



IVUS and Venous Stenting

The two main mechanisms for venous diseases are reflux and obstruction. Some patients will have a combination of the two. Due to the familiarity with the diagnosis and treatment of superficial/peripheral venous disease due to reflux, this update will focus on deep venous obstructive lesions. Duplex ultrasound is the modality of choice for evaluating the extremity veins whereas superficial ultrasound of central deep veins is limited by technical difficulties due to the deep position of these veins within the pelvis and abdomen as well as by the overlying bowel. Similarly, venography has poor sensitivity and specificity in the detection of venous stenosis. Intravenous ultrasound or IVUS can detect fine intraluminal trabeculae, frozen valves and outside compression that can be missed with standard multiplanar venography. IVUS is thus the new gold standard in detecting iliac and caval venous obstructive lesions. In the past, treatment for deep venous disease involved open surgery for venous bypass. With the development of endovascular techniques, venous angioplasty and stenting are now better treatment options for patients suffering from obstructive venous disease.

The best known etiology of non-thrombotic iliac obstructive lesions is that of the left iliac vein being compressed by the right iliac artery or May-Thurner syndrome. Non-thrombotic venous obstructions can also occur where the right iliac artery crosses the right iliac vein and where the hypogastric arteries cross the iliac veins. In thrombotic patients, these will typically be permissive lesions, and DVT is more likely to occur at the sites of venous compression.

The Society for Vascular Surgery (SVS) and the American Venous Forum (AVF) recommend: “in patients with clinically significant iliac and caval obstruction combined with infrainguinal reflux or obstruction, percutaneous balloon angioplasty with stenting is suggested as the initial procedure over deep venous valvular reconstructions or open operative bypass procedures because it is much less invasive and presents less risk to the patient.” *J Vasc Surg* 2014;60:3S–59S (August 2014 Supplement).

Furthermore, the SVS/ AVF venous leg ulcer guidelines state: “In a patient inferior vena cava or iliac vein total vein occlusion or severe stenosis, with or without lower extremity deep venous reflux disease, that is associated with skin changes at risk for venous leg ulcer (C4b), healed ulcer (C5) or active venous leg ulcer (C6) we recommend venous angioplasty and stent

recanalization in addition to standard compression therapy to aid in venous ulcer healing and to prevent recurrence.”

My clinical criteria for considering a patient for IVUS and venous stenting are in concordance with the SVS/AVF recommendations above. I will also consider deep venous evaluations for patients with severe C3 disease if cardiac etiologies for the edema have been ruled out. Typically, this is considered for patients with C4 to CEAP 6 venous clinical findings (significant venous edema, venous pigmentation, healed or active ulcers) with little or no superficial venous reflux and symptoms of Chronic Venous Insufficiency. I will also look at the deep venous

flow patterns. Deep venous reflux or continuous flow at the SFJ can be signs of more proximal obstruction.

I am currently providing IVUS and venous stenting as an outpatient procedure done at Munson Healthcare Cadillac Hospital. Many of these patients are already on anticoagulation but if not, I am recommending aspirin for life and Plavix for the first 3-months post stenting. In addition, serial follow-up ultrasound exams to monitor the flow in the venous stents is highly recommended.