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Clinical Study of Varicose Veins of Lower Limb

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1. Objectives of the Study

- To study the various risk factors, complications leading to varicose veins of lower limbs
- To study the role of Duplex USG in the accurate diagnosis of site of incompetence

2. Materials and Methods

Study Area
The present study is a prospective study conducted in BHAGWAN MAHAVEER JAIN HOSPITAL,BANGALORE which is a private, 500 bedded multispeciality hospital during 2017 to 2019 for a period of 2 years

Study population
Patients admitted in our hospital with age group restricted to 18-70 years are studied. Patients who underwent surgeries for the same complaints previously were not included

Sample size
Total numbers of patients studied were 150(183 limbs) .All patients who were admitted and treated are studied and followed up.

Inclusion Criteria
- All patients admitted with lower limb varicose viens in hospital
- Patients aged 18 to 70 years
- CEAP: C1-C6

Exclusion Criteria
- Patients aged below 18 and above 70 yrs
- Patients in the outpatient department
- DVT patients
- Anaphylaxis to sclerosants
- Bad medical status
- Pregnancy status
- Infected venous ulcer
- Venous malformations
- Varicose veins other than lower limb
- Medical treatment
- Management of leg ulcers

In our study, materials used are-

Sclerosant	: STDS (FOAM)
Stripper	: Plastic stripper
Laser	: 1020 nm
Radiofrequency	: 120 J per 20 secs

3. Case Performa

A thorough history was taken in all the patients. A detailed clinical examination was done. All the clinical tests were applied then all patients were subjected to duplex USG to confirm the diagnosis. The routine investigations were done. The patients underwent treatment based on their clinical and investigational profile. The post-operative course was noted. Further the patients were followed up. Final outcome evaluated all the information was taken down in the proforma designed for the study.

4. Follow Up

Duplex ultrasound scan was performed at 1wk, 1 month& 5 months post procedure to assess SFJ and GSV occlusion, neovascularization, recanalisation.

All scans were performed by the same investigator to avoid inter observer variability with 5 months to 2 years follow up period.

5. Data Analysis

Study design: An observational clinical study

Statistical Methods: Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean +/-2 SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance.

Student t test (two tailed, dependent) has been used to find the significance of study parameters on continuous scale with in each group. Paired Proportion test has been used to find the paired significance.

Significant figures:
+ Suggestive significance (P value: $0.05<P<0.10$)
* Moderately significant (P value: $0.01<P<0.05$)
** Strongly significant (P value: $P<0.01$)

Statistical software: The Statistical software namely SAS 9.2, SPSS 15.0, Stata 10.1, MedCalc 9.0.1, Systat 12.0 and R environment ver.2.11.1 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

6. Salient Findings

As varicose veins assume an innocent course for variable length of time, almost all patients involved in this study had prominent veins. But majority of the patients presented with complications and advanced hemodynamical changes (Oedema, pigmentation & ulcer).

- Long saphenous vein was involved both alone & combinedlyin 96.7% of the cases and only 3.3% patients had sapheno-popliteal incompetence. The results are favourable with the western studies. This can be explained as length of the long saphenous vein is more and the short saphenous vein runs in fascial tunnel from above the lateral malleolus to the popliteal fossa and the communicating are mostly indirect in short saphenous system.
- In present study most of the patients presented with saphenofemoral incompetence and combined perforator and saphenofemoral incompetence. The patients who had combined incompetency and long standing saphenofemoral incompetence were presented with higher class of CEAP and more complications.
- In all patients routine Duplex USG was done, and has been found to have impotent role in accurate diagnosis of valvular as well as perforator incompetecy and routine preoperative duplex examination lead to improved surgical result and lower recurrence rates.

Table B -1: Age distribution of patients studied

Age in years	No. of patients	%
<20	3	2.0
20-30	22	14.7
31-40	28	18.7
41-50	48	32.0
51-60	34	22.7
61-70	15	10.0
Total	150	100.0

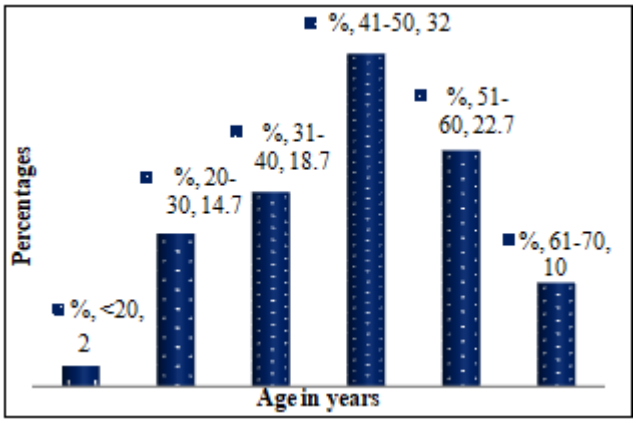


Figure B -1: Age distribution of patients studied

Table B -2: Gender distribution of patients studied

Gender	No. of patients	%
Male	114	76.0
Female	36	24.0
Total	150	100.0

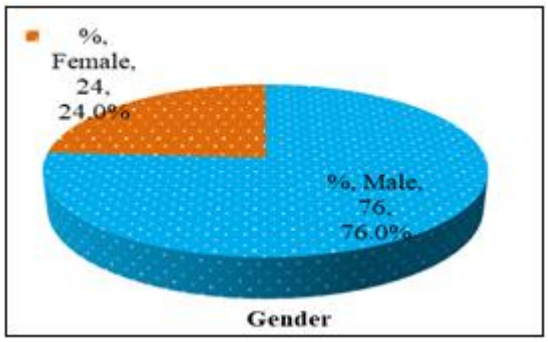


Figure B-2: Gender distribution of patients studied

Table B-3: Occupation distribution

Occupation	No. of patients	%
Police	1	0.7
Agriculture	17	11.3
Auto driver	1	0.7
Bank cashier	1	0.7
Bank manager	2	1.3
Barber	1	0.7
Bike mechanic	1	0.7
Bus driver	1	0.7
Business	3	2.0
Carpenter	1	0.7
Cashier	1	0.7
Chat bussiness	1	0.7
Clerk	2	1.3
Contracter	1	0.7
Cook	2	1.3
Coolie	1	0.7
Daily laborer	1	0.7
Doctor	1	0.7
Driver	3	2.0
Electrician	1	0.7
Hotel waiter	2	1.3
Housewife	19	12.7
Industry worker	2	1.3
Iron business	1	0.7
Juice maker	1	0.7
Lab tecnician	1	0.7
Librarian	1	0.7
Mech.engineer	1	0.7
Medical student	2	1.3
Office boy	1	0.7
P.e.t	1	0.7
Painter	1	0.7
Pg student	1	0.7
Pharmacy rep	1	0.7
Plumber	1	0.7
Political leader	1	0.7
Postman	1	0.7
Receptionist	1	0.7
Retd. Teacher	6	4.0
Retd.cook	1	0.7
Retired clerk	1	0.7
Ricebussiness	1	0.7
Salesman	4	2.7
Scavenger	1	0.7
Security guard	2	1.3
Shop keeper	10	6.7
Software	11	7.3
Student	4	2.7
Supervisior	4	2.7
Teacher	8	5.3
Technician	3	2.0

Temple pandith	1	0.7
Traffic police	3	2.0
Veg vender	6	4.0
Watch man	1	0.7
Gym trainer	1	0.7
Total	150	100.0

Table B-4: Clinical manifestations of patients studied

Clinical manifestations	No. of patients (n=150)	%
dilated Veins		
• -	0	0.0
• +	23	15.3
• ++	71	47.3
• +++	56	37.3
Pain, discomfort, heaviness, fatigue		
• -	25	16.7
• +	82	54.7
• ++	40	26.7
• +++	3	2.0
Edema		
• -	97	64.7
• +	48	32.0
• ++	5	3.3
• +++	0	0.0
Pigmentation		
• -	61	40.7
• +	63	42.0
• ++	26	17.3
• +++	0	0.0
eczema		
• -	81	54.0
• +	36	24.0
• ++	30	20.0
• +++	3	2.0
Lipodermatosclerosis / atrophie blanche		
• -	144	96.0
• +	6	4.0
• ++	0	0.0
• +++	0	0.0
Number of ulcers		
• -	134	89.3
• +	15	10.0
• ++	1	0.7
• +++	0	0.0
Ulcer duration		
• -	134	89.3
• +	10	6.7
• ++	5	3.3
• +++	1	0.7
Ulcer size		
• -	134	89.3
• +	12	8.0
• ++	4	2.7
• +++	0	0.0

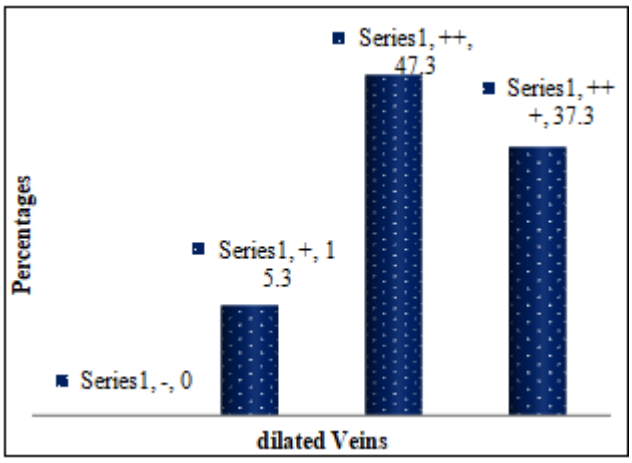


Figure B -4a: Clinical manifestations of patients studied

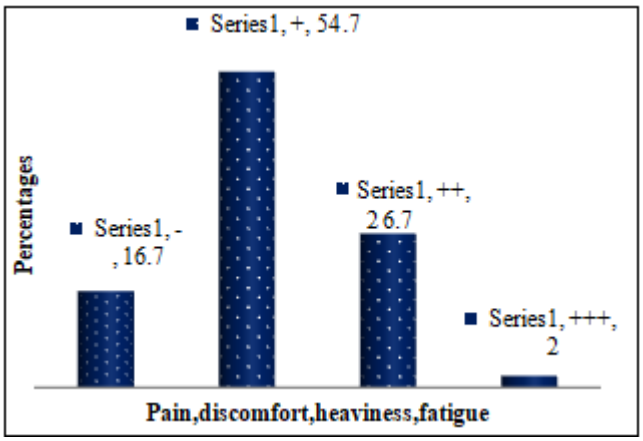


Figure B -4b: Clinical manifestations of patients studied

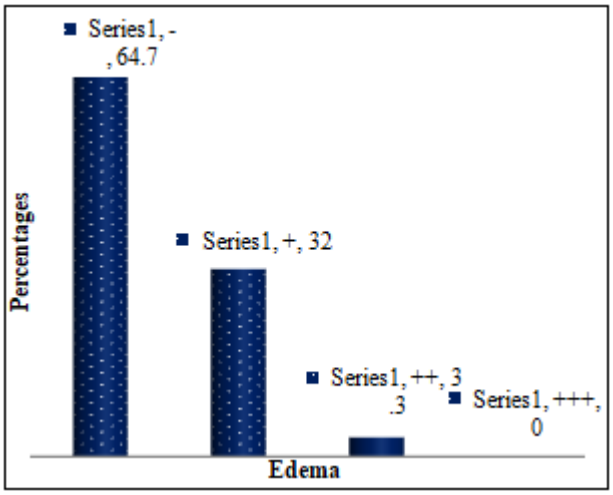


Figure B -4c: Clinical manifestations of patients studied

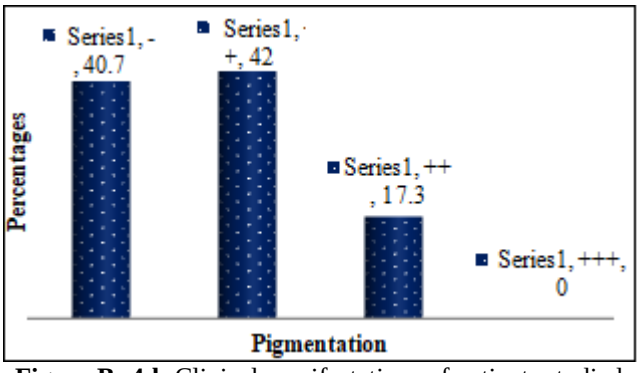


Figure B -4d: Clinical manifestations of patients studied

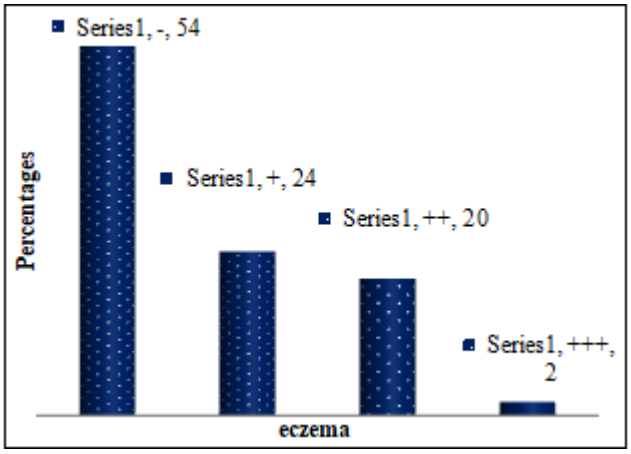


Figure B -4e: Clinical manifestations of patients studied

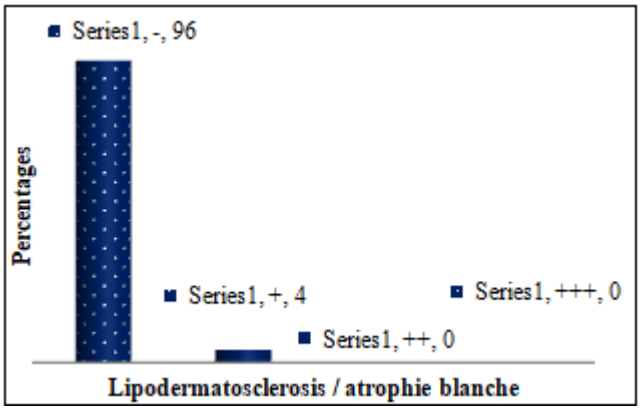


Figure B -4f: Clinical manifestations of patients studied

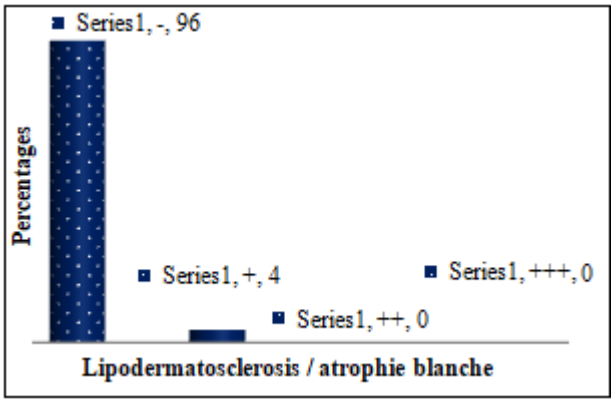


Figure B -4g: Clinical manifestations of patients studied

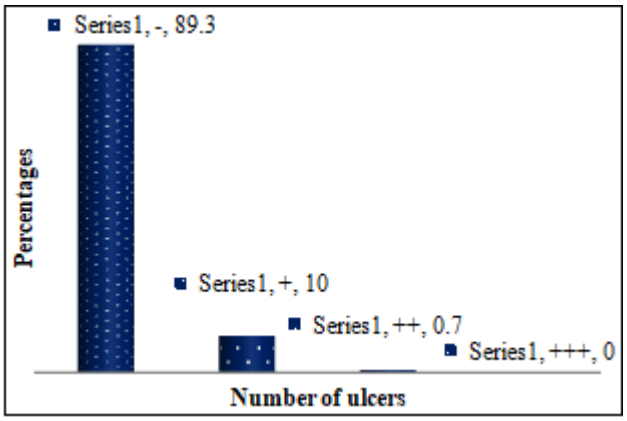
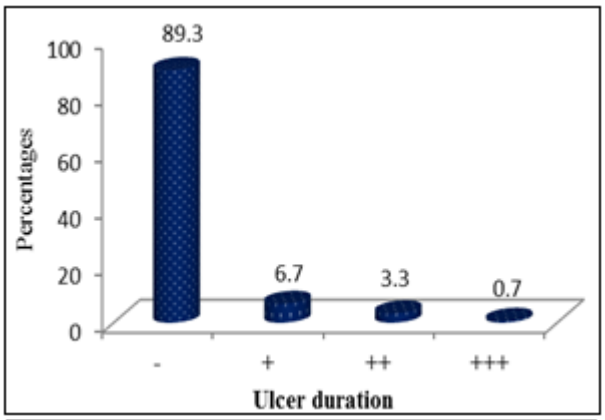


Figure B-4h



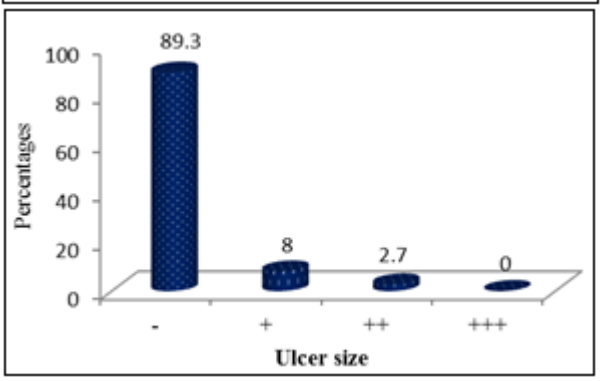


Table B-5: Varicosity Site of patients studied

Varicosity Side	No. of patients (n=150)	%
Great saphenous vein		
• Negative	0	0.0
• Left	23	15.3
• Right	71	47.3
Short saphenous vein		
• Negative	130	86.7
• Positive	5	3.3
• Left	6	4.0
• Right	9	6.0

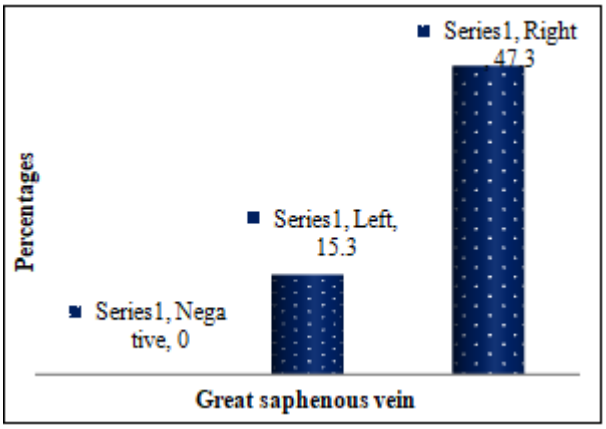


Figure B -5a: Varicosity Site of GSV in limbs

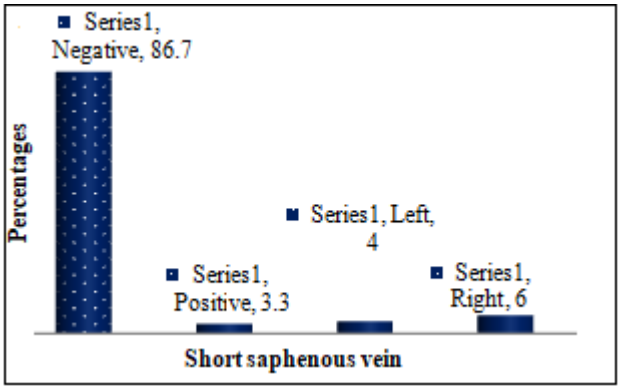


Figure B -5b: Varicosity Site of SSV in limbs

Table B-6: Clinical tests of patients studied

Clinical tests	No. of patients (n=150)	%
Brodie – Trendelenbert's test	122	81.3
Below knee perforators	124	82.7
Multiple Tourniquet test A/K – Above knee peforatros	57	38.0
Below knee perforators	126	84.0

Table B-6: Clinical tests of patients studied

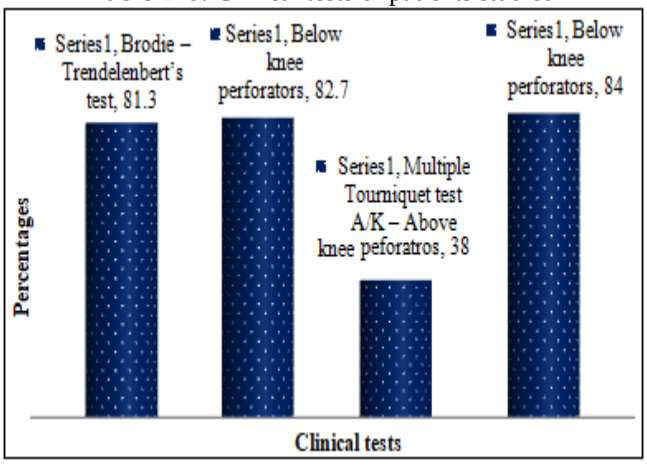
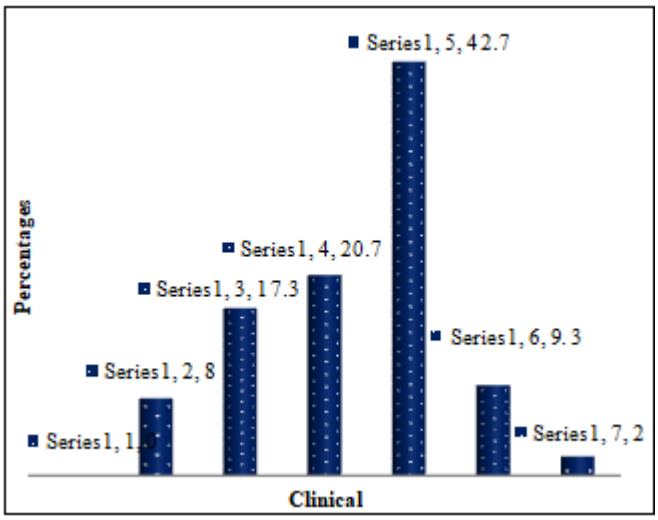
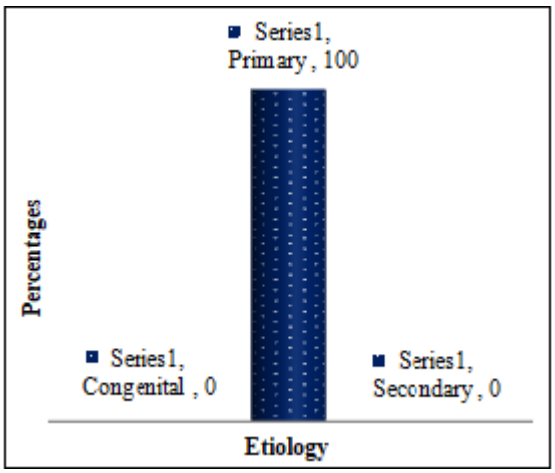


Table B-7: CEAP Classification of patients studied

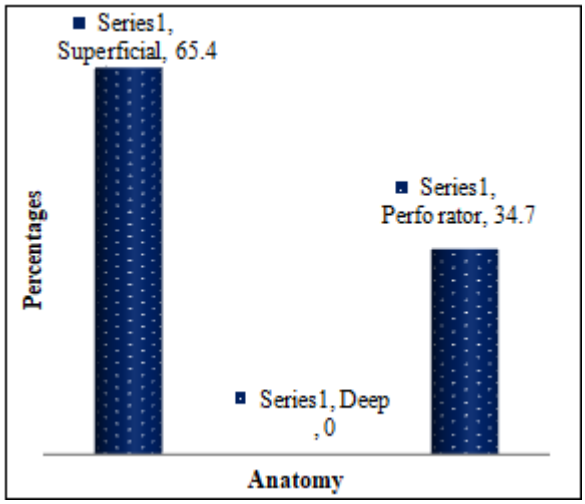
CEAP Classification	No. of patients (n=150)	%
Clinical		
1. No visible signs	0	0.0
2. Reticular veins/telangiectasis	12	8.0
3. Prominent veins	26	17.3
4. Swelling / oedema	31	20.7
5. Eczema/pigmentation	64	42.7
6. Healed ulcer	14	9.3
7. Active ulcer	3	2.0
Etiology		
• Congenital	0	0.0
• Primary	150	100.0
• Secondary	0	0.0
Anatomy		
• Superficial	98	65.4
• Deep	0	0.0
• Perforator	52	34.7
Pathology		
• Reflux	150	100.0
• Obstructive	0	0.0



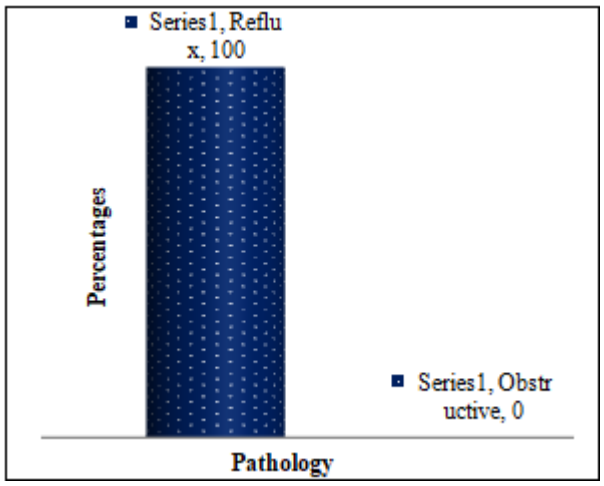
Figures B -7a: CEAP – clinical grading



Figures B -7b: CEAP – etiological grading



Figures B -7c: CEAP – anatomical grading



Figures B -7d: CEAP – pathological grading

Table B-8: Duplex USG of patients studied

Duplex USG	No. of patients (n=150)	%
SFJI	122	81.3
SPJI	19	12.7
PI	124	82.7
DVR	0	0.0
DVT	0	0.0

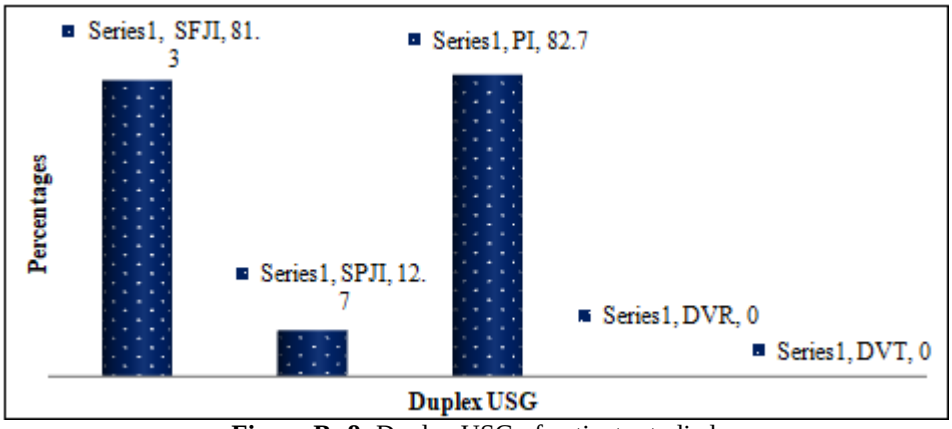


Figure B -8: Duplex USG of patients studied

7. Conclusion

This study revealed that the disease is prevalent in active phase of life and male prepondence.

Occupations involving prolonged standing and violent muscular effort are prone for the disease.

Majority of the patients had long saphenous incompetency and the complications are more when both valvular and perforator systems are involved.

Duplex USG is the investigation of choice

8. Recommendations

1) Thorough history and detailed clinical examination are essential to make the diagnosis and site of incompetence
2) Duplex USG is the most sensitive and specific investigation in the management of varicose veins and to be used in all cases for accurate diagnosis.

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