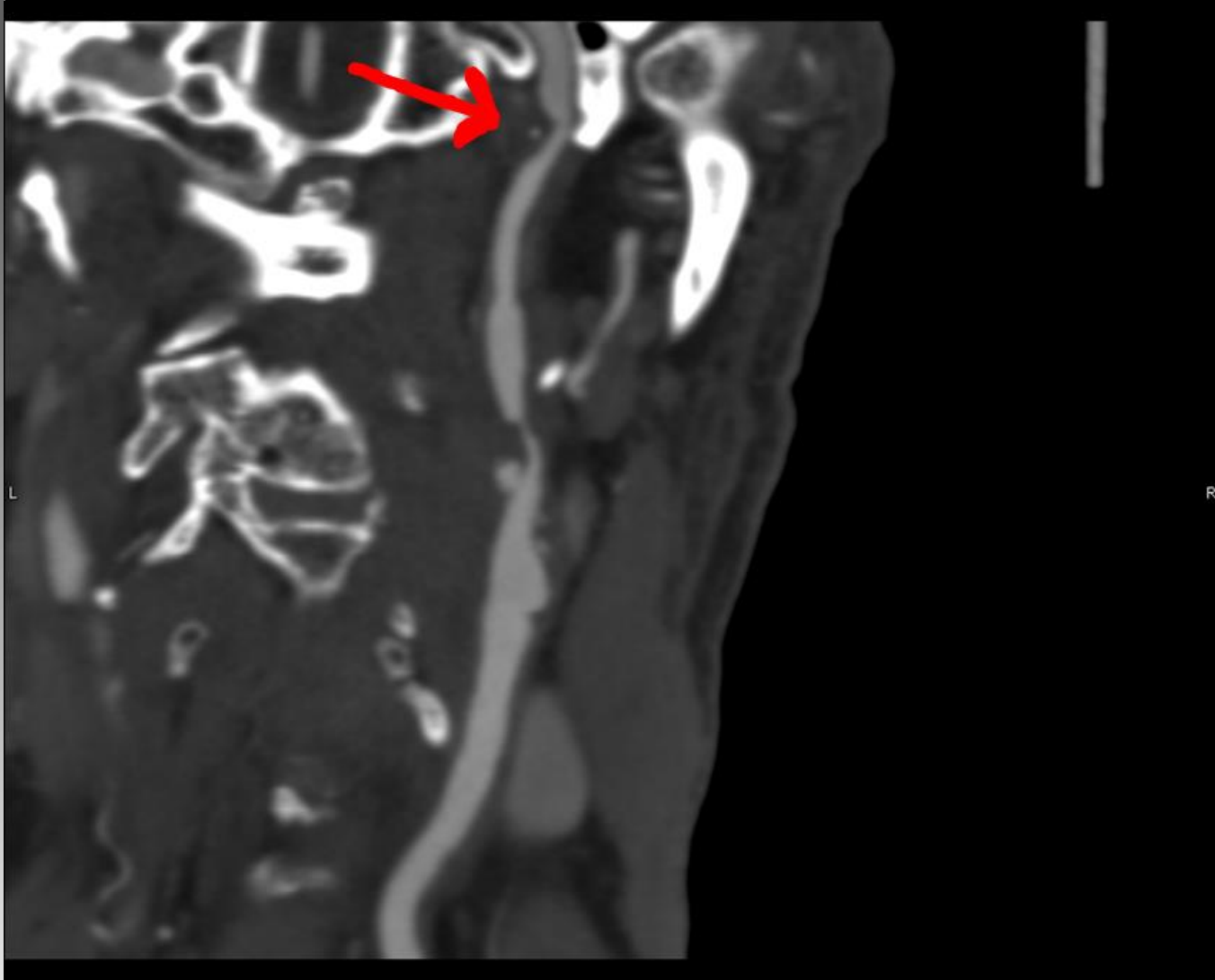


- Using healthy vessel as a reference is sometimes needed to obtain a more accurate vessel stenosis
- Here there was a difference of 15 percent

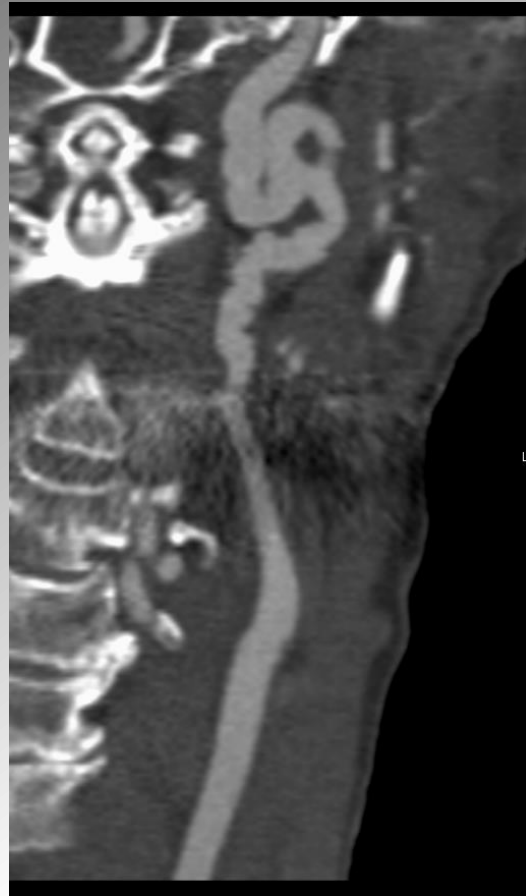


Stenosis In Distal ICA

Not NASCET, Still Necessary

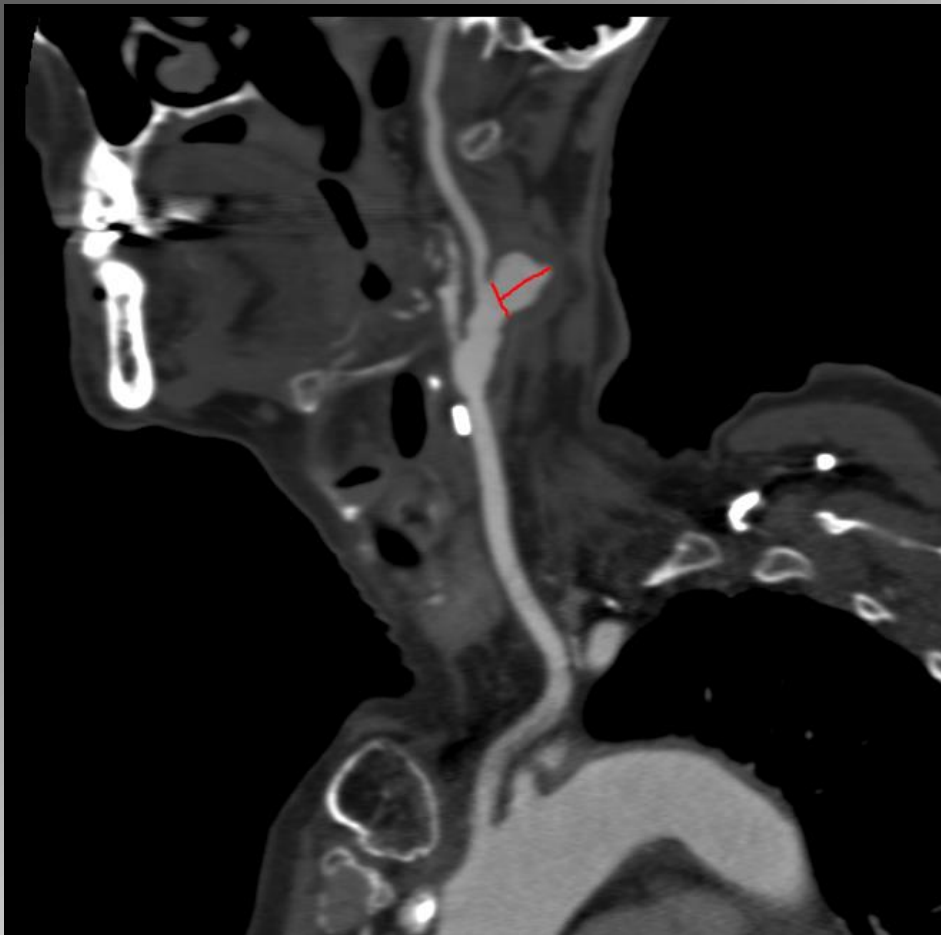


Fibromuscular Dysplasia

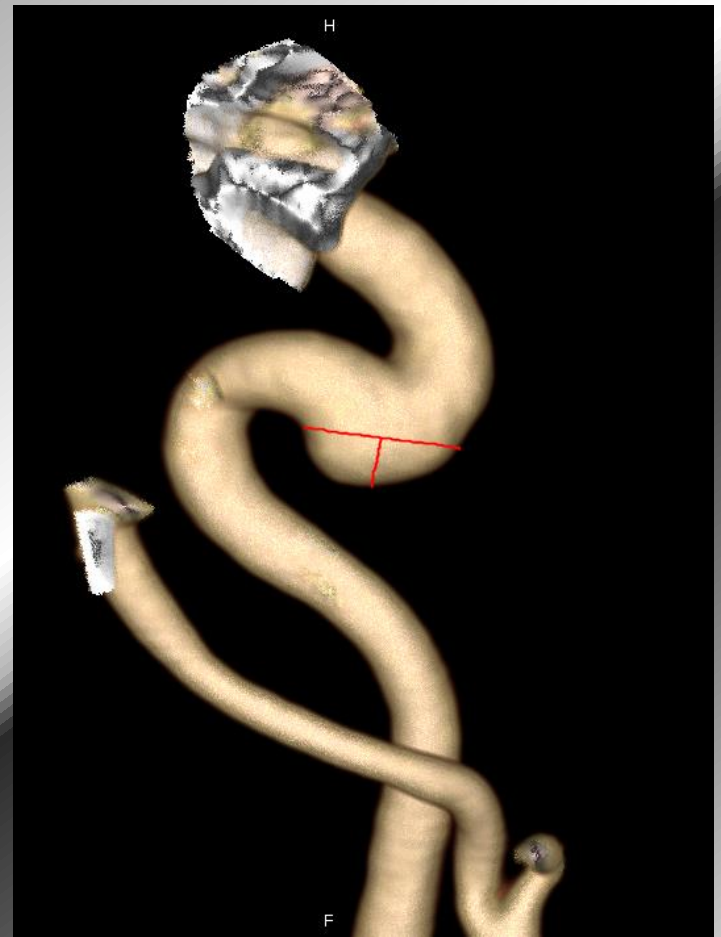


ICA Aneurysm

Aneurysm near bulb

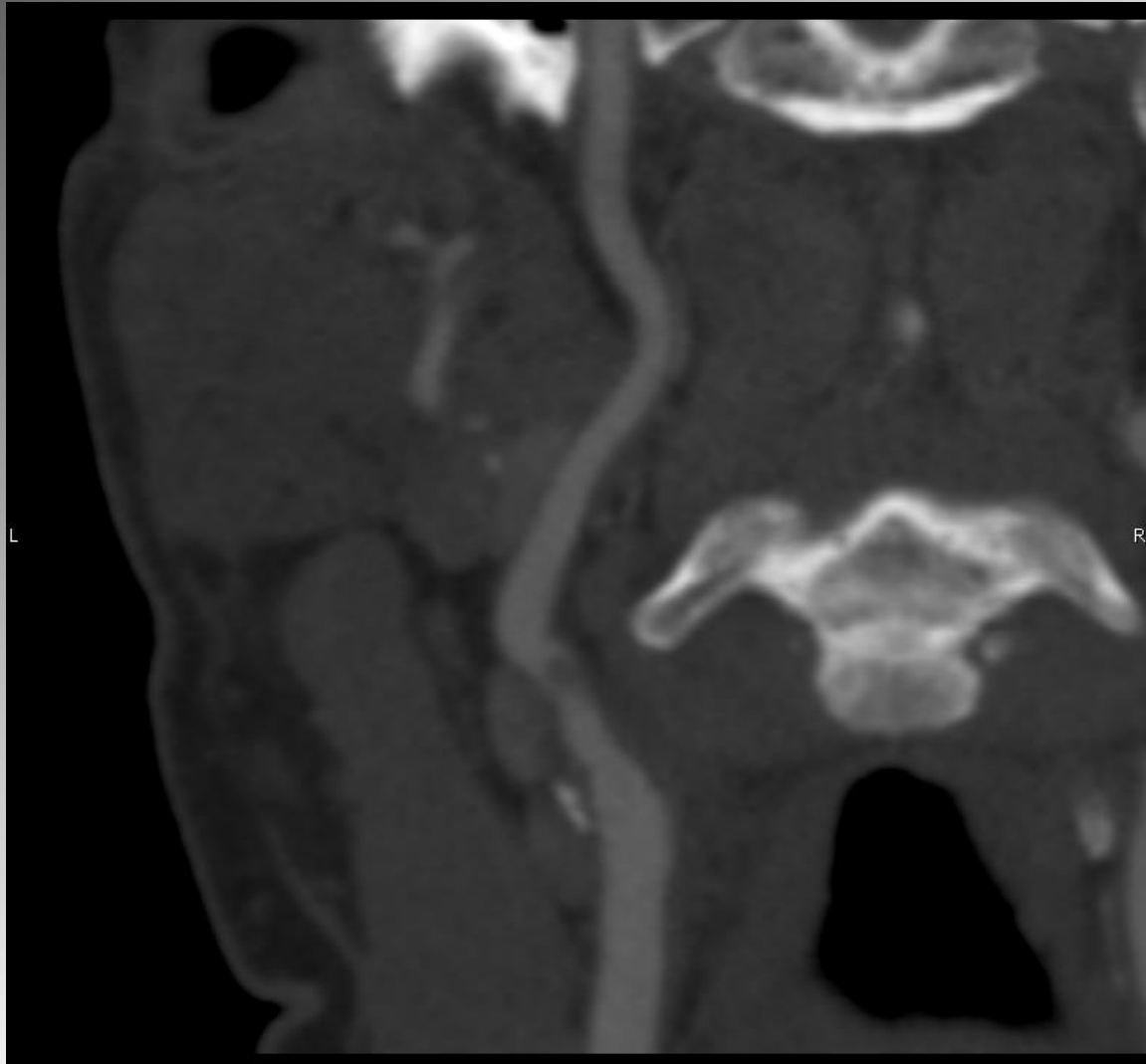


Distal ICA aneurysm



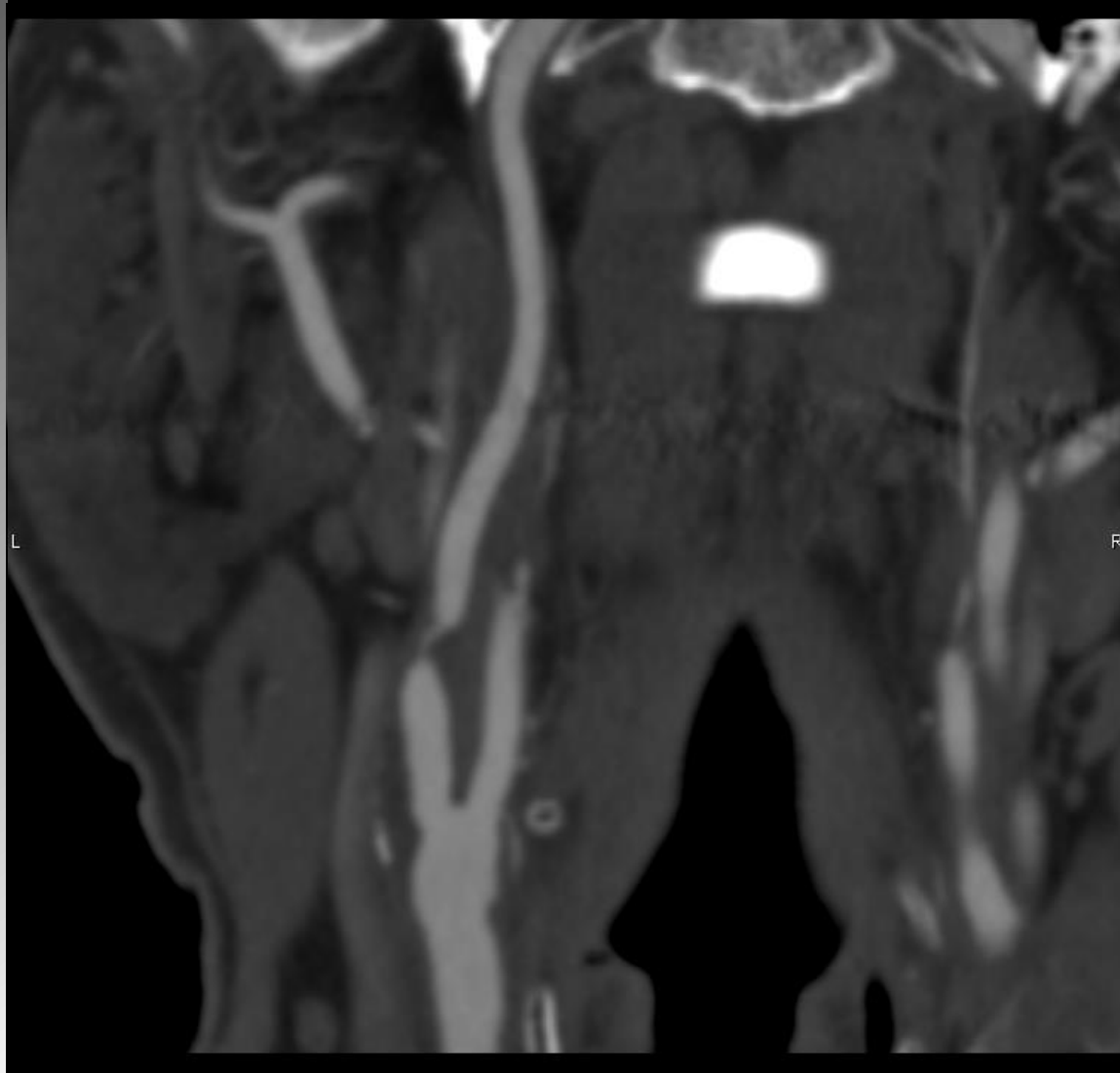
Filling Defect

(soft plaque, clot)



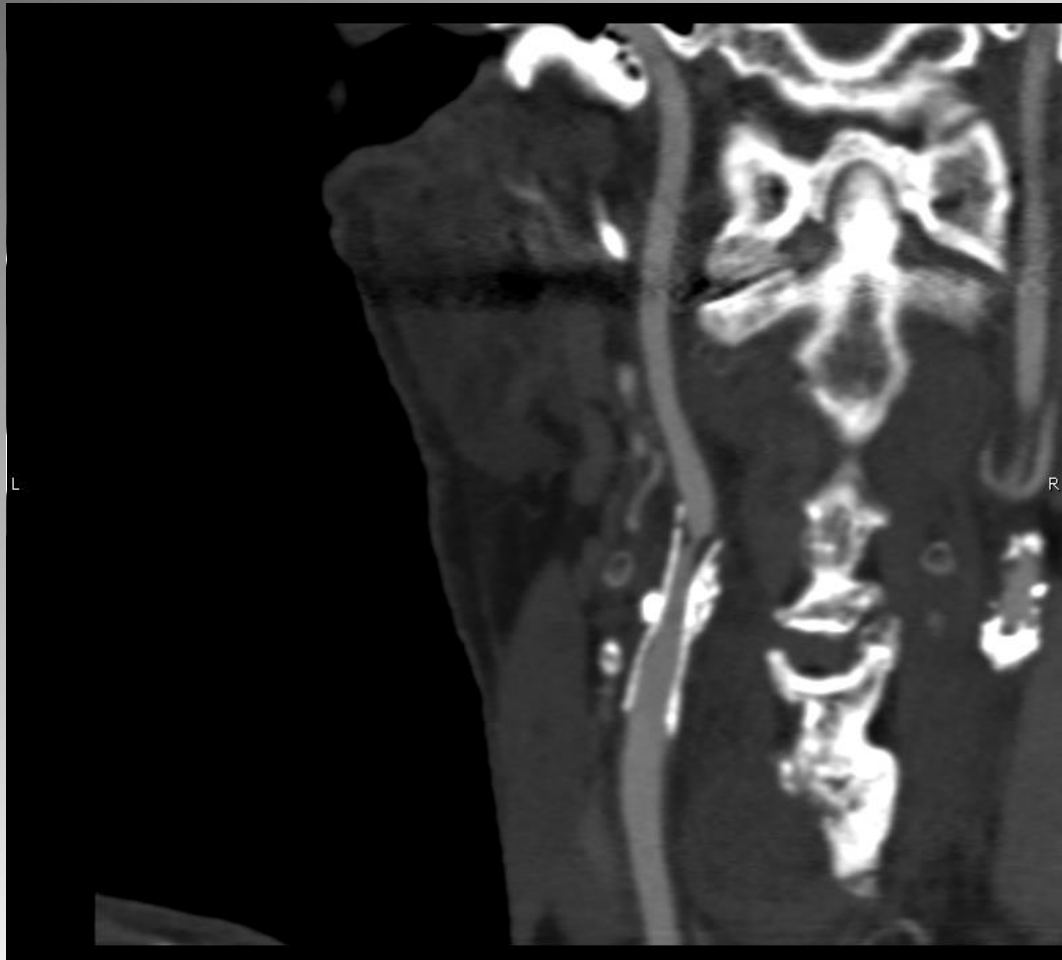
Clamp Injury

(post endarterectomy)

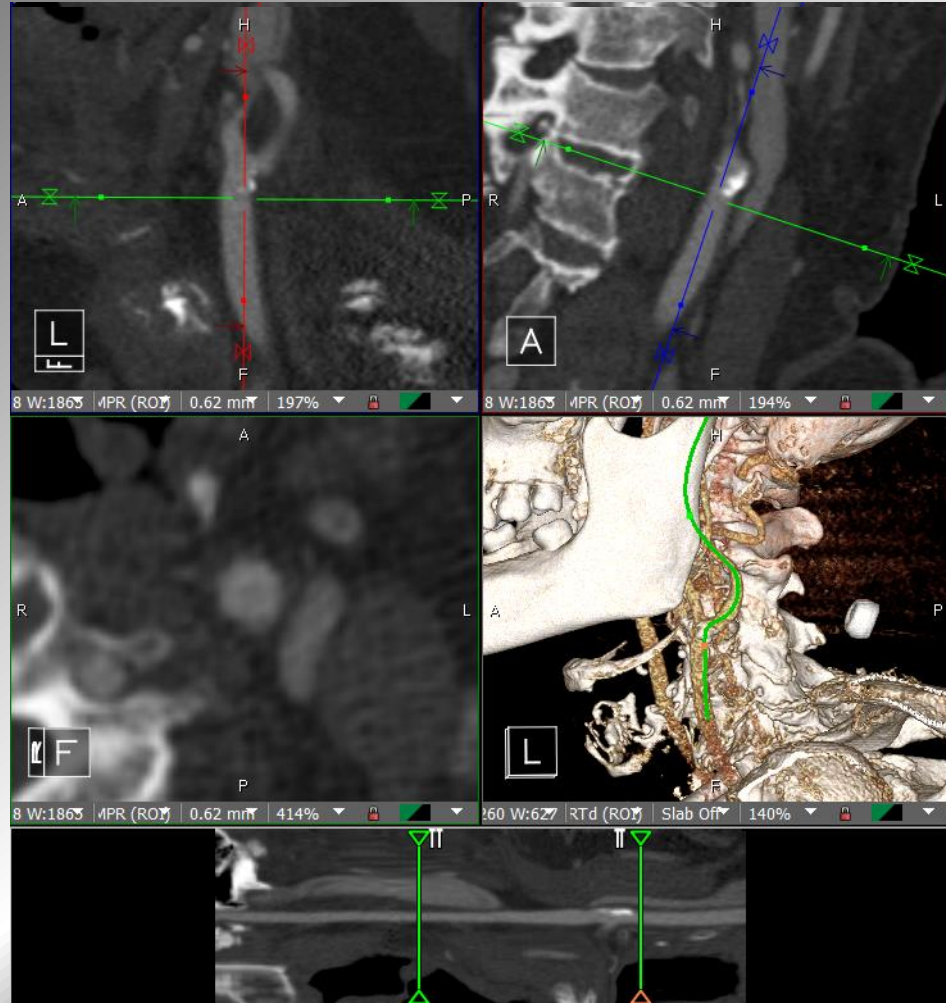
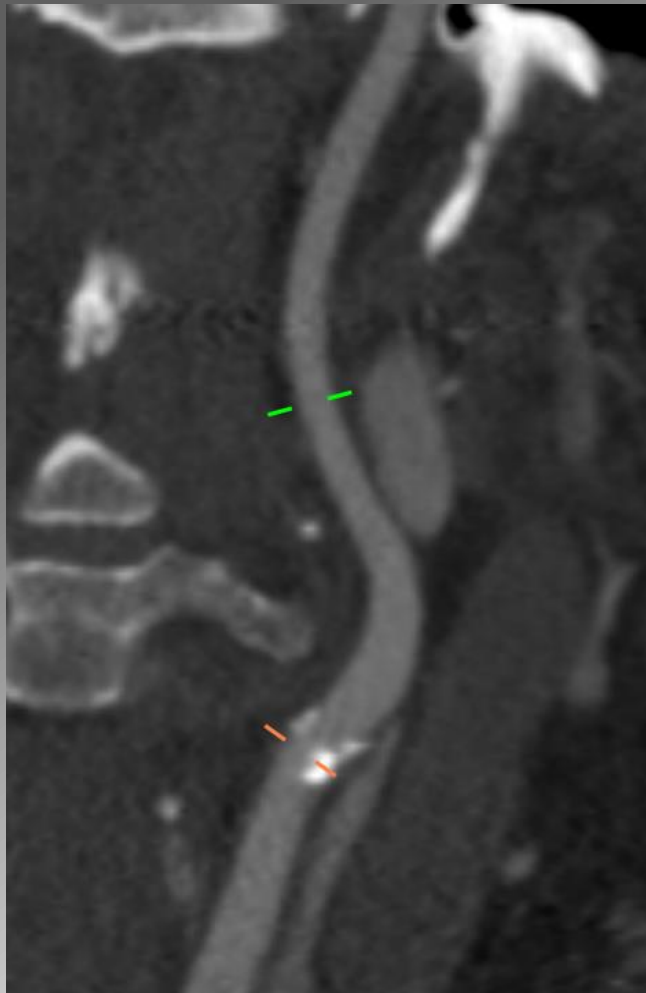


Stent Within ICA

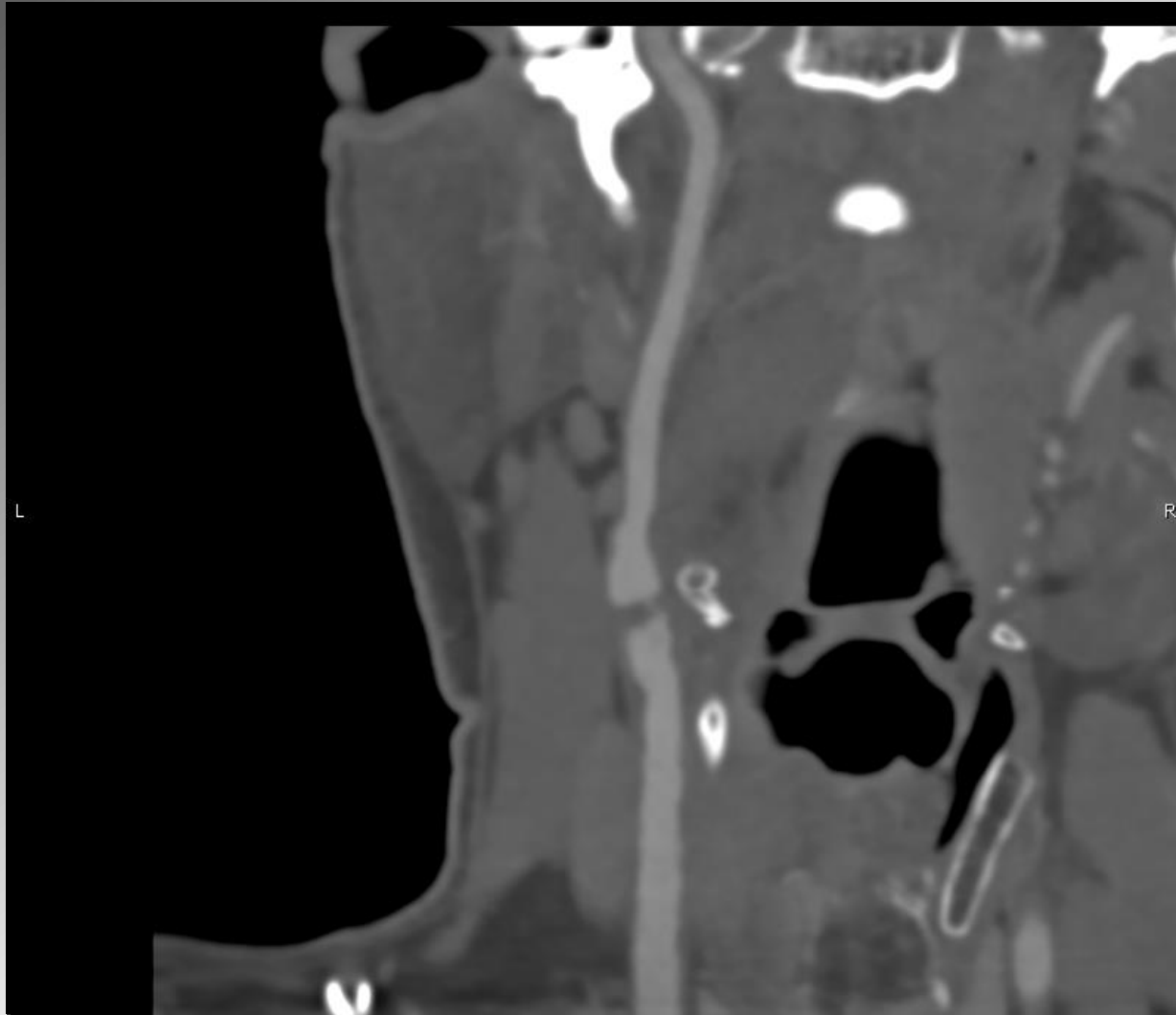
Measure reference and min inside stent



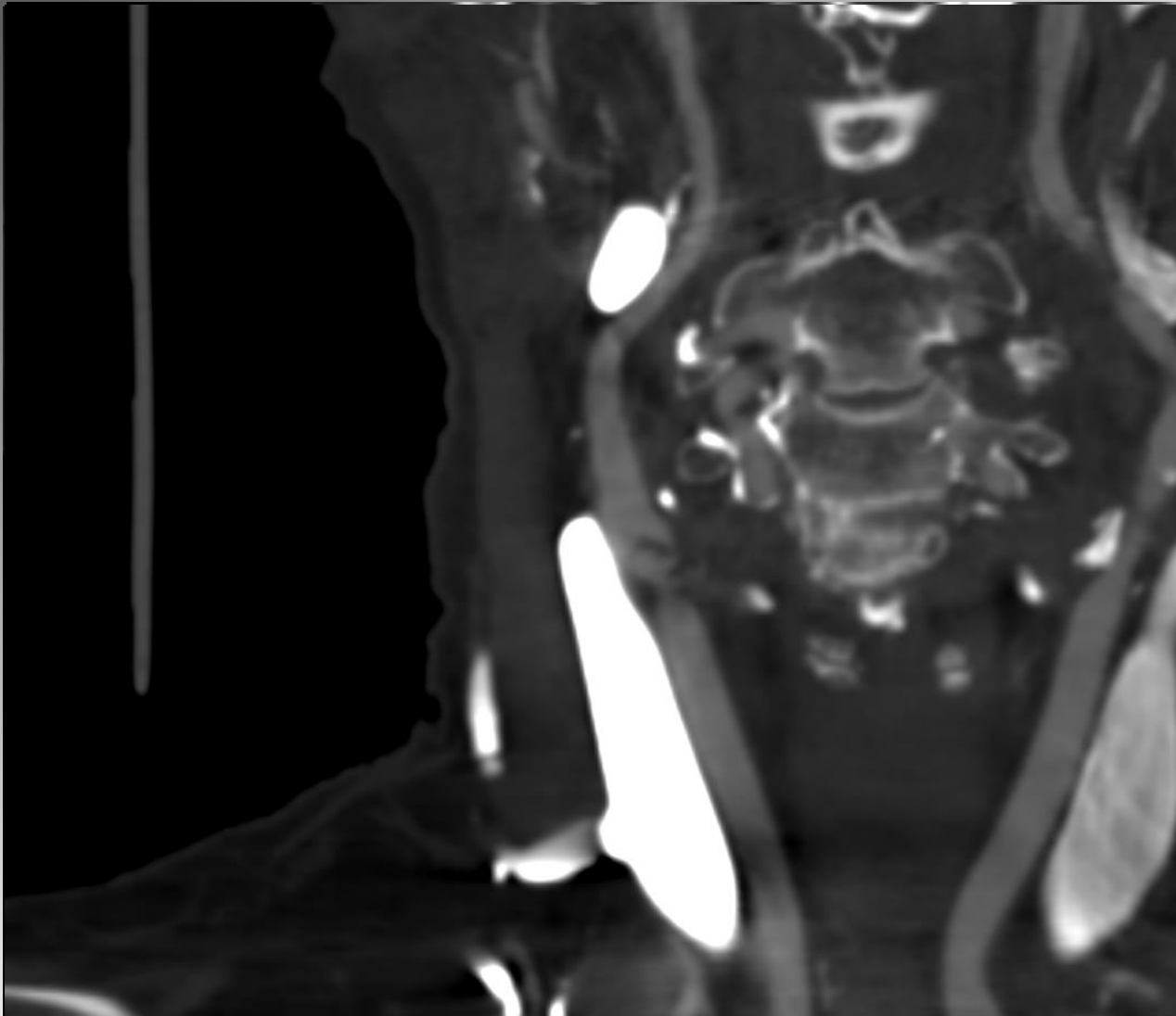
Difficult Stenosis (cloudy ca+)



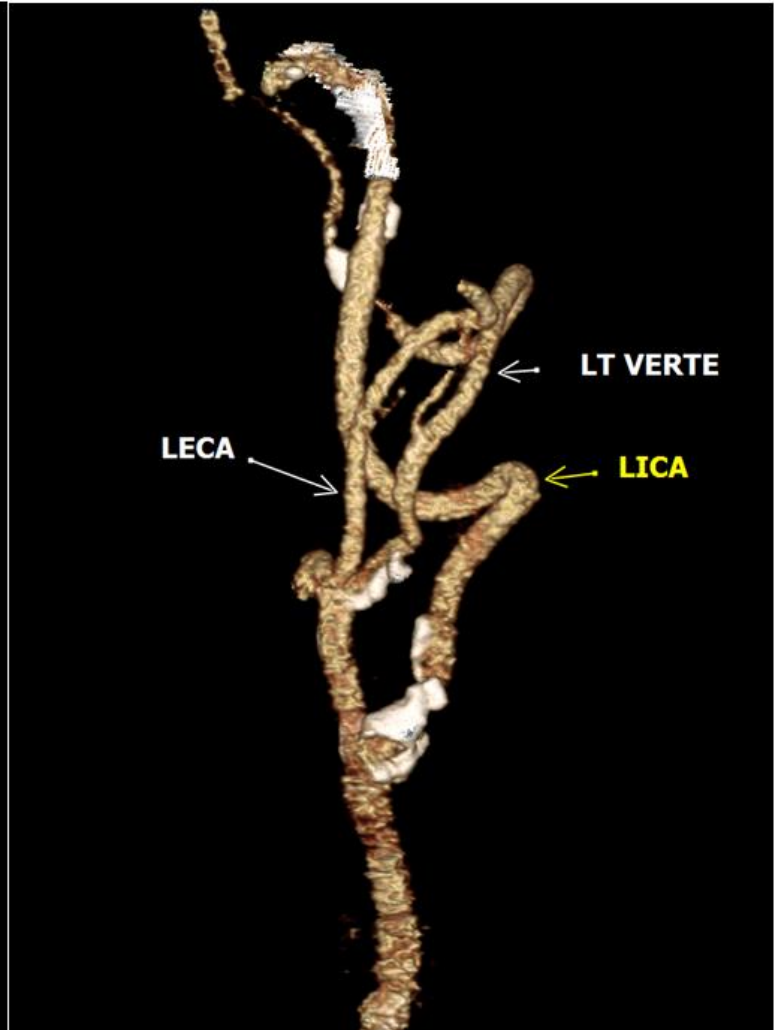
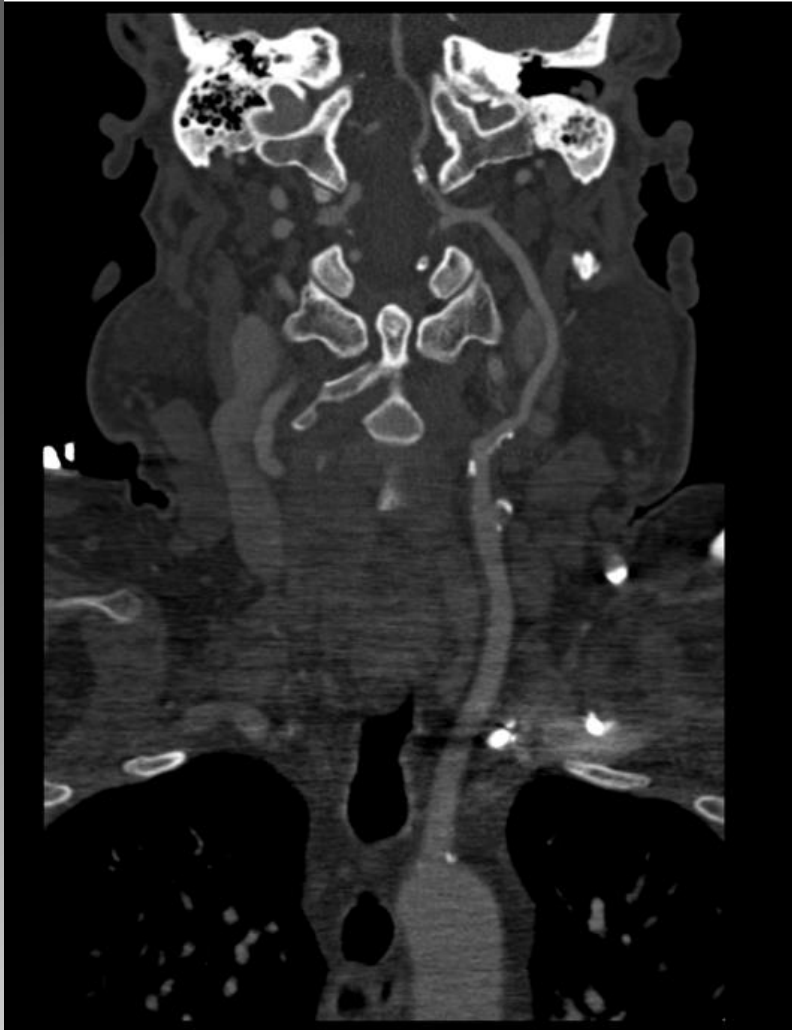
Difficult Stenosis (soft plaque)



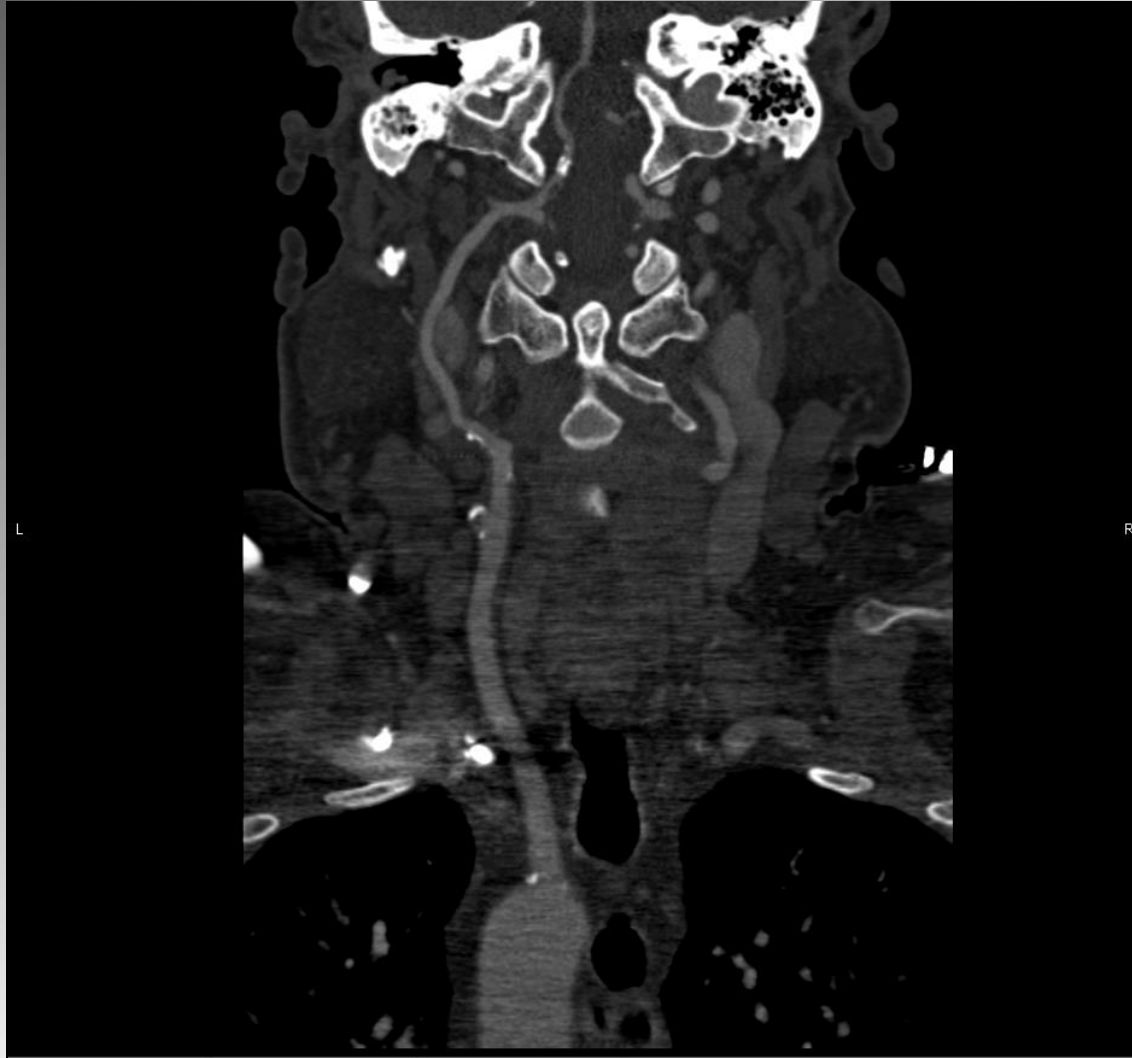
Difficult Stenosis (soft plaque/artifact)



Carotid/Vertebral Anomaly



Carotid/Vertebral Anomaly



Common Carotid Artery Disease



Special Thanks to:

**Sarah Downey RT(R)
Image Quality Coordinator
3DR Laboratories LLC
Louisville, Ky**