Northern Michigan VEIN Specialists

Classify and Track Venous Disease and Treatment Outcomes
Ultrasound Interpretation

In order to standardize the diverse manifestations of venous disease and for tracking treatment outcomes, the American Venous Forum devised the CEAP (Clinical, Etiological, Anatomical and Pathophysiological) classification. Typically, CEAP classifications will just be listed by the C clinical score which ranges from a 0 to a 6. Each leg is reported separately, for example, a patient could have C4 findings on the left with only C2 findings on the right. The scoring is as follows:
C0- No clinical evidence of venous disease C1- Telangectasias or spider veins
C2- Varicose Veins
C3- Venous Edema C4- Venous hyperpigmentation C5- Healed ulceration
C6- Active ulceration

Interestingly, not all patients progress in a stepwise fashion, many patients with C3-6 findings never had visible varicose veins (C2). Likewise, not all patients with bulging varicose veins are at risk for future ulceration. Also, the symptoms don't always match the C score. I've had patients with diffuse venous pigmentation and 3 cm varicosities who stated they had little symptoms and patients with spider veins who have significant pain at the site of the veins. I will state that the patients with advanced C scores and "little symptoms" are often amazed by how much better their legs feel after treatment. This phenomenon is likely because the symptoms come on and progress so slowly that they just think that is how their legs are supposed to feel.
As CEAP only tracks clinical findings, we also use and track VCSS or Venous Clinical Severity Score. This gives points for patient reported pain or discomfort level as well as points for their use of compression and points for clinical findings including varicosities, edema, ulcers, inflammation and induration.

After the clinical exam, a venous duplex ultrasound is the next step in diagnosing and classifying venous pathology. The two main pathophysiological causes of venous disease are reflux and obstruction.
Reflux, or incompetence, is due to failure of the valves and is seen as backwards flow on the ultrasound. To be considered clinically significant, reflux must last for at least 500 milliseconds. Obstruction can be seen in post thrombotic patients or can be due to congenital or anatomical findings such as a May- Thurner syndrome (left iliac vein compression by the right common iliac artery). In addition to looking for reflux, we also examine the pattern of venous flow both in the deep and superficial venous systems. Normal venous flow should be phasic and thus vary with respiration. Pulsatile flow can be seen with elevated right heart pressures or tricuspid regurgitation or in thin patients, it can simply be a transmitted signal from adjacent arteries. Loss or phasic flow or continuous flow can indicate more proximal venous obstruction. These flow patterns help us differentiate venous edema from cardiac edema and also comes into play in evaluating patients with more advanced CEAP scores (3-6) as they may have a central source for their venous pathology.

I will discuss this more in subsequent updates as I will be offering Intravenous Ultrasound or

IVUS with venous stenting of iliac vein stenotic lesions in February 2017 to patients who will meet the criteria for this procedure.