Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

EFFICACY OF FOAM SCLEROTHERAPY INMANAGEMENT OF SYMPTOMATIC VARICOSE VEINS OFLOWER EXTREMITIES- A PROSPECTIVEOBSERVATIONALSTUDY

DR SUJATHA V BADIGER,DR BHARATH KUMAR T J,DR SIDDESH G B,DR PAVAN KUMAR S

Corresponding Author:DR PAVAN KUMAR S

ABSTRACT

Background: The prevalent issue of varicose veins in the lower extremities necessitates exploring effective and efficient treatment methods. This study aims to evaluate the efficacy of foam sclerotherapy, focusing on improvements in the venous clinical severity score and the swift return to work post-treatment. Through this research, we intend to ascertain whether foam sclerotherapy can serve as a cost-effective, safe, and satisfactory alternative to traditional treatments.

Methodology: A universal sampling method was implemented to select the sample size for the study. The study cohort consisted of 31 patients who visited the outpatient department and met the established inclusion criteria. These patients underwent comprehensive history evaluation and physical examinations. Subsequent to the preliminary evaluations, the patients were subjected to necessary hematological and biochemical analyses along with appropriate radiological investigations, including USG venous Doppler studies, dictated by clinical suspicions. All participants underwent USG-guided foam sclerotherapy and their progress was monitored based on predefined outcomes.

Results: The study predominantly involved males aged between 30 and 60 years. A significant enhancement in patient satisfaction was documented, with notable reductions in ulcer size in 3 out of the 31 patients who initially presented with ulcers. Moreover, the therapy ensured a 100% reduction in reported pain and swelling, with no hospital stays extending beyond one day. Remarkably, 28 out of the 32 patients managed to resume their work within a span of less than 7 days, showcasing no side effects from the treatment.

Conclusion: The data gleaned from the study underscore the considerable patient satisfaction derived from foam sclerotherapy, especially concerning alleviation in pain, swelling, and enhanced ulcer healing.

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

Furthermore, patients reported a significant reduction in lower limb pigmentation following the therapy. Not only is foam sclerotherapy cost-effective and safe, but it also facilitates a quicker return to work coupled with shorter hospital stays, establishing itself as a potent alternative in managing symptomatic varicose veins.

Keywords: Foam Sclerotherapy, Varicose Veins, Venous Clinical Severity Score, Ulcer Healing, Outpatient Department.

INTRODUCTION

Varicose veins, prominently observed in the lower extremities, are a prevalent vascular condition characterized by the enlargement and twisting of superficial veins due to venous insufficiency. This medical condition affects a significant portion of the adult population worldwide, raising substantial concerns pertaining to public health and quality of life. The continual advancements in medical science have fostered the development of diverse treatment modalities to manage this pervasive condition effectively. One such emerging treatment is foam sclerotherapy, a minimally invasive procedure that has garnered attention for its efficacy in the management of symptomatic varicose veins. This prospective observational study meticulously explores the efficacy of foam sclerotherapy in managing symptomatic varicose veins of the lower extremities.

The pathogenesis of varicose veins involves the malfunctioning of the venous valves, leading to venous hypertension and subsequent dilatation of the veins, which affects the lower limbs predominantly[1]. The symptomatic presentation often includes leg pain, swelling, and notable skin changes, including pigmentation and ulcers[2]. Notwithstanding, the condition also exerts a significant psychosocial impact, as it frequently affects individuals' self-esteem and quality of life due to the cosmetic disfigurement it entails[3].

Foam sclerotherapy, an innovative treatment modality, has emerged as a potent alternative to surgical interventions, offering benefits such as shorter hospital stays and quicker return to daily activities[4]. This procedure involves the injection of a sclerosing agent in the form of

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

foam directly into the affected veins, causing their closure and subsequent absorption by the body. This minimally invasive approach, thus, targets the root cause of the condition, mitigating symptoms and improving the overall clinical severity score[5].

The venous clinical severity score (VCSS) is a robust tool frequently utilized in research and clinical settings to assess the severity of varicose veins and to monitor the patient's progress post-treatment[6]. The efficacy of foam sclerotherapy can thus be quantitatively evaluated using the VCSS, presenting a reliable means to gauge the treatment's success in improving patients'symptoms and quality of life over time.

As we delve further into the prospect of foam sclerotherapy as a potential mainstay treatment for symptomatic varicose veins, it becomes imperative to analyze various aspects including its efficacy in reducing pain, minimizing pigmentation, and facilitating ulcer healing. Furthermore, the rapid resumption of daily activities post-treatment stands as a testament to its less invasive nature, fostering a quicker recovery process compared to traditional surgical interventions[7].

Considering the economic aspect, foam sclerotherapy presents as a cost-effective alternative to surgery, minimizing hospital stay duration and facilitating quicker return to work[8]. Additionally, it demonstrates a favourable safety profile, with a considerably lower incidence of complications compared to other treatment modalities, thus signifying its potential as a preferable treatment option for symptomatic varicose veins in the foreseeable future.

In the present study, we envisage filling the existing gaps in literature pertaining to the efficacy of foam sclerotherapy in the management of symptomatic varicose veins of the lower extremities. Through a prospective observational lens, the study seeks to furnish concrete data and insights, contributing significantly to the burgeoning body of research in this domain.

In conclusion, as we stand on the cusp of a paradigm shift in the management of symptomatic varicose veins, foam sclerotherapy emerges as a promising candidate, potentially revolutionizing the treatment landscape. Through meticulous investigation and data analysis,

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

this study aims to corroborate the efficacy of foam sclerotherapy, thus paving the path for its widespread acceptance and implementation in clinical practice.

The forthcoming research promises not only to substantiate the efficacy of foam sclerotherapy but also to spotlight its significant role in enhancing patients' quality of life, fostering quicker recovery, and reducing the economic burden associated with the management of symptomatic varicose veins.

AIMS&OBJECTIVES

Aim:

To conduct a prospective observational study evaluating the overall effectiveness of foam sclerotherapy in managing symptomatic varicose veins.

Objectives:

Primary:

To assess the enhancement in the venous clinical severity score following foam sclerotherapy treatment.

Secondary:

To analyze the duration required for patients to resume work post-foam sclerotherapy procedure.

Materials and Methods

Study Setting:

- **Location:** Department of general surgery, Sahyadri Narayana Multispeciality Hospital, Shimoga.
- **Duration**: 18 months.
- **Design**: Prospective Observational Study.

Population and Sampling:

- **Target Population**: All patients consulting at the general surgery and vascular department OPD.

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

- **Sample Size**: A universal sampling method determined the sample size, encompassing all patients with varicose veins visiting the hospital, with a minimum inclusion of thirty individuals (n=30).
- **AgeRange**: 20-80 years, including both genders.

Inclusion Criteria:

- Recurrent varicose veins.
- Residual perforator incompetence.
- Patients unwilling to undergo open surgery.
- Clinically diagnosed perforator incompetence.

Exclusion Criteria:

- Previous history of Deep Vein Thrombosis (DVT).
- Documented allergy to sclerosing agents.
- History of vasculopathy or peripheral vascular disease (PVD).
- Truncal and junctional incompetence.

Parameters Studied:

The following parameters were closely monitored to gauge improvements post foam sclerotherapy in patients with varicose veins in the lower extremity:

1. Age
2. Gender
3. Pain levels
4. Varicose veins status
5. Skin pigmentation
6. Ulcer presence
7. Inflammatory responses
8. Induration levels
9. Venous oedema

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

10. Venous clinical severity scores (at admission and follow-up)
11. Return to work post-treatment

Methodology:

31 patients within the age bracket of 20-70, exhibiting symptoms such as dilated veins, pain, skin pigmentation, swelling, or venous ulcers, were enlisted for the study. Diagnosis relied on clinical examinations and doppler studies. Post Institutional Research and Ethical committee approval, and with informed consent from participants, the study commenced at Sahyadri Narayana Multispeciality Hospital. The follow-up spanned 18 months, during which the efficacy of foam sclerotherapy was assessed based on parameters like pain reduction, pigmentation improvement, oedema alleviation, and ulcer healing. The study utilized Setrol (60 mg/2ml) injections administered through ultrasound-guided foam sclerotherapy under regional block in the OT, ensuring a one-day hospital stay and systematic follow-ups at specified intervals over a year.

Data Collection:

Data aggregation involved a structured questionnaire where patients' histories and physical examination findings were meticulously recorded. Necessary blood and radiological tests were performed, and data were catalogued into Microsoft Excel for comprehensive analysis.

Statistical Analysis:

Utilizing SPSS v16 on Windows 10, the data was analyzed, with demographic data presented as frequencies and percentages, and continuous variables as mean ± SD. The student t-test evaluated the mean score differences for independent variables, considering a p-value <0.05 as statistically significant. Graphic representations of the data were created using MS Excel and Word, offering insights through bar and pie charts.

RESULTS

A total of 31 patients fulfilling inclusion criteria are included in present studyafter obtaining the informed consent aged between 20 to 80 years. Patients were assedusingvenous

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

severityscorescaleand charted withrespect outcomes.

TABLENO:3AGEDISTRIBUTION:

Age	Frequencyandpercentage**(%)**
31-35	7(22.6%)
36-40	15(48.4%)
41-45	3(9.7%)
>45	6(19.4%)

Abovetableshowsagewise distributionof thestudygroup.Outof31patientsevaluated15patients(48.4%)were<40years.3patients(9.7%)were< 45years.

6patients(19.4%)were >45years.

TABLENO:4GENDERDISTRIBUTION

Gender	Frequencyandpercentage(%)
Male	23(74.2%)
Female	8(25.8%)

The above table shows gender wise distribution of study group. 23 patients(74.2%) were male andremaining 8 patients (25.8%) were female which indicatesthatmalesarepredominantly affected in thestudy.

TABLENO:5PAINDISTRIBUTIONINSTUDYGROUP.

Painscores	**FrequencyAt admissionwith%**	**At1 month**	**At3 months**	**At6months**
None	0	26(83.9%)	30(96.8%)	31(100%)
occasional	7(22.6%)	3(9.6%)	1(3.2%)	0
Dailypain(not restricting)	19(61.3%)	2(6.5%)	0	0
Dailypain (restricting)	5(16.1%)	0	0	0

The above table shows distribution of pain the study group. At admission

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

7patients(22.6%)hadoccasionalpain,19patients(61.3%)haddailypain(notrestrictingdaily activity) and 5 patients(16.1%) had daily pain (restricting dailyactivity). At 1 month follow up majority of patients i.e., 26 patients (83.9%) had nopain, 3 (9.6%) had only occasional pain and 2 patients had pain which restricted theirdaily activity. At 3 month follow up 30 patients (96.8%) had no pain and 1patient hadoccasionalpain.

TABLENO:6VENOUSEDEMADISTRIBUTIONINSTUDYGROUP

Varicoseoedema	Frequencyand (%)atadmission	At1 month	At3 months	At6 months
None	23(74.2%)	28(90.3%)	31(100%)	31(100%)
Aboveanklebut belowknee	8(25.8%)	3(9.7%)	0	0

The above table shows distribution of venous oedema in the study group.23patients (74.2%) out of 31 patients had no oedema at admission. 8 patients (25.8%)had oedema below knee but above ankle. At 1 month follow up venous oedemasignificantly reduced to 3 patients (9.7%). At 3 months no patients were found to havevenousoedema.

TABLENO:7PIGMENTATIONDISTRIBUTIONINSTUDYGROUP

Pigmentation	Frequencyand (%)atadmission	At1 month	At3 months	At6 months
None	26(83.9%)	27(87.1%)	28(90.3%)	28(90.3%)
Limited to perimalleolarregion	1(3.2%)	3(9.7%)	3(9.8%)	3(9.8%)
Diffuseoverlower thirdofcalf	4(12.9%)	1(3.2%)	0	0

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

The above table shows the distribution of pigmentation.26patients (83.9%)out of 31 had no pigmentation at admission.1 patient (3.2%) had pigmentation in perimalleolar region and 4 patients (12.9%) had diffuse pigmentation over lower third ofcalf.At1monthoffollowuppigmentationreducedand27(87.1%)hadnopigmentation, limited to peri malleolar area in 3 patients (9.7%) and 1 patient (3.2%)had pigmentation diffusely over lower third of calf. At 3 months 28 patients (90.3%)hadnopigmentation,3patients(9.7%)hadonlypigmentationlimitedtoperimalleolar region. At 1 year only 3 patients (9.7%) had pigmentation limited to perimalleolararea.

TABLENO:8VARICOSEVEINDISTRIBUTION

Varicoseveins	Frequencyand(%)at admission	At1 month	At3 months
None	0	31(100%)	31(100%)
Few/scattered	8(25.8%)	0	0
Confinedtocalf	23(74.2%)	0	0

The above table shows distribution of varicose veins in the study group.23patients (74.2%) had varicose veins confined to calf.8 patients (25.8%) had few /scattered varicose veins.At follow up at 1 month ,none of the patients had varicoseveins.(100%).

TABLENO:9INFLAMMATIONINTHESTUDYGROUP

Inflammation	Frequencyand(%) atadmission	At1 month	At3months
None	28(90.3%)	29(93.5%)	31(100%)
Diffuseoverlower thirdofcalf	3(9.7%)	2(6.5%)	0

The above table shows distribution of inflammation in study group. 28 patients(90.3%)hadnoinflammationatadmission.3patients(9.7%)hadinflammationdiffuselyoverl owerthirdofthe calf.At1monthfollowup29(93.5%)hadnoinflammation.At3 months, none(100%) of patients had inflammation.

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

TABLENO:10INDURATIONINSTUDYGROUP

INDURATION	Frequency and % atadmission	At 1month	At 3months	At 6months	1year
None	28(90.3%)	29 (93.5%)	31	31	31
Limited to peri malleolararea	3(9.7%)	2(6.5%)	0	0	0

The above table shows distribution of induration in study group. 27 patients(87.1%) had no induration at admission. 4 patients (12.9%) had induration limited toperimalleolarregionatadmission.At1monthindurationwasfoundinonly2patients (6.4%). At3 months noneof thepatientshad indurationon followup.

TABLENO11ACTIVEULCERNUMBERINSTUDYGROUP

Activeulcer number	Atadmission	At1 month	At3 months	At6 months
None	28(90.3%)	28	29	31
1	1(3.2%)	1	1	0
2	1(3.2%)	1	1	0
>3	1(3.2%)	1	0	0

The above table shows distribution of ulcer number in study group. 28 patients(90.3%) had no active ulcer at admission. 3 patients (3.2%) had active ulcer whichreduced substantially to 2 patients with ulcer at 3 months and at end of 6 months noneofpatientshad any ulcer.

TABLENO:12ACTIVEULCERSIZE.

Active ulcersize	Frequencyand (%) atadmission	At 1month	At 3months	At 6months	At1year
None	28(90.3%)	29 (93.6%)	31(100%)	31(100%)	31(100%)

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

<2cm	1(3.2%)	2(6.4%)	0	0	0
2-6cm	2(6.5%)	0	0	0	0

The above table showsUlcer size distribution of study group.28 patients(90.3)hadnoulceratadmission.1patient(3.2%)hadulcersizeof<2cmand2patients (6.5%) had ulcer size between 2-6cm. At 1 month patient of ulcer size 2-6cmreduced to <2cm in 2 patients. At 3 months all the ulcers healed and none were foundtohaveulcers.

TABLENO:13ACTIVEULCERDURATIONATADMISSION

Activeulcerduration	Atadmission
None	28(90.3%)
<3 months	1(3.2%)
3months -1 year	2(6.5%)

Theabovetableshowsactiveulcerdurationinstudygroup.28patients(90.3%) had no ulcer at admission.1 patient (3.2%) had ulcer with duration of <3monthsand 2patients (6.5%) hadulcer durationbetween3months to 1year.

TABLE NO :14 USE OF COMPRESSION THERAPY-STOCKINGS ATADMISSION

		Frequency	Percent
USE OFCOMPRESSIONSTOCKINGS	NotUsed	25	80.7
	Intermittentuse	1	3.2
	Useon mostdays	5	16.1
	Total	31	100.0

The above table shows distribution of use of stockings in the study group atadmission. 25 patients (80.7%) had not used compression therapy. 1 patient (3.2%)had used intermittently and 5 patients (16.1%) had used compression therapy most ofthedays.

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

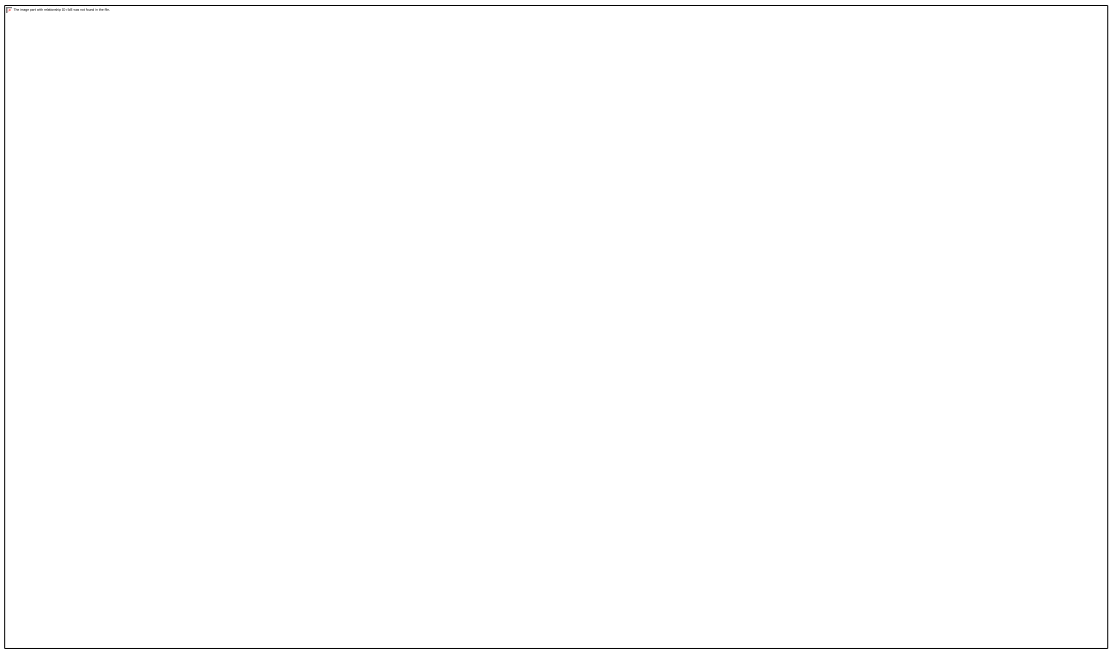

Figure1:Distribution ofReturntoworkinstudygroup

The above table shows patients returning to work after foam sclerotherapy. 20patients (64.5%) returned to work in 4 days .6 patients (19.4%) in 7 days and 3patients(9.7%) returned to work in 14 days.

TABLE N0: 16 VENOUS CLINICAL SEVERITY SCORE AT ASDMISSIONANDAT FOLLOW UP

	Mean	SD	95%CI	Tvalue	Pvalue
Totalscoresat admission Totalscoresat1month	5.61 0.52	4.28 1.338	3.967-6.227	9.212	<0.0001
Totalscoresat admission Totalscoresat2months	5.61 0.16	4.28 0.37	3.99-6.90	7.65	<0.0001
Totalscoresat admission Totalscoresat3months	5.61 0.16	4.28 0.37	3.99-6.90	7.65	<0.0001
Totalscoresat admission Totalscoresat6months	5.61 0.16	4.28 0.37	3.99-6.90	7.65	<0.0001
Totalscoresat admission Totalscoresat1year	5.61 0.16	4.28 0.37	3.99-6.90	7.65	<0.0001

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

The above table shows the comparing scores at follow up in study group. Themean total score at admission was 5.61+/- 4.28 and the mean total score on follow upat 1 year was 0.16+/-0.37. The difference in the mean at the time of admission andafterfoamsclerotherapywasstatistically significant(p=0.001).

DISCUSSION

The venous insufficiency of lower limb has substantial effects on patient'shealth-related quality of life and results in health status comparable to other chronicconditionssuch asdiabetesmellitusand cardiovasculardiseases.

Open surgery is to date the gold standard in the treatment of lower limbvaricose veins. This, however, entails the use of general or regional anaesthesia andnecessitates a groin incision for surgical dissection of the SFJ. The use of dopplerultrasoundinthetreatmentofvaricoseveinsallowsalternativestrategiestobeused.

Foam sclerotherapy wasan established methodof causing venous occlusionby the injection of sclerosing into the affected veins. Direct contact of sclerosant withthe venous endothelium initiates endothelial and contiguous mural injury. A local,wall-adherent thrombus then forms, and subsequent sclerosis transforms the treatedvein into a fibrous cord. An ideal treatment should relieve all physical symptoms,significantly improve the appearance of the leg, be complication-free, allow a fast(immediate) return to normal activities, be inexpensive, and be widely available andapplicableto affected patients.

ThepresentstudyaimedtoassesstheefficacyoffoamSclerotherapyinoverallmanagement ofsymptomatic varicoseveins.

A total of 31 patients fulfilling inclusion criteria are included in present studyafter obtaining the informed consent aged between 20 to 80 years. Similar to presentstudy, Kharl RAK et el., to assess the outcome of patients undergoing ultrasoundguided foam sclerotherapy. Their ages ranged from 17 to 68 years with the mean ageof43.21years.Sixhundredandsixty-eight(88.82%)legswerehavingGreatSaphenous Vein while 84 (11.17%) legs were having short saphenous vein disease.Maximumlegs 256 (34.04%) had C3 disease.[9]

The venousclinicalseverity scoring was assessed among all the patients, atthe initiation of the treatment and at of 1styr of treatment follow-up. The scoringsystem involved different variables and the scoring was 0 for minimum and 3 asmaximumscoreshowingthehighestseverity.Attheinitialperiodoftreatment,the

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

pain score was maximum among 5 patients (16.1%), varicose veins was confined tocalf or thigh in 23patients (74.2%), Venous oedema was seen above ankle but belowknee in 8 patients (25.8%), pigmentation as diffuse over lower third of calf in 4patients (12.9%), inflammation as diffuse over lower third of calf in 3patients (9.7%),indurations in peri malleolar area in 3 patients (9.7%), active ulcer duration of morethan 3 months was seen in 2 patients (6.5%), the active ulcer size was seen to be 2-6cm in 2 patients (6.5%) and use of compression stockings was used on most of daysin 5 patients(16.1%).On assessment of the mean total score at admission, it wasfound to be 5.61±4.28. On follow up of patients at the 1st year, the mean score wasfound to be 0.16+/-0.37, with no venous clinical severity symptoms. In study byYilmaz S et al., followed up clinically and with colour Doppler ultrasound at 1, 6, and12 months. ELA was technically successful in all cases, although another venouspuncturewasnecessaryin29legs.ConcomitantUSGFSwasalsotechnicallysuccessfulinallcases,butonetothreeadditionalsclerotherapysessionswereperformedin203legswithpersistentvaricosities.Duringthefollow-up,recanalization of the laser-ablated refluxing veins occurred in 16 legs (1.7%) and wastreated with repeat ELA or USGFS.[10] In study by Gafar AT et al., documented similartopresentstudythatTwenty-five(50%)patientsreporteddeformity,30(60%)patients reported pain, 30 (60%) patients reported heaviness, and 35 (70%) patientsreported oedema. Pain at injection sites was reported in 32 (64 percent) of patients,itchinginfour(8percent),ecchymosisin18(36percent),andsuperficialthrombophlebitis in eight (16 percent). In the treatment of primary varicose veins,foamsclerotherapy is safe, effective,and lessdifficult.[11]

Kharl RAK et al., documented that single session of Foam sclerotherapy wasenough in 511 (67.95%) legs, while 197 (26.19%) legs were treated with two and 44(5.85%) legs were treated with three sessions of foam sclerotherapy. Percentages ofmain trunk occlusion were 98.01% at 1 month while 97.39% at 3 months follow up.Only 2 (0.30%) patients had Deep Venous Thrombosis while 3 (0.45%) patients hadthrombophlebitiswhich required surgery.[9]

In study by Darvall et al., documented Recanalization at 12 months is superiorto that reported after surgery and similar to that observed following other minimallyinvasivetechniques.[12] InstudybyKumickiJetal.,among96percentofsubjects,

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

symptoms of chronic venous insufficiency were reduced or eliminated (50 patients).Allpatientsexperiencedthedisappearanceorreductionofvaricoseveins(100percent). According to Tegernsee's consensus, full success of ultrasonography wasobtained in 38 (73 percent) instances after 12 months, while 11 (21 percent) patientsshowed a partial desired result. In three (6%) cases, reflux lasted longer than onesecondin thetreated great saphenous vein.[13]

Presentstudydocumentednoadverse effectswiththe treatmentprocedurewith better safety for the patients. Major complication documented in 1.4% of thetreated legs and included skin necrosis and calf vein thrombosis in study by Yilmaz Set al.,[10] and main trunk occlusion were 98.01% at 1 month while 97.39% at 3 monthsfollow up. Only 2 (0.30%) patients had Deep Venous Thrombosis while 3 (0.45%)patients had thrombophlebitis which required surgery in study by Kharl RAK et al.[9]In addition to present study, Satoshi W et al., concluded in their study that TLFScombined with EVLA may be an easy, safe, and effective procedure with acceptablecomplicationsvs.EVLA aloneandreducesadditional secondstageinterventions.[14]

Maurya AK et al., documented early complications included: superficial skinnecrosis in 4 legs (2.70%), pain at injection sites in 21 legs (14.18%), superficialthrombophlebitis in injected veins in 21 legs (14.18%), bruising in 18 legs (12.16%),superficial vein thrombosis in 10 legs (6.75%), and skin staining around injected veinsin 13 legs (8.78 percent).[15] Early effects included: superficial skin necrosis in 7 legs(3.78%),discomfortatinjectionsitesin27legs(14.59%),superficialthrombophlebitis in the injected vein in 23 legs (12.43%), and skin discolorationsurrounding injected veins in 16 legs (8.64 percent). In conclusion, UGFS is a safe,simple,and useful procedureforindividuals withvaricoseveins.[16]

Similar to present study, Kumicki J et al., concluded that during a one-yearstudy,ultrasound-guidedfoamsclerotherapyofincompetentgreatsaphenousveinsand varicosities was proven to be an effective and safe therapeutic approach.[13] Thesafety and clinical effectiveness of UGFS were excellent for all clinical, aetiological,anatomical,andpathologicalelementsclassesofGSVreflux.Inconclusion,thepopularityofthisoutpatientapproachamongpatientsmaybeattributedtotheconvenience of treatment, cheaper cost, absence of downtime, and removal of venousindicationsand symptoms.

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

CONCLUSION

The current study unequivocally highlights the pronounced efficacy of foam sclerotherapy in alleviating symptomatic manifestations such as pain and venous oedema, as well as in reducing pigmentation in the lower limbs attributed to varicose veins. Remarkably, this treatment modality not only accelerates the healing process of venous ulcers but also enables patients to resume their occupational responsibilities more rapidly, coupled with reduced hospitalization durations. Furthermore, the absence of complications within our study cohort underscores the safety and simplicity of foam sclerotherapy, positioning it as a cost-effective intervention that facilitates substantial improvements in symptom management and ulcer healing.

REFERENCES

1. Smith PC. Pathophysiology of varicose veins. Journal of Vascular Surgery. 2010;51(5):53-61.
2. Gloviczki P, Comerota AJ, Dalsing MC, et al. The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. Journal of Vascular Surgery. 2011;53(5 Suppl):2S-48S.
3. Shingler S, Robertson L, Boghossian S, Stewart M. Social and psychological impact of limited cutaneous systemic sclerosis in the UK population: how different are the experiences of those with systemic sclerosis to those with other chronic illnesses?. Clin Rheumatol. 2013;32(7):975-83.
4. Carradice D, Mekako AI, Mazari FA, Samuel N, Hatfield J, Chetter IC. Randomized clinical trial of endovenous laser ablation compared with conventional surgery for great saphenous varicose veins. Br J Surg. 2011;98(4):501-510.

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

5. Rasmussen LH, Lawaetz M, Bjoern L, Vennits B, Blemings A, Eklof B. Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy and surgical stripping for great saphenous varicose veins. Br J Surg. 2011;98(8):1079-1087.
6. Vasquez MA, Rabe E, McLafferty RB, et al. Revision of the venous clinical severity score: venous outcomes consensus statement: special communication of the American Venous Forum Ad Hoc Outcomes Working Group. J Vasc Surg. 2010;52(5):1387-1396.
7. Nordon IM, Hinchliffe RJ, Brar R, Moxey P, Black SA, Thompson MM. A prospective double-blind randomized controlled trial of radiofrequency versus laser treatment of the great saphenous vein in patients with varicose veins. Ann Surg. 2011;254(6):876-881.
8. Brittenden J, Cotton SC, Elders A, et al. A randomized trial comparing treatments for varicose veins. N Engl J Med. 2014;371(13):1218-1227.
9. Yilmaz S, Ceken K, Alparslan A, Durmaz S, Sindel T. Endovenous Laser Ablation and Concomitant Foam Sclerotherapy: Experience in 504 Patients. Cardiovasc InterventRadiol. 2012;35(6):1403–7.
10. Darvall KAL, Bate GR, Adam DJ, Silverman SH, Bradbury AW. Duplex ultrasound outcomes following ultrasound-guided foam sclerotherapy of symptomatic recurrent great saphenous varicose veins. Eur J VascEndovasc Surg. 2011;42(1):107–14.
11. Neto FC, de Araújo G, Kessler IM, de Amorim RFB, Falcão DP. Treatment of severe chronic venous insufficiency with ultrasound-guided foam sclerotherapy: A two-year series in a single center in Brazil. Phlebol J Venous Dis. 2015;30(2):113–8.
12. Watanabe S, Nishio S, Tsuji T, Fujita S, Kyo E. Effect of Transluminal Injection of Foam Sclerotherapy Combined with Endovenous Thermal Ablation of Varicose

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

Veins. EJVES Vasc forum. 2020;47:83–6.

13. Chapman-Smith P, Browne A. Prospective five-year study of ultrasound- guided foam sclerotherapy in the treatment of great saphenous vein reflux. Phlebology. 2009;24(4):183–8.
14. Kurnicki J, Osęka M, Tworus R, Gałązka Z. Ultrasound-guided foam sclerotherapy of great saphenous vein with 2% polidocanol - one-year follow- up results. Wideochirurgiaiinne Tech maloinwazyjne = Videosurgery other miniinvasive Tech. 2016;11(2):67–75.
15. Singh M, Kola A, Katyayan I, Manwatkar S. Outcome Following Ultrasound Guided Foam Sclerotherapy Treatment for Varicose Veins in a Tertiary Care Centre. Int J Contemp Med Surg Radiol. 2018;3(4):82–7.
16. Gafar A, Omran W, Alkhateep Y, Albatanony A. Evaluation of foam sclerotherapy in treatment of lower limbs: primary varicose veins. Menoufia Med J. 2019;32(4):1234–8.