Mother Lode Vein Institute

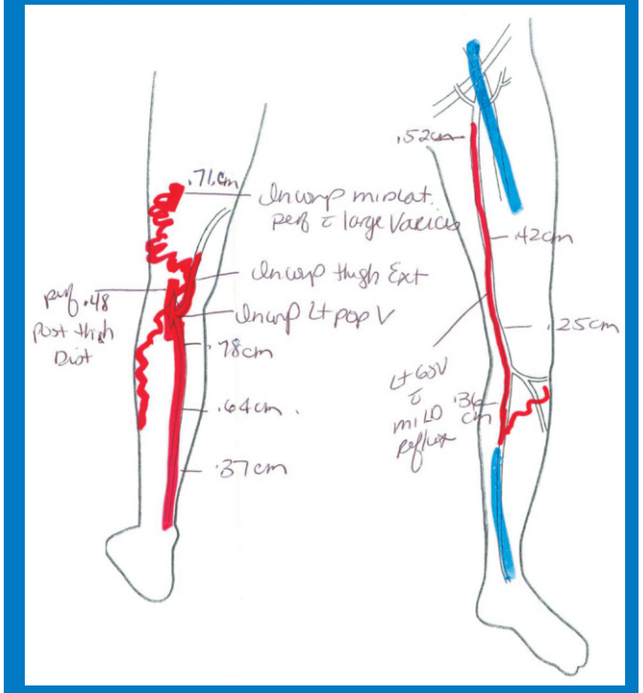
Stephen J. Hopkins, MD, FACS

Notes from Dr. Stephen Hopkins

Ultrasound Diagnosis of Vein Disease

For over 10 years, Joe has been suffering from aching pain, heaviness and swelling of his legs - symptoms that are worse with prolonged standing or sitting. Five years ago, he began noticing bulging varicose veins. Joe's complaints are fairly typical of venous reflux disease - but how is this condition diagnosed to determine the appropriate treatment?

There are three answers to this question - #1 Ultrasound, #2 Ultrasound, and #3 Ultrasound. This test takes about 30 - 50 minutes, and is usually performed in the office. It is completely painless, and is performed mostly in the standing position. It utilizes an ultrasound "probe," that allows for the transmission and reception of simple ultrasound waves. These ultrasound waves are transmitted from the probe, then bounce off the tissues of the body (our veins) and are received and detected again by the same probe. These received ultrasound waves are converted to electronic signals by the probe which are then processed by a computer. The computer then transmits these processed signals onto a TV-type monitor, to allow visualization of an image on the screen - this is standard ultrasound. In this way, blood clots in our veins can be easily diagnosed.



Vein Mapping

For evaluating blood flow through a vein (or an artery), a special ultrasound computer processing mode is used, called "doppler mode." Ultrasound waves that bounce off blood cells moving towards the probe travel at a higher frequency than those waves that bounce off blood cells that travel away from the probe. The classic example is when a train is traveling towards a observer, then rushes past, then away from this same observer. The pitch (frequency) of the "sound" that the train makes to the observer is higher when the train is traveling toward the observer compared to the pitch (frequency) of the "sound" of the train as it travels away from the observer. In the same way, the ultrasound waves that are transmitted from the probe bounce off the moving blood cells (like the train) and are detected by the probe. The "doppler" mode on the computer is able to utilize this fact to tell the physician the direction of the blood flow - using the doppler equation (those interested in this equation - Google it) programmed into the computer. For a phlebologist, this is critical, as it allows us to determine if the flow in a leg vein is going towards the heart or "refluxing" abnormally towards the feet. Modern ultrasound technology is truly amazing and really give us almost all of the information we need to make treatment decisions - all from a machine the size of a laptop computer. A vein map is drawn to help plan treatment.

Symptomatic superficial veins that are found to have venous reflux disease benefit from endovenous thermal ablation. Tortuous refluxing varicose veins under the skin benefit from microphlebectomy. These procedures will be discussed in future articles. Past articles can be found at MotherLodeVeinInstitute.com under the "Newspaper Patient Education" link.

Stephen J. Hopkins, MD, FACS

For a personal consultation with Dr. Hopkins call 532-5528 to make an appointment. Dr. Hopkins is a General Surgeon, Certified by the American Board of Surgery, and a Phlebologist, Certified by the American Board of Phlebology.

The Mother Lode Vein Institute has offices in Jackson (256-9499) and Sonora (532-5528)

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