

Presentations, Complications and Approaches to Varicose Veins- A Clinical Study

Dr. Souvik Patra¹, Dr. Jithin Abraham Jacob²

¹Department of General Surgery, A.J. Institute of Medical sciences and Research Centre, Mangaluru, Karnataka, India

²Department of General Surgery, A.J. Institute of Medical sciences and Research Centre, Mangaluru, Karnataka, India

Corresponding Author: Dr. Souvik Patra

Abstract: Varicose veins are a common encounter in a surgical out-patient department. The vivid range of presentations can leave the surgeon perplexed about the approach to be taken. Despite this, little epidemiological research has been carried out on venous disease, perhaps partly because of society's perception that venous disease is not a major problem and it is not normally a cause death. More recently however, efforts have been made to conduct structural epidemiological studies to identify risk factors and to clarify the geographical variations suggested in the past by anecdotal the prevalence of varicose veins and presents evidence for an against the different theories of causation. The study emphasizes on a sample of the society presented to us, who were diagnosed with varicose veins and patterns with respect to their age, sex, social status, occupations, recurrence, and involvement of the limbs were assessed. The outcomes based on the time of presentations, improvement in the quality of life including conservative regimens were briefed. The ultimate aim of the study being to assure a life of normal quality.

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I. Introduction

Varicose veins are rising at its incidence aiming to erect posture of the human race, which might otherwise be attributed to pregnancy, prolonged hours of standing, obesity, while heredity has a significant say.^[1,2] While the most common site of varicosities to develop is the lower limbs, other sites like the esophageal and hemorrhoidal venous plexuses are also not rarities.^[3] Presentation of long standing varicosities may range from mild edema, heaviness, pruritis to thrombophlebitis, hyperpigmentation, lipodermatosclerosis, ulceration and in severe scenarios bleeding from the attenuated venous clusters. Though the actual cause of varicose veins is still unclear, neovascularization and reduced vaso-contractibility are commonly attributable cause.

Colour duplex is the investigation of choice over the clinical acumen and aiding in minimal access sub-fascial ligation.^[2] Although multiple modalities of treatment is available, conventional methods are preferred routinely bearing in mind the cost factor.^[4]

II. Aims and Objectives

The aim of this study was to identify the possible causes and patterns of competence of venous valves sapheno-femoral/sapheno-popliteal and perforators and see the patency/thrombus in deep veins including Colour Doppler study, to study as various complications e.g. skin eczema, ulceration, pigmentation and thrombosis of deep venous system. Thereby to propose the management tyo according diagnosis of the venous involvement.

III. Materials and Methods

The study was conducted in the Department of General Surgery, A.J. INSTITUTE OF MEDICAL SCIENCES AND RESEARCH CENTRE, MANGALURU.

All the patients with dilated veins over lower limb in the age group of 20-75 years were included in the study and was subjected to Colour Doppler scan of the limb and routine hemogram including – Hb, T&D, Blood & Sugar, urea and routine examination of urine were screened.

Equipment Used was Hewlett Packard Image Paint Sonography unit with a linear triphase mode multi-frequency 5-12 MHz probe. Standard machine settings selected for maximum Doppler sensitivity were used. These were scale of 40mm. The lowest velocity seek (calibrated on this canner at 0.3M/sec for a Doppler angle at 60 degree) and the lowest Colour filter setting (50 KHz) order to minimize rejection of low frequency shifts,

the colour Doppler gain was adjusted until background noise was apparent as a coloured snow-stormy then backed off until only a few random colour speckles (50 percent gain). The use of long persistent (Colour frame averaging) also improved the ability to detect low velocity flow. Care was taken not to apply pressure with the probe as this can potentially obliterate small low pressure vessels.

IV. Method of Examination

The groin and both lower limb scanned for seeking the common femoral, superficial femoral, popliteal, short saphenous, peroneal, anterior and posterior tibial veins any interluminal thrombus. Any reflux at sapheno-femoral junction. Dilatation and tortuosity as veining, reversal of flow to search out locate the incompetent perforators.

Brodie-trendelenberg test: Performed to determine the incompetency as sapheno-femoral valve and perforator incompetence below S.F junction.

Tourniquet Test: Indicates the site of perforator incompetence.

Perthe’s Test: To know the patency of deep veins in S.F. incompetence.

Schwartz Test Percussion test of Chevrier :An impulse(thrill) is felt on the varicose vein if it is tapped far away.

Fegan’s Test: The site of perforator incompetence is felt as a defect in the deep fascia on palpation.

Raju’s Test:Useful test for venous obstruction with patient lying supine, pressure is measured in the veins of hand and feet.

Pratt’s Test: To know the position of leg perforators.

Morrissey’s Cough Impulse Test: An expansible impulse is felt in the long saphenous veins particularly at the opening if then S.F. valve is incompetent.

V. Results

Patients were taken from different age groups in 21 to 80 years of age group. But most of them belonged to age group 30-50 years and almost 28% of them belonged 41-50 years.

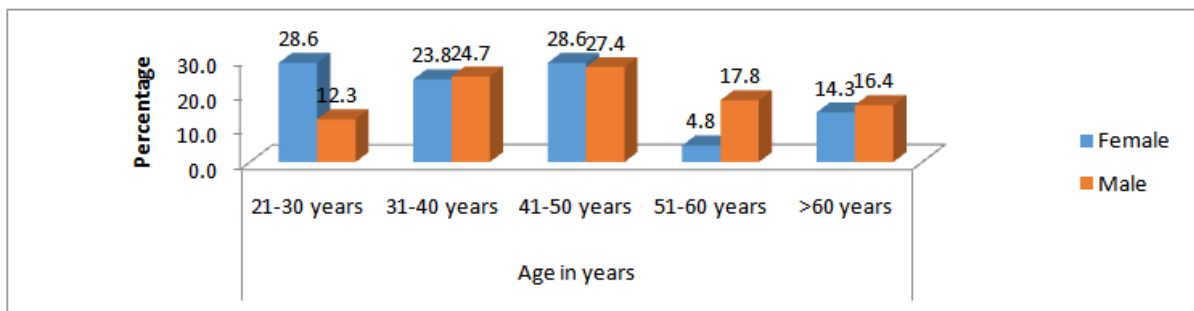


Image 1 : Graphical distribution of age in the study group

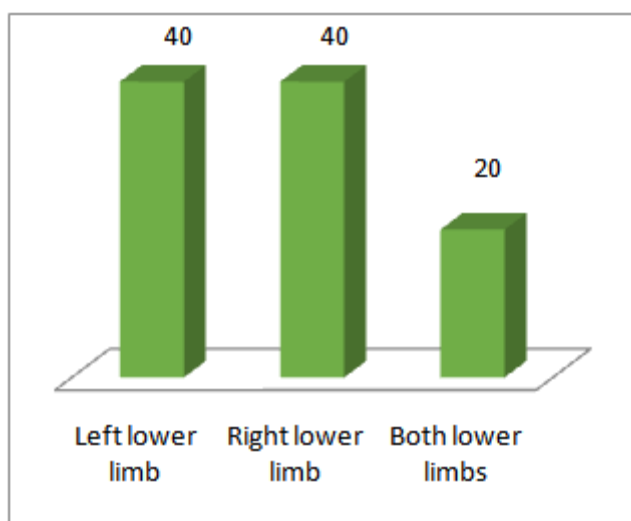
The most common risk factor was associated to long standing occupation-18% were farmers, 15% were teachers, 12% were housewives. 11% shopkeepers, 11% clerks, 8% students, 6% policemen, 6% rickshaw pullers, 5% vegetable sellers, 4% bus conductors, 2% labourers and 2% watchmen.

In middle class (class III) men 42% and women 30% were affected, in Lower middle class (class IV) men 37% and women 69% were affected and in Lower class (class V) men 19% and no women were affected.

When accounting for the complications, 12% had skin discolouration-the most common, 7% had venous ulcer, 4% eczema and 1% pigmentation. Most commonly occurring symptom was swelling in 84%, Pain in 77% and Dilated veins in 62%. Skin changes were found in 12% cases and only 3% cases were found with Eczema without dilatation of veins.

| Socioeconomic Status | Women | | Male | |
|----------------------|-------|------|------|-------|
| | No. | % | No. | % |
| I | 0 | 0.0 | 0 | 0.0 |
| II | 0 | 0.0 | 0 | 0.0 |
| III | 2 | 30.4 | 12 | 42.9 |
| IV | 5 | 69.6 | 11 | 37.7 |
| V | 0 | 0.0 | 5 | 19.5 |
| Total | 7 | 100 | 28 | 100.0 |

Table 1: Percentage analysis of affected population in the study group based on socio-economic status



Graph 2: Graphical representation of showing laterality of involvement

| Symptoms | No. | Percentage |
|------------------------------------|-----|------------|
| Pain | 27 | 77 |
| Swelling | 29 | 84 |
| Dilated veins | 22 | 62 |
| Skin changes | 4 | 12 |
| Eczema without dilatation of veins | 1 | 3 |

Table 2: Data showing the symptomatic presentation of varicose veins in the study

Out of the 35 cases studied, only 3 cases were found to have positive family history of the disease. In our 35 cases colour Doppler study, 34% had Sapheno-Femoral Junction incompetence. Sapheno-Popliteal Junction incompetence in 22%, 28% had perforator incompetence, 3% were detected to have DVT and Thrombophlebitis in 9%. Out of 35 cases, 17% patients were treated conservatively, 6% were treated by minimal invasive technique and rest 17% were surgically treated by Trendelenberg's procedure and 60% by ligation and stripping. Out of 27 cases which were operated in the past by ligation or foam sclerotherapy, 8 cases (23%) were reported with post-operative recurrence.

VI. Discussion

Venous disorders are very common and especially affect the lower limb. Twenty percent of the population suffer with varicose veins and 2 percent have skin changes, which may precede venous ulceration.

One of the most common problem with the veins of the leg is failure of their valves. This occurs frequently in varicose veins, which affects system resulting in varicose veins in westernized countries. In developing countries where a primitive way of life is maintained, there is a very low incidence of varicose veins. A further major factor is inherited. Women in whom neither parent have varicose veins have a 10 % risk of developing varices, but when both parents are affected there is an 80% chance. Men are affected less frequently than woman.

Our study done in the department of surgery A.J.INSTITUTE OF MEDICAL SCIENCE AND RESEARCH CENTRE, MANGALURU over a period of two years including 35 cases.

In our study, we found that there is higher no of males as compared to womens attributing mostly to their presentation to a health centre for care. Of the 15 to 70 years population considered, most belonged to the age group 30 to 50 years and we found higher prevalence of the disease with the increasing age.

According to the Russian observational programme SPEKTR: analysis of age-specific structure of patients with chronic venous diseases, concluded that special medical care was sought by persons in 31-60 years of age : men - 60.6%, women - 63.8%. Bihari I et al (2012)^[5] analyzed the prevalence and risk factors of varicose veins and chronic venous disease in Budapest. They Verified risk factors include advancing age, pregnancy, jobs requiring a lot of standing, blue-collar work and excess body weight.. Women gender nor was not identified as a contributing factor for varicose veins. A study conducted in the city of Tampere, Finland which was aimed at estimating the incidence of varicose veins in complete cohorts of 40-60 year-olds in a general population done by Mäkiavaara LA et al^[6] concludes new varicose veins appear also in the middle-aged population, and the rate is linked with the women gender, especially at the beginning of the 6th decade.

It was observed during the study that the most common risk factor was long standing occupation. 18% patients were farmer, 15% were teacher, 12% housewife, 11% shopkeeper, 11% clerk, 8% student, 6% policeman and rickshaw puller, 5% vegetable seller, 4% bus conductors, 2% watchman and 2% labourer.

According to Bahk JW et al (2012)^[7] explored the relationships between occupational characteristics and symptoms of varicose veins and nocturnal leg cramps and their gender differences in a Korean population. The characteristics of standing work were different according to gender. The odds ratio of varicose veins was significantly high for prolonged standing for male and women workers. However, the odds ratio of nocturnal leg cramps was only significant among prolonged standing male workers. Therefore, effective interventions to interrupt or reduce prolonged standing at work should be implemented for the prevention of varicose veins and nocturnal leg cramps. Pfisterer L et al (2014)^[8] have described in their review that the development of varicose veins or chronic venous insufficiency is preceded by and associated with the pathophysiological re-modelling of the venous wall. In line with this, known risk factors such as prolonged standing occupation induced increase in venous filling pressure may contribute to varicosity. Also a study at Copenhagen, Denmark in October 2000 found that for men, working mostly in standing position, the risk ratio for varicose veins was 1.85 in comparison with all other men. For women, it was 2.63. Hence concluding that prolonged standing profession contributes to the development of varicose veins in both males and women.

Middle and lower middle class people were observed to be affected more. While in class I (Upper class) and class II (Upper middle) none were affected, in class III (Middle) men were 42% and women were 30%, in class IV (Lower middle) men were 37% and women were 69% and in class V (Lower) men were 19% and women none.

According to study done by Sánchez FS et al^[9] on Quality of life in patients with chronic venous disease or varicose veins: influence of the socio-demographical and clinical factors, The increasing disease severity by Venous Clinical Severity Score (VCSS) is associated with reductions in quality of life.

Our study showed venous insufficiency with equal propensity in either of the lower limbs- 40% limb and 20% in both limbs. Kirienko AI, et al (2012)^[10] in their study found that Men were found to have more often total reflux along the great saphenous vein on the right leg (35.7% as compared with 25.1 % for women;) and insufficiency of perforators (72.9% versus 59.7%;). Women were more often found to have isolated varicosity of inflows-confluents.

Complications such as Skin changes 12%, Ulcer 7%, Eczema 4% and Skin pigmentation 1% were observed while Deep Vein Thrombosis was detected in 2%. A study done by Labropoulos N et al (2007)^[11] demonstrated an increased risk of developing deep vein thrombosis in known cases of varicose veins.

Swelling in 84%, Pain in 77% and Dilated veins in 62% were noted to be the most common presenting symptoms. Skin changes were found in 12% cases and in 3% with Eczema without dilatation of veins. A structured interview based study by Langer R Det al (2005)^[12] assessed the prevalence of pain, itching, heaviness, tired legs, cramping, swelling, and nighttime restless legs. Pain was the most common symptom but was relatively nonspecific. Swelling was the most specific marker for prevalent visible and functional disease. Heaviness and itching also helped to distinguish prevalent disease. They concluded venous symptoms being more prevalent in study participants with both visible and functional disease and in women. Swelling was the most specific predictor; heaviness, itching, and pain also helped to distinguish cases.

In our study, we found only 13% cases report with positive family history of disease. According to a nationwide family study in Sweden Zöller B et al^[13] done on Venous thromboembolism and varicose veins share familial susceptibility Varicose Veins and Venous Thromboembolism share familial susceptibility. This novel finding suggests the existence of shared familial and possibly genetic factors.

In the study group, we found incompetence of the long saphenous vein in 66%, short saphenous vein 29 % and both in 5 %. In colour doppler we also found that 52 % of patients have sapheno-femoral junction incompetence, 22% of patients have sapheno-popliteal incompetence. Wong JK et al (2003)^[14] investigated specific variations in venous anatomy and patterns of reflux in varying clinical situations, they observed that sapheno-femoral junction (SFJ) incompetence predominated in both primary and recurrent varicose veins. Only 21% of primary legs and 25% of recurrent legs had sapheno-popliteal junction (SPJ) incompetence. SPJ incompetence was present in only 42% of cases.

In our study, we managed 34% patients conservatively 37% minimally invasive and 29% patients surgically. According to study done by Zhao ZY et al^[15] Compared with the conventional surgery group, the GSV trunk stripping and foam sclerotherapy group had a significantly lower surgical time, amount of bleeding and duration of hospital stay. No statistically significant difference with respect to wound infection, local discomfort, postoperative recurrence rates of varicosity and patients satisfaction score was observed.

According to study done by Lin F et al^[16] on the management of varicose veins. Foam sclerotherapy and radiofrequency ablation were associated with less pain and faster recovery than endovenous laser ablation and surgical stripping. Patients undergoing endovenous laser ablation and radiofrequency ablation are most

likely to have a faster recovery time and earlier return to work in comparison with those undergoing conventional high ligation and stripping.

66 cases were surgically treated out of them 11 cases of recurrence are reported which is 16.69%. They were associated with long, short saphenous incompetence along with perforator incompetence. A study by CinaG^[17] on Recurrent varicose veins of the legs. They concluded that, as is clear from our study, the main cause of recurrence is inadequate surgery. This can only be due to inadequate preoperative assessment (lack of rigorous clinical and Ultrasound Doppler evaluation) and not correct surgical technique, as it may occur if the surgery is performed by a surgeon inexperienced in this type of surgery.

VII. Conclusion

35 patients were included in the study of which 28 were male and 7 were female patients. All these patients were proven case of varicose vein by clinically and by venous colour Doppler Arteriovenous anastomosis occurring in association with saphenous vein disease and identified using duplex ultrasound are usually found below the knee in the long saphenous system and sometimes at the base of venous ulcers. Knowledge of their presence and location may help to avert complications of sclerotherapy, and guide the approach to treatment.

In our study 35 cases were included and it was found that:

- Patient were taken from different age groups in 21 to 70 years age group. But most of them belonged to age group 30 to 50 years and almost 26% of them belonged to 40 to 50 years age group.
- Male 80% and female 20% were affected.
- In patients with different occupations, the most common risk factor was long standing occupation. 18% patients were farmer, 15% were teacher, 12% housewife, 11% shopkeeper, 11% clerk, 8% student, 6% policeman and rickshaw puller, 5% vegetable seller, 4% bus conductors, 2% watchman and 2% labourer.
- Patients from middle and lower middle class socioeconomic status were affected more common. We found class I (Upper class) and class II(Upper middle) both men and women were 0%, in class III(Middle) men were 42% and female were 30%, in class IV (Lower middle) men were 37% and female were 69% and in class V(Lower) men were 19% and female were 0%.
- Varicose veins presents 40% in right limb, 40% in left limb and 20% in both limb.
- Out of 35 cases, 8 cases showed the complications of varicose veins, in which 12% had skin discolouration, 7% had venous ulcer, 4% eczema and 1% pigmentation.
- Out of 35 cases, only 1 cases were associated with Deep Vein Thrombosis.
- Most commonly occurring symptom was Swelling 84%, Pain 77% and Dilated veins 62%. Skin changes were found in 12% cases and only 3% cases were found with Eczema without dilatation of veins.
- Out of 35 cases, only 3 cases was found with positive family history of disease.
- Most commonly involved vein was long saphenous vein seen in 66%, short saphenous vein 29%, both L.S.V and S.S.V 5%.
- Out of 35 cases, 6 cases were managed conservatively and 29 cases were managed surgically.
- Only 8 cases was reported with post-operative recurrence of varicose veins out of 29 cases.

Disease of the venous system is a major problem affecting western societies, resulting in considerable morbidity in the population and cost to the health service. For the patient with varicose veins or leg ulceration, there is persistent discomfort and disability of extending over long period of time. Surgical ligation and stripping of the greater saphenous vein has been gold standard for the treatment of sapheno-femoral junction incompetence for several years, although sclerotherapy of the greater saphenous vein has also been advocated.

The four important health factors are social functions, domestic activities, cosmesis and emotional status. Validity was demonstrated by means of high correlations with all eight domains of the SF-36 general health measures. Responsiveness was demonstrated by means of significant reduction in the score of the ulcer questionnaire as ulcers healed at 6 and 11 weeks. Good evidence exists that a clinically derived measure of patients with venous ulcers has validity to measure the quality of life.

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