

Ultrasound – Lower Extremity Vein Mapping

PURPOSE:

To evaluate the superficial veins to determine if they can be used harvested for vascular bypass procedures.

SCOPE:

Applies to all Ultrasound Lower Extremity Vein Mapping studies performed in:

- UT Southwestern Zale-Lipsky University Hospital, William P. Clements Jr. University Hospital, and all University Hospital-based Clinics Imaging Services (UTSW)
- Parkland Health and Hospital System Department of Radiology (PHHS)

INDICATIONS:

- Arterio-venous dialysis access planning
- Lower extremity bypass grafts
- Coronary artery bypass grafts

CONTRAINDICATIONS:

- Patients with open wounds

EQUIPMENT:

- Commercial ultrasound scanner with Doppler
- Linear transducer with a frequency range from 5-10 MHz

PATIENT PREPARATION:

- Patient should be reclining in a supine reverse Trendelenberg position.
- The leg should be externally rotated.
- It may be helpful to have the patient's leg dangling over the side of the bed to maximize vein diameter.

EXAMINATION:

GENERAL GUIDELINES:

- The examination must be bilateral unless otherwise contraindicated.
- A complete examination includes evaluation of the entire course of the accessible portions of each vessel
- Variations in technique must be documented

EXAM INITIATION:

- Introduce yourself to the patient
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms. Enter and store data page

TECHNICAL CONSIDERATIONS:

- Equipment gain and display settings will be optimized while imaging vessels with respect to depth, dynamic range, and focal zones
- All vessels will be checked for patency with intermittent transducer compression, unless thrombus is present
- Document bifid femoral veins. Obtain AP measurements of both vessels
- Document areas of wall thickening, thrombus, or branches
- The deep system is evaluated for patency depending on the ordering physician and if indicated by the patient history.

DOCUMENTATION:

1	GSV at junction	Transverse AP diameter grayscale
2	GSV superior thigh	Transverse AP diameter grayscale
3	GSV mid thigh	Transverse AP diameter grayscale
4	GSV inferior thigh	Transverse AP diameter grayscale
5	GSV at the knee	Transverse AP diameter grayscale
6	GSV superior calf	Transverse AP diameter grayscale
7	GSV mid calf	Transverse AP diameter grayscale
8	GSV inferior calf	Transverse AP diameter grayscale
9	CFV	Transverse AP diameter grayscale
10	Profunda confluence	Transverse AP diameter grayscale
11	Superior femoral	Transverse AP diameter grayscale
12	Mid femoral	Transverse AP diameter grayscale
13	Inferior femoral	Transverse AP diameter grayscale
14	Popliteal	Transverse AP diameter grayscale
15	SSV superior calf	Transverse AP diameter grayscale
16	SSV mid calf	Transverse AP diameter grayscale
17	SSV inferior calf	Transverse AP diameter grayscale

GSV: Greater saphenous vein

CFV: Common femoral vein

SSV: Small saphenous vein

PROCESSING:

- Review examination data
- Export all images to PACS
- Note any study limitations

REFERENCES:

- Society for Vascular Ultrasound. Vascular Technology Professional Performance Guidelines. Lower extremity Vein Mapping.
- <http://account.svunet.org/files/positions/LE-Vein-Mapping-2011.pdf>

CHANGE HISTORY:

Status	NAME & TITLE	DATE	BRIEF SUMMARY
Submission	Mark Reddick, MD	6/9/2016	Submitted
	David Fetzer, MD, Director	6/20/2016	Approved
Review	Eddie Hyatt, MD	12/15/2018	Reviewed
	Jana Smith, RDMS, RVT; Sanjeeva Kalva, MD	3/27/2025	Reviewed
Revisions			