

# Surgical Management of Varicosity of Lower Limb and its Complications: A Clinical Study

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## ABSTRACT

**Background:** Varicose veins are a common condition that the current paper elaborates the features of the condition in a local Indian population. This prospective clinical study of surgical management of varicose vein was conducted to study the age, sex and occupational distribution of varicose veins of lower limb. Evaluations of clinical features and surgical methods of treatments that were in practice in the management of varicose veins in terms of recurrence and symptoms improvement were also studied. **Methods:** Two years prospective study was conducted in our institution from April 2016 to March 2018. During this period 68 cases of varicose veins of lower limbs were admitted to our hospital of which 60 cases were selected and were studied in detail. After thorough clinical examination and relevant investigation they are all subjected to surgical management. **Results:** Out of 60 cases studied, 31 (62%) had only long saphenous vein involvement, 7 (14%) had short saphenous vein involvement and in 5 (10%) cases both short and long saphenous system were involved. In addition to long saphenous vein involvement, incompetent perforators were present in 17 (34%) cases. Among them prominent veins and pain were the main complain in 38 (78%) patients. Itching and pigmentation were present in 4 (8%) patients. Ankle edema was present in 6 (12%) patients. Pain and ulceration of lower leg were present in 2 (4%) patients. After clinical assessment appropriate surgical procedures were followed for each of patients. These cases were followed for 3 year durations. Out of 60 patients 7 (14%) patients had recurrence of varicose vein. 7 (14%) patient complained of recurrence of pain after 2 years of surgery but no appearance of varicose vein. One patient complained of persistence of pigmentation after surgery. 2 patients complained of persistence of ankle edema and there was complete healing of ulcer which was present earlier. **Conclusion:** Commonest age group of varicose vein of lower limb was 20 to 40 years. Definite relationship exists between the occupation and the incidence of varicose veins. The patients were in the occupation which required standing for long time had the higher chances of varicose vein. Severity of the symptoms is not proportional to the duration of varicose veins. The involvement of long saphenous vein is more common than the short saphenous vein. Since our study shows very low percentage of recurrence and symptoms related to varicose vein the surgical line of treatment is an ideal treatment for varicose vein. For incompetent perforators, sub-fascial ligation appears to be a better method of treatment than extra fascial ligation. Because in the former all the perforators could be visualized and dealt with, while in the latter there were chances of missing one or two perforators. If cases are selected properly with good operative technique the complications are negligible.

**Keywords:** Long saphenous vein, Varicose ulcer, Primary varicose veins; Preoperative; Venous incompetence.

## INTRODUCTION

Varicose veins occur commonly in the general population but despite much research the etiology of venous disease is still poorly understood. Varicosity of the lower limb and its treatment is as old as mankind. These have been recognized as a chronic disorder since ancient times as their discussion is documented from the days of Hippocrates 2500 years ago. He observed that 'it was better not to stand in the case of an ulcer on the leg' with reference to varicose veins.<sup>[1]</sup> Varicose veins are

one of the commonest ailments of people 20% of the population suffers with varicose veins and 2% have skin changes that may precede venous ulceration.<sup>[2]</sup> The considerable knowledge has been gained about anatomy, pathophysiology and clinical management of varicose veins of the lower extremities during the past few years. The most important of these studies has been on the behavior of venous pressure of superficial and deep veins of lower limbs in standing position, during rest and exercise and on the function of muscular venous pump. The numbers of patients coming to the hospital are much less than the real incidence of the treatments of varicose vein. The reason could be that the unless patient develop some complications like pain, eczema and ulcerations they did not come to hospital for treatment of varicose vein. The most common peripheral vascular disease is Varicose veins of the lower limb. Varicose vein

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surgery if followed with meticulous surgery will produce high percentage of good results.

### **Aims and Objectives**

The aims and objective of this prospective clinical study of surgical management of varicose vein was to study the age, sex and occupational distribution of varicose veins of lower limb and evaluations of clinical features and surgical methods of treatments that were in practice in the management of varicose veins in terms of recurrence and symptoms improvement were also studied.

## **MATERIALS AND METHODS**

This prospective study was done in teerthanker mahaveer medical college and hospital from april 2016 to march 2018

Patients who were having varicose veins attending our hospital formed the subject of the study. Our sample size was 60 patients. All patients with varicose vein of any age attending our hospital were included in the study. Patient with history of acute or chronic deep vein thrombosis were excluded from the study.

A Performa was made and in out patient department a detailed history and thorough physical examination of the patients having varicose vein were carried out and recorded in the Performa. Appropriate laboratory investigations were carried out. for confirmation of diagnosis and to rule out deep vein thrombosis all patients were subjected to Doppler ultrasound of both lower limbs. Written informed consent have been taken from patient after informing them about the procedure of the study before subjecting them to include in the study. Before the operative procedure the complication of long standing varicose vein such as edema, ulceration and dermatitis were taken care of.

These 60 cases of varicose vein constituted 0.6% of the total surgical admissions in our hospital during that period. The age of the patients studied varied from 15 to 70 years. There were 51 males and 9 females.

**Table 1: Age and sex incidence.**

Age in years	Male	Female	Total
15-20	10 (20%)	0	10 (20%)
21-30	12 (24%)	4 (8%)	16 (32%)
31-40	15 (30%)	3 (6%)	18 (36%)
41-50	9(18%)	1 (2%)	10 (20%)
51-60	4 (8%)	0	4 (8%)
61-70	1 (2%)	1 (2%)	2 (4%)
Total	51 (82%)	9 (18%)	60

Among 60 patients studied, 54 patients exhibit a definite history of standing for long duration. In that 38 were agricultural and related workers and 6 were businessmen who required standing for long duration during their work. Others are sedentary workers. Among 60 patients, only 2 gave the family

history of the same problem. So the incidence of family history of varicose vein in this study were very low (4%). In this series, 36 patients had varicosity in the left lower limb and 21 had varicosity in the right lower limb and the remaining 3 had bilateral limb involvement.

The average duration of symptoms in this study was 4 years. The longest duration of symptom was 6 years and shortest was 6 months. The predominant symptom in majority of cases was prominent veins and dullaching pain.

Leg involved	No. of patients (60)	Percentage
Left leg	36	62%
Right leg	21	42%
Bilateral	3	6%

Presentation of symptoms	No. of cases	Percentage
Prominent vein andpain	48	88%
Itching and pigmentation	4	8%
Ankle edema	6	12%
Pain and ulceration	2	4%
Total	60	110

## **RESULTS**

The following table explains the type of venous system involved.

Type	No. of cases	Percentage
1. Long saphenous system	31	62%
2. Long saphenous + incompetent perforators	17	34%
3. Short saphenous system	07	14%
4. Both long and short saphenous veins involvement	05	10%
Total	60	110%

No.	Surgical procedure	No. of patients
1.	Saphenofemoral flush ligation and ligation of anatomical constant tributaries at their termination along with stripping of long saphenous vein by using intraluminal stripper.	31 (62%)
2.	Perforators were identified sub-fascially and ligated in addition to the above procedure.	17 (34%)
3.	Saphenofemoral and saphenopoplital flush ligation with stripping of both long and short saphenous vein.	3 (6%)
4.	The saphenofemoral, saphenopoplital flush ligation with stripping of long and short saphenous vein and sub-fascial ligation and excision of incompetent perforators were performed.	2 (4%)
5.	Saphenopoplital flush ligation with stripping of short saphenous was done after ligating the tributaries.	6 (12%)
6.	Saphenopoplital flush ligation with sub-fascial ligation of perforators.	1 (2%)
Total		60

Conservative treatment was followed preoperatively to improve the general condition of the patients and

to make them fit for surgery. Post-operative elastocrepe bandage was applied to all the cases to prevent haematoma formation after stripping of veins and advised to continue it for 2 more months after they were discharged from the hospital. The following surgical procedures were adopted.

In this series, stripping of long saphenous vein was done in 48 cases and stripping of short saphenous vein was done in 6 cases and stripping of both veins was done in 5 cases. Out of these, 3 patients complained of sensory impairment in cutaneous nerve distribution of long saphenous nerve and 1 patient complained of sensory impairment of distribution of sural nerve. The low incidence of sensory impairment in the present series may be because of better surgical technique and avoiding stripping of vein in distal third of leg where the nerve and vein travel very closely. The low incidence of sensory impairment is also due to the fact that most of our patients were village and agricultural workers who may not be bothered to notice slight impairment of sensation. Haematoma formation was noticed in 3 cases after stripping and it was resolved in about a month time. 6 cases had post operative wound infection and they were treated with appropriate antibiotics. There was no incidence of deep vein thrombosis.

These cases were followed for 3 year durations. Out of 60 patients 8 (16%) patients had recurrence of varicose vein. Eight patient complained of recurrence of pain after 2 years of surgery but no appearance of varicose vein. One patient complained of persistence of pigmentation after surgery. Two patients complained of persistence of ankle edema and there was complete healing of ulcer which was present earlier.

## DISCUSSION

Varicose veins of the lower limb are the most common peripheral vascular disease of mankind. The term varicose is derived from Latin word 'varicose', which means dilated. Varicose vein by definition means dilated, elongated and tortuous vein. In developed countries patients turn up to treatment for cosmetic reasons, however in our Indian scenario it is the complications and not the cosmetic reasons that bring the patient to the doctor. The age distributions of varicose vein shows majority of patients are between the age of 20 to 40 years which correlates well with study conducted by Promod Mirji et al and Lateef.<sup>[1,2]</sup> Among 60 patients studied, 44 patients exhibit a definite history of standing for long duration. In that 38 were agricultural and related workers and 6 were businessmen who required standing for long duration during their work. This suggests occupation has a definite role as a causative or a contributing factor. The occurrence of varicose vein in members of the same family suggests that the hereditary

factors may play a role. In our series among 60 patients, only 2 gave the family history of the same problem. So the incidence of family history of varicose vein in this study were very low (4%). The most common symptom was dilated veins with dull aching pain which occurred alone or in combination of limb edema, pigmentation or ulceration. It is evident from this series that the cosmetic factor is not the thing that prompts the Indian patient to seek treatment as do those in the west.<sup>[3,5]</sup>

In this series, left side involvement was present in 36 cases. Higher incidence of varicosity is in conformity with some authors who think that the varicose veins are more common in the left limb probably due to the venous drainage of the left leg follows a more tortuous course through the pelvis, with left common iliac vein traversed by the right common iliac artery and also due to presence of loaded sigmoid colon which exerts constant pressure on the vein in the pelvic cavity.<sup>[6]</sup> In 21 (42%) patients right leg was involved and 3 (6%) cases bilateral involvement was present. The present study revealed long saphenous vein involvement that was 43 patients (86%) with or without short saphenous system and perforators incompetence was most common. This was some what equivalent to other studies.<sup>[3,5]</sup> All patients in our study underwent Doppler ultrasound of both the legs for confirmation of the diagnosis and to rule out presence of deep vein thrombosis which we felt must before proceeding with surgical management.<sup>[5]</sup>

The total duration of hospital stay was 10 days in our study. Some of the western studies followed the basis of day care in varicose vein surgery and found that it is safe, feasible and more cost effective.<sup>[7,8]</sup>

In our series, no cases gave definite history of deep vein thrombosis and also no case had superficial thrombophlebitis. This finding was in conformity with some authors that the superficial thrombophlebitis as a cause of varicose veins is very rare and most probably phlebotic changes occur in the veins which are already varicosed.<sup>[9]</sup> The complications of varicose vein surgery are as such very rare. In our study, we noticed haematoma formation in 3 cases, which resolved by conservative treatment. 6 patients had postoperative wound infection, which was treated with antibiotics. There was no incidence of deep vein thrombosis postoperatively. Out of 60 cases, 3 patients complained of sensory impairment in cutaneous nerve distribution of long saphenous nerve and 1 patient complained of sensory impairment of distribution of sural nerve. The low incidence of sensory impairment in the present series may be because of better surgical technique and avoiding stripping of vein below midcalf where the nerve and vein travel very closely.<sup>[10]</sup>

In addition to surgery, sclerotherapy, foam therapy, laser endoluminal ablation and radiofrequency endoluminal ablation are the other available

treatments for varicose vein. In one meta-analysis of treatment of varicose vein mentioned these treatments appear to be safe with rare side effects. Surgery is the only treatment with long term effectiveness data. The other less invasive treatments are associated with shorter disability and less pain, but only short term effectiveness data.<sup>[11,12]</sup>

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## CONCLUSION

Commonest age group of varicose vein of lower limb was 20 to 40 years. The varicose veins of lower limbs are a disease of younger age group, occurring more commonly during third and fourth decades of life. The occupations involving prolonged standing and violent muscular efforts are more prone for developing varicose veins. Family history is found to be another contributory factor. Majority of our patients presented with complications of varicose veins rather than the disease itself. Presence of prominent swellings in lower limb and pain were the commonest presenting symptoms. Combined valvular incompetence is more common than individual incompetence. Saphenofemoral junction ligation with multiple subfascial ligation of perforators was the commonest operation in our hospital. Other procedures were done with good results depending on the requirement of the case. The most common post-operative complication was wound infection.

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