



How to Measure Peripheral Venous Diameters and Depths

In the context of Venous Reflux Studies and
Peripheral Vein Mapping Studies

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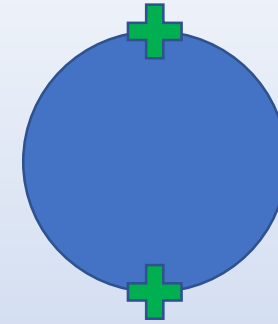
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Dejah R. Judelson, MD, RPVI

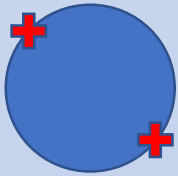
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Worcester, Massachusetts

Basic Diameter Measurement

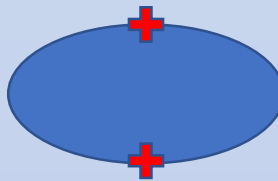
- ▶ Transverse plane when possible
- ▶ 90 degrees to long axis of vessel
- ▶ Calipers positioned near field to far field



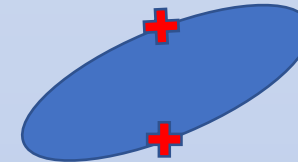
Correct



Incorrect: calipers not positioned near field to far field



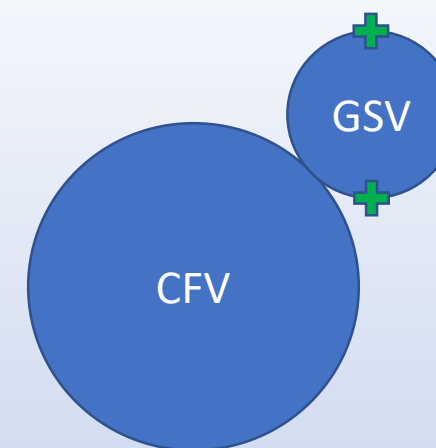
Incorrect: vessel partially compressed by transducer



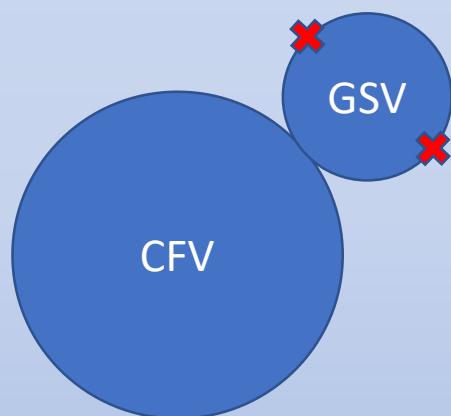
Incorrect: measurement oblique to long axis of vessel

“Perfect” Junction Measurement

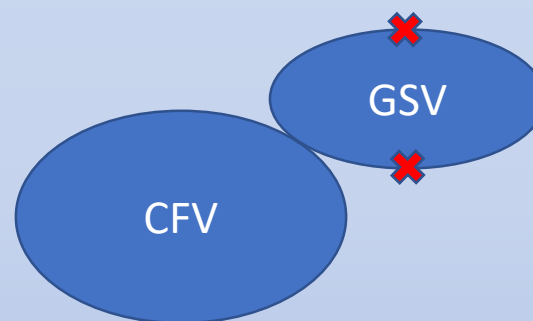
- ▶ Transverse view when possible
- ▶ Rarely possible due to angulation of SFJ
- ▶ 90 degrees to long axis of vessel
- ▶ Calipers positioned near field to far field



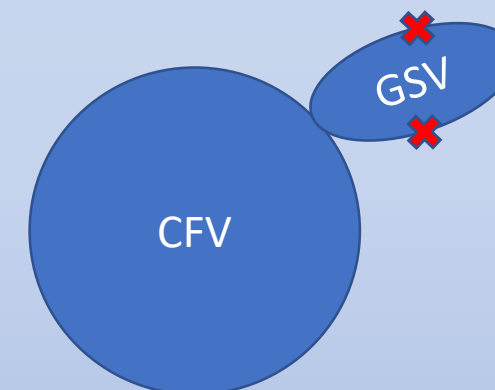
Correct



Incorrect: calipers not positioned near field to far field



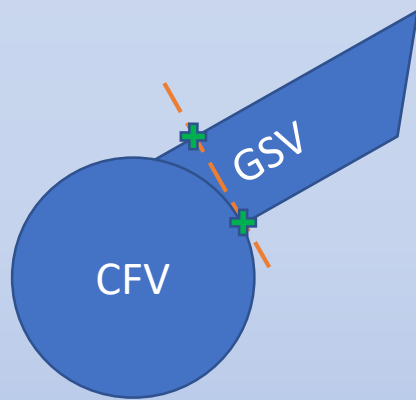
Incorrect: vessels partially compressed by transducer



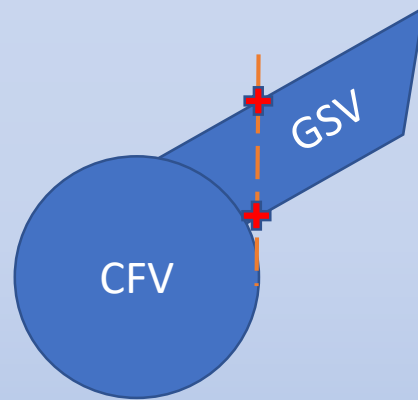
Incorrect: measurement oblique to long axis of vessel

Typical Junction Measurement

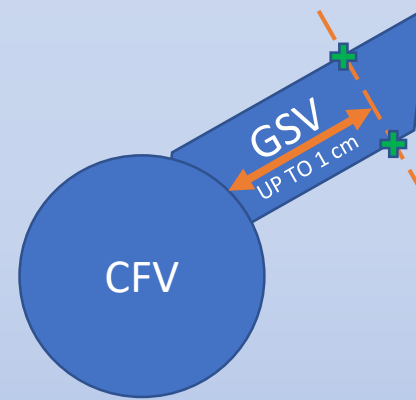
- ▶ Scanning plane clearly shows long axis of vessel to be measured
- ▶ Calipers 90 degrees to long axis of vessel
- ▶ Measurement is of vessel, not confluence
- ▶ Can measure up to 1 cm from actual confluence



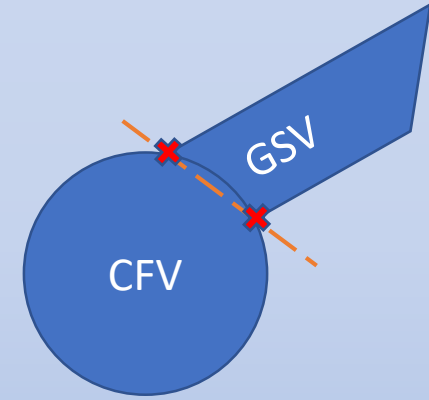
Correct



Incorrect: oblique to long axis of vessel



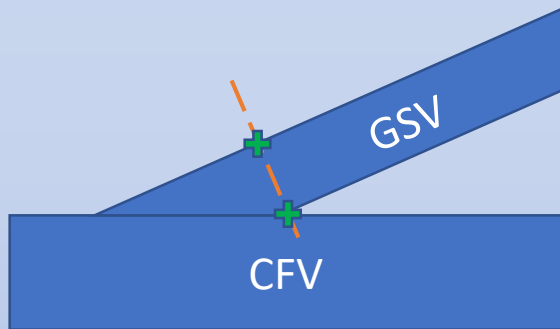
Correct



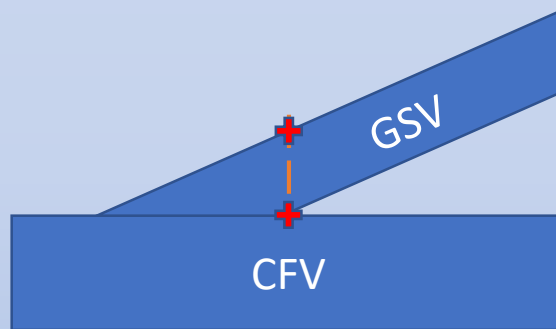
Incorrect: actual confluence is oblique to long axis of vessel

Typical Junction Measurement – Long Axis

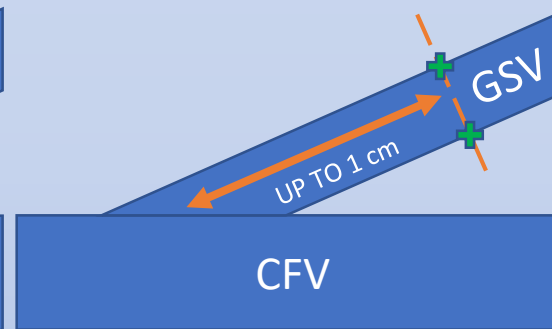
- ▶ Scanning plane clearly shows long axis of vessel to be measured
- ▶ Calipers 90 degrees to long axis of vessel
- ▶ Measurement is of vessel, not confluence
- ▶ Can measure up to 1 cm from actual confluence



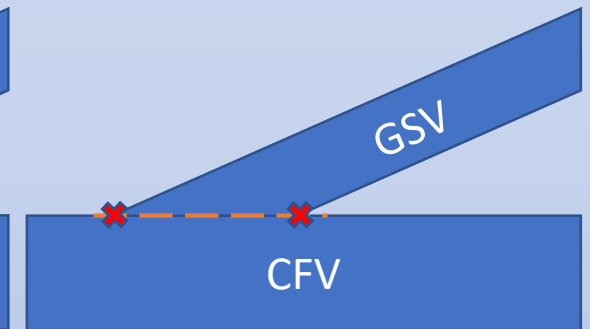
Correct



Incorrect: oblique to long axis of vessel



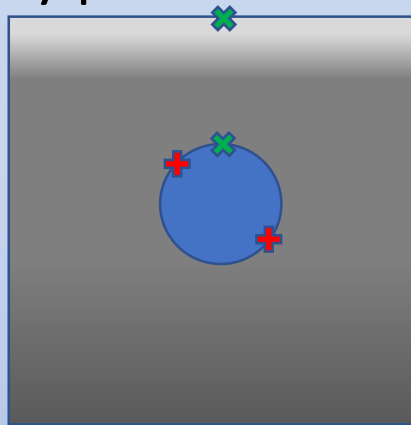
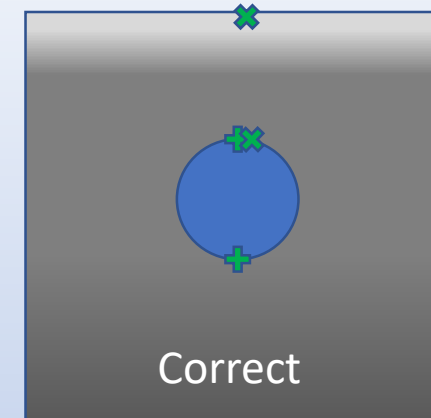
Correct



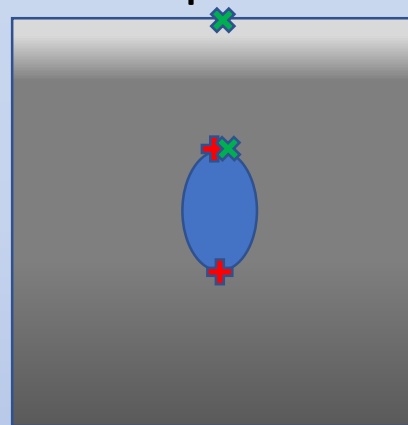
Incorrect: actual confluence oblique to long axis of vessel

Diameter & Depth Measurements

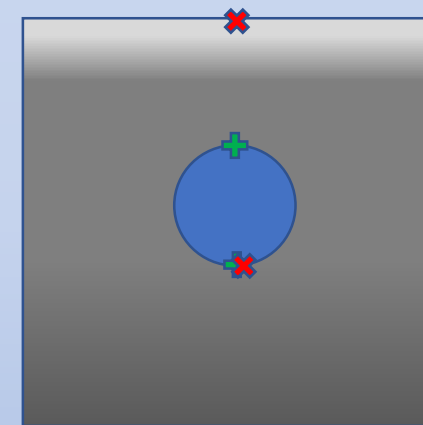
- ▶ Transverse view 90 degrees to long axis of vessel; AND
- ▶ Transducer 90 degrees to skin surface
- ▶ Measure from top of image (skin surface) to most superficial aspect of vessel
- ▶ Only possible if long axis of vessel is parallel to skin surface



Incorrect: diameter calipers not positioned near field to far field



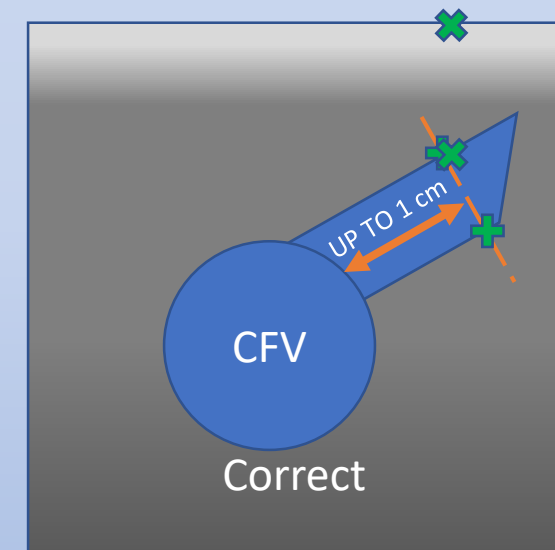
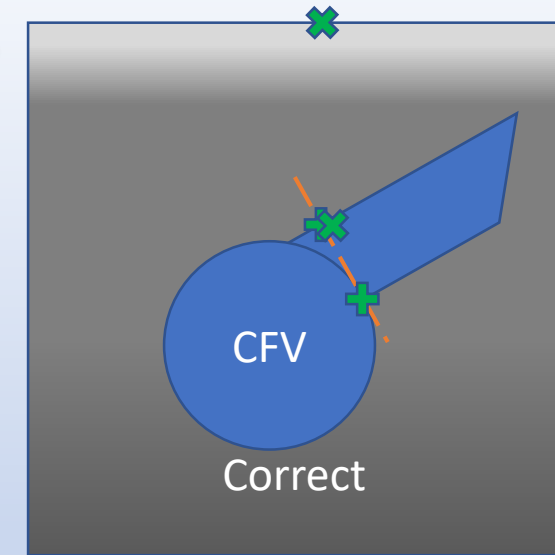
Incorrect: not 90 degrees to vessel (vessel diving deep)



Incorrect: depth calipers not measuring to most superficial aspect of vessel

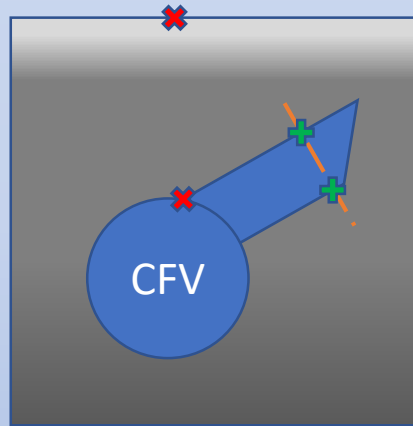
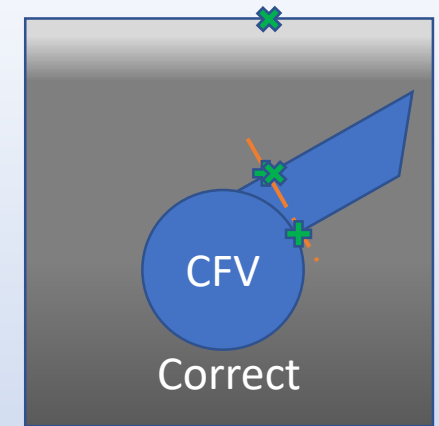
Diameter & Depth of Junctions

- ▶ Scanning plane clearly shows long axis of vessel to be measured
- ▶ Transducer 90 degrees to skin surface
- ▶ Measure from top of image (skin surface) to nearest caliper of the diameter measurement (depth caliper and diameter caliper touching)
- ▶ Can measure up to 1 cm from actual confluence
- ▶ It's OK if the actual confluence is slightly deeper than the measurement

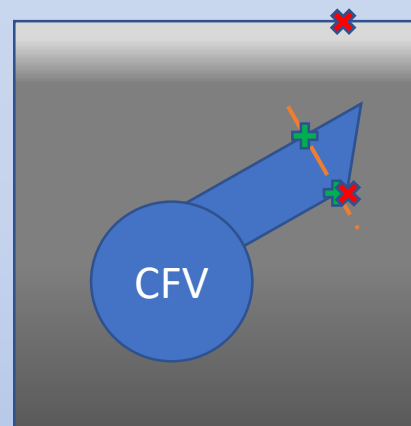


Diameter & Depth of Junctions

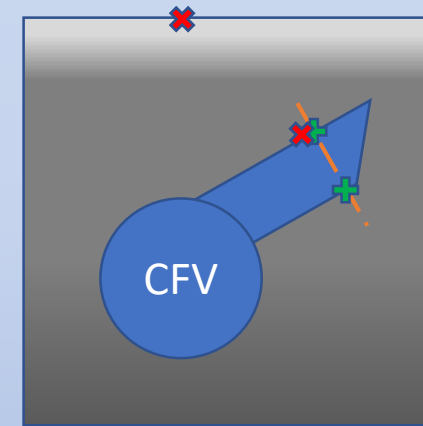
- ▶ Do not measure depth of actual confluence – this policy decision made at UMass for consistency & reproducibility, other accredited labs may choose to measure differently
- ▶ Measure from top of image (skin surface) to the nearest caliper of the diameter measurement (depth caliper and diameter caliper touching)
- ▶ It's OK if the actual confluence is slightly deeper than the measurement – does not change treatment or patient management



Incorrect: depth caliper not touching diameter caliper



Incorrect: depth caliper touching wrong diameter caliper



Incorrect: depth calipers not perpendicular to skin surface



Thank You

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September 11, 2019