

Figure 1

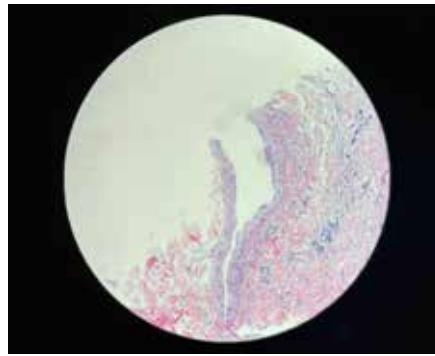


Figure 2

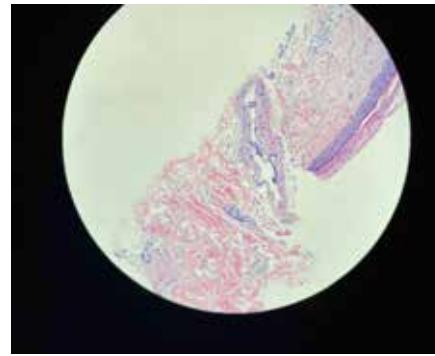


Figure 3

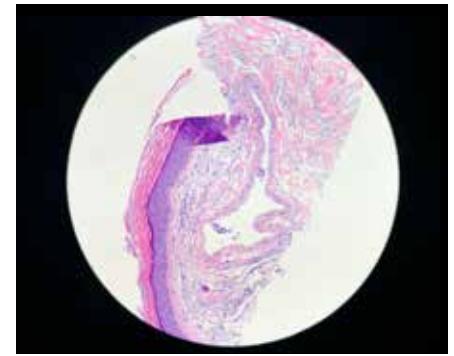


Figure 4

## The importance of diluents in sclerotherapy

By Ronald Bush, MD, FACS

An advantage of having access to a histology lab cannot be overstated. The ability to scientifically study various venous issues is possible. One study we have recently completed and are now submitting is comparing the

critical micelle concentration (CMC) of both Sotradecol (STS) and Polidocanol (POL) based on histology.

Using as a reference the previous work of *Wong et al* (Wong, 2015), who have determined the CMC values of STS and POL and the possible variations depending

on diluent used, we studied the effect of H<sub>2</sub>O and normal saline (NS) on both STS and POL at concentrations commonly used in sclerotherapy for telangiectasia.

Basically, CMC levels signify the value at which additional sclerosant will have no further effect. This is the first study to look at the histology by varying the CMC levels.

STS being an ionic detergent had a significantly reduced CMC level when saline was the diluent. Use of H<sub>2</sub>O or NS as a diluent for POL had minimal effect on CMC levels and this was verified histologically.

As can be seen in Figures 1-3, there is considerably more damage when H<sub>2</sub>O is used as the diluent. In Figure 4 it is evident that at very low concentrations STS is still effective when diluted with bacteriostatic water. Using ½ NS potentiates damage when the same concentrations of STS are compared. This is magnified even more using H<sub>2</sub>O alone. At concentrations of 0.2% STS, the CMC level is 0.2%. By adding the common diluent NS, the levels decrease to 0.075%.

Based on our studies, the preferred sclerosant is Sotradecol 0.1% (1/2 NS). Sotradecol 0.075% diluted with water is effective in > 90% of specimens examined whereas using

NS as a diluent produced minimal damage if at all. **VTN**



**Ronald Bush, MD, FACS**, is one of the nation's leading specialists in venous diseases. He founded and is the medical director for Vein Experts, a national group of venous specialists specializing in venous disease, and he is in

practice at Water's Edge Dermatology in Florida. He is board-certified in general vascular surgery; and was also certified in cardio/thoracic surgery. For the past 20 years, he has devoted his practice solely to the treatment of venous disease and one of the first in the nation to do so. Many of the new procedures now performed in the ambulatory treatment of varicose veins have originated in part from his clinical studies.

### REFERENCE

Kaichung W, Chen T, Connor D, et al. Basic physicochemical and rheological properties of detergent sclerosant. *J Phlebol* 2015; 30(5) 339-349.

*Water's Edge Dermatology photos, 2019*

## The types of staining that may occur after sclerotherapy

By Peggy Bush

There are two types of staining that can occur when treating telangiectasia. Type I is diffuse and results from vessel wall lysis after sclerotherapy. There is red cell extravasation to the reticular dermis and iron pigment remains after red cell lysis.

Type II staining occurs with intra-luminal thrombosis. It is distinguished by a linear stain in former vessel lumen and is very common when foam sclerotherapy is used. Evacuation of thrombus early may be helpful, but some staining will persist.



Figure 1

**STAINING**  
continued on page 26

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Developed by Ron Bush, MD, FACS & Peggy Bush, APRN

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