



ORIGINAL ARTICLE

The role of ultrasound guided foam sclerotherapy in treatment of truncal varicose veins



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KEYWORDS

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Abstract Objective: The aim of this study was to evaluate the role of ultrasound guided foam sclerotherapy in the treatment of lower limb truncal varicose veins.

Subjects and methods: The study included 30 patients (9 males and 21 females) ranging from 20 to 40 y, with various degrees of varicose veins chosen from the vascular surgery department from April 2013 to April 2014. All patients are evaluated with color Doppler ultrasound system.

Results: The study included nine males (30%) and 21 females (70%) with various degrees of varicose veins. Each case had foam injection under duplex guidance. All patients suffered from cosmetic disfigurement, whereas 24 patients (80%) complained of leg pain. In the first phase (after 2 weeks) 28 patients (93.3%) showed complete clinical improvement of the pre-interventional symptoms, while only 2 patients (6.7%) showed no improvement. Four patients (13.3%) suffered from complications in the form of thrombophlebitis. The 2nd phase follow up demonstrated the final patient's outcomes. 86.7% of the subjected sample (26 patients) showed further improvement.

Conclusion: Foam sclerotherapy is an effective, simple and safe technique for the treatment of truncal varicose veins with minimal complications.

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Abbreviations: GSV, great saphenous vein; SSV, short saphenous vein; DVT, deep venous thrombosis

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1. Introduction

Varicose veins are elongated, tortuous, and dilated superficial veins of the lower limbs with deficient valves. The World Health Organization (WHO) defines varicose veins as saccular dilatation of the veins which are often tortuous (1).

They are classified etiologically into primary and secondary varicose veins. Secondary varicose veins almost always follow

a change in the deep venous system function whether outflow obstruction or pump failure or both. The precise cause of primary varicose veins remains unknown (2).

Sclerotherapy is a minimally invasive technique uses an injection of a special chemical (sclerosant) into a varicose vein to damage and scar the inside lining of the vein (3,4).

Foam sclerotherapy is performed under ultrasound control. The foam solution causes intense spasm of the vein and a greater volume can be injected without using too much of the STD solution (5,6).

The initial results with foam sclerotherapy are very promising and this method of treatment offers a possible alternative to surgery. Surgery carries a risk of general anesthesia and the time of work off. Surgery is not more effective than foam sclerotherapy for primary truncal saphenous vein treatment (7,8).

The complications of foam sclerotherapy include brown pigmentation of the skin, deep venous thrombosis (DVT), skin ulceration, scar and allergic reaction (9,10).

2. Aim of the work

The aim of this study is to evaluate the role of ultrasound guided foam sclerotherapy in the treatment of truncal varicose veins.

3. Patients and methods

This study was approved by the ethics committee of our institution during the period between April 2013 and April 2014. The study group included 30 patients (9 were males and 21 females) ranging from 20 to 40 y with a mean age 30 y, with various degrees of varicose veins chosen under umbrella of the study criteria from vascular surgery department. All patients were evaluated with color Doppler ultrasound system (Logic 5 Pro, General Electric Medical System, GE Healthcare, Milwaukee, WI, USA) Ultrasound 5–10 MHz for the deep and superficial venous system. The exclusion criteria were as follows: Pregnancy, breast feeding, DVT, known allergy to polidocanol solution (Aethoxysclerol) and lack of mobility. Inclusion criteria for the study were truncal incompetence in the great saphenous veins as defined by a reflux of more than 0.5 s documented by duplex scan. The chosen patients underwent ultrasound guided foam sclerotherapy with early follow up 1–3 days postinjection and long follow up to 6 months. A Tessari micro-foam technique was done using 2 mm Aethoxysclerol 2% to 8 ml sterile air with triple way cannula. Using sonar guidance the cannula is placed inside the truncal vein and injection of the foam inside the vein done. Patients are treated at the operating room in the radiology department which is equipped with a color duplex ultrasound and an adjustable examination board.

3.1. Instruction given for patient immediately post procedure

- To walk for at least half hour.
- To have plenty of fluids.
- To maintain external compression for 4 days.
- Given anti-inflammatory medication with strict follow up.

3.2. Every patient is advised to

- (1) Avoid straining, strenuous physical activity or Valsalva maneuver for the first month because they may contribute to early recanalization.
- (2) Avoid prolonged car or plane travel of more than 4 h during the first month after treatment to decrease the incidence of the thromboembolic events.

4. Results

Thirty patients were selected to fulfill the aims and objectives of this study, nine (30%) males and 21 females (70%), with various degrees of varicose veins, chosen under umbrella of study criteria. Each case had single injection with foam under duplex guidance and the varicosities are assessed after injection and any complications were observed. Venous reflux before interventional techniques presented in 27 patients (90%) along the long saphenous vein (Figs. 1B and 2C), 5 patients (16.7%) had refluxing short saphenous vein. Sixteen patients (53.3%) had refluxing saphenofemoral junction, whereas 2 patients (6.7%) had refluxing saphenopopliteal junction (Table 1). All subjected individuals suffered from cosmetic disfigurement, whereas 24 patients (80%) complained of leg pain. Twenty-one patients (70%) suffered from limb heaviness, and 5 patients (16.7%) complained of itching. The follow up regimen was subdivided into two phases: The first phase describes the patient's manifestation and complications after 2 weeks of interventional therapy (Figs. 1E and 2A and B), while the second phase demonstrates the final patient's outcomes after 3 months of interventional therapy. The first phase (after 2 weeks) found that 28 patients (93.3%) showed complete clinical improvement of the pre-interventional symptoms (Table 2), while 2 patients (6.7%) showed no improvement in his symptoms (Table 3). Four patients (13.3%) suffered from complications in the form of thrombophlebitis. The 2nd phase follow up demonstrated the final patient's outcomes. 86.7% of the subjected sample (26 patients) showed further improvement in the symptoms. Thrombophlebitis, developed in 2 patients (6.7%) (see Fig. 3).

5. Discussion

Sclerotherapy refers to the method of varicose veins interventional treatment, where a chemical substance is introduced into the lumen of a vein to cause endothelial necrosis and subsequent fibrosis. Apart from reducing the size of the vein to a small fibrous cord, effective sclerotherapy also eliminates the physiopathological reflux associated with varicose veins. It can be effective for all types of pathological venous dilatations from major truncal varicose veins to the finest telangiectases (11).

Foam sclerotherapy has several advantages from liquid form; a smaller quantity of sclerosing agent is to be injected, no dilution with blood and it ensures homogenous effect along the injected vein, provided the diameter remains reasonable (11).

A detailed review of the outcomes of ultrasound guided foam sclerotherapy has been published recently. Cabrera et al. (12) has published a clinical series of 500 legs treated by foam sclerotherapy. He reported that after three or more

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