Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/17240
DOI URL: http://dx.doi.org/10.21474/IJAR01/17240

RESEARCH ARTICLE

COMPARISON OF FOAM SCLEROTHERAPY AUGMENTED PHLEBECTOMY VERSUS AMBULATORY PHLEBECTOMY IN THE MANAGEMENT OF ISOLATED BELOW KNEE INCOMPETENT PERFORATORS

Dr. Balaji V.P, Dr. Preetham Raj G., Dr. Karthik I. Guttedar, Dr. Saravanan K. and Dr. Ramesh S.K

Manuscript Info

Manuscript History
Received: 10 May 2023
Final Accepted: 14 June 2023
Published: July 2023

Key words:-
Ambulatory Phlebectomy, Foam Sclerotherapy Augmented Phlebectomy, Revised Venous Clinical Severity Scoring System

Abstract

Background & Objectives: Among the patients who underwent Foam Sclerotherapy Augmented Phlebectomy (FSAP) and Ambulatory Phlebectomy (AP)

a) To determine the number(proportion) patient seeking for post operative pain (greater than 3 according to visual analog scale in 1 months of procedure)
b) To determine median number of days to resume normal activities
c) To assess the healing of venous ulcer using CEAP classification and revised venous clinical severity scoring system.
d) To identify any recurrence at the same site of Earlier Phlebectomy (FSAP or AP) using duplex scan after 6 months of procedure

Methods: Patients satisfying inclusion criteria are enrolled within 24 hrs of admission afterinformed consent. All the patients with isolated below knee perforator incompetence will be evaluated with through clinical examination, radiological and laboratory investigations. Those who require surgery will be admitted and appropriate surgery will be performed and analyzed for in term of post operative pain, operative time, hospital stay, number of days to resume normal activities, healing of venous ulcer, recurrence.

Results: Majority of patients belonged to the age group 41- 50 years. M: F is66% males and 34% females. number of days to resume normal activities by the patient mean days among FASP group 9.4% and AP group is 12.8%Post Procedure VAS pain score in 1 month among study participants mean vas score among Foam Sclerotherapy Augmented Phlebectomy 4.5% and Ambulatory Phlebectomy 5.1%length of hospital study in FSAP group mean 5.1% and in AP group 5.3%, Recurrence among the patients underwent FSAP group 4.7% and in AP group 14.5%.

Interpretation & Conclusion:FSAP is associated with less post operative pain, shorter duration pf hospital stays and a quicker recovery, shorter duration of surgery, earlier return to work and not associated with major postoperative complications. There is less recurrence in FSAP compared with AP in the follow up period of six months.

Corresponding Author:- Dr. Balaji V.P
Address:- Senior Resident, Department of General Surgery, ESIC Medical College and Post Graduate Institute of Medical Science and Research, Rajajinagar, Bengaluru.

Introduction:-

The most common manifestation of chronic venous insufficiency (CVI) worldwide is varicose veins. The prevalence of CVI varies from <1 to 40%in females and from <1 to 17%in males [1]. The prevalence for varicose veins is higher and ranges from <1 to 73 % in females and from 2 to 56 % in males [1]. Isolated perforator incompetence prevalence has been reported in various literatures to range between 2 %o 8.4 % of limbs with skin changes.[2,3] However, in our hospital varicosities of lower limb cases are quite higher due their nature of job.There have been significant advances in the treatment of superficial venous reflux in recent years, with endo venous modalities replacing traditional stripping operations.[4] However, the management of tortuous varicosities has remained largely unchanged for decades. Perforators are those which connect the superficial and deep veins through the muscular and soleal venous plexus.Ambulatory phlebectomy (AP) using a vein hook to remove varicose veins through micro-incisions was pioneered by Robert Muller in 1956.[5] While traditional ambulatory phlebectomy (AP) is a safe and effective procedure, few adverse effects such as hematoma, bleeding, bruising and nerve injury have been reported. To improve AP and to reduce some of these adverse events, Foam Sclerotherapy (FS)has become increasingly popular for treatment of varicosities. A novel technique Foam sclerotherapy augmented phlebectomy (FSAP) increases precision and creates additional veno spasm leading to reduced bruising, reduced nerve injury and sclerosis of residual vein segment."We hypothesize that ligation of isolated below knee perforators by foam sclerotherapy augmented phlebectomy may be feasible and may prevent from recurrence, as it further strengthens the effect of FSAP and minimizes the risk of recanalization of the treated isolated perforators. Both clinical and experimental trials demonstrate that foam sclerotherapy augmented phlebectomy is better than ambulatory phlebectomy"

Objectives Of The Study:-

Among the patients who underwent Foam Sclerotherapy Augmented Phlebectomy (FSAP) and Ambulatory Phlebectomy (AP)

1. To determine the number(proportion) patient seeking for post operative pain (greater than 3 according to visual analog scale in 1 months of procedure)
2. To determine median number of days to resume normal activities
3. To assess the healing of venous ulcer using CEAP classification and revised venous clinical severity scoring system.
4. To identify any recurrence at the same site of Earlier Phlebectomy (FSAP or AP) using duplex scan after 6 months of procedure.

Methodology-

Type Of Study:

Prospective study, Comparative analytical study.

Source Of Data:

The study was conducted in Dept. Of General Surgery, ESIC MC PGIMSR, Rajajinagar, Bangalore. Ethical clearance from the institute was obtained prior to commencement of the study.

Sample Size:

A minimum of 96 will be collected.

Study Period:

From January 2020 to June 2021

Inclusion Criteria:

1 Duplex scan showing isolated below knee incompetent perforators with competent sapheno femoral, sapheno popliteal junction with deep veins being normal.
2 All cases of varicose veins showing only below knee perforators incompetence with or without venous ulcer
3 Patient who are willing to enroll for the study and willing for written consent and regular follow up.

Exclusion Criteria:

1. Prior history of deep vein thrombosis
2. Allergic to sclerosants
3. Associated arterial and neuropathic problems
4. Pregnant and lactating women

5. Prior history of trauma
6 . Impaired renal functions

Methods:-

Patients with varicosities of isolated perforator incompetence in all the surgery units are taken into the study.A written valid informed consent from the subject will be taken.Detailed history and physical examination will form the basis of the study, findings are recorded using standard proforma and will be randomized in to two groups GROUP 1(AMBULATORY PHLEBECTOMY) and GROUP 2 (FOAM SCLEROTHERAPHY AGUMENTED PHLBECTOMY) group. The patient will be randomly allocated to (AMBULATORY PHLBECTOMY) and (FOAM SCLEROTHERAPHY AGUMENTED PHLBECTOMY) group by computer generated randomization.

Preoperative Preparation

Revised Clinical Etiology Anatomy Pathophysiology (CEAP) assessment to be done.Location of varicosities, presence or absence of skin pigmentation, oedema, dermatitis ,ulceration, venous eczema and lipodermatosclerosis to be documented .A duplex study to be carried out to assess extent of varicosities like presence or absence of saphenofemoral and saphenopopliteal incompetence, isolated perforator incompetence and deep veins.Routine blood investigations such as CBC, RFT, COAGULATION PROFILE, BLEEDING AND CLOTTING TIME, SREOLOGY, SERUM ELECTROLYTES.CHEST XRAY AND ELECTROCARDIOGRAPHY

Pre-operative procedure planning

Ultrasound is used to identify the pathological target veins and one to three access sites are identified 10 cm apart for intravenous access. The vein is accessed under ultrasound guidance with a micro puncture needle or butterfly. A small volume (<5 mL) of 0.25e0.5% foam sclerosant (polidocanol or sodium tetradecyl sulphate) prepared in a 1:4 ratio using room air (Tessari technique) is injected into the vein and dispersed throughout the network of target varices using the ultrasound probe.

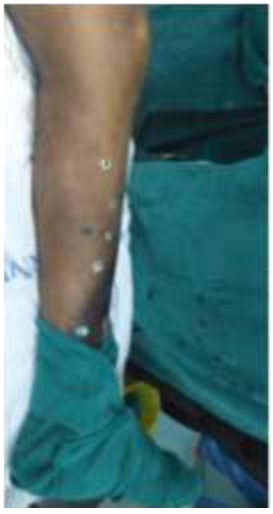

Fig 1:- Pre-Operative

Local (tumescent) anesthesia infiltration

Tumescence solution (a combination of normal saline, epinephrine, and bicarbonate as per local policy) is injected into the perivenous space under ultrasound guidance until the hyperechoic veinare surrounded by the tumescent solution.

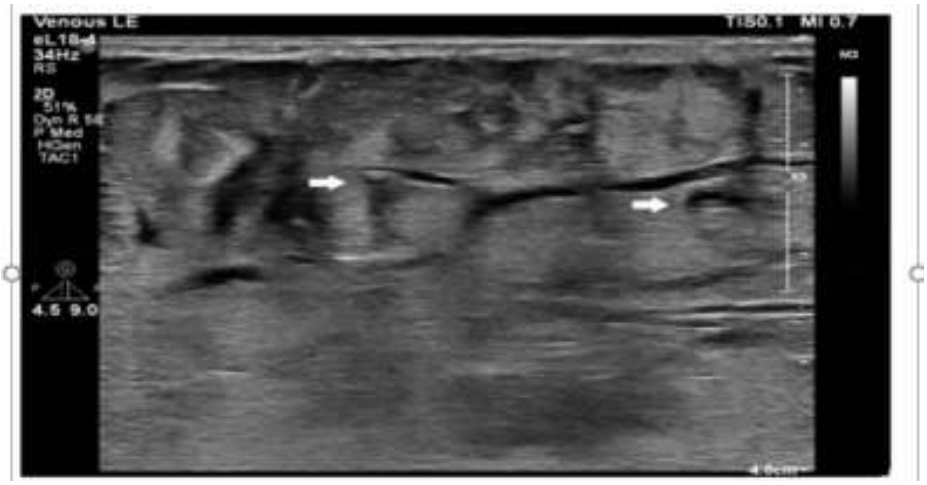

Fig2:- Veins With Tumescent Anesthesia.

FIG 3:-Doppler Identification Of Target Veins.

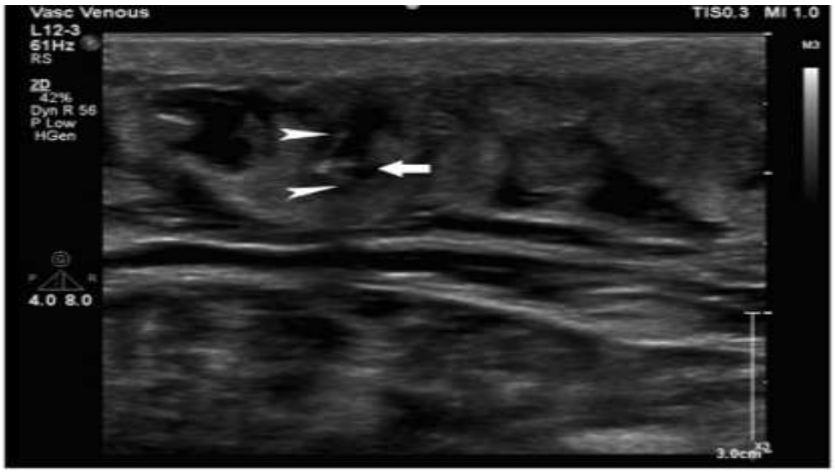

Fig 4:-Hyperechoic Veins (Arrow Heads) Hooked By Thephlebectomy Hook.

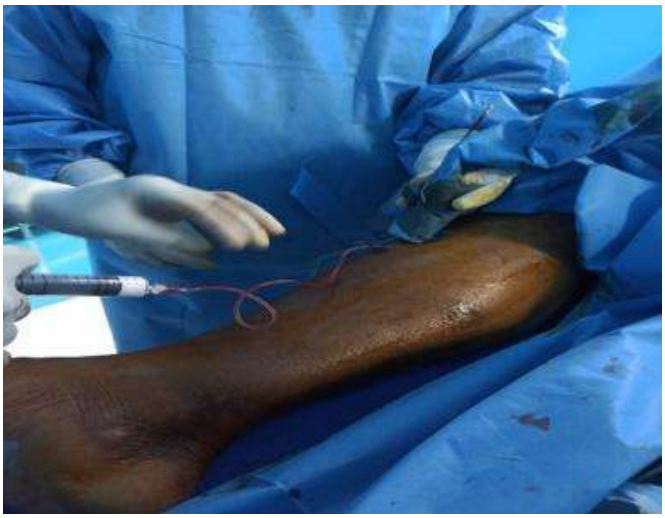

Fig 5:- Target Veins Traeted By Foam Scleraotheraphy.

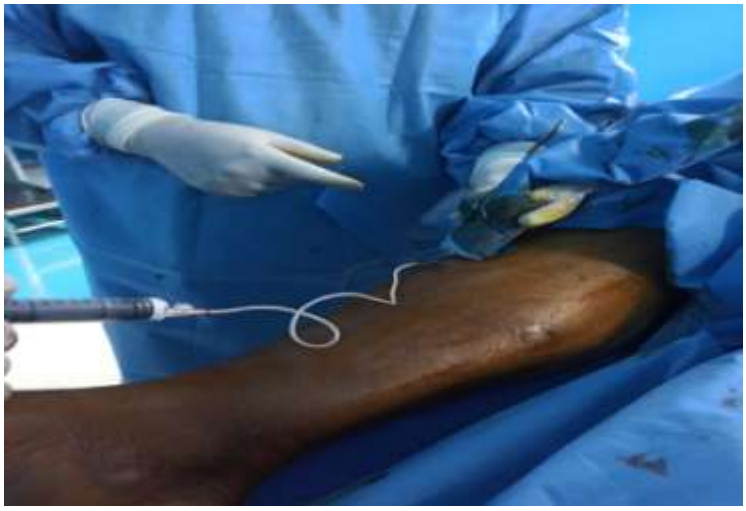

Fig 6:- Injecting Foam Sclerotheraphy.

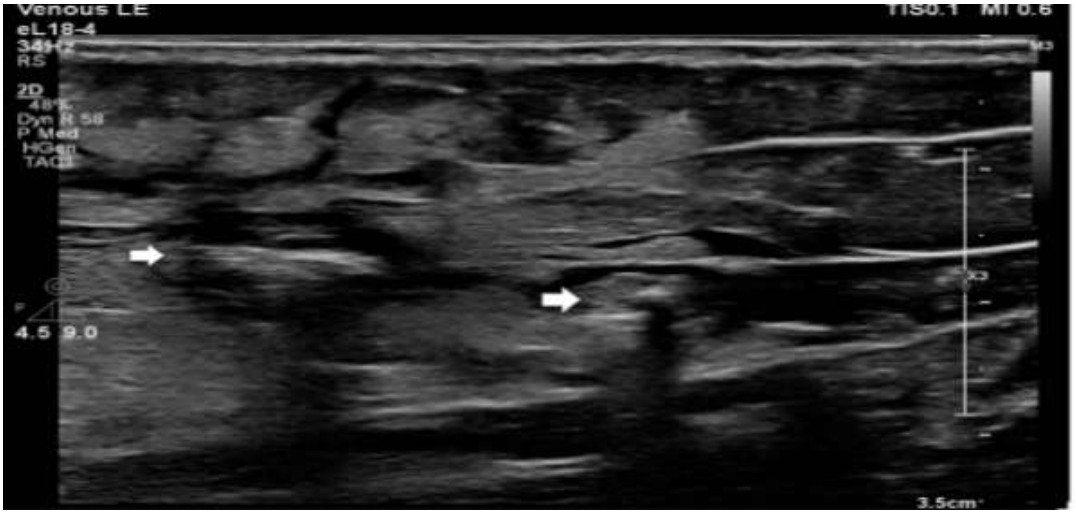

Fig 7:-Hyperechoic Veins After Foam Sclerotherphy Clearly Demarcated (arrows) From Surronding Tissues Despite The Tumescent Anaesthesia.

No surface marking is required. Ideal access sites are localized using ultrasound and sterile gel. A #11 blade is used to make a small incision directly overlying the hyperechoic vein. The vein hook is then inserted into the incision. The "hooking" of the hyperechoic vein and exteriorization of the vein is clearly visualized under ultrasound and once the vein is exteriorized, the remainder of the procedure is similar to traditional AP. Each further step of incision and hooking the vein is done under ultrasound guidance, until the entire target vein (or as much as possible) is exteriorized. Bleeding and bruising are minimized by venous spasm induced by a combination of foam sclerosant injection and tumescent anesthesia (containing epinephrine).

Adjunctive sclerotherapy
Smaller target veins are treated by ultrasound guided foam sclerotherapy in the same session.

Post-procedural care
Incisions may be covered with wound glue or steristrips, if needed. Primary suturing is not usually necessary as incision are 1 to 3 mm and blood loss is minimal because of venospasm. A compression dressing or bandage is applied to include all the micro-incisions.

Ambulatory phlebectomy
Under local anesthesia (2 % lignocaine) After tumescent anesthesia, (Klein's tumescent solution prepared with 1-liter normal saline mixed with 50 ml of 1 % lignocaine, 1 ml of 1:1000 epinephrine, and 10 ml of 8.4 % sodium bicarbonate) had been injected into the perivenous tissues, a micro-incision or puncture was made near the vein with the number 11 blade.Most incisions were oriented vertically, except around the knee, where stab incisions were made along Langer's lines. Using gentle traction, successive hemostats were applied to the varix end and longer vein segments were excised. Another incision was made at an equivalent distance, and the procedure was repeated. Perforating veins were recognized as branches in the vein, often with an orientation perpendicular to the skin and associated with a deep pulling sensation by the patient. The puncture sites were covered with adhesive strips, sterile dressings, and wrapped with soft gauze rolls and stretch bandages.

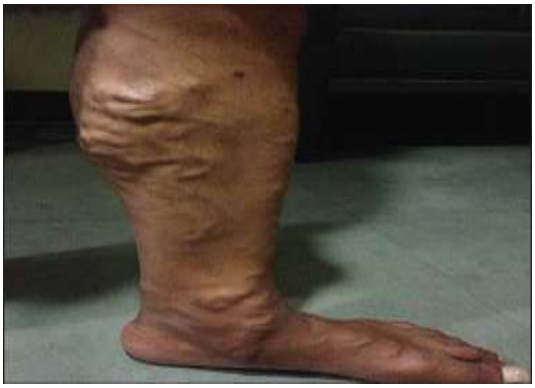

Fig 8:- Preoperative Picture.

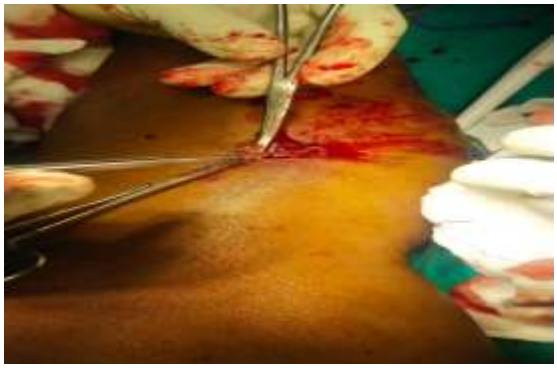

Fig 9:-Hooks Delivering The Target Vein Above To The Skin Surface.

Fig 10:-hooked vein is clamped both proximally and distally.

Fig 11:-Transection Of Vein With Traction With Clamp And Opitional Ligation Of Vein.

Results:-

Table 1:- Age Distribution of the study participants.

Age	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
20-30	8	16.7	9	18.8	0.07
30-40	13	27.1	19	39.6	
40-50	18	37.5	14	29.2	
50-60	6	12.5	3	6.3	
>60	3	6.3	3	6.3	
Mean Age	44.6±7.4		43.1±5.7		0.84

Chi Square Test, Independent t test, Sig. 2 tailed, p<0.05

Table 2:- Gender Distribution of the study participants.

	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
Male	32	66.7	29	60.4	0.442
Female	16	33.3	19	39.6	

Chi Square Test, Sig. 2 tailed, p<0.05

Table 3:- Time of operation among the study participants.

Time of operation	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
05-15 mins	21	43.75	0	0	**0.004**
15-30 mins	27	56.25	2	4.17	
31-45 mins	1	2.08	38	79.17	
>45 mins	0	0	8	16.67	
Mean	46.42±5.4		40±6.4		

Chi Square Test, Independent t test, Sig. 2 tailed, p<0.05

Table 4:- Clinical Manifestations among the study participants.

Clinical Manifestations	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	P-value
Dilated Veins	21	43.75	20	41.67	0.551
Telangiectasia or reticular veins	4	8.33	6	12.50	
Edema without skin changes	10	20.83	9	18.75	
Skin changes ascribed to venous disease	5	10.42	6	12.50	
Ulcers	8	16.67	7	14.58	

Chi Square Test, Sig. 2 tailed, p<0.05

Table 5:- Post-procedure Condition/ complications among study participants.

Post-procedure Condition	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
Pain	39	81.25	33	68.75	0.08
Transient skin pigmentation	14	29.17	11	22.92	
Superficial thrombophlebitis	11	22.92	8	16.67	
Transient loss of sensation	1	2.08	6	12.50	
Bleeding	1	2.08	3	6.25	

Chi Square Test, Sig. 2 tailed, p<0.05

Table 6:- Post Procedure VAS pain score in 1 month among study participants.

VAS pain score in 1 month	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
0 to 3	36	75.00	21	43.75	
4 to 6	10	20.83	25	52.08	
7 to 9	2	4.17	2	4.17	**<0.001**
Mean	4.5±2.1		5.1±2.7		**0.007**

Chi Square Test, Independent t test, Sig. 2 tailed, p<0.05

Table 7:- Hematoma Formation among the study participants.

Hematoma Formation	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
Yes	0	0	4	8.33	**0.0012**
No	48	100	44	91.67	

Chi Square Test, Sig. 2 tailed, p<0.05

Table 8:- Wound Infection among the study participants.

Wound Infection	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
Yes	4	8.33	11	22.92	0.003
No	44	91.67	37	77.08	

Chi Square Test, Sig. 2 tailed, p<0.05

Table 9:- Scar/ Pigmentation among the study participants.

Scar/ Pigmentation	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
Yes	7	14.58	21	43.75	**0.012**
No	43	89.58	27	56.25	

Chi Square Test, Sig. 2 tailed, p<0.05

Table 10:- Number of days to resume normal activities among the study participants.

Number of days to resume normal activities	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	p-value
<7 Days	29	60.42	12	25.00	0.041
≥7 Days	19	39.58	36	75.00	
Mean Days	9.41±2.4		12.81±4.33		0.009
Median Days	8.5 (5.5-12.7)		10.3(6.8-14.9)		

Chi Square Test, Independent t test, Sig. 2 tailed, p<0.05

Table 11:- Venous clinical Severity scores among study participants wise.

Venous Clinical Severity Scores	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	Total	Percent
1	1	2.08	1	2.08	2	2.04
2	2	4.17	3	6.25	5	5.10
3	1	2.08	2	4.17	3	3.06
4	2	4.17	2	4.17	4	4.08
5	1	2.08	1	2.08	2	2.04
6	2	4.17	1	2.08	3	3.06
7	1	2.08	1	2.08	2	2.04
8	3	6.25	2	4.17	5	5.10

9	2	4.17	1	2.08	3	3.06
10	1	2.08	1	2.08	2	2.04
11	1	2.08	2	4.17	3	3.06
12	2	4.17	1	2.08	3	3.06
13	2	4.17	2	4.17	4	4.08
14	2	4.17	2	4.17	4	4.08
15	1	2.08	2	4.17	3	3.06
16	1	2.08	2	4.17	3	3.06
17	2	4.17	2	4.17	4	4.08
18	1	2.08	1	2.08	2	2.04
19	2	4.17	1	2.08	3	3.06
20	2	4.17	1	2.08	3	3.06
21	1	2.08	2	4.17	3	3.06
22	1	2.08	2	4.17	3	3.06
23	2	4.17	2	4.17	4	4.08
24	1	2.08	1	2.08	2	2.04
25	2	4.17	2	4.17	4	4.08
26	2	4.17	1	2.08	3	3.06
27	1	2.08	1	2.08	2	2.04
28	2	4.17	1	2.08	3	3.06
29	2	4.17	4	8.33	6	6.12
30	2	4.17	1	2.08	3	3.06

Table 12:-Range of VCSS among study participants.

Range VCSS	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	Total	Percent
0 to 5	7	14.58	9	18.75	16	16.33
6 to 10	9	18.75	6	12.50	15	15.31
11 to 15	8	16.67	9	18.75	17	17.35
16 to 20	8	16.67	7	14.58	15	15.31
21 to 25	7	14.58	9	18.75	16	16.33
26 to 30	9	18.75	8	16.67	17	17.35

Table 13:-Length of Hospital stay among study participants.

Length of Hospital stay	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	Total	Percent
1 to 3 days	3	6.25	2	4.17	5	5.21
4 to 6 days	39	81.25	41	85.42	80	83.33
>6 days	6	12.50	5	10.42	11	11.46
Mean	5.1±2.4		5.3±1.7		5.5±2.0	

Table 14:-Recurrence among study participants.

Recurrence	Foam Sclerotherapy Augmented Phlebectomy	Percent	Ambulatory Phlebectomy	Percent	Total	Percent
Yes	2	4.17	7	14.58	9	9.38
No	46	95.83	41	85.42	87	90.63

Discussion:-

Ours was a Prospective Comparative analytical study with clinical outcomes of Foam Sclerotherapy Augmented Phlebectomy versus Ambulatory Phlebectomy in the Management of Isolated Below Knee Incompetent Perforators"- addressing the incompetent perforators in leg, with a study population of 96 patients. Duplex scan was used to confirm the perforator vein incompetence of whom majority of the population belonged to CEAP classification of 4, 5 and 6.

Mean age of patients presented in our study were in the range of 44 .6 years with 66% males and 34% females included in our study. A study conducted by M.G.Vashist and Nitin Singhal[21] in Indian journal of surgery in 2014 also showed similar figures. Another study reported by Belramman A et al[22]showed reported 31% males and 69% females. R Kishore et al the most commonly affected age group was 31–40 years with a mean age of 36 years. The prevalence of isolated perforator incompetence was found to be more common in males than in females in the vicinity of this study.

The reason for male predominance is our study could be because more number of males working in ESI corporation majority belonging to working class with long hours of standing.

Our study also showed that majority of our patient were in the age group of <50 years (84.3%) and rest were above the age of 50years (15.6%). A study published in 2016 in Indian journal of surgery also observed age group of 40-50yrs with a mean of 44 years, which was similar to our study.

The diagnosis of varicose vein associated comorbidities in our study group was negligent with hypertension being the most common. About 25% of our study group had secondary skin changes but only 11% had overlying ulcer.

Among the presenting primary symptoms, dilated veins were the most common in % (n = 41/96) of the patients. Other presenting symptoms were distributed in this manner: Telangiectasia or reticular veins (n=10/96) Oedema without skin changes (n = 19/96); Skin changes ascribed to venous disease (n = 11/96); ulcer (n = 15/96Among the both groups time of operation among study participants in Foam Sclerotherapy Augmented Phlebectomy is 46.4% and in Ambulatory Phlebectomy is 40.6% In our study Post Procedure VAS pain score in 1 month among study participants mean vas score among Foam Sclerotherapy Augmented Phlebectomy 4.5% and Ambulatory Phlebectomy 5.1%Post procedural complications like Transient skin pigmentation, Superficial thrombophlebitis, Transient loss of sensation, Bleeding is 29.1%,22.9%, 2.08%, 2.08% respectively in Foam Sclerotherapy Augmented Phlebectomy and in Ambulatory Phlebectomy is 22.9%,16.6%,12.5%,6.2% respectively.Post procedural hematoma formation no patients developed hematoma in Foam Sclerotherapy Augmented Phlebectomy and in Ambulatory Phlebectomy is 8.33%. In our study wound infection reported about n=15/96 and scar and pigmentation after post procedure is n=28/96 In our study number of days to resume normal activities by the patient mean days among FASP group 9.4% and AP group is 12.8%Range of venous clinical severity scoring system a greater number of patients over range of 11-20.In our study length of hospital study in FSAP group mean 5.1% and in AP group 5.3%,Recurrence among the patients underwent FSAP group 4.7% and in AP group 14.5%.Zafarghandi MR et al[18] Postoperative pain was significantly lower in foam sclerotherapy group by VAS (P = 0.003). There was a significant difference in the morbidity rate between the two techniques (13.3%. in foam sclerotherapy, 37.8% in ambulatory phlebectomy, P = 0.008). The main predictors of the pain incidence included ambulatory phlebectomy, female gender, and advanced age. Satisfaction was significantly higher in foam sclerotherapy group (P = 0.024). Also, this group had shorter time to return to work (P < 0.001).DeRoos et al, in 2003,they found that the recurrence rate at 1 year following sclerotherapy was 25% compared to 2.1% in the phlebectomy group. After 2 years, the recurrence rate was 37.5% in the sclerotherapy group. However study, considered only the lateral anterior vein and used a liquid sclerosant rather a foam sclerosant, so that these results cannot be generalized to tributaries treated after truncal vein ablation using FS.[6]T,yamaki, in 2011, conducted visual foam sclerotherapy alone or ultrasound guided foam sclerotherapy for treatment of superficial venous insufficiency. The study consists of 97 patients total of 51 limbs in 48 patients were treated with UGFS + VFS, and 52 limbs in 49 patients were treated with VFS alone. Finally, study indicate that UGFS + VFS and VFS alone have equivalent efficacy in the treatment of GSV reflux.[7]R. Kishore, in 2015, conducted between ambulatory phlebectomy and foam sclerotherapy total patient for study 428 patients, primary symptom of the patient for the medical attention was relieved in 78 % of the patients in the phlebectomy group, only 51 % of the patients in foam sclerotherapy were relieved from their presenting symptoms.In conclusion, the interruption of perforators is effective in decreasing the symptoms of chronic venous insufficiency and for the rapid healing of ulcers. From this study that ambulatory phlebectomy serves as alternative to foam sclerotherapy in treating patients with isolated perforator incompetence.[8]Raghu Kolluri et al in 2018, few adverse effects such as hematoma, bleeding, bruising and nerve injury have been reported. To improve AP and to reduce some of these adverse events, herein we report a novel technique Foam Sclerotherapy Augmented Phlebectomy (FSAP). Foam sclerotherapy and DUS act as valuable adjuncts to traditional AP. SAP increases precision and creates additional veno spasm leading to reduced bruising, reduced nerve injury and sclerosis of residual vein segment.[9]

Table 15:- Comparison between studies.

	Zafarghandi MR et al [18] (2017) (FS)	(AP)	R. Kishore et al [17] (2018) (FASP)	(AP)	Belramman et al [19] (2019) (FS)	(AP)	Our Study (FASP)	(AP)
Wound infection	3%	7%	5.3%	4%	16%	21%	8.3%	22.8%
Nerve Injury	8.5%	5%	11%	15%	4%	11%	2.08%	12.5%
Number of days to resume normal activities < 7 days	54.5%	23%	61%	35 %	66.4%	35.4%	60.42%	25.00%
Recurrence	18%	28%	5.8%%	12%	8%	16.8%	4.17%	14.58%

Conclusion:-

On day-to-day basis in the outpatient department, we come across a lot of patients diagnosed with varicose veins with or without skin changes and associated chronic venous ulcers both newly diagnosed and the ones on a long term follow up. After the initial diagnosis the first preference is usually conservative line of management. Though the venous ulcers can be managed by bed rest and limb elevation which lead to its healing, but due to either patient factor or disease coarse by itself leads to lack of adherence to the compression stockings or long-term ingestion of venotonic medications, causing significant morbidity and decreased quality of life for the patients.The open technique of exploration of the subfascial plane for ligation of incompetent perforating veins leads to delayed wound healing, wound infection and recurrence.Hence a less invasive approach like the Foam sclerotherapy Ambulatory phlebectomy should be preferred over the classical operation as these have an advantage of minimal post-operative pain with early active mobilization. Foam sclerotherapy Ambulatory phlebectomy surgery is a safe and effective method for treating incompetent perforating veins.In a tertiary care Centre this procedure of Foam sclerotherapy Ambulatory phlebectomy surgery can be performed with available ultrasound instruments and apparatus.Foam sclerotherapy Ambulatory phlebectomy not only reduces the post-operative sequelae but also requires small skin incisions. These Foam sclerotherapy Ambulatory phlebectomy in patients with venous ulcers results in fewer incidences of wound complications and healing of wound.The number of perforators treated in Foam sclerotherapy Ambulatory phlebectomy was more as compared to Ambulatory phlebectomy group. This technique can also be utilized to perform ligation of the incompetent perforating veins in patients with lipodermatosclerosis and active ulcers to identify and ligate the perforators beneath the ulcer site which thus helps in ulcer healing and prevent ulcer recurrencesHence, Foam sclerotherapy Ambulatory phlebectomy should be added to varicose vein surgery for the management of incompetent perforators to reduce long-term recurrences and better immediate wound healing, lower complications, higher patient satisfaction and earlier returning to the work.

References:-

1. Beebe-Dimmer JL, Pfeifer JR, Engle JS, Schottenfeld D. The epidemiology of chronic venous insufficiency and varicose veins. Ann of epidemiol. 2005;15(3):175-84.
2. Lees TA, Trender H . Chronic limb swelling vascular and endovascular surgery: companion to specialist surgical practice, 5th edn, Saunders Elsevier, UK, pp.2014, 317–318.
3. Bergan JJ, Bundens WP. Clinical application of objective testing in venous insufficiency. Haimovici's Vascular Surg 2004 :1045-57.
4. Gloviczki P, Comerota AJ, Dalsing MC, Eklof BG, Gillespie DL, Gloviczki ML et al. The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the Society for Vascular Surg and the Am J of vascular surg. 2011 ;53(5):2S-48S.
5. Muller R. Esthetics in phlebology. Phlebologie. 1985;38(4):673-6
6. Douglas WS, Simpson NB. Guidelines for the management of chronic venous leg ulceration. Report of a multidisciplinary workshop. Br J Dermatology 1995; 132: 446-52.
7. Bobek K, Cajzl L, Capelak V, Slaisova V, Opatzny K, Barcal R. Etude de frequence des maladies phlebologiques et de I' influence de quelquesfacteursetiologiques. Phtebologie 1966; 19: 217-30.
8. Nelzen 0, Bergqvist D, Lindhagen A. The prevalence of chronic lower-limb ulceration has been underestimated: results of a validated population questionnaire. Br J Surg 1996, 83: 255-8. Vi
9. Callam MJ, Harper DR, Dale n, Ruckley CV. Chronic ulcer of the leg: clinical history. BMJ 1987; 294: 1389-91

10. BAKER SR, STACEYM C, JoPP-McKAY AG, HOSKIN SE~ THOMPSON PJ. Epidemiology of chronic venous ulcers. Br] Surg 1991; 78: 864-
11. De Roos KP, Nieman FH, Neumann HM. Ambulatory phlebectomy versus compression sclerotherapy: results of a randomized controlled trial. Dermatol surg. 2003;29(3):221-6.
12. Yamaki T, Nozaki M, Iwasaka S. Comparative study of duplex-guided foam sclerotherapy and duplex-guided liquid sclerotherapy for the treatment of superficial venous insufficiency. Dermatol surg. 2004 ;30(5):718-22.
13. Kishore R, Sankar TB, Anandi A, Nedunchezhian S, Murugan V. A Prospective Study in Comparison of Ambulatory Phlebectomy and Duplex Guided Foam Sclerotherapy in the Management of Varicosities with Isolated Perforator Incompetence. Ind J of Surg. 2016 ;78(5):356-63.
14. Zafarghandi MR, Farsavian H, Davoudi M, Farsavian AA. Outcome of ultrasonography-guided foam sclerotherapy versus stab avulsion ambulatory phlebectomy in the treatment of varicosis in small veins of the leg: A single blinded randomized clinical trial. Iranian Journal of Radiology. 2017 Jul 31;14(3).
15. Belramman A, Bootun R, Lane TR, Davies AH. Foam sclerotherapy versus ambulatory phlebectomy for the treatment of varicose vein tributaries: study protocol for a randomised controlled trial. Trials. 2019 Dec;20(1):1-7.
16. Kolluri R, Hays KU, Gohel MS. Foam Sclerotherapy Augmented Phlebectomy (SAP) Procedure for Varicose Veins: Report of a Novel Technique. 2018;41:16-8.
17. Vashist MG, Malik V, Singhal N. Role of subfascial endoscopic perforator surgery (SEPS) in management of perforator incompetence in varicose veins: A prospective randomised study. Indian Journal of Surgery. 2014 Apr;76(2):117-23.
18. Belramman A, Bootun R, Lane TR, Davies AH. Endovenous management of varicose veins. Angiology. 2019 May;70(5):388-96.
19. HOMANSJ. The operative treatment of varicose veins and ulcers based upon a dassificafion of these lesions. Surg Gyn Obstet 1916; 22: 143-158.
20. Rhodin Johannes AG. Histology: a text and atlas. New York: Oxford University Press; 1974..
21. Ehinger B, Falck B, Sporrong B. Adrenergic fibers to the heart and to peripheral vessels. Bibl Anat 1996;8:35.
22. Sigel B, Popky GL, Wagner DK, et al. A Doppler ultrasound method for diagnosing lower extremity venous disease. Surg GynecolObstet1968;127:339.