

Observational Study on Incidence of Peripheral Arterial Disease in Patients with Varicose Veins and Need for Concomitant Treatment of Both Arterial Disease and Venous Disease in a Tertiary Care Centre

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Abstract: *Introduction:* Chronic venous insufficiency is the disease of human venous system, mostly caused by venous reflux, which is a result of ineffective venous valves. Peripheral arterial disease is a localized form of systemic atherosclerosis. Symptoms like pain and leg ulcers can be the presenting feature in both varicose veins and peripheral arterial diseases, it is important to differentiate the two diseases and to rule out the concomitant occurrence. *Materials and Methods:* Study design used was prospective observational method with a sample size of 350 patients. Study was done on all patients fulfilling inclusion criteria in our department of general surgery at KMCT medical college hospital using a structured proforma. Diagnosis was made by clinical and radiological examination. Data was entered into Microsoft software and association between the factors were assessed using chi square test and student t test. *Results:* The mean age of the study population was found to be 52.24+ 6.976 years with a minimum age of 22 and maximum of 67 years with almost ¾th of the study population (74%) belonged to males. 83.4% of the study population had type II diabetes mellitus as a comorbidity. It was noted from the study that 219 (62.6%) among 350 had an incidence of POVD along with varicose veins. Incidence of PVOD as per the current study among the study population was found to be 62.6% (n=219). Among 219 who underwent treatment for POVD, 77% (n=169) benefitted from the medication whereas 23% didn't had any benefit. *Conclusion:* Association between the co existence of arterial and venous diseases is statistically significant which shows the need for evaluation of arterial status of those patients with varicose veins. Also the concomitant treatment of both arteriovenous disease showed significant benefits in healing and overall outcome of the patient.

Keywords: chronic venous insufficiency, peripheral arterial disease, varicose vein, arterial doppler, venous doppler, peripheral occlusive vascular disease.

1. Introduction

Peripheral arterial disease affects an estimated 8 to 12 million people in the United States, and it affects at least 202 million people worldwide. A meta - analysis of 34 studies revealed a 23.5% rise in the prevalence of peripheral arterial disease during the first decade of the twenty - first century. Symptoms like pain and leg ulcers can be a presenting feature in both varicose veins and peripheral arterial disease. Hence it is important to differentiate the two diseases and to rule out the concomitant occurrence of varicose veins and peripheral arterial disease. Studies were done to find out an optimal management option concomitant occurrence of varicose veins and peripheral arterial diseases. A study by Chang S - L report that the incidence of peripheral artery disease was significantly lower after varicose veins were treated with endovenous thermal ablation than it would have been in the absence of treatment. A review on role of modified compression therapy in treatment of mixed arterial venous leg ulcers reported that most of the studies that were included in their review showed a positive result with reasonable healing rates using modified compression therapy for individuals with mixed arterial venous leg ulcers.

2. Materials and Methods

A Prospective observational study conducted for a period of 2021 - 2022 centered at KMCT Medical College Hospital, Manassery, Kozhikode with a sample size of 350 patients with varicose veins.

Inclusion Criteria

- Patients aged more than 30 years & less than 60 years
- Patients with varicose veins
- All inpatients and outpatients with varicose veins coming to department of General surgery, KMCT Medical College

Exclusion Criteria

- Patients not willing to take part in study
- Patient aged less than 30 years & > 60 years
- Patients who had a past history of coronary artery disease
- Patients with infective bone diseases (osteomyelitis) of lower limb

Study will be done on all patients fulfilling inclusion criteria in Department of General Surgery, KMCT Medical College.

Volume 12 Issue 5, May 2023

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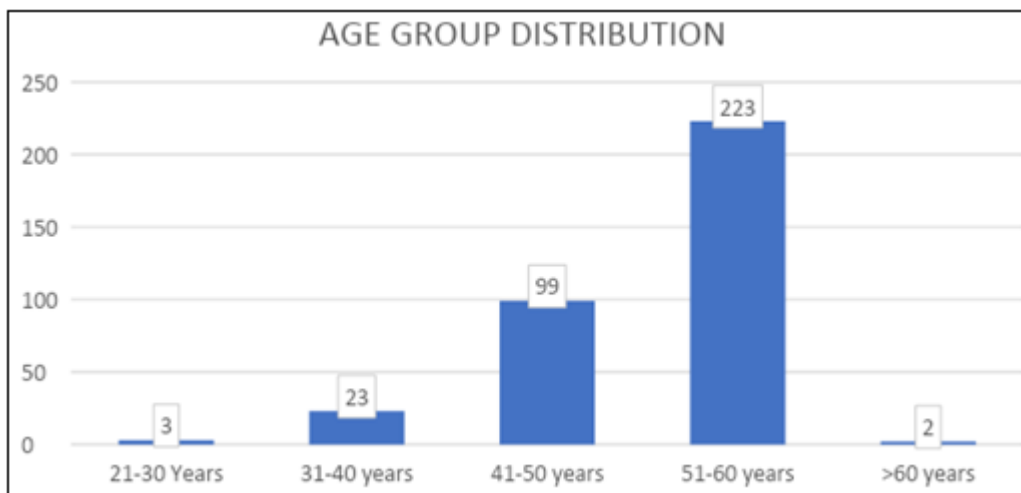
The purpose and method of study will be explained to the patient. Written informed consent will be taken from all willing patients. Diagnosis is made completely on clinical and radiological evaluation. After clinical examination of the patient varicose severity will be assessed by CEAP classification and scoring system for varicose veins. Then for every patient under study a both arterial & venous Doppler scan of both legs will be taken. Findings will be noted. Collected data will be entered into the proforma and analysed.

3. Observations and Results

Mean age of the study population was found to be 52.24+ 6.976 years with a minimum age of 22 and maximum of 67 years.

Table 1: Age Group

	Frequency	Percent
21 - 30 Years	3	.9
31 - 40 years	23	6.6
41 - 50 years	99	28.3
51 - 60 years	223	63.7
>60 years	2	.6
Total	350	100.0



Bar chart showing the age groups

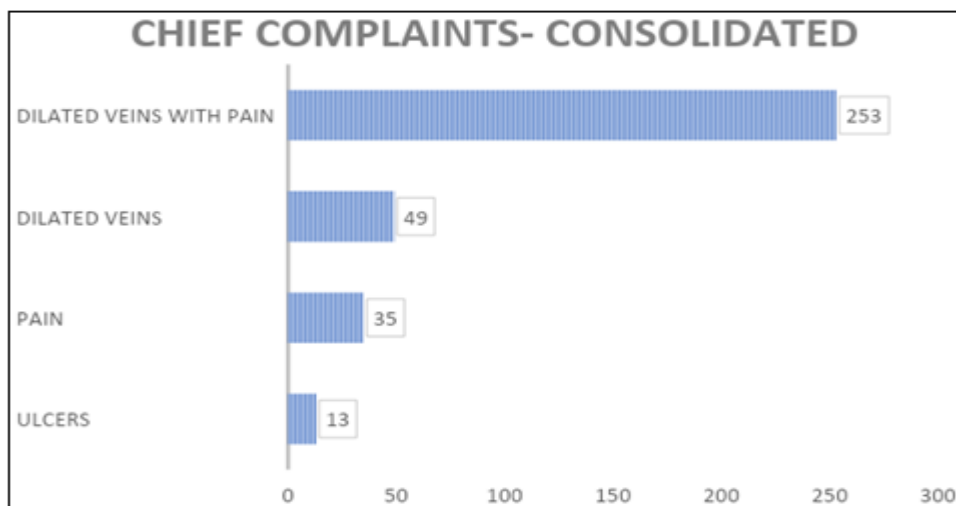
Current study found that 63.7% of the study population belonged to the age group of 51 - 60 years of age followed by 41 - 50 years age group with a participation of 28.3%. Only 0.9 % among the study population belonged to age group of 21 to 30 years.

The present study found that 83.4% of the study population had type II diabetes mellitus as a comorbidity.

When the complaints were consolidated it was found that dilated veins with pain as the most commonly occurring complaint followed by dilated veins alone and pain alone. Ulcers were the least occurring complaint

Table 2: Co - Morbidity - Type II Diabetes Mellitus

	Frequency	Percent
No	58	16.6
Yes	292	83.4
Total	350	100.0



Bar chart showing chief complaints

The current study had diagnosis as varicose vein and combination of varicose vein with PVOD.

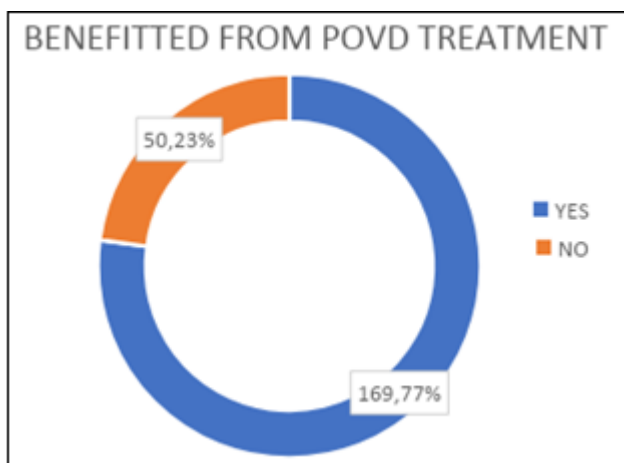
Table 3: Diagnosis among the Study Population (Combined)

	Frequency	Percent
Varicose veins and POVD	219	62.6
Varicose Veins	131	37.4
Total	350	100.0

The incidence of POVD as per the current study among the study population was found to be 62.6% (n=219)

Table 4: Benefited from POVD Treatment

	Frequency	Percent
Yes	169	77.16
No	50	22.84
Total	219	100.0



Pie chart (Doughnut) showing proportion benefitted from POVD treatment

The current study found that among 219 who underwent treatment for POVD, 77% (n=169) benefitted from the medication whereas 23% didn't had any benefit

4. Discussion

The mean age of the study population was found to be 52.24+ 6.976 years with a minimum age of 22 and maximum of 67 years. Majority (63.7%) of the study population belonged to the age group of 51 - 60 years, followed by 28.3% of the participants belonging to 41 - 50 years age group. This study observed that 83.4% of the study population had type II diabetes mellitus. Diabetes mellitus is an important risk factor for peripheral arterial disease.1 According to Stoberock K. et al. 's systematic review of 61 papers from 30 countries, the prevalence of PAD varied between populations with and without diabetes (20 - 50% vs.10 - 26%).

In this study, 219 (62.6%) among the 350 participants had an incidence of POVD along with varicose veins. The rest of the participants had only varicose veins and no peripheral arterial disease. This was found to be a higher incidence than that observed by Matic M et al., where a total of 17.28% of the study population had peripheral arterial disease along with varicose veins.6 Another study by Mäkivaara LA et al

observed that there was a significantly increased risk for people with varicose veins to develop a co - existent peripheral arterial disease with an odds ratio of 2 and 95% confidence interval of 1.5 to 2.7.11 Another retrospective cohort study was done by Chang S - L et al also observed that there was a significantly increased risk of incident peripheral artery disease among adults with varicose veins. In this study we also found that patients with combined arteriovenous disease smoking is an important risk factor, here among 219 patients with combined arteriovenous disease 160 have smoking history.

In this study, out of 219 patients diagnosed with POVD all of them were given medication. This study also observed that among the 219 participants who underwent treatment for POVD, 77% (n=169) benefitted from the medication whereas 23% didn't had any benefit. According to a study by Mosti G. et al. observed that maximum time to complete healing, and the median healing time was significantly lower among patients with pure venous recalcitrant leg ulcers compared to those with mixed arterial and venous recalcitrant leg ulcer when they treated only the venous disease44. A study by Lantis JC et al reported achieving a near - normal ABI by treatment of the peripheral arterial disease speeds up the healing process among patients with mixed arterial - venous ulcers.

5. Conclusion

Peripheral arterial disease is more frequent in patients with chronic venous insufficiency. In our study it is noted that 219 (62.6%) among 350 had an incidence of peripheral arterial occlusive disease along with varicose veins. The incidence of PVOD as per the current study among the study population was found to be 62.6% (n=219). The existence of concomitant risk factor diabetes mellitus could be a reason for increased frequency of peripheral arterial disease in varicose vein patients. Also smoking is an independent risk factor which can again contribute to the increased frequency of peripheral arterial disease in patients with varicose veins. When simultaneously treated both arteriovenous disease the healing time was faster and both arterial and venous complications were decreased and outcome was better compared to treating venous disease alone.

References

- [1] Townsend CM, R Daniel Beauchamp, B Mark Evers, Mattox KL, Sabiston DC. Sabiston textbook of surgery: the biological basis of modern surgical practice. St. Louis, Missouri: Elsevier; 2022.
- [2] Khanna, A. K., Kumar, S. Venous Scenario in India. Indian J Surg.2021; 1 – 4 Available from: <https://doi.org/10.1007/s12262-021-02949-1>
- [3] Agarwal V, Agarwal S, Singh A, Nathwani P, Goyal P, Goel S. Prevalence and risk factors of varicose veins, skin trophic changes, and venous symptoms among northern Indian population. Int J Res Med Sci 2016; 4: 1678 - 82.
- [4] Dalboh A, Alshehri NA, Alrafie AA, Bakri KA. Prevalence and awareness of varicose veins among teachers in Abha, Saudi Arabia. J Family Med Prim Care [Internet].2020; 9 (9): 4784–7. Available from:

http://dx.doi.org/10.4103/jfmpc.jfmpc_490_20

- [5] Rao BN, Pusphalatha R. A clinical study on varicose veins of lower limb, surgical management and functional outcome at a tertiary care hospital of South India. *Int Surg J* 2020; 7: 1051 - 5.
- [6] Society for Vascular Surgery Lower Extremity Guidelines Writing Group, Conte MS, Pomposelli FB, Clair DG, Geraghty PJ, McKinsey JF, et al. Society for Vascular Surgery practice guidelines for atherosclerotic occlusive disease of the lower extremities: management of asymptomatic disease and claudication. *Journal of vascular surgery* [Internet].2015; 61 (3 Suppl): 2S41S. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/25638515/>
- [7] Fowkes FG, Rudan D, Rudan I, et al. Comparison of global estimates of prevalence and risk factors for peripheral artery disease in 2000 and 2010: a systematic review and analysis. *Lancet*.2013; 382: 1329–1340
- [8] Song P, Rudan D, Zhu Y, et al. Global, regional, and national prevalence and risk factors for peripheral artery disease in 2015: an updated systematic review and analysis. *Lancet Glob Health*.2019; 7 (8): e1020 - e1030. doi: 10.1016/S2214 - 109X (19) 30255 - 4
- [9] Matic M, Matic A, Djuran V, Gajinov Z, Prcic S, Golusin Z. Frequency of Peripheral Arterial Disease in Patients With Chronic Venous Insufficiency. *Iran Red Crescent Med J*.2016 Jan 2; 18 (1): e20781. doi: 10.5812/ircmj.20781. PMID: 26889387; PMCID: PMC4752728.
- [10] Ammermann F, Meinel FG, Beller E, Busse A, Streckenbach F, Teichert C, Weinrich M, Neumann A, Weber MA, Heller T. Concomitant chronic venous insufficiency in patients with peripheral artery disease: insights from MR angiography. *Eur Radiol*.2020 Jul; 30 (7): 3908 - 3914. doi: 10.1007/s00330 - 020 - 06696 - x. Epub 2020 Feb 25. PMID: 32100090; PMCID: PMC7305257.