

Demographics, Risk Factors, and Surgical Outcomes of Chronic Venous Disease: Experience from a Tertiary Care Centre

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Abstract

Background: Varicose veins represent a common manifestation of chronic venous disease affecting the lower limbs and are associated with considerable morbidity when left untreated. Although often considered benign, complications such as pigmentation, dermatitis, thrombophlebitis, and venous ulceration may significantly impair quality of life. The present study aimed to evaluate the demographic profile, clinical characteristics, and management outcomes of patients presenting with varicose veins at a tertiary care teaching hospital. **Materials and Methods:** This hospital-based observational study was conducted in the Department of General Surgery at a tertiary care centre over a period of 24 months. A total of 85 patients diagnosed with primary varicose veins were included. Data regarding demographic characteristics, clinical presentation, venous involvement, complications, and surgical management were collected and analysed using descriptive statistics and Chi-square testing. **Results:** Females constituted the majority of patients (83.5%). The most commonly affected age group was 21–30 years (24.7%). Left lower limb involvement was observed in 49.4% of cases. Farmers represented the predominant occupational group (44.7%). Pigmentation was the most frequent complication (30.6%). Surgical management yielded favourable outcomes, with seroma being the most common postoperative complication (11.8%). **Conclusion:** Varicose veins predominantly affect young and middle-aged individuals engaged in occupations involving prolonged standing. Early diagnosis and appropriately tailored surgical intervention result in satisfactory clinical outcomes with minimal complications. Preventive public health strategies addressing occupational risk factors are essential to reduce disease burden.

Keywords: Varicose veins; Chronic venous disease; CEAP classification; Duplex ultrasonography; Saphenofemoral junction; Surgical management; Occupational risk factors

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INTRODUCTION

Varicose veins represent one of the most prevalent manifestations of chronic venous disease (CVD), affecting approximately 10–30% of adults globally and contributing substantially to morbidity, healthcare expenditure, and reduced work productivity.^[1,2] The condition results from venous valvular incompetence leading to reflux, venous hypertension, and progressive structural alteration of superficial veins.^[3] The lower limb venous system functions through coordinated interaction between superficial, deep, and perforator veins. Failure of valvular mechanisms produces ambulatory venous hypertension, ultimately manifesting as edema, pigmentation, dermatitis, and venous ulceration.^[4] Multiple epidemiological studies have identified female gender, advancing age, obesity, pregnancy, hereditary predisposition, and prolonged standing occupations as major determinants of disease development.^[5,6] Occupational exposure remains particularly relevant in developing countries where agricultural and manual labour dominate workforce patterns.^[7] Indian studies have demonstrated increasing prevalence of varicose veins among younger working populations, attributed to prolonged standing, delayed medical consultation, and limited awareness regarding preventive

measures.^[8,9] Geographic and lifestyle variations in Himalayan regions may further influence disease presentation and progression. Clinical classification using the CEAP system enables uniform disease assessment, while duplex ultrasonography remains the diagnostic gold standard for identification of reflux and operative planning.^[10,11] Despite growing global literature, comprehensive clinical data evaluating demographic characteristics and management outcomes in the Kashmiri population remain scarce. The present study was therefore undertaken to analyse demographic distribution, occupational risk factors, clinical presentation, and surgical outcomes of varicose vein disease in a tertiary care teaching hospital.

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MATERIALS AND METHODS

Study Design and Setting: This was an observational, hospital-based research study within the Department of General Surgery at SKIMS Medical College Hospital, BeMina, Srinagar, spanning 24 months.

Study Population: Eighty-five patients with known primary varicose veins of the lower limbs were recruited.

Inclusion Criteria:

- Patients aged >15 years
- Symptomatic or complicated primary varicose vein clinical diagnosis.

Duplex confirmed saphenofemoral or saphenopopliteal incompetence, with or without perforator involvement.

Exclusion Criteria:

- Recurrent varicose veins
- Deep venous thrombosis
- Secondary varicosities (e.g., post-thrombotic, compression of the pelvis)
- Medically unfit for surgery

Methodology: All patients were thoroughly clinically assessed with history, examination, and duplex ultrasonography. Those who have complications (ulcers, dermatitis) were treated with conservative intervention before the operation. The surgical intervention depended on the incompetent location, SFJ/SPJ ligation, stripping, phlebectomy or perforator ligation. The bilateral cases were made to run in stages. Daytime compression stockings were recommended in the postoperative period (six months). The 1, 3, and 6 months were used as the follow-up period.

Data Collection: Parameters used included age, gender, occupation, laterality, CEAP class, the involved venous segment, complications, type of procedure, and postoperative outcomes.

Statistical Analysis: SPSS 23 was used to analyse the data. Frequencies and percentages were used to present the descriptive statistics. Categorical variables were checked

with the Chi-square test, and $p < 0.05$ was regarded as significant.



Figure 1: Showing the External appearance of varicosity on superficial Examination (tortuosity, widening & lengthening of veins).

RESULTS

Demographic Profile: The average age of patients was 42.3 years, with a range of 14.7 years. Females predominated (83.5%). The age group most frequently affected was that of 21-30 years (24.7 per cent).

Table 1: CEAP Classification of Chronic Lower Extremity Venous Disease

C – Clinical Classification	Description
C0	No visible or palpable venous disease
C1	Telangiectasia / Reticular veins
C2	Varicose veins
C3	Edema
C4a	Pigmentation or eczema
C4b	Lipodermatosclerosis / Atrophie blanche
C5	Healed venous ulcer
C6	Active venous ulcer
E – Etiological Classification	
Ec	Congenital
Ep	Primary (most common)
Es	Secondary (post-thrombotic)
En	No venous cause identified
A – Anatomical Classification	
As	Superficial veins
Ad	Deep veins
Ap	Perforator veins
An	No venous location identified
P – Pathophysiological Classification	
Pr	Reflux
Po	Obstruction
Pr,o	Reflux + Obstruction
Pn	No venous pathophysiology

Table 2: Age Distribution of Patients (n=85)

Age Group (Years)	Frequency	Percentage
≤20	7	8.2%
21-30	21	24.7%
31-40	15	17.6%
41-50	16	18.8%
51-60	15	17.6%
61-70	8	9.4%
≥71	3	3.5%
Total	85	100.0%

Table 3: Gender Distribution (n=85)

Gender	Frequency	Percentage
Female	71	83.5%
Male	14	16.5%
Total	85	100.0%

Table 4: Laterality of Varicose Veins (n=85)

Diagnosis	Frequency	Percentage
Bilateral varicose	5	5.9%
Left side varicose	42	49.4%
Right side varicose	38	44.7%
Total	85	100.0%

Table 5: Occupational Distribution (n=85)

Occupation	Frequency	Percentage
Business Man	10	11.8%
Farmer	38	44.7%
Housewife	17	20.0%
Policeman	5	5.9%
Student	13	15.3%
Teacher	2	2.4%
Total	85	100.0%

Table 6: Disease Complications (n=85)

Complication	Number of Patients	Percentage
Pigmentation	26	30.6%
Dermatitis	12	14.1%
Thrombophlebitis	5	5.9%
Ulcer	2	2.4%
Hemorrhage	0	0.0%

Table 7: Postoperative Complications (n=85)

Complication	Number of Patients	Percentage
Seroma	10	11.8%
Neuropathy	5	5.9%
Wound infection	3	3.5%
Hematoma	2	2.4%
Recurrence	4	4.7%

Table 8: Surgical Procedures Performed (n=85 procedures)

Procedure	Frequency	Percentage
Right SFJ Ligation	27	31.8%
Left SFJ Ligation	22	25.9%
Left SFJ Phlebotomies	6	7.1%
Left SPJ Ligation	4	4.7%
Right SPJ Ligation	4	4.7%
Multiple Phlebotomies	2	2.4%
Left SFJ+SPJ+Multiple Phlebotomies	1	1.2%
Others (combined procedures)	19	22.4%
Total	85	100.0%

Table 9: Association Between Age and Diagnosis

Age Group	Bilateral	Left Side	Right Side	Total
≤20	1	5	1	7
21-30	2	12	7	21
31-40	0	3	12	15

41-50	0	6	10	16
51-60	2	11	2	15
61-70	0	3	5	8
≥71	0	2	1	3
Total	5	42	38	85

Chi-square = 22.69, p = 0.030

DISCUSSION

Chronic venous disease represents a significant yet under-recognised public health problem, particularly in developing regions where occupational risk factors remain prevalent. The pronounced female predominance observed in the present study aligns with findings from both international and Indian epidemiological studies, which attribute increased susceptibility to hormonal influences, pregnancy-related venous dilatation, and prolonged domestic or occupational standing.^[1,12] Interestingly, the peak incidence within younger age groups in our cohort differs from Western population studies that demonstrate progressive age-related increase in disease prevalence.^[13] Similar observations have been reported from Indian and South Asian populations, suggesting earlier occupational exposure and delayed preventive healthcare utilisation as contributing factors.^[8,14] The predominance of left lower limb involvement noted in this study corroborates established anatomical explanations such as compression of the left common iliac vein by the right common iliac artery (May-Thurner mechanism), predisposing to venous stasis and reflux.^[15] Pigmentation emerged as the most frequent complication, reflecting chronic venous hypertension and delayed presentation. Comparable findings have been described in Indian hospital-based studies where socioeconomic constraints and limited disease awareness influence healthcare-seeking behaviour.^[9,16] Surgical intervention guided by duplex ultrasonography demonstrated favourable clinical outcomes with acceptable complication rates. Conventional procedures including saphenofemoral ligation and stripping continue to remain effective in resource-limited settings despite increasing adoption of endovenous techniques globally.^[11,17] Postoperative seroma formation constituted the most common complication in our series, consistent with previously reported outcomes following open venous surgery.^[18] The relatively low recurrence rate observed supports meticulous preoperative reflux mapping and selective surgical correction. Occupational analysis in the present study strongly reinforces prolonged standing as a major modifiable determinant of chronic venous disease. Preventive interventions such as workplace ergonomics, periodic limb elevation, compression therapy, and early screening programmes have demonstrated effectiveness in reducing disease progression.^[7,19] Although limited by single-centre design and moderate sample size, this study provides valuable regional insight into demographic and clinical characteristics of varicose vein disease in Kashmir. Future multicentric studies incorporating minimally invasive endovenous modalities, long-term follow-up, and quality-of-life assessment are warranted to optimise management strategies.^[17,20]

CONCLUSION

The varicose veins remain a severe population health concern in Kashmir, particularly among young women and work groups that have to stand long and often. We demonstrate that clinical examination and correct patient diagnosis, supported by duplex imaging and personalised surgical care, can achieve successful outcomes in terms of patient function and appearance, with minimal complications. An interdisciplinary approach to collaboration among operative specialists, radiologists, and occupational health professionals will be used, and the cooperation should benefit the patient by reducing the number of recurrences and improving quality of life.

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Conflicts of interest

There are no conflicts of interest.

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