



Original Research Article

CLINICAL STUDY OF VARICOSE VEINS OF LOWER LIMBS AND ITS MANAGEMENT

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ABSTRACT

Background: Varicose veins of the lower limbs are a prevalent peripheral vascular disease affecting a significant portion of the adult population. Despite its common occurrence, many patients seek medical attention only after complications arise. This study aims to evaluate the clinical presentations, management strategies, and outcomes of patients with varicose veins to improve treatment protocols and patient outcomes.

Materials and Methods: This prospective, hospital-based study was conducted over 24 months and included 60 patients admitted to the Department of General Surgery at a tertiary care hospital. Patients aged 20-75 years with primary varicose veins were randomly selected. Exclusions were made for those with recurrent varicose veins, deep venous thrombosis, secondary varicosities, pregnancy-associated varicose veins, and those with abdominal masses. Data collection involved detailed clinical examinations, routine and special investigations, pre-operative and post-operative management, and follow-ups.

Results: The study included 60 patients, predominantly males (88.33%), with an age range of 21-75 years. The highest incidence was observed in the 41-50 years age group (31.67%). The clinical classification using the CEAP system revealed that 36.67% of patients were in Class 2, and 20% had active venous ulcers (Class 6). Occupations involving prolonged standing, such as farming (26.67%) and daily wage labor (21.67%), were identified as significant risk factors. The left limb was more frequently affected (50%) compared to the right (31.67%). Venous incompetence primarily involved the great saphenous system (70%) and was confirmed using duplex ultrasound. Surgical interventions, including sapheno-femoral flush ligation and stripping, were performed, with 43.33% undergoing the former procedure. Post-operative complications included seroma (10%) and wound infections (6.67%), with a recurrence rate of 6.67%. Long-term follow-up indicated improved quality of life and functional outcomes for most patients.

Conclusion: Varicose veins predominantly affect middle-aged males engaged in occupations requiring prolonged standing. Accurate clinical and duplex ultrasound assessments are crucial for effective management. Surgical intervention, particularly sapheno-femoral flush ligation and stripping, yields significant symptomatic and cosmetic improvements. Despite the effectiveness of surgery, long-term follow-up is essential to monitor and manage recurrences and complications.

Keywords: Varicose veins, Lower limbs, Peripheral vascular disease

INTRODUCTION

Varicose veins of the lower limb and their treatment is as old as mankind. Varicose veins are one of the commonest ailments of people, probably one in five women and one in fifteen men over the age of forty-five are affected. The numbers of patients coming to the hospital for the treatments of varicose vein are much less than the real incidence. The reason could be that the patients did not come to hospital unless they develop some complications like pain, eczema and ulcerations. Varicose veins of the lower limb are the most common peripheral vascular disease. Varicose vein surgery produces high percentage of good results if meticulous surgery is followed. The term varicose is derived from the Latin word meaning dilated". The definition of varicose veins varies widely ranging from clearly visible, dilated, tortuous and possibly prominent subcutaneous veins of lower extremities according to Arnoldi, to varicose veins secondary to loss of valvular efficiency according to Dodd and Cockett, Vein with a saccular dilatation which is often tortuous according to WHO.^[1]

The prevalence has been variously reported from as little as 2% to over 20% in population studies. This enormous variation results from the different populations studied, different definitions applied and the different assessment or examination techniques used. Western studies have shown that 20% population suffers from varicose vein and 1% has skin changes preceding to venous ulceration.^[2] It's in the developed countries where attire reveals more than it conceals; patients turn up for treatment of cosmetic reasons. In our Indian scenario it's the complications not the cosmetic reasons bring the patient to the doctor. That is the reason, why, though common, varicose veins remain as an ice-berg phenomenon.

Objectives

- To study the age, sex and occupational distribution of varicose veins of lower limb
- To study the different clinical presentations of varicose veins and find out the incompetence in lower limb varicose veins.
- To study the management of varicose veins and its outcome.
- To study the complications associated with varicose veins in lower limbs.

MATERIAL AND METHODS

The study, titled "Clinical Study of Varicose Veins of Lower Limbs and Its Management," was designed as a hospital-based prospective study conducted over 24 months. The study included a sample of 60 cases, sourced from patients admitted to the surgical wards of the Department of General Surgery at a tertiary care hospital. The selection of cases was random. During this period, 60 patients with varicose veins were studied. Data were

collected through a detailed proforma, capturing clinical findings, coexisting medical illnesses, routine investigations, and special investigations where necessary. The study documented pre-operative treatments, operative findings, and post-operative outcomes. Inclusion criteria encompassed patients of both sexes aged 20-75 years, clinically diagnosed with primary varicose veins, including those with unilateral and bilateral varicose veins, as well as complicated cases. Exclusion criteria included patients with recurrent varicose veins, concurrent deep venous thrombosis, secondary varicosities, varicose veins associated with pregnancy, and varicose veins with an abdominal mass. The patients were investigated, operated on, and followed up with a focus on documenting the final outcomes. Routine follow-ups were conducted during the immediate post-operative period and daily until discharge, noting any complications and administering necessary treatments. Post-surgery, patients received IV fluids, broad-spectrum antibiotics, sedatives, and analgesics. Upon discharge, patients were advised on diet, rest, work limitations, drug regimen, avoiding prolonged standing, and using elastic crepe bandages. Follow-up visits were scheduled every 15 days for one month and then monthly, during which the general condition and operated limb were examined for wound healing, scar appearance, tenderness, and recurrence.

RESULTS

60(Sixty) patients with primary varicose veins who were treated are included in the study. The age of these patients ranged from 21 yrs to 75 yrs. 1 patient (1.67%) was in the 21-30 years age group, 10 patients (16.67%) were in the 31-40 years age group, 19 patients (31.67%) were in the 41-50 years age group, 16 patients (26.67%) were in the 51-60 years age group, and 14 patients (23.33%) were over 61 years old. 53 patients (88.33%) were male, and 7 patients (11.67%) were female. 40% of patient's had positive family history, which is one of the important risk factor in the development of varicose veins.

The clinical classification according to the CEAP (Clinical-Etiological-Anatomical Pathophysiological) system was distributed as follows: 22 patients (36.67%) were classified as CEAP Class 2, indicating the presence of visible varicose veins. Twelve patients (20%) fell into CEAP Class 3, characterized by the presence of edema. Another 10 patients (16.67%) were in CEAP Class 4, which includes skin changes such as pigmentation and eczema. Similarly, 12 patients (20%) were classified as CEAP Class 5, indicating healed venous ulcers. Lastly, 4 patients (6.66%) were in CEAP Class 6 representing active venous ulcers. There were no patients in CEAP Classes 0 or 1 in this study.

Out of 60 cases, maximum are noted in farmers 16 patients (26.67%), daily wage labourer 13 patients (21.67%). [Table 1]

Left limb was more affected 30 cases (50%) than right limb 19 cases (31.67%). In 11 of the cases (18.33%), both the limbs were involved. [Table 2]

All 60 patients had leg pain, cosmetic problem. 18 patients had dermatitis and 14 patients suffered from leg ulcer. [Table 3]

Long saphenous system is the most common venous system affected by varicosity (63.33%). Both the long and short saphenous system is affected in 11.66% of the cases. [Table 4]

Duplex ultrasound was required to accurately diagnose perforator incompetence in 4 patients. [Table 5]

Most common surgical procedure performed is Sapheno-femoral flush ligation + Stripping was done in 26 cases (43%). [Table 7]

Total number of complications was 18; Seroma was commonest with 06 cases. There was recurrence of varicosity in 04 cases. [Table 8]

Out of 18 patients who underwent long segment stripping of long saphenous vein 2 patients had

saphenous neuritis accounting for 11% of cases. [Table 9]

- In 12 cases only saphenofemoral flush ligation was done and recurrence was noted in 4 patients in 12 months follow up.
- In 4 patients saphenofemoral flush ligation with multiple subfascial ligation was done and recurrence was noted in 1 patient.
- In 4 patients multiple stab avulsion was carried with saphenofemoral flush ligation and recurrence was noted in 1 patient.

Pre-operative stay in hospital was longer in patients with ulcer patients was 12 days. Post-operative stay in hospital was longer in patients with wound infection and saphenous neuritis was 13 days. [Table 10]

Overall quality of life was improved in all patients. 80% cases felt cured and 20% felt better after surgery. 40 patients felt leg pain was cured. Leg swelling was disappeared in 7 patients.

Leg ulcer was cured in 8 patients. 48 patients were able to work well after surgery. [Table 11]

Table 1: Occupational Risk

OCCUPATION	NUMBER OF PATIENTS (n=60)	PERCENTAGE(%)
FARMER	16	26.67%
POLICEMAN	7	11.67%
DAILY WAGE LABROUR	13	21.67%
BUSSINESSMAN	4	6.67%
BUS CONDUCTOR	2	3.33%
TEACHER	3	5%
HOMEMAKER	6	10%
TRUCK DRIVER	5	8.33%
SHOP KEEPER	4	6.67%
TOTAL	60	100%

Table 2: Side Affected

SIDE	NO. OF CASES (n=60)	PERCENTAGE (%)
Right	19	31.67%
Left	30	50%
Both limbs	11	18.33%
TOTAL	60	100 %

Table 3: Pre-Operative Symptomatology

Symptoms	No of cases (n=60)	Percentage(%)
Leg Pain	60	100%
Dilated Veins	60	100%
Pigmentation of skin	14	23.33%
Dermatitis	18	30%
Ankle swelling	12	20%
Non healing Ulcer	14	23.3%
Phlebitis	0	-
Bleeding	0	-

Table 4: Venous System Involved

VENOUS SYSTEM INVOLVED	NO. OF CASES (n=60)	PERCENTAGE (%)
Great saphenous system + Perforator incompetence	42	70
Short saphenous system + Perforator incompetence	07	12
Both systems with perforator incompetence	11	18

Table 5: Correlation Between Clinical Examination V/S Duplex Ultrasound.

Findings	Clinical Examination (n=60)	Duplex USG (n=60)
Sapheno-femoral incompetence	52	52
Sapheno-popliteal incompetence	8	8
Perforator Incompetence		
Above knee perforator	00	01
Below knee perforators	13	14
Lower Leg perforators	06	06
Multiple perforators	20	22
Deep venous thrombosis	-	-

Table 6: Surgical procedures performed

Surgical procedures	Limb	Percentage
Sapheno-femoral flush ligation + Stripping	26	43.33%
Sapheno-femoral flush ligation + Stripping + Multiple stab avulsion	06	10%
Sapheno-femoral flush ligation + Stripping + Subfascial ligation	14	23.33%
Sapheno-femoral flush ligation + Stripping + Sapheno popliteal ligation	04	6.66%
Sapheno-femoral flush ligation + Stripping + Sapheno popliteal ligation + Subfascial ligation	06	10%
Sapheno popliteal ligation alone	02	3.33%
Multiple stab avulsion alone	02	3.33%

Table 7: Post Operative Complications

COMPLICATIONS	NO. OF CASES	PERCENTAGE
Bleeding	00	00
Haematoma	02	3.33
Seroma	06	10
neuropathy	02	3.33
Delay healing	02	3.33
Wound infection	04	6.67
Recurrence	04	6.67

Table 8: Complication Of Stripping:

Long saphenous stripping	No. of patients	Saphenous neuritis
Long segment	18	2
Short segment	18	-

Table 9: Recurrences After Surgical Management

Type of surgery	No of patients	Recurrence	%
SFFL	12	4	33.33%
SFFL+MSFL	4	1	25%
SFFL+MSA	4	1	25%

Table 10: Patients with complicated varicose veins and duration of stay in hospital both in preoperative and postoperative period

Complicated varicose veins patients planned for surgery	Preoperative stay (Days)	Post operative stay (Days)
Patients with ulcer	12	10
Patients without ulcer or wound infection	4	8
Patients with infection post operatively	6	12
Patients with post operative saphenous neuritis	11	13

Table 11: Post Op Outcome

Symptoms	Cured	Better	Same	Worse
Leg Pain	40	20	-	-
Pigmentation of	10	4	-	-
Dermatitis	18	-	-	-
Cosmetic appearance	28	32	-	-
Leg Swelling	7	4	1	-
Ulcer healing	8	4	2	-
Bleeding	-	-	-	-
Ability to do work	48	12	-	-
Overall QOL	50	10	-	-
Pleased with result of surgery	60	-	-	-

DISCUSSION

This study, titled "Clinical Study of Varicose Veins of Lower Limbs and Its Management," is a hospital-based prospective investigation conducted over 24 months. The study aimed to evaluate the clinical presentation, management strategies, and outcomes of 60 patients with primary varicose veins. By analyzing both conservative and surgical treatments, the research sought to provide a comprehensive understanding of effective management practices. This study's findings are intended to enhance the clinical approach to varicose veins, ultimately improving patient care and outcomes.

Majority of the patients in the study were less than 50 years. So it is the disease, which affects the youth and the bread-earning members of the society.

In this series male to female ratio was found to be 6:1. Widmer recorded a ration of 1:1

The decreased occurrence of disease in females at our set up may be due to the fact that our middle class and lower class women are not much worried about the cosmetic appearance. Secondly the women may be resistant to complications of varicose veins probably due to hormonal influence or less average height compared to male which has a direct impact on venous hypertension or less violent muscular activity.

In this study 56% of patient's belong to the group whose occupation involved prolonged standing.

Limb Involvement: In our study, left lower limb was involved in 30(50%) cases and right lower limb was involved in 19(31.67%) cases and in 11(18.33%) both limbs were involved.

In present study right and left limb involvement is 31.67% and 50% respectively, which compares favorably with study conducted by Dur AHM et al, which was right limb 48.55% and left limb 51.45%.

Both limbs involvement in this study were seen in 4 patients.

Almost all patients had prominent varicosities and pain as common symptom, associated with other manifestations and complications of varicose veins. Cosmetic appearance was the commonest presenting complaint, which favors with the other comparative studies.

The majority of the patients (70%) had sapheno-femoral and perforator incompetence.

Isolated perforator incompetence was seen only in 2% of patients. 14% patients present with combined sapheno-femoral, sapheno-popliteal and perforator incompetence.

Both studies showed that Trendelenburg's operation with stripping offered very effective results.

In my series, 38 patients had skin changes. 24 (63.15%) had combined superficial and perforator incompetence, 12 (31.57%) had isolated superficial incompetence, and 2 (5.26%) had isolated perforator incompetence.

- In a similar study by T.A. Lees & D. Lambert⁴² (60 patients with skinchanges), 39 (65%) had combined superficial and perforator incompetence. 17(28.33%) had isolated superficial incompetence, and 2 (3.33%) had isolated perforator incompetence. Incompetent perforator was noted in 41 (82%) cases.

Conservative treatment was given to all the patients pre-operatively with the idea of improving the limb and making it fit for surgery. Postoperative compression treatment was followed routinely to prevent hematoma formation after stripping and were advised elastic crepe bandage/stockings for three to four months. Sclerosant therapy was not tried in this series because of the paucity and nonavailability of the sclerosant agents and also because of the presence of major +incompetence.

Table 12: Comparison of age among different studies

Age (years)	Lateef MA et al ³	Ratkal C et al ⁴	Present study
Below 20	05%	06%	0%
20 – 40	65%	72%	18.34%
Above 40	30%	22%	31.67%

Table 13: Comparison of gender among different studies

	Male: Female
Present study	5:1
Widmer LK et al ⁵	1:1

Table 14: Comparison of occupation among different studies

Occupation	Mirji P et al ⁶	Ratkal C et al ⁴	Present Study
Occupation involving prolonged standing	85.7%	44%	56%

Table 15: Comparison of limb involvement among different studies

Limb	Dur AHM et al ⁷	Prasad BKP et al ⁸	Present study
right	48.55%	56%	31.67%
left	51.45%	40%	50%

Table 16: Comparison of Venous System involvement among different studies

Venous System involved	Janugade HB et al ⁹ (2017)	Present Study
Long Saphenous Vein	85%	70%
Short Saphenous Vein	14.28%	11.7%

Table 17: Comparison of Clinical Manifestations among different studies

Symptoms	Present Study		Rudofsky G et al ¹⁰	O'Shaughnessy M et al ¹¹
	No. Of patients	%		
Prominent veins	60	100.00	90.00	92.00
Prominent veins and pain	60	100.00	30.00	54.00
Prominent veins and edema	29	48.33	52.00	62.00
Pigmentation and Lipodermatosclerosis	14	23.33	13.00	22.00
Venous ulceration	14	23.33	9.00	14.00
Previous history of DVT	-	-	-	5.00

Table 18: Comparison of treatment of varicose veins among different studies

Procedures	Present study	Sahu SK et al., ¹²
Trendelenburg operation + Stripping	43.33%	42.85%

Table 19: Site of Incompetence and Complications

Site of incompetence in complicated varicose veins (class 3 and above)	Leese TA et al., ¹³	Present study
Isolated Superficial Incompetence	17(28.33%)	12 (31.57%)
Combined superficial and Perforator Incompetence	39 (65%)	24 (63.15%)
Isolated Perforator Incompetence	2 (3.33%)	2 (5.26%)
No Reflux	2 (3.33%)	0

CONCLUSION

This study of sixty cases of lower limb varicose veins reveals that while varicosity is common, many patients do not seek treatment due to lack of symptoms. The condition predominantly affects males aged 41-50 and is linked to occupation, with the long saphenous system and left limb more commonly involved. Clinical examination is highly predictive, and color Doppler is recommended to enhance treatment effectiveness and reduce recurrence. Effective management relies on thorough clinical examination and duplex scanning, with surgery being a primary treatment. Many patients showed cosmetic and symptomatic improvement, although long-term follow-up is needed. Despite promising new treatments, their high cost necessitates medical insurance for broader accessibility.

REFERENCES

1. Shenoy RK. Varicose veins and deep vein thrombosis: Manipal manual of surgery. 5th Ed. New Delhi: CBS Publishers & Distribution Pvt Ltd; 2020.
2. Bailey H, Love RJMN, Russell RCG, Williams NS, Bulstrode CJK. Venous disorders: Bailey and Love's short

practice of surgery. 27th Ed. London: Arnold Publishers; 2018.

3. Lateef MA. Clinical pathological study of the primary varicose veins in the lower limb, Br.J.Surg. 1995; 82: 855-856
4. Ratkal C. Clinical Pathological study of varicose veins of the lower limb. University of Mysore; 1980.
5. Widmer LK ed. Peripheral venous disorders prevalence and socio-medical importance. Bern: Hans Huber, 1978:1-90
6. Mirji P, Emmi S, Joshi C. Study of Clinical Features and Management of Varicose Veins of Lower Limb. Journal of Clinical and Diagnostic Research. 2011; 5(7): 1416-1420
7. Dur AHM, Mackay AJC. Duplex assessment of clinically diagnosed chronic venous insufficiency. Br. J. surg. June 1992; 79: 155-161.
8. Prasad BKP, Prem Kumar A. Clinical Study of Varicose Veins and their Management. Int J Biomed Advance Res. 2015;6(8):564-8
9. Janugade HB, Patil BP, Tata NH, Saygaonkar HV, Janugade DH, Dokania V. Clinical profile and management of lower limb varicose veins. 2017;6(2):1615-22
10. Rudofsky G. Epidemiology and pathophysiology of primary varicose veins. Langenbecks Arch Chir 1988; Suppl 2:139-44
11. O' Shaughnessy M. Surgery in the treatment of varicose veins. Ir Med J. 1989 June; 82(2): 54-55
12. Sahu SK, Bhushan S, Sachan PK. Clinico-Anatomical and Radiological Study of Varicose Veins of Lower Limb and Their Management Outcomes. The Internet Journal of Surgery. 2012;28(2).
13. Leese TA, Lambert D. Patterns of venous reflux in limbs with skin changes associated with chronic venous insufficiency. Br. J. Surg. June 1993; 80: 725-28.