

# Sclerotherapy of Lower Extremity Varices: Optimal Cosmetic Results

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## Abstract

Today sclerotherapy is superior than surgical and non-surgical treatments to relieve the symptoms and to reach the optimal cosmetic result for small, localized, primary varices of lower extremity.

This article reviews the indications, application methods and complications for sclerotherapy of the lower extremity varices.

Sclerotherapy has the advantage of not requiring general or regional anesthesia and takes much less time than equivalent surgical techniques. It is more cheaper than surgery, does not limit patient's daily activities and if successful has the best cosmetic appearance with asymptomatic life. If the procedure is performed in the hands of experts the risk and secondary side effects of the treatment are minimal and rates of success should approach 100%.

## INTRODUCTION

Varicose veins of the lower extremities are present in approximately 20 percent of adults. They are often symptomatic and may contribute to the development of cutaneous changes of venous insufficiency<sup>(1)</sup>. Although venous systems are inherently variable, the treatment of varicose and telangiectatic leg veins can be approached in a logical, systematic fashion<sup>(2)</sup>. Treatment of venous insufficiency has been revolutionized by introduction of less invasive endovenous procedures<sup>(3)</sup>.

During the last half of the 20th century, sclerotherapy as a major treatment of varicose veins came and went<sup>(4)</sup>. The aim of treatment by sclerotherapy is the fibrous occlusion of varicose veins and the absence of recanalization of an intravascular thrombus. Modern sclerotherapy started at the beginning of the 20(th) century in Europe. Tournay in France, Sigg in Switzerland and Fegan in Ireland developed different schools of practice<sup>(5)</sup>.

Sclerotherapy competes with these for truly minimal less invasive care. The idea of using air and drug in combination is quite old. Orbach described an air block technique using froth in 1944 and in 1993 Cabrera proposed use of a true foam of sodium tetradecyl sulfate or polidocanol to treat varicose veins<sup>(3)</sup>. Cabrera published his experience with

foamed sclerosant in patients with great saphenous varices and arteriovenous malformations<sup>(4)</sup>. Cabrera designed his treatment with the specific aim of obliterating the saphenous trunks. His technique consisted of filling the great saphenous vein in the thigh or the small saphenous vein in the calf with foamed sclerosant injected. His initial report on long-term follow-up revealed that the results were at least comparable to surgery and perhaps somewhat better and his results have been confirmed by others. Investigations into treatment of small vein varices, including telangiectasias, has resulted in the finding that foam results in a 20% improved appearance compared to liquid sclerosant. The most popular sclerosants currently used as foams are polidocanol and sodium tetradecyl sulfate and of the many techniques used<sup>(4)</sup>. A compounding pharmacy supplied the 1-3% polidocanol that was prescribed for each patient according to guidelines on the Food and Drug Administration (FDA) website<sup>(3)</sup>.

In a study by Tessari et al., a preliminary multicenter experience of sclerotherapy performed by means of this new kind of sclerosing foam made of purified sodium tetradecylsulfate is described<sup>(6)</sup>. The authors evaluated the safety and efficacy of different doses and concentrations of the drug as well as different methods of preparing the foam in addition, the results of this technique were evaluated. Each author used different concentrations (0.1-3%) and

doses (2-8 ml) according to the size and number of the veins. Alternate methods of preparing the foam were examined as well. At 1-month follow-up, the vast majority of treated larger veins were either obliterated or showed a normal state of cephalad blood flow. Results for minor varicosities were good, but with related complications of hyperpigmentation and small areas of cutaneous necrosis<sup>(6)</sup>. The best foam was obtained by mixing one part liquid sodium tetradecylsulfate and four to five parts air, but the duration of the foam product was also related to several other factors<sup>(6)</sup>.

Sclerotherapy is the treatment of choice for spider veins and is indicated in the treatment of reticular and short saphenous varicose veins. There is currently no consensus on the place of sclerotherapy in the treatment of the long saphenous vein and incompetent perforating veins<sup>(5)</sup>. Insuring a satisfactory outcome also requires that the patient is thoroughly informed about the procedure and its possible risks<sup>(7)</sup>. Obliteration of varicose veins was entirely satisfactory. There was no disability down time, no need for analgesics or sedation<sup>(3)</sup>. Treatment of chronic venous insufficiency resulted in rapid, 2-6 weeks, ulcer healing, relief of painful lipodermatosclerosis and dermatitis and some decrease in skin hyperpigmentation<sup>(3)</sup>. A standing Doppler duplex reflux examination needed in all cases<sup>(8)</sup>. Compression was by long stretch elastic bandaging.

In our clinical application;for all patients, procedure was performed in one extremity.Before the procedure,bilateral lower extremity venous system components were evaluated with colored Doppler ultrasonography.Cases with wide varices,chronic occlusive arter disease and cardiopulmonary diseases were excluded.Sclerosing agent was Na-tetradecyl sulphate.If diameter of the lesion is <1mm we used 0.5-1% component and if between 1 and 3mm we used 1-2% component (Figures 1 and 2).

**Figure 1**

Figure 1



**Figure 2**

Figure 2



In all cases we performed anergy-allergy tests with minimal SC doses, before the procedure (controls at 2nd and 24th hours). Following, sclerotherapy performed to maximally dilated packet with tourniquet pressure (Figure 3).

**Figure 3**

Figure 3



After the procedure, local compression was used for a week,

with elastic bandages (Figure 4).

**Figure 4**

Figure 4



Compression was performed to prevent probable thrombosis complication and to adhere the vein walls more rapid and tightly. Patients were encouraged to continue their normal daily activities. None of the patients had skin pigmentation or necrosis and thrombosis complication. Their follow-up was made in our outpatient clinic (Figure 5).

**Figure 5**

Figure 5



Treatment with compression and foam sclerotherapy causes more rapid resolution of the venous insufficiency complications and does so without an increase in morbidity<sup>(8)</sup>.

Understanding the interconnected character of the venous system, it is senseless for physicians to limit treatment to telangiectatic veins<sup>(2)</sup>. The risk of complications depends on

the agent used, its concentration and the quantity injected<sup>(5)</sup>. The most common strong reactions are fainting, suffusion, skin darkening and superficial thrombophlebitis and pigmentation at the site of the injection<sup>(4,9)</sup>. The other very rare complications are; blistering, allergic reaction and deep venous thrombosis<sup>(9)</sup>. The latter is highly focused, therefore the patient's thrombophilic history is revealed.

Successful treatments were carried out not only in the lower leg but also in upper limb varicosities, vascular malformations, venous lake of the lip and hemorrhoidal nodes. The sclerotherapy and operation rather supplement each other than compete<sup>(9)</sup>. This method has an outstanding importance in the treatment of intracutaneous venectases and reticular varicosis but side branches and perforators can be cured as well. As is well known, varicosity is a progressive disease and the sclerotherapy can be repeated unrestricted<sup>(9)</sup>.

In conclusion; the permanent eradication of ectatic veins while minimizing the incidence of adverse effects, minimizing patient discomfort, and treating the maximal number of veins during each session are goals of injection sclerotherapy<sup>(7)</sup>. It can be performed in the office and is more cost-effective than traditional surgical vein stripping, which requires hospitalization and a recuperation period. Sclerotherapy is relatively safe and effective and may be used to treat both varicose veins and telangiectatic "spider"

veins of the lower extremities<sup>(1)</sup>. In the hands of experts the risk and secondary side effects of the treatment are minimal<sup>(5)</sup>.

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