MEGO AFEK AC Ltd.
Compression Therapy Systems

Clinical Newsletter

October 2018

Venous Edema or Lymphedema?

New discoveries in human physiology are changing how physicians think about the lymphatic system.

In the "old days," it was thought that edema from chronic venous insufficiency and lymphedema were two entirely separate diseases. Patients with swollen legs from chronic venous insufficiency or trauma to their blood vessels had "venous edema" and were treated by phlebologists, who prescribed compression stockings and exercise to "raise the hydrostatic pressure to push fluid back into the veins," while patients with lymphedema (which was considered a rare disease), were sent to a lymphedema therapist for manual lymph drainage.

The theory that edema fluid is absorbed by the veins, has been around for many years. In 1896, Professor Starling published a theory that fluid leaks out of the small blood vessels in the arterial side of the capillary bed, into the tissue spaces, and that the fluid is reabsorbed back into the vein side of the capillary bed, creating a steady state. He wrote a mathematical formula, called The Starling Equation, to describe the inflow and outflow. According to the Starling Equation, 90% to 100% of the fluid that leaks out of the capillaries is reabsorbed by the veins, while only 10%- or even zero - is absorbed by the lymph vessels. This theory was accepted for many years as fact. The lymphatic system played a minor role and was usually ignored by physicians.

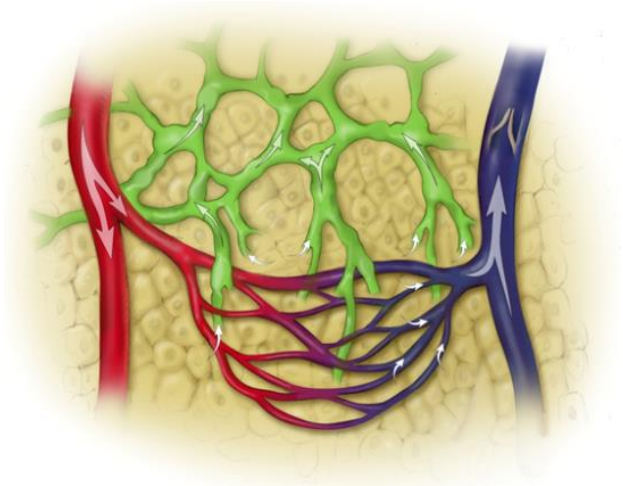


Illustration of a normal capillary bed in the skin. The arterial capillaries are red, the vein capillaries are blue, and the lymph vessels are green.

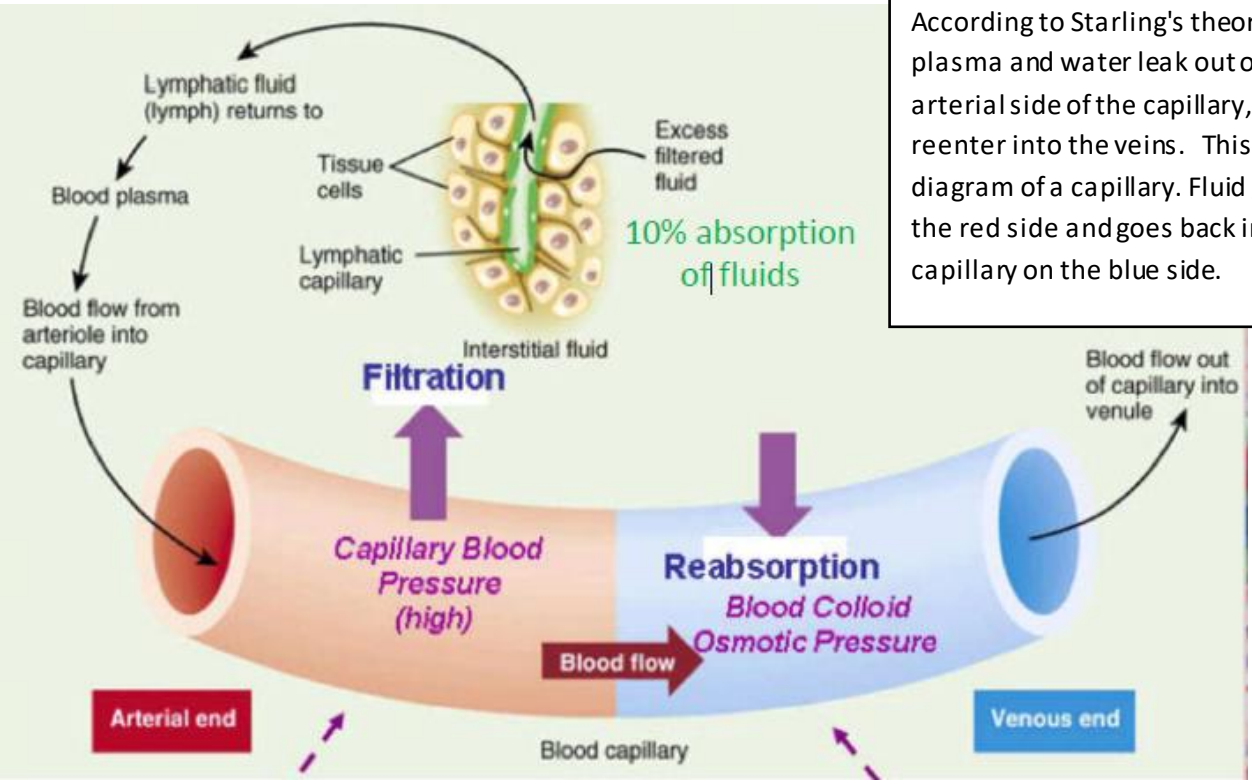
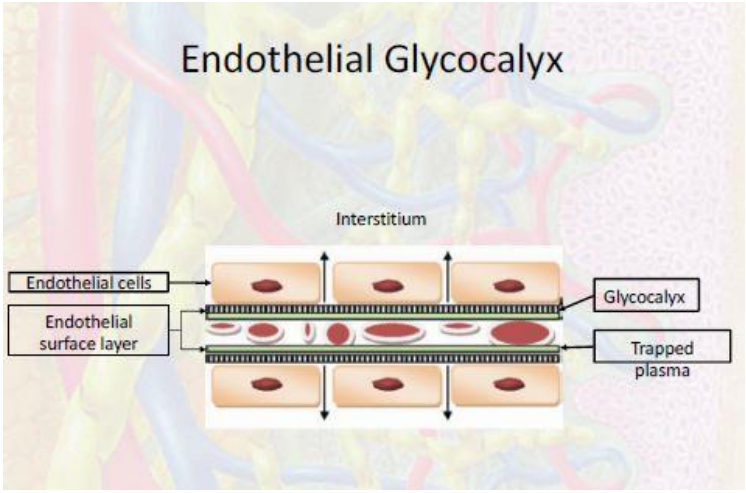


Illustration showing the Starling Equation in a normal, healthy person. According to Starling's theory (1896), plasma and water leak out of the arterial side of the capillary, and reenter into the veins. This is a diagram of a capillary. Fluid goes out the red side and goes back in to the capillary on the blue side.

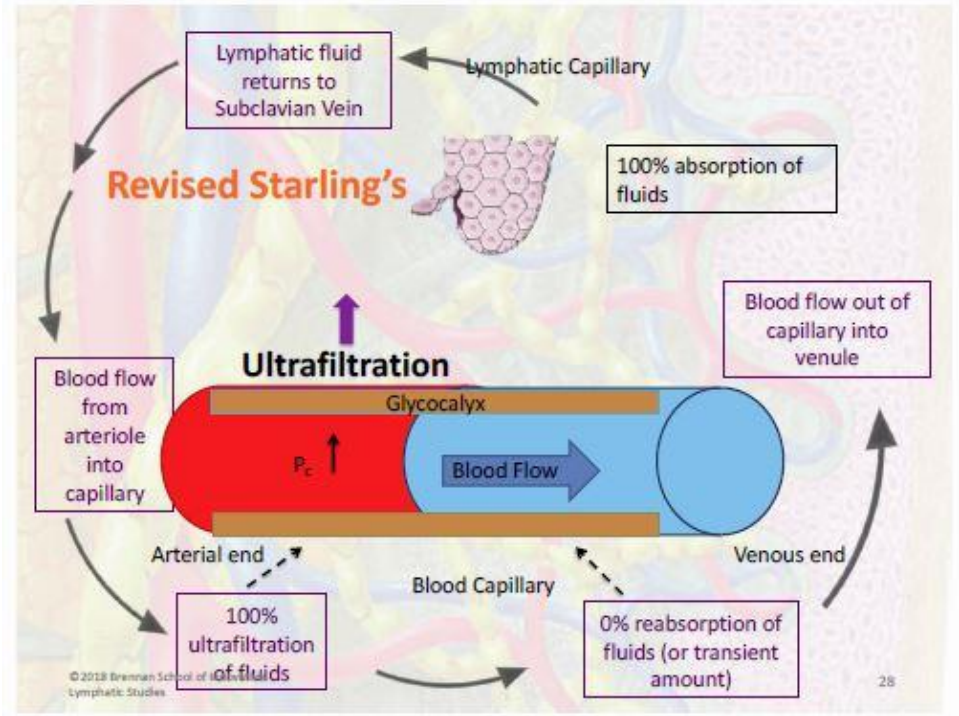
But around 15 years ago, scientists took another look at the way the tiny capillaries are constructed. Their conclusion was that Starling's equation is wrong.

The Glycocalyx

New technology showed that the vein capillary walls are lined with a jellylike structure called the glycocalyx. The glycocalyx has small passages that allow fluid to exit the capillaries. But under most circumstances these passages do not let fluid enter the capillaries.

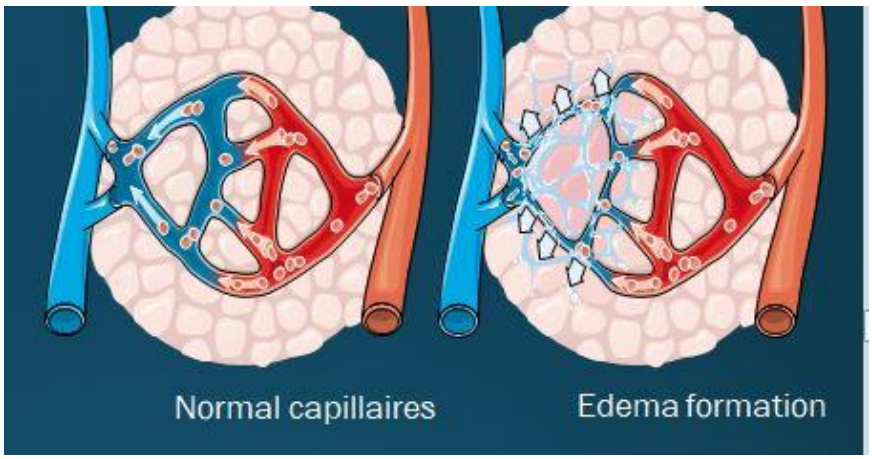


The scientists then created a "REVISED Starling Equation," showing that now most of the fluid gets reabsorbed by the **lymph vessels.**



According to the Revised Starling Equation, the lymphatic system plays a **major role** in maintaining normal fluid balance. And it is even more important when it receives a higher load of edema from chronic venous insufficiency.

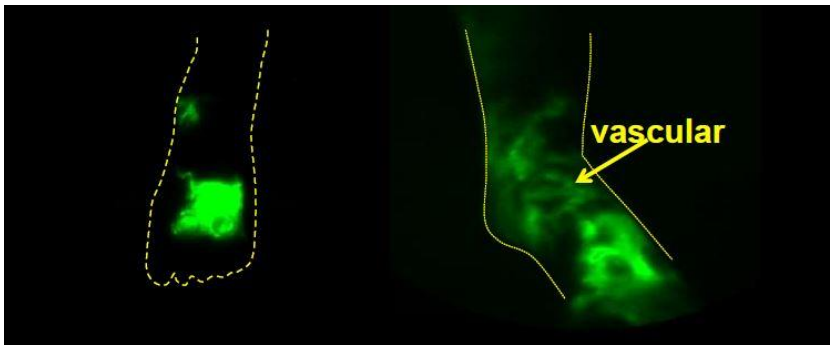
In patients with venous insufficiency, the pressure increases in the tiny veins because of the failure of valves in the bigger veins upstream, causing backflow. The vein capillary walls become leaky, allowing water and plasma to leak out of the veins, causing swelling in the feet and legs. This chronic swelling causes inflammation and skin breakdown, resulting in chronic venous stasis ulcers, infection, and hardening of the tissues.



How can this information help our business?

Now that more physicians know the huge role that the lymphatic vessels play in absorbing edema, they appreciate that chronic venous edema can be treated using **lymphatic drainage techniques such as Lympha Press®.** This is **in addition** to the effect Lympha Press® has on increasing blood flow in the veins, reducing venous stasis and reducing leakage from the small veins. Lympha Press® is used in facilities treating venous edema, such as wound care clinics and vein clinics, and as a part of a home care program for patients with chronic venous ulcers.

The recent study of Lympha Press® treatment using IC Green Lymphography proves that Lympha Press® treatment increases the speed of lymph vessel flow and contractions, and increases the amount of edema fluid that is absorbed into the lymph vessels. **This helps the lymph vessels absorb the quantity of edema leaking out of damaged veins, and reduces swelling.**



Foot of patient with Stage II/III lymphedema, before (left) and after (right) treatment with Lympha Press Optimal®.

So does this mean that chronic venous edema is actually lymphedema? Many physicians say yes. Others say no, but that untreated, it can lead to a disease they call "phlebolymphedema."

Our next Clinical Newsletter will discuss phlebolymphedema.

Phlebolymphedema is the most common type of lymphedema in the developed world. Lympha Press® systems are well positioned for market growth in treating phlebolymphedema, as the elderly population continues to increase.

Wishing you success and good health.

References

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