

2003 Guidelines for Sclerotherapy

THE AMERICAN ACADEMY OF COSMETIC SURGERY

1. Incidence

An estimated 30% to 60% of adults in the United States have varicose veins and the incidence increases with age. Varicose veins may occur with increased frequency over an individual's lifetime with up to 72% of women and 43% of men developing this problem by the seventh decade.¹

2. Etiology

Predisposing factors for the development of varicose vein disease have been studied by several investigators. Genetic factors have been felt to play a major role. Approximately 80% of patients with telangiectasia or varicose veins have at least one family member with telangiectasia or true varicose veins.²

Other etiologic factors that have been felt to be associated with an increased incidence of the development of varicose veins include pregnancy, hormones, anoxia, recurrent infections, standing vocations (> 6 hours per day) and obesity (greater than 20% of ideal body weight).³

3. Medical Consequences of Varicose Veins

The majority of patients with varicose vein disease have symptoms that may be associated with venous incompetence. Symptoms may include pain, cramping, fatigue, dull aching, restlessness of the legs, stinging, burning and a sensation of heaviness in the legs.⁴ It has been shown in several studies that symptoms are not directly related to either the number or diameter of varicose veins. Approximately 50% of patients seek sclerotherapy for varicose complaints of symptoms in the areas of the visibly involved vessels. Many have vessels less than 1mm in diameter. This supports the fact that even patients with small diameter vessels may have some degree of medical symptoms associated with their lower extremity veins.⁵

It is common for signs of venous insufficiency to accompany the presence of varicose veins. The major clinical signs of varicose vein disease include hyperpigmentation, edema, dermatitis, skin

induration, ulceration, hemorrhage, and thrombophlebitis.⁶

Skin thickening, scaling, and brawny brown discoloration are most commonly noted making up a clinical complex called lipodermatosclerosis. The development of ulcerations related to the development of varicose veins and associated venous insufficiency are most commonly located at the level of the medial malleolus.⁷

In summary, considerable morbidity can be associated with the evolution of venous insufficiency if not treated in a timely fashion.

4. Training and Education

Physicians practicing sclerotherapy should have adequate training and experience in the field. The training and experience may be obtained in residency training, observational training, cosmetic surgery fellowship training, CME accredited PVA graduate didactic and live surgical programs or via proctorship with trained credentialed surgeons experienced in sclerotherapy techniques. In addition, training and education may be obtained through other interdisciplinary organizations, or one-to-one observation of training experiences in a proctorship or preceptorship setting with qualified practicing of sclerotherapy techniques.

Surgeons of multiple specialties perform sclerotherapy. Qualified surgeons who practice sclerotherapy should have the necessary skills to perform the procedures and the knowledge to diagnose and manage venous disease and its associated sequelae as well as understand the appropriate indications, technique modifications and management of potential adverse sequelae associated with sclerotherapy.

5. Pre-sclerotherapy Evaluation

An appropriate medical history and physical examination should be based upon the patient's general health and age and should be performed on all patient candidates. Special attention should be given to a history of thrombophlebitis, clotting

disorders and generalized systemic illnesses. Informed consent must be obtained prior to performing sclerotherapy.

Pre-sclerotherapy laboratory evaluation should include at least Doppler evaluation and preferably Duplex ultrasonography of any patients with elevated veins, veins > 4mm in diameter, symptoms of pain or fatigue or associated signs of venous insufficiency. Such evaluation should rule out incompetence of the greater or lesser saphenous veins and their associated junctions or evidence of perforator disease. When possible the size of such incompetent greater or lesser saphenous veins should be documented.

6. Management Approaches for Patients with Varicose Veins

The therapeutic approach chosen for a given patient will depend upon multiple factors including underlying medical status, lifestyle, source and origin of the venous insufficiency, size of the vein in question, physician training and cost.

Sclerotherapy may be performed in an ambulatory outpatient setting.

The cornerstone aspect of all therapeutic approaches involves the utilization of compression hose by the patient, which both helps to improve the results of all therapeutic modalities, but also has been shown to slow down the development of new varicose veins in genetically predisposed individuals.⁸

New varicosities may be anticipated regardless of the management approach secondary to the chronic nature of the disease and the source of insufficiency if not treated in genetically predisposed individuals.⁹

Treatment approaches for varicose veins may be divided into sclerotherapy, laser/intense pulsed light, surgical and endovascular modalities.¹⁰

Sclerotherapy remains the cornerstone of therapy for all varicose veins less than 4 mm and greater or lesser saphenous vein insufficiency (the two major axial conduits of the superficial venous system) .have been addressed.

Despite all of the above aforementioned modalities, approximately 78-80% of all patients with varicose vein treatment by physicians have sclerotherapy included as part of the treatment program. It remains the workhorse of all

therapeutic interventions for the management of varicose veins.¹¹

At present the majority of patients with incompetence of the greater saphenous vein are treated with one of the newer endovascular radiofrequency (Closure™) or laser procedures.¹² Down time is minimal compared to the older more conventional surgical ligation and stripping modalities where prolonged hospitalization was part of the treatment program.¹³⁻¹⁶ A third modality of treatment is available for patients who refuse these alternatives or if recurrence occurs. Duplex guided sclerotherapy involves direct injection of the sclerosing solution into the greater saphenous vein under duplex guidance.¹⁷⁻¹⁹

The majority of non-saphenous truncal varicose veins between 4-6mm are treated either by sclerotherapy or ambulatory phlebectomy. Ambulatory phlebectomy, an outpatient procedure where a hook is utilized to extract veins through a micropuncture opening under tumescent local anesthesia, guarantees extraction of the vein in a single procedure. This is a more complex surgical outpatient procedure associated with a higher complication profile.^{20, 21} Foam sclerotherapy is an accepted modality for treatment of large diameter vessels. The foam may be formulated by dispersing solution through a three-way stopcock. More efficient sclerosant-endothelial contact may be achieved utilizing this technique leading to lesser numbers of treatment sessions and more efficient results.

For varicosities 2-4mm in diameter, sclerotherapy is the treatment of choice.²²⁻²⁸ Large areas of veins can usually be eradicated in a cost efficient manner in two to three treatment sessions. Bruising, pigmentation and development of nets of microvessels are the only relatively rare minor sequelae of this procedure. Sclerotherapy which is the most common procedure, performed world wide for the treatment of varicose veins which fall into this vessel diameter subgroup.²⁹⁻³² Sclerotherapy of small vessels less than 1mm is commonly carried out with either chromated glycerin 70%, hypertonic saline 23.4%, polidocanol .05% or sodium tetradecyl sulfate 0.25%.

No more than 10cc of solution is instilled per treatment session.

Approximately two to three treatment sessions are carried out to clear a given treatment area.

The minimal sclerosant concentration (MSC) to treat a given vessel diameter is recommended.

Approximately 0.1-0.3cc of sclerosant is injected per injection site.

Patients are instructed to wear Class I (10-20mm Hg) support hose for 7-14 days following each treatment session.

Bruising and/or temporary pigment dyschromia are commonly noted following each treatment session.

Finally, vessels less than 2 mm in diameter are most commonly treated either by sclerotherapy, lasers, intense pulsed light sources or a combination of these modalities. When these vessels are of sufficient diameter allow for needle entrance, sclerotherapy remains the most efficient and cost effective treatment modality.^{33, 34} Often a combination of these modalities are performed at a given treatment session.^{35, 36}

Permanence of results in the treatment of small diameter vessels by sclerotherapy is extremely high approaching 90-95%.³⁷⁻³⁹ There is a high degree of new vessel formation in genetically predisposed individuals. For larger diameter vessels > 4mm in diameter, there is a greater degree of treatment failures approximately 25% and recurrences noted in approximately 10% of large diameter vessels treated by this modality. However, recurrences are also documented after surgical ligation and endovascular treatment of large diameter veins as well.⁴⁰⁻⁴⁴

7. Expected Sequale

- a) Common side effects: Bruising, edema, hyperpigmentation, telangiectatic matting
- b) Occasional side effects: Hematoma, tape reactions, superficial thrombophlebitis, pruritus, ulceration
- c) Uncommon complications: Local and systemic hypersensitivity reactions, arterial necrosis, paresthesias, scotomata, syncope, hirsutism

8. Post-operative Care

Post-sclerotherapy compression garments should be graduated in nature. For small diameter vessels

(< 4mm in diameter) fashion hose (16-18mm Hg) or Class I (20-30mm Hg) support hose may be applied.

For larger elevated vessels (>4mm in diameter) Class II (30-40mm Hg) graduated support hose is recommended.

Previous studies have shown that three days of compression during waking hours is the minimal duration of time necessary to achieve beneficial effects of compression. Post-sclerotherapy, with three weeks duration, is the optimal time for which increased efficiency and decreased side effect profiles, particularly avoidance of post-sclerotherapy hyperpigmentation may be achieved.

9. Documentation of Care

Patients should have standardized pre-operative and post-operative photographs to document the extent of patient's veins. The operative record should include, at a minimum, the following information:

- 1) Type of sclerosant utilized
- 2) Concentration of sclerosant
- 3) Volume of sclerosant injected
- 4) Anatomical site treated (anatomic charts are useful)
- 5) Complications should be noted
- 6) Post-operative garments utilized

Sclerotherapists should review and compare before and after photographs to objectively evaluate the quality and extent of final outcomes. Critical outcome analysis is valuable for surgeon and patient prospectives.

10. Privileging for Sclerotherapy Surgeons

No specific privileging is necessary for sclerotherapy procedures. They are normally provided in an outpatient ambulatory setting. Advanced Cardiac Life Support and CPR training should be obtained by the practicing sclerotherapist in case an adverse event such as anaphylaxis or inadvertent intra-arterial injection should occur.

11. Conclusion

In summary, sclerotherapy remains an extremely efficient, low risk, cost effective treatment of lower extremity veins of all sizes. It is the treatment of choice for varicosities 1-4mm in diameter. However, it also plays a useful role in the

physician's treatment armamentarium of both larger and smaller diameter veins.

12. Disclaimer

The recommendations contained in this document are not intended to establish a standard of care, but serve only as a guideline. The ultimate responsibility for the patient's well being rests on the clinical judgment of the attending physician and surgeon.

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