

Prosthetic Vein Valve

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For those living with Chronic Venous Insufficiency life can be challenging and uncomfortable. Chronic Venous Insufficiency or CVI is a condition where blood pools in the lower leg. Those who are most susceptible to it are the obese, extremely inactive, and elderly, but it can also be inherited. CVI occurs when the valve, found in veins in the lower leg, gets damaged preventing blood from flowing upwards. When this occurs the blood will begin to pool in the veins causing discomfort to the person. Yet there is now hope to fix these damaged valves.

Engineers at the Georgia Institute of Technology have developed a prosthetic vein valve to help deal those suffering from CVI. This valve is a one-way flap made from poly cryogel. The material has many useful attributes, including its biocompatibility with body tissue because of its attraction to water; the ability to adjust its mechanical strength; flexibility comparable to that of natural body tissue; and composition of organic polymer, rather than silicone. So clearly there is a lot of promise with this new valve.



Test trials still need to be conducted on animal test subjects. The animals they shall be using are sheep because their cardiovascular geometry and physiology are similar to those of humans. During the test trials, two prosthetic vein valves will be implanted. The researchers will test the biocompatibility and performance of the devices for four weeks. Before these animal test occur the valve design needs to meet two major criteria. The first being the valve had to withstand high pressures without leaking. The second being the valve had to open with small pressure gradients, even after 500,000 cycles of opening and closing, which is equivalent to a half year.



As of now things are looking good for the Prosthetic vein valve, but only time will truly tell if it makes it and is allowed to be used to help those sufferers of CVI.

References

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