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Vascular Ultrasound Protocol: Lower Extremity Arterial

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Last Review Date: Link to Last Review Date Table

List of Required Images

Lower Extremity Bilateral

- **Transverse gray scale**
  - Common Femoral Artery
  - Profunda Femoris Artery
  - SFA: Proximal, Mid, and Distal
  - Popliteal Artery: Proximal and Distal

- **Sagittal images gray scale, color and spectral Doppler along long axis of the vessel**
  - Common Femoral Artery
  - Profunda Femoris Artery
  - SFA: Proximal, Mid, and Distal
  - Popliteal Artery: Proximal and Distal
  - Posterior Tibial Artery: Prox and Distal
  - Peroneal Artery: Proximal and Distal
  - Anterior Tibial Artery: Proximal and Distal
  - Dorsalis Pedis Artery

For general pathology, use the Pathology Protocol.

Additional Images for Anatomy and Vascular-Specific Pathology

- For suspected stenosis or occlusion, include spectral Doppler waveforms and velocity measurements proximal to, at site of, and distal to the stenosis or occlusion. Demonstrate spectral broadening or turbulent flow.
- Evaluation of stents and or grafts should include Doppler interrogation proximal to, within, and distal to the stent or graft.

Guidelines for Lower Extremity Arterial Evaluation

- Evaluate the entire course of each vessel bilaterally.
- Patient in supine position.
- Use a 9 MHz linear transducer.
- Use color flow images with proper color scale to demonstrate areas of high flow and color aliasing.
- Set spectral Doppler gains to allow a spectral window and optimize to reduce artifact.
- Use an angle of 60 degrees or less to measure velocities. Doppler angle should always be parallel to the vessel wall.

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- ABI ratios. Ankle & Brachial systolic blood pressure should also be included

Ankle Brachial Index Interpretation	
1.0-1.4	Normal
0.9-1.0	Acceptable
0.8-0.9	Some arterial disease
0.5-0.8	Moderate disease
< 0.5	Severe disease

Interpretation criteria for Duplex classification of peripheral artery occlusive disease:
Stenosis category Peak systolic velocity (cm/s) Velocity ratio Distal artery spectral waveform

STENOSIS	**PSV**	**Ratio**	**Waveforms**
<20%	<150 cm/s	<1.5	Triphasic(multiphasic), Normal PSV
20% to 49%	150-200	1.5-2	Triphasic(multiphasic), Normal PSV
50% to 75%	200-300	2-4	Monophasic, reduced PSV
>75%	>300	4	Monophasic, reduced PSV
Occlusion	No flow, length of occlusion estimated		

Common Indications for Lower Extremity Arterial Duplex

To evaluate the lower extremities for arterial disease, extent of plaque and severity of stenosis. The indications for arterial duplex ultrasound examinations include, but are not limited to: Claudication • Rest pain • Nonhealing wounds or ulcers • Cyanosis • Cold feet • Known stenosis • Abnormal ABI • Absent pedal peripheral pulses • Trauma • Aneurysms.