

# The VEU

## The Vascular & Endovascular Update

Winter 2022

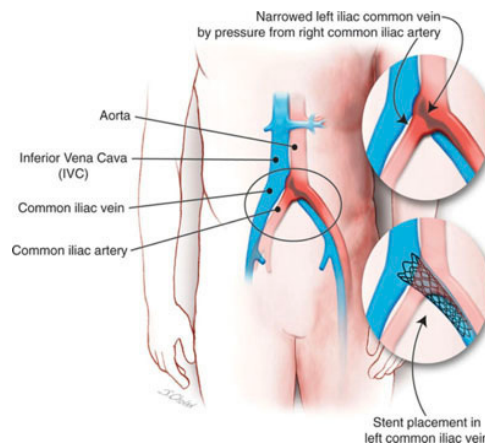
### Is Swelling Due to Venous Disease?



The term "lifeblood", defined as "the indispensable

factor or influence that gives something its strength and vitality" isn't just a poetic expression. Blood itself, and the healthy flow of it throughout the body, is necessary to life. Without adequate blood flow, the body's elements are choked of oxygen, fill and swell with waste products and become necrotic, be it limbs, organs or tissues.

Swelling from venous disease is a significant threat to the health and wellness of the body. There are five common reasons for vascular swelling; May-Thurner, phlebitis, chronic venous insufficiency, varicose and spider veins and leg ulcers. Understanding these diseases can help physicians recognize early symptoms, refer patients for prompt treatment and avoid serious, life-changing complications.



#### May-Thurner Syndrome

When your patients experience pain, swelling and a feeling of heaviness in the legs, they may Google those symptoms and believe they have PAD, peripheral artery disease.

However, your patient may have May-Thurner syndrome (MTS) and the symptoms they feel are really an indicator of deep vein thrombosis (DVT), a complication of MTS.

May-Thurner syndrome is also known as Cockett syndrome or iliac vein compression syndrome. It typically occurs when the right iliac artery squeezes the left iliac vein where they cross each other in the pelvis. Because of the pressure from the right iliac artery, blood can't flow as easily to the left iliac vein, creating a clogged

hose affect.

Your patients may have May-Thurner syndrome and it may never cause an issue. About 2-5% of patients with chronic venous insufficiency of the lower extremities are diagnosed with MTS. It typically affects the left lower extremity, but can present in the right as well. MTS can cause:

- Leg swelling
- Leg pain
- Leg ulcer
- DVT
- Pulmonary embolism
- Chest pain
- Shortness of breath
- Critical limb ischemia
- Stroke
- Renal compression
- Bladder compression

The exact cause of MTS is unclear. It's theorized that May-Thurner Syndrome is 2:1 times more common in women than in men, because it's diagnosed more often in women with DVT than in men with DVT but statistics are difficult to confirm because May-Thurner does not always cause problems.

Your patients are more likely to develop DVT from May-Thurner Syndrome if they are:

- Woman age 20-40
- Have scoliosis
- Recently had a baby
- Have had more than one child
- Take oral contraceptives, birth control pills
- Other medical condition that causes blood clotting

When your patient has MTS, they are more likely to develop DVT, greatly increasing the risk of amputation.

If you suspect your patient has MTS, refer them to a trusted vascular surgeon. They will perform a CT or MRI to for accurate diagnosis. Your patient may be prescribed thrombolysis alone, or the surgeon may recommend a minimally invasive angioplasty and stent in conjunction with thrombolysis.

If your patient's condition requires it, the surgeon may perform bypass surgery to detour around the section of vein that is being compressed or they may reposition the right iliac artery to relieve compression. Studies show endovascular procedures have a higher success rate for MTS than open surgeries.

**If you think your patient may have a DVT, urge them to get to an emergency room immediately.**



### Phlebitis and Thrombophlebitis

The Greek word "phleb" means vein. The root word "itis" is latin for inflammation. "Thrombo" is derived from the Greek word "Thrombos," which means "clot of blood." Phlebitis, therefore,

means inflammation of a vein and thrombophlebitis is inflammation of a vein due to a blood clot.

Signs and symptoms of thrombophlebitis are red, inflamed and painful veins. The veins are usually superficial, typically found just under the surface of the skin and are described as a red, tender, hard "cord like" mass. The clot in these veins rarely travels to another part of the body.

Thrombophlebitis occurs when a patient has experienced injury, surgery or prolonged inactivity, just as with other blood clots.

Risk factors are the same as those of a DVT and include:

- Age over 40
- Using birth control pills or hormone replacement therapy
- Pregnancy and first 6 weeks after delivery
- Experiencing or have experienced cancer or cancer treatment
- Family history of blood clots
- Having a central venous catheter or pacemaker
- Overweight or obese
- Lack of exercise
- Smoke tobacco products

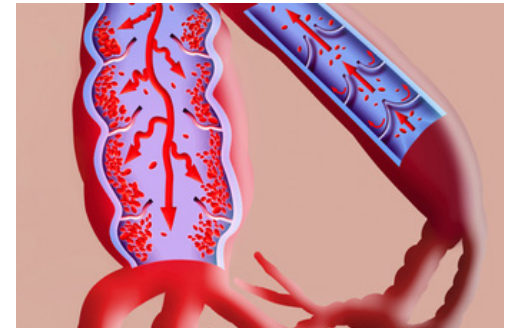
Superficial thrombophlebitis rarely cause serious health complications, but an ultrasound should be performed, as about 1 in 5 patients with thrombophlebitis also have a DVT.

When accompanied by varicose veins, it is prudent to consult with a vascular surgeon to reduce the risk of a DVT developing, or thrombophlebitis from reoccurring.

Affected individuals are usually treated to relieve the pain and inflammation. Initially, apply gentle heat and warm compression to the affected area, elevate legs and use a NSAID.

Compression stocking may help prevent clots. Typically, phlebitis and thrombophlebitis will resolve with these mild interventions.

Prevention tactics include increasing fluid intake and walking exercise and recommending movement in the feet and legs every few minutes.



### Chronic Venous Insufficiency (CVI)

Unlike arteries, which carry oxygenated blood to organs, veins carry deoxygenated blood back to the heart. When standing, the pressure the heart provides is only strong enough to push the blood no further than the calf. Therefore, the movement of the legs results in contraction of the muscles, squeezing down on the veins and pushing the blood back to the heart. To aid with this, leg and arm veins have valves to prevent blood from moving backwards.

CVI happens when the wall and/or valves in the leg veins are no longer working effectively, making it difficult for veins to return blood to the heart. This causes blood to collect or "pool" in the veins, referred to as stasis.

CVI is most commonly seen in the legs and is typically the cause of varicose veins, but CVI can occur anywhere in the body. About 40% of Americans have CVI. The typical patient is over 50 and female.

Risk factors for CVI include:

- Female
- Occupations that require

prolonged standing upright (hair stylist or cashier)

- Over age 50
- Extended periods of inactivity
- Smoking
- Obesity
- Pregnancy
- Family history of varicose veins or DVT

Unrecognized CVI that goes untreated may result in legs that are persistently swollen, heavy, throb, develop varicose/spider veins, reddish-brown skin discoloration and ultimately ulceration of the skin.



### Varicose Veins and Spider Veins

As previously mentioned, varicose/spider veins are generally caused by CVI. These are almost always superficial leg veins that have become engorged. Although there are multiple risk factors in developing varicose veins, it is commonly seen in individuals whose profession requires prolonged standing. With the constant pull of gravity on the lower extremity venous blood, ultimately the valves weaken, allowing blood to flow backwards in the veins toward one's feet. At the same time, blood is working to flow up the leg. This results in blood being forced out to the superficial veins, becoming dilated and serpiginous and resulting in varicose veins.

While most varicose and spider veins appear in those over 50, they can occur at any age, even in the teen years. Risk factors for

varicose veins are similar to CVI and include:

- Female
- Over 50
- Family history of varicose veins
- Taking birth control pills or hormone replacement therapy
- Extended periods of sitting or standing
- Smoking
- Obesity
- Pregnancy

Varicose and spider veins cannot be reversed or eliminated by wearing compression stockings. However, wearing compression stockings at a minimum 20-30 mmHg of pressure strength aids in compressing the superficial veins, and diverting blood to the deeper veins. This prevents reflux in the veins and reduces swelling, decreasing the risk of developing varicose veins or preventing those already present from worsening. This is also true of frequently elevating legs(ankles) above the level of the heart. The force of gravity then aids in returning the blood back to the heart.

Unfortunately, varicose and spider veins cannot be completely prevented. Your patients may be able reduce your risk and slow the development of this disease by:

- Walking, swimming or biking at least 30 minutes a day
- Achieving and maintaining a healthy weight
- Avoiding high heels and constricting hosiery
- Changing position frequently when sitting or standing
- Frequently pointing and flexing feet often when sitting
- Elevating legs above the level of the heart for at least 15 minutes each day

Varicose and spider veins may not require treatment.

However, in some cases, these veins can cause bleeding or ulcers when the skin is broken, or blood clots when deeper veins are affected. These complications need immediate care.

If your patient desires, varicose and spider veins can be treated and removed with sclerotherapy, laser treatments, laser energy and in some cases, removing the varicose vein with minimally invasive micro techniques. All procedures are performed on an outpatient basis.

### Leg Ulcers

There are many types of ulcers. Leg ulcers, gastric ulcers, ulcers in an artery; just to name a few. An ulcer is essentially when there is a breakdown in the lining of that organ. For a leg ulcer, it is a breakdown of the skin. There are four common types of leg and foot ulcers:

- Venous stasis ulcers
- Neurotropic ulcers
- Arterial or ischemic ulcers
- Mixed arterial/venous ulcers



**Venous stasis ulcers** are found below the knees, usually on the inner leg above the ankle, and account for nearly 90% of all leg ulcers in the United States.



**Neurotropic ulcers** occur in diabetics and are found on the

bottom of the foot in areas of pressure points.



**Arterial or ischemic ulcers** are seen in individuals with poor blood flow in the arterial circulation of the leg. The ulcers are typically at the tips of the toes but can be on the top or bottom of the foot.

Many times, **mixed arterial/venous ulcers** have the characteristics of a venous ulcer. To determine if your wound is a mixed venous/arterial ulcer, an ankle/brachial index would need to be obtained. If the index is greater than .8, the ulcer is most likely venous alone. If the index is less than .8, this suggests a mixed arterial/venous ulcer.

The root cause of leg ulcers is CVI and damaged vein valves. These compromise blood flow and result in pooling, increased blood pressure in the legs, swelling and skin changes. For diabetes especially, nerve damage or neuropathy causes a loss of sensation in the feet and changes in the sweat-producing glands. Because of the decreased ability to feel, individuals are unaware of damage to the skin such as calluses, cracking or injuries with the subsequent risk of infection.

Individuals who have experienced leg swelling, blood clots or varicose veins are at great risk of leg ulcers. Those who may develop leg ulcers typically have:

- Diabetes
- Arteriosclerosis
- CVI
- Hypertension

More than 80% of amputations occur as a result of a leg ulcer.

Leg ulcers need to be treated promptly when noticed. Wounds that are ignored may lead to severe skin and bone infections which can lead to amputation of toes, feet or legs, severely impacting quality of life.

Your vascular surgeon is able to diagnose and treat these ulcers. Treatment for leg ulcers is unique to each patient and their wound, but may involve mechanical or chemical debridement, antibiotics, irrigation, moist or dry dressings, or hyperbaric oxygen therapy. **It is vitally important to get treatment for a leg ulcer as soon as they are noticed to avoid serious complications and amputation.**

#### Disease Prevention

Individuals can prevent or delay the onset of these diseases by taking these steps:

- Stop smoking
- Avoid long periods of inactivity, either sitting or standing
- Walk or exercise at least 30 minutes a day, 5 days a week
- Achieve and maintain a healthy weight
- Achieve and maintain a healthy blood pressure

- Elevate legs above the heart for at least 15 minutes each day
- Pay frequent and careful attention to skin health, especially in the legs
- Control cholesterol and triglycerides through medication and dietary changes
- Eat a low-salt diet
- Wear compression stockings if you anticipate standing or sitting upright for an extended period of time. (20 - 30 mmHg)
- Manage any diabetes and blood sugar issues

**When you see symptoms of venous disease, or if your patient is over 50 and has several risk factors, refer them to a fellowship-trained, board-certified vascular and endovascular surgeon.**

#### About the author, Dr. Eugene Tanquilut

**Dr. Eugene Tanquilut** is board-certified in both vascular and endovascular surgery. Award-winning, a Vitals Top 10 Doctor and a Patient's Choice Doctor, he earned Vascular and Endovascular Fellowships at Cleveland Clinic.

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