

# Peripheral Arterial Studies in the Upper Extremity

for

*Clinical Approach to Vascular Ultrasound and Registered Physician in Vascular Interpretation (RPVI) Prep Course*

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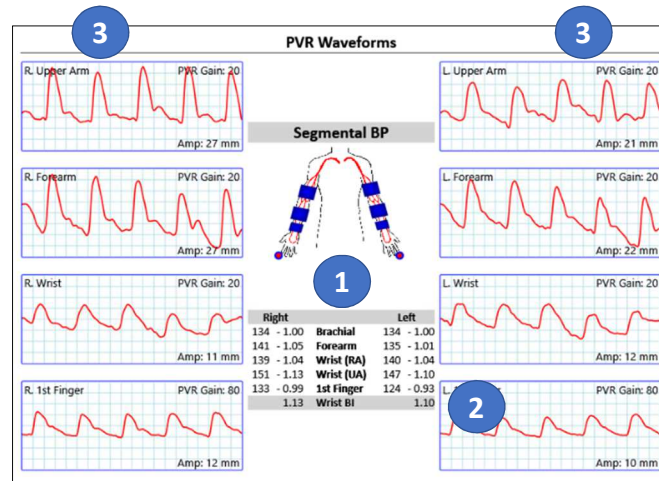
## Disclosures

- Consultant – Magneto Thrombectomy Solutions

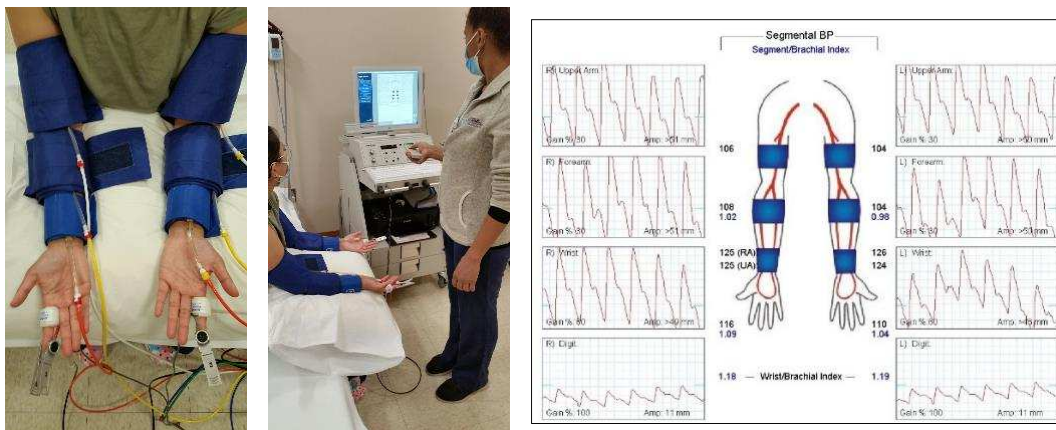
Upper extremity arterial anatomy

Normal

# Pulse Volume Recordings and Segmental Pressures



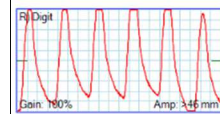
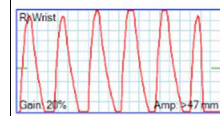
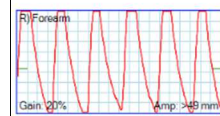
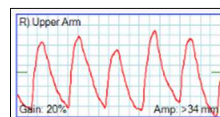
# Finger photoplethysmography





# Subclavian artery – Evaluation and challenges

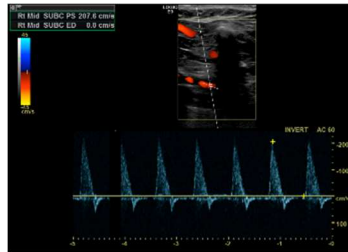
## Subclavian Artery Stenosis



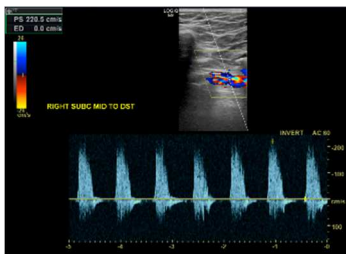
PVR's Look Great, No?

Always compare!

## Subclavian Artery Stenosis – Same Patient

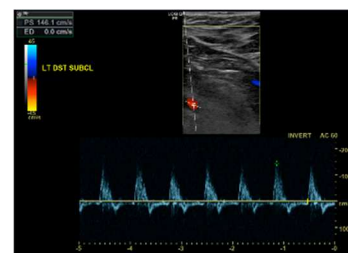
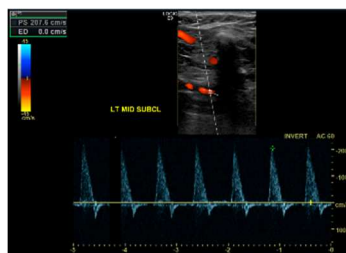
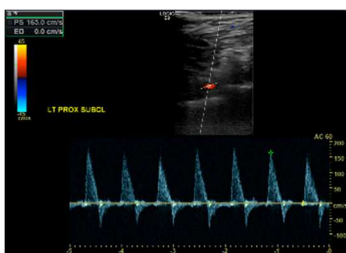


Is this the whole story?



Further interrogation...

## Subclavian Artery Stenosis – Compare to the Contralateral Side!



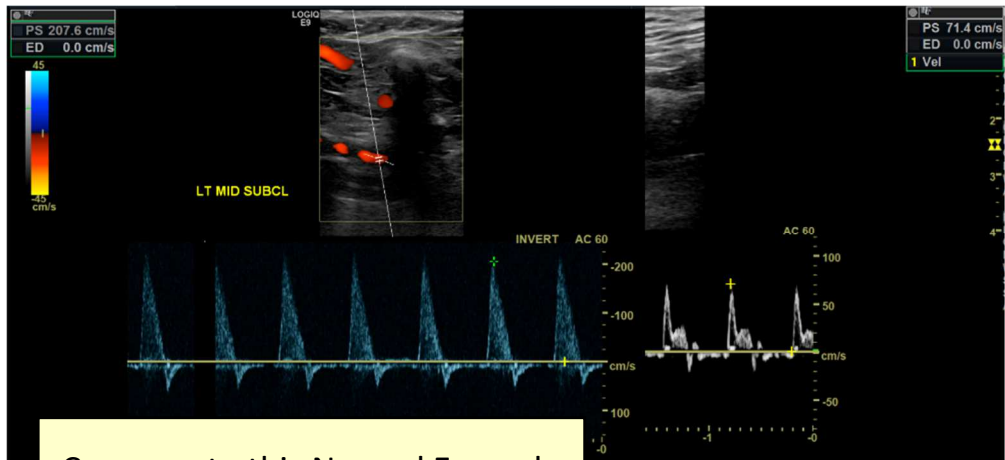
## Reversed Vertebral Artery Flow Can Suggest Subclavian Artery Stenosis



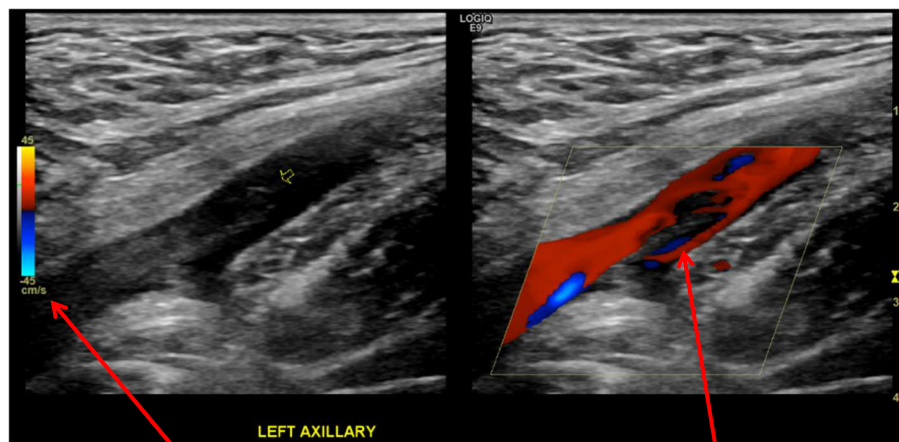
Arterial Occlusion



## Proximal, High Resistance, Abnormal Flow



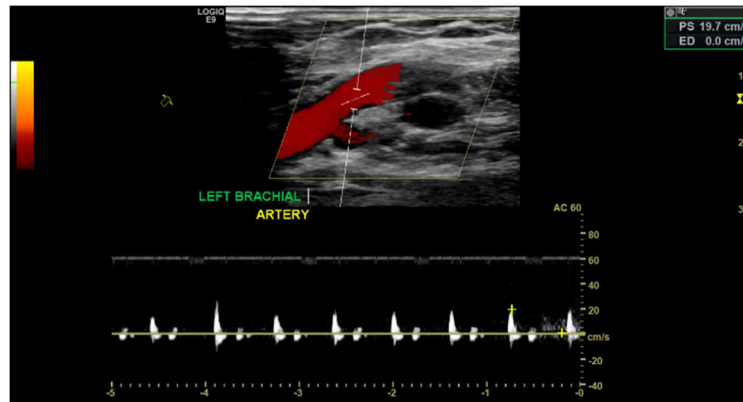
## Often Thrombus is Visible



Tip: Check the flow velocity before determining flow voids...



## Beyond Grayscale and Color-Flow. Assess Flow Pattern



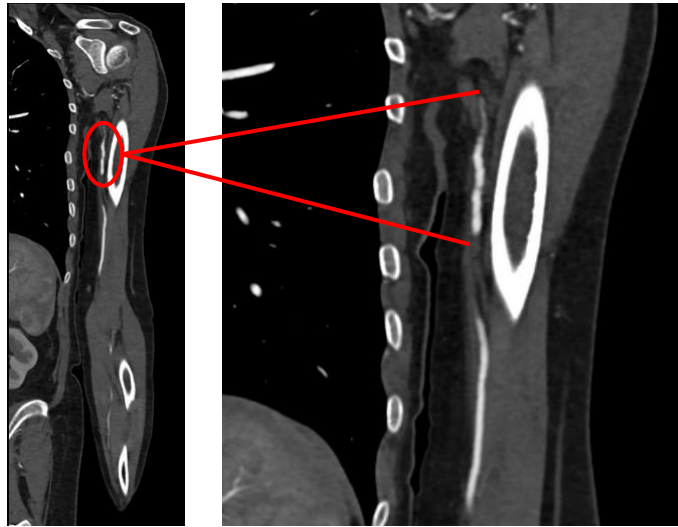
## CINI Loops are Very Useful





## Upper Extremity FMD (Brachial)

Do you see a problem here?



Aneurysms and pseudoaneurysms

## Patient Experiences Pain After Angioplasty

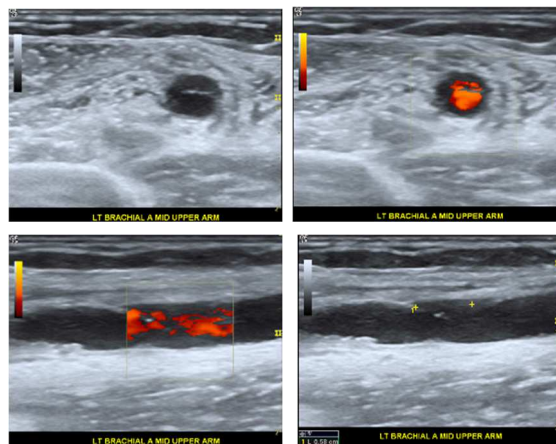
Post angioplasty changes



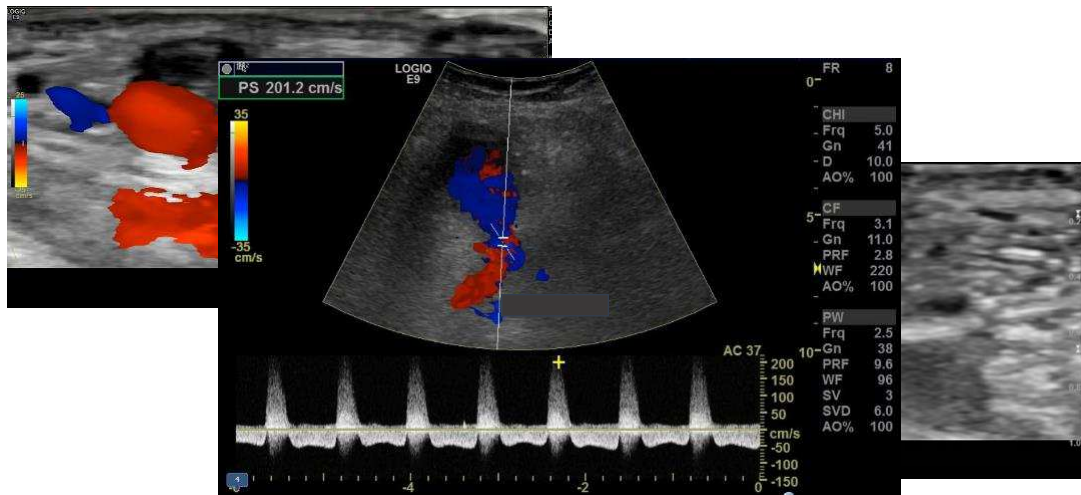
Do you see any other problems?



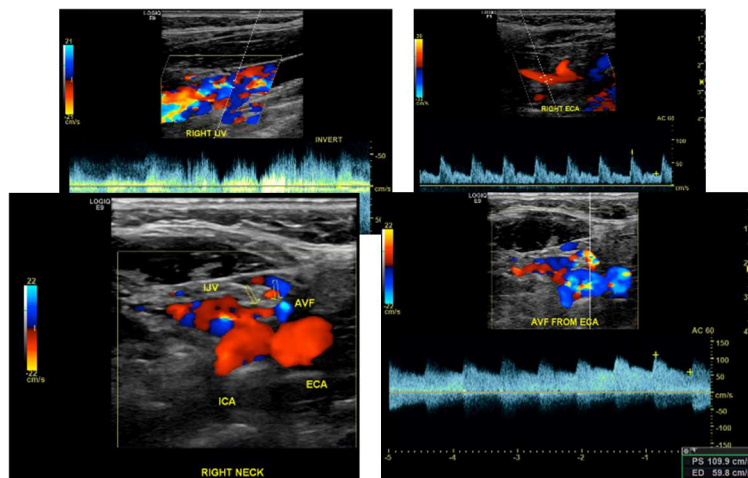
## Upper Extremity – Post Angioplasty Dissection



## Upper Extremity PSA

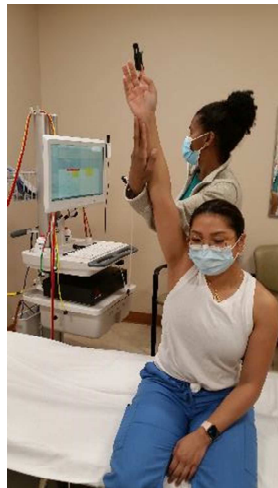


## Upper Extremity Iatrogenic AVF



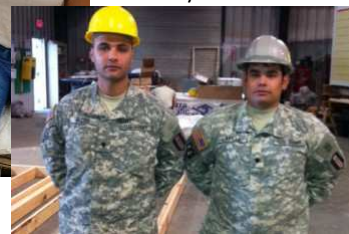
# Thoracic outlet syndrome Evaluation

## Patient Positioning

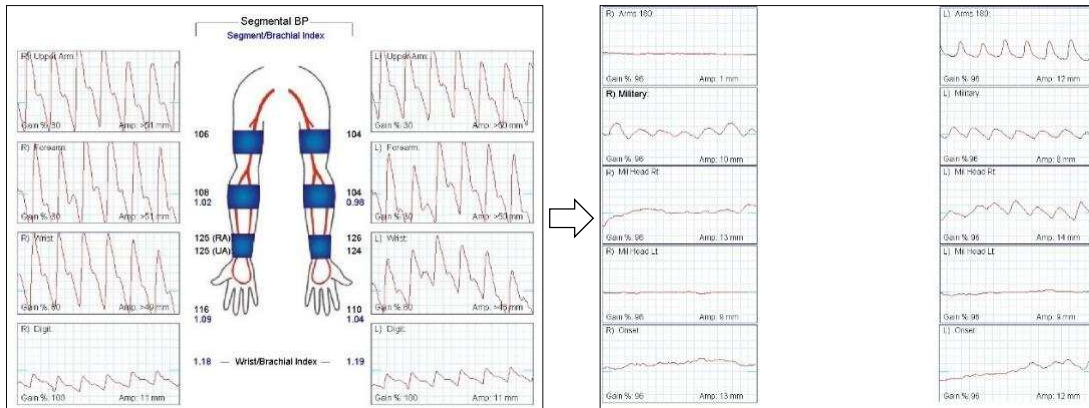


Do you know what this is?

Military Position



Flow May be Normal At Rest, Become (More) Abnormal with Arm Positioning:



Vasospastic Condition Evaluation



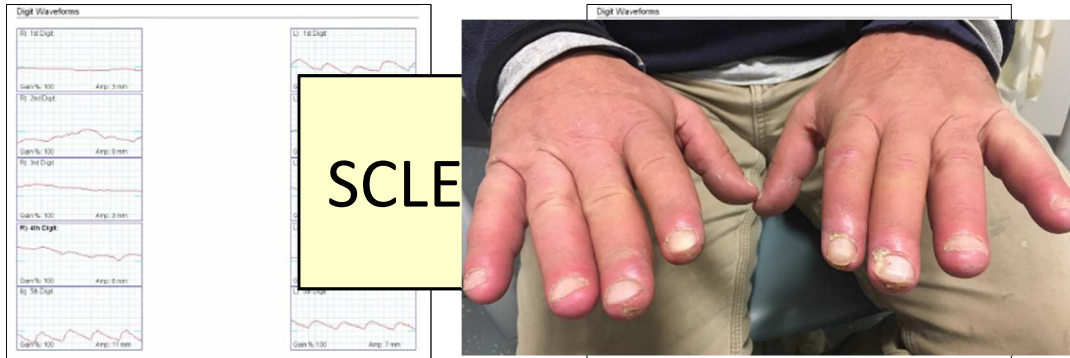
## Cold Immersion and Rewarming



## Reversible Vasoconstriction with Rewarming:



## Fixed, Blunted, Finger Waveforms:



## Summary

- Vascular laboratory evaluation of upper extremity arteries includes physiological studies and duplex ultrasonography
- Maneuvers are central to patient evaluation:
  - Thoracic outlet
  - Temperature
- As always, clinical correlation is key. Images cannot stand on their own (e.g. subclavian artery evaluation)
- Communication with the vascular laboratory is crucial (e.g. when you are looking for a procedural complication)