GUNDERSEN/LUTHERAN ULTRASOUND DEPARTMENT POLICY AND PROCEDURE MANUAL

SUBJECT: Groin Sonogram
SECTION: Vascular Ultrasound
ORIGINATOR: Deborah L. Richert, BSVT, RDMS, RVT
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APPROVED BY: _____
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Scheduling: One half hour time slot.

Prep: None.

Patient Position: Supine, with patient's head slightly elevated as necessary for comfort.

Equipment: Colorflow duplex ultrasound unit with a 5 MHz linear transducer, and a 2.5 MHz and/or 3.5 MHz sector or curved array transducer.

Purpose: To evaluate the groin after puncture procedures to the femoral artery for possible vascular complications such as pseudoaneurysm, arteriovenous fistula, thrombosis, and/or hematoma.

Exam Protocol: The CFA, proximal SFA, PFA, CFV, cephalad FV, and PFV should be evaluated in longitudinal and transverse axis with real time images. Compression maneuvers should be performed on the venous structures. Color and spectral Doppler of these arteries and veins should be performed.

In the case of an **arteriovenous fistula** there will be a communication between the adjacent artery and vein, most likely caused by inadvertent puncture of both the artery and vein during the procedure. Ultrasound findings may be turbulent, pulsatile venous flow often with a high velocity (note that external compression of a vein can also cause similar findings). The turbulence may generate a color bruit in the adjacent soft tissues. There will be low resistance arterial flow in the feeding artery proximal to the fistula with a normal high resistance waveform seen in the artery distal to the fistula. The actual site and size of the fistulous communication should be sought and documented if possible.

Juxtaposed masses in the groin should be sought. Any mass observed should be evaluated for flow using color and spectral Doppler. The neck of the pseudoaneurysm should be imaged for size, location, and spectral Doppler waveform.

Note that hemorrhage can extend from the groin into the retroperitoneum along the psoas muscle and in the preperitoneal space along the anterior abdominal wall. Even though these areas are best examined by CT, the sector and/or curved array abdominal transducer(s) should be used to evaluate these deeper structures and the pelvis for fluid collections/hematomas.

Imaging Protocol: The following images will represent the groin sonogram. Even though only specific images are documented, the groin and surrounding soft tissue will be scanned in detail. Additional images may be necessary for proper documentation.

1. Transverse image at the puncture site or area of pain or swelling with color Doppler.
2. Longitudinal image of the CFA with color and spectral Doppler documenting the waveform within this vessel.
3. Longitudinal image of the proximal SFA with color and spectral Doppler documenting the waveform within this vessel.
4. Longitudinal image of the PFA with color and spectral Doppler to document the waveform within this vessel.
5. Compression of the CFV, cephalad FV, and the PFV should be performed, and longitudinal images of the CFV, cephalad FV, and PFV with color and spectral Doppler should be obtained to document the waveform and patency in each vein.
6. The waveforms within the arteries and veins should be evaluated in the setting of A-V fistula both proximal and distal to the fistula site and the location of the fistula should be imaged.
7. The soft tissues adjacent to the vessels will be evaluated for the presence of any fluid collections/masses. Any fluid collection/mass identified should be documented with respect to the location and should be measured in longitudinal, AP, and transverse dimensions.
8. If a pseudoaneurysm is identified the neck should be documented as well as which vessel the pseudoaneurysm is arising from. The pseudoaneurysm should be measured in transverse, AP, and longitudinal dimensions. Spectral Doppler should be used to confirm “to and fro” flow within the pseudoaneurysm neck and flow within the pseudoaneurysm.
9. Representative longitudinal and transverse images of the groin and pelvis using the sector or curved array abdominal transducer documenting the presence or absence of any hematomas/fluid collections in these areas that are too deep to image with the linear transducer.