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VENOUS REFLUX ACHIEVING HEALTHY LEGS IN TIME FOR SUMMER

Next to lumbosacral spine disease, venous insufficiency is the number one price we humans paid when we abandoned walking on all fours and stood erect.

Have you ever wondered how blood gets from the legs back to the heart?

Unlike the arterial system in which blood is propelled forward by the heart in an elastic, high-pressured system, blood returning to the heart is literally like water running uphill. The pumping action of leg muscles, negative intrathoracic pressure with inspiration and venous valves in leg veins accomplish this physiologic miracle.

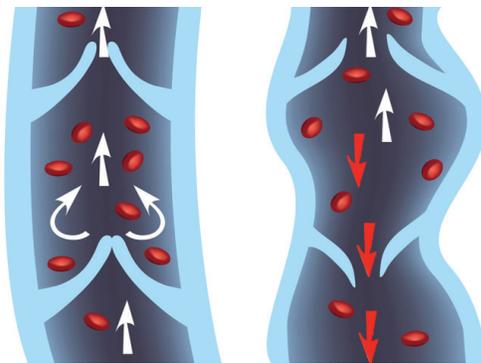


Fig 1: Normal functioning valve on the left and prolapsed valve on the right, with reflux.

With the help of venous valves spaced inches apart in leg veins, blood moves sequentially back to the heart like boats through the Panama canal. These bicuspid valves, as diaphanous and fragile as butterfly wings, open and close during the cardiac cycle and insure progressive forward movement of blood so that our ventricles are full when the heart beats again.

What causes venous reflux?

Much depends on these fragile valves that are injured or destroyed in a variety of ways. Deep venous thrombosis almost always destroys the valves in the affected veins. A gravid uterus during pregnancy causes a functional venous obstruction that stretch leg vein valves rendering them patulous and leaky (see Fig 1). Some people, men and women, have an inherited tendency for leaky valves that make it more difficult for blood to get out of the legs and back into the central venous circulation. Occupational hazards with long periods of standing affect baggers at the supermarket, waiters, vascular surgeons and flight attendants. Couch potatoes who prefer life lived horizontally rather than vertically are spared.



Fig 2: The spectrum of venous insufficiency.

Whatever the cause, dysfunctional venous valves in the pelvis and legs result in "venous insufficiency" that lead to swollen and achy legs, varicose and spider veins and in bad cases, venous stasis ulcers (see Fig 2).

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What are the treatment options?

Do I need surgery?

In general, venous insufficiency is not a life or limb threatening problem. However, it can cause significant lifestyle limitations and be a source of significant frustration and discomfort. When venous blood struggles to get out of leg veins, the hydrostatic pressure within these thin walled vessels causes them to dilate and protein rich serum leaks into surrounding skin and fat. Our legs swell, our superficial veins become varicose and our skin discolours and cracks, making us vulnerable to fissures, ulcers and infection.

Walking on our hands or spending our lives in a hospital bed with legs elevated will cure venous insufficiency every single time, **but elevation and elastic support are more palatable solutions.** Despite their simplicity, both are remarkably effective in counteracting gravity and getting blood out of the legs and back to the heart (see Fig 3).



Fig 3: Graduated compression stockings are measured and fitted to each patient, and work by augmenting venous return.

How do I know if I have venous reflux?

While the diagnosis of venous insufficiency is usually clinically apparent, a venous duplex scan confirms the diagnosis and localizes the offending leaky valves. Color flow Doppler vividly demonstrates retrograde flow of venous blood backward through incompetent valves and the location and severity of venous insufficiency can be quantified (see Fig 4).

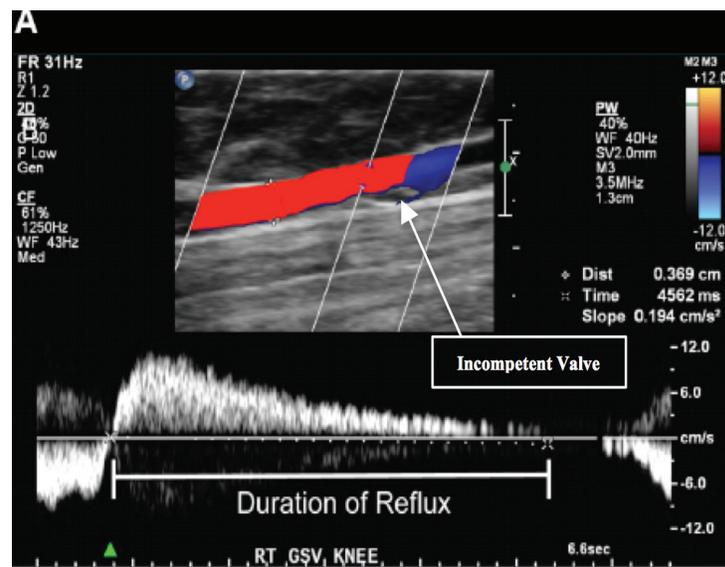


Fig 4: Color flow Doppler demonstrating reflux in the great saphenous vein (Note the change in color flow duplex, red indicates reflux).

What if compression stockings and leg elevation are not enough?

Historically, direct surgical repair of diseased valves to render them competent had a decade or two long run of interest, but ultimately proved to be ineffective. Stripping the saphenous vein, ligation of perforating veins and excision of varicosities was the mainstay of surgical therapy for 50 years until the turn of the century when less invasive percutaneous procedures including laser and radiofrequency catheter ablation replaced them. These newer technologies are office-based procedures that use thermal energy to close the offending vein and redirect venous blood into deeper veins with competent valves.

Stand by for the next installment when these procedures will be discussed in detail. Or we should say, sit by with legs elevated - toes above the nose for the most effective drainage.