Upper Extremity Venous Duplex Protocols
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- General principles for evaluation of the upper extremity veins are similar to the lower extremity. All vessels should be imaged in both a transverse and sagittal plane. With some exceptions noted below, transducer compression is the primary technique for determining presence of thrombus. See lower extremity protocol.
- All gray scale, color Doppler and Spectral analysis images should be optimized using appropriate instrument settings for the structure being interrogated, including transducer, frequency, power, gain, dynamic range, and other controls.
- The subclavian vein is imaged (or attempted) supraclavicularly and assessed for patency and phasicity. It is generally difficult if not impossible to compress the vein from this imaging window. The internal and external jugular veins can be imaged from this window as well.
- Moving below the clavicle, the axillary vein can be imaged and followed into its confluence from the brachial vein(s) and the profunda brachii vein.
- The brachial vein(s) can be followed to its confluence at the antecubital fossa. Usually the transverse plane is easiest and best as there is often anatomic variation in the size and number of brachial veins.
- The radial and ulnar veins, usually paired, can be followed as they course parallel to the artery down to the wrist.
- The basilic vein can be found as it empties into the proximal brachial vein and followed distally to the elbow or beyond. It lies medial to the brachial vessels and is often the largest vein in the upper arm.
- The cephalic vein courses on the lateral aspect of the arm and can be followed from the wrist to the shoulder where it usually empties not the axillary vein.
- Obtain a waveform from the contralateral subclavian / axillary vein for outflow comparison

Dialysis Access Evaluation (CPT 93990TC)

- If a dialysis access is to be evaluated, the type of access is ascertained prior to beginning the exam. The arterial side is imaged from the subclavian artery to the arterial anastomosis, (or fistula anastomosis) through the graft, the venous anastomosis, and back the venous side to the chest. Frequent spectral waveform analyses should be performed at each segment, anastomosis and any other areas where color Doppler indicates a flow abnormality. A waveform/velocity from within the graft should be calculated. Manual graft compression can decrease the high flow velocities normally encountered in dialysis access. This can be helpful in identifying truly stenotic areas.

The room is then cleaned and trash properly disposed. The exam table, instrument(s), including control panel and transducers are cleaned and/or sterilized as necessary with appropriate cleaner(s) when finished with exam. Paper linens are replaced in preparation for the next exam.
Venous Obstruction Required Documentation

Gray scale Images

Compression (patency) – if possible given anatomic location
by convention, the compressed image will be on the right side of the side by side image unless noted**

1. Internal jugular
2. External jugular (as necessary)
3. Subclavian
4. Axillary
5. Brachial veins
6. Radial / ulnar only if clinically pertinent
7. Basilic
8. Cephalic
9. Any area of suspected obstruction

Doppler (color – spectral) - Flow characteristics / reflux (as necessary)

1. Internal Jugular Vein
2. Subclavian Vein
3. Axillary Vein
4. Other vessels as clinically indicated