

ORIGINAL RESEARCH

## Clinical Study and Management of Varicose Veins of Lower Limbs

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### ABSTRACT

**Background:**To study the distribution, pathology, clinical features, various modes of investigations and overall management of varicose veins of lower limbs.

**Materials and Methods:** The study was carried out Govt Medical College/General Hospital, Suryapet from October 2021– March 2022 to evaluate the —Clinical presentation and management of varicose vein in lower limbs. 50 cases of varicose veins of lower limbs were presented and analysed in our study. Fifty cases of varicose veins of the lower limb have been studied in detail.

**Results:** Varicosity of the lower limb is a common clinical entity. The number of cases reporting to the hospital is much less than the real incidence; because in the absence of symptoms due to varicose veins patients do not seek treatment in our country. The commonest age group of patients suffering from varicose veins is 41 to 50 years. Most of the patient presented to the hospital for one or the other complications and not for cosmetic reasons. The majority of the patients were male. A definite relationship exists between the occupation and the incidence of varicose veins as most of our patients are workers standing for longer duration. The involvement of long saphenous system is more common than the short saphenous system. Left limb is affected more common. The cause for the same is not known but could be attributed to the longer course traversed by the left iliac veins. Clinical examination has a high predictive accuracy. It gives sufficient information to treat the patients in centres where colour Doppler is not available or affordable. The use of colour Doppler is a valuable supplement to clinical examination for effective treatment of varicose veins and its use is strongly recommended to prevent recurrences and reduce morbidity as it is effective tool in detecting venous incompetence and to rule out deep vein thrombosis. SPJ junction and perforators are highly variable and should always be marked pre-operatively using USG Doppler. Operative line of treatment is a primary procedure in the management of varicose veins of lower limbs. Venous ulcer heals well after surgery. Surgery is a quality modality for varicose veins patients with ulcer with low recurrence rate. Complications are negligible if cases are meticulously selected and operated. The present procedures enable the patient to lead almost normal life after surgery with few recoverable morbidities.

**Conclusion:** There is need for general health education and awareness about varicose veins in the society in order to achieve timely treatment with good outcome and to reduce the morbidity.

**Keywords:** varicose veins, long saphenous system, USG, Lower limbs, morbidity, Venous Ulcer.

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## INTRODUCTION

Varicose veins and their associated symptoms and complications constitute the most common chronic vascular disorder of the lower limb. The term 'varicose' is derived from the Latin word meaning 'dilated'. Varicose veins are defined as dilated, tortuous and elongated veins.

Varicose veins are a common medical condition present in at least 10% of the general population.<sup>[1]</sup> The symptoms of varicose veins range from symptomatic varicose veins to more severe complications such as ulceration and bleeding.

Varicose veins may cause significant morbidity including dermatitis, ankle edema, spontaneous bleeding, superficial thrombophlebitis, lipo-dermatosclerosis and ulceration.

Varicose veins were recognized pre historically and many inventions were made regarding the diagnosis and treatment of varicose veins by many phlebologists including many bandaging techniques, ligation and stripping of veins. The attention was mainly towards the mechanical effects of the varicosity rather than the basic cause. It is only in the recent past that considerable knowledge has been gained concerning the anatomy of the venous system of the leg, the physiological mechanism of venous return to the heart against gravity and pathology of the disorder, which has led to many newer modalities of investigations and treatment.

The Doppler ultrasound and duplex imaging has become the mainstay of investigations in the diagnosis of chronic venous insufficiency.<sup>[2]</sup>

The treatment options for varicose veins includes Trendelenburg operation, Stripping, Subfascial ligation of perforators, Laser, Sclerotherapy, Subfascial endoscopic perforator surgery & Radiofrequency ablation. In the recent past, minimally invasive procedures are replacing the more invasive procedures.

The search for more effective means of diagnosing and treating the varicose veins and prevention and management of its complications continues and this Research paper aims at studying the distribution, pathology, clinical features, various modes of investigations and overall management of varicose veins of lower limbs.

## Aim & Objectives

1. To study the incidence of varicose veins according to age, sex and occupation.
2. To study spectrum of clinical presentation in varicose veins.
3. To study the various surgical methods for the management of varicose veins.
4. To study effect of surgery in healing of varicose ulcers if present.
5. Study of recurrence of varicose veins and venous ulcers up to 6 months.

## MATERIALS & METHODS

This was a prospective study involving 50 patients who presented with symptoms of primary varicose veins to Govt Medical College/General Hospital, Suryapet from October 2021–March 2022.

### Inclusion criteria

Patients presenting with signs and symptoms of primary varicose veins who get investigated with Doppler studies and undergo an appropriate definitive surgical procedure.

### Exclusion criteria:

1. Secondary varicose veins
2. Recurrent varicose veins
3. Deep venous incompetence

#### 4. Varicose veins other than lower limbs

**Study design:** All patients who presented to our outpatient department with symptoms of primary varicose veins were meticulously examined and later subjected to Colour Doppler studies before they underwent surgery for the same.

#### Clinical examination

After obtaining an adequate history, the patient was examined in standing position with good illumination, exposing both the lower limbs completely. The following tests were performed:

- Brodie Trendelenburg I and II, Modified Perthe's test, multiple tourniquet test, Schwartz test, Morrissey's cough impulse test, Fegan's test
- Abdominal and rectal examination

The results of the tests were documented according to the clinical proforma.

#### Colour Doppler ultrasonography

We used the Toshiba ultrasonography machine.

Using a 7-10 MHz probe, the patients were examined in standing position along the whole length of the long saphenous and short saphenous systems.

The following signs were specifically looked for:

1. Sapheno femoral junction incompetence
2. Sapheno popliteal junction incompetence
3. Perforator incompetence
4. Deep venous system
5. Presence of abnormal or unnamed veins or perforators and the sites of incompetence were marked by indelible skin pencil.

#### Intraoperative findings:

The following operative procedure were undertaken –

- High, flush ligation of saphenofemoral junction with or without stripping of long saphenous vein.
- High, flush ligation of sapheno popliteal junction without stripping of short saphenous vein.
- Incompetent perforator vein ligation.

The intra-operative results were documented in the proforma.

#### Follow-Up

All patients were discharged after 7 to 14 days with mean 7 days after surgery with elastic crape bandage. They were all followed up for a minimum of 4 months after they were discharged for symptomatic relief, recurrence of varicosity, healing of varicose ulcers.

Ethical clearance has been obtained from our institution.

#### RESULTS

50 (Fifty) patients with primary varicose veins who were treated in M.G.M Hospital, Warangal, during November 2018 to December 2020 were included in the study.

**Table 1:Age Distribution**

Age In Years	No. of Patients	Percentage
11-20	2	4%
21-30	10	20%
31-40	12	24%
41-50	13	26%

51-60	8	16%
61-70	5	10%
Total	50	100%

Mean  $\pm$  SD: 42.14 $\pm$ 13.58 The age of these patients ranged from 20 yrs to 69 yrs. The commonest age group of patients was between 41 to 50 yrs (26 %).

**Table 2: Gender Distribution**

Gender	No. of Patients	Percentage
Male	37	74%
Female	13	26%
Total	50	100%

Gender distribution: Out of 50 patients, 74% (37 patients) were male and 26% (13 patients) were female.

**Table 3: Occupation**

Occupation	No. of Patients	Percentage
Farmer	20	40%
Shopkeeper	10	20%
Traffic Police	1	2%
House wife	0	12%
Bar Tender	3	6%
Masons	3	6%
Others	7	14%
Total	50	100%

**Occupation** – Most of these patients belonged to agricultural background (40%) and long-standing occupations.

**Table 4: Limb Involvement**

SIDE	No. of Patients	Percentage
Right	15	30%
Left	35	70%
Total	50	100%

**Limb involvement:** Out of 50 patients the left limb involvement was seen in 70% (35 patients) and right limb involvement in 30% (15 patients)

**Table 5: Symptomatology**

Symptom	No of patients	Percentage
Dilated veins	46	92%
Pain	38	76%
Ulcer	21	42%
Edema	10	20%
Periostitis	0	0
Equinus Deformity	0	0

**Symptoms:** Our patients presented with varied symptoms, out of which dilated veins was the most common in 46 (92%) patients, followed by pain in 38 (76%) patients

**Table 6: Venous System Involved**

System involved	No. OfPatients	Percentage
Only Long Saphenous Vein (LSV)	45	90%

Only Short Saphenous Vein (SSV)	2	4%
Long Saphenous Vein + Short Saphenous Vein	3	6%
Sapheno femoral junction incompetence (SFJI)	44	88%
Sapheno-popliteal junction incompetence (SPJI)	5	10%
Incompetent Perforator (I P)	44	88%

**Table 7: Treatment**

Procedure done	No. of patients	Percentage
Sapheno femoral junction Ligation + Stripping of long saphenous vein + Perforator Ligation	28	56%
Sapheno femoral junction Ligation + Perforator Ligation	7	14%
Sapheno femoral junction Ligation	6	12%
Sapheno femoral junction Ligation + Sapheno-Popliteal Junction Ligation + Stripping of long saphenous vein+ Perforator Ligation	3	6%
Perforator Ligation (IPL)	4	8%
Sapheno-Popliteal Junction Ligation + Perforator Ligation	2	4%

**Table 8: Complications**

Complications	No. of patients	Percentage
Seroma	1	2%
Haematoma	4	8%
Wound Infection	2	4%
Limb oedema	1	2%
Paraesthesia	1	2%
Delayed healing	2	4%
Total	11	22%

Total number of complications were 22% (11 patients); Haematoma was commonest at 8% (4 patients) followed by wound infection at 4% (2 patients).

**Table 9: Correlation of age with Recurrence of Varicose of Veins**

Age in years	No. of Patients	No. of patients with recurrence of Varicose Veins	Percentage of recurrence of varicose veins
< 20	2	0	0%
21-30	10	2	20%
31-40	12	0	0%
41-50	13	1	7.7%
51-60	8	2	25%
61-70	5	1	20%
Total	50	6	12%

Recurrence of varicose of veins is positively associated with higher age with  $P=0.390$ .

**Table 10: Correlation of Type of Surgery with Recurrence of Varicose Veins**

Type of Surgery	No. Of Patients	No. of patients with recurrence of Varicose veins	Percentage of recurrence of Varicose Veins
Sapheno femoral junction Ligation+	28	0	0%

Stripping of long saphenous vein+Perforator Ligation			
Sapheno femoral junction Ligation +Perforator Ligation	7	2	28.6%
Sapheno femoral junction Ligation	6	3	50%
Sapheno femoral junction Ligation + Sapheno-Popliteal Junction Ligation + Stripping of long saphenous vein + Perforator Ligation	3	0	0%
Perforator Ligation	4	1	25%
Sapheno-Popliteal Junction Ligation +Perforator Ligation	2	0	0%
Total	50	6	12%

Incidence of recurrence of varicose veins is significantly more associated with only SFJL, followed by SFJL+SFPL, and SFPL with  $P=0.005^{**}$

**Table 11: Correlation of type of Surgery with Recurrence of Ulcer**

Type of Surgery	No. of Patients	No. of patients with recurrence of Venous Ulcer	Percentage of recurrence of Venous Ulcer
Sapheno femoral junction Ligation + Stripping of long saphenous vein + Perforator Ligation	16	2	12.5%
Sapheno femoral junction Ligation +Perforator Ligation	1	1	100%
Sapheno femoral junction Ligation	0	0	0%
Sapheno femoral junction Ligation + Sapheno-Popliteal Junction Ligation + Stripping of long saphenous vein + Perforator Ligation	2	0	0%
Perforator Ligation	2	1	50%
Sapheno-Popliteal Junction Ligation + Perforator Ligation	0	0	0%
Total	50	4	8%

Incidence of recurrence of ulcer is not statistically associated with type of surgery with  $P=0.600$

## DISCUSSION

In our study a total number of 50 patients with primary varicose veins were admitted, investigated, operated and followed up. The results were analyzed and compared with other similar studies.

In my study the age range is from 20 yrs to 69 yrs. Malhotra et al in their study comprising 677 patients from both North and South India had an age range of 18-65 years.<sup>[3]</sup>

In my series male to female ratio was found to be 3:1. Widmer in Switzerland recorded a ration of 1:1. Callam et al in England and Leipnitz et al recorded a ratio of 1:2.<sup>[4-6]</sup>

In the present study, only 13 cases were female out of a total of 50 patients which is very low as compared to the western studies. In our study the decreased incidence of disease in females at our hospital may be due to the fact that females sought treatment for symptoms due to varicosities rather than cosmetic reasons. Also most probably the Indian women cover their limbs with clothing and hence they are not much worried about the appearance of the dilated veins.

**Occupation:** In our study most patients were farmers (40%) followed by shopkeepers(20%) , bar tenders(6%) and manual labourers (6%) who involved in long standing work hours. Hence occupation has a definite role to play as a causative factor.

In our study, left lower limb was involved in 35 (70%) cases and right lower limb was involved in 15(30%) cases. When compared with the study conducted by A.H.M. Dur, A. J.C.Mackaay et al,<sup>[7]</sup> our study showed an increased incidence of involvement of the left limb. This is probably because the loaded left colon compresses the left iliac veins, the left common iliac artery crossing over the left common iliac vein and the longer course traversed by the left iliac veins.

In the present study, the commonest symptoms are dilated veins (92%) and pain (76%) in the affected limb. These findings correlate well with the other studies done by W.B. Campbell et al<sup>8</sup>, with cosmetic symptoms being 90% and aching pain 57% because in our country patients come to the hospital for some symptoms rather than cosmetic appearance.

In this series, long saphenous vein was involved in 90% of cases (45 patients), the short saphenous vein in 4% (2 patients) and both long and short in 6% (3cases). In our study perforator incompetence is 88% (44 patients) as compare to Labropoulos N et al<sup>9</sup> in which they found it 68 %.

Out of 50 cases, saphenofemoral junction ligation including the ligation of anatomically constant tributaries at its termination with stripping of long saphenous vein by Mayos stripper and ligation of incompetent perforator was done in 28 cases. Sapheno-popliteal flush ligation was done in 5 cases, SFJ and SPJ ligation with stripping of LSV in 3 cases, only SFJ ligation was done in 6 cases. SSV was not stripped to avoid nerve injury. Flush ligation of SFJ and incompetent perforator ligation was done in 7 cases. Only incompetent perforator ligation was done in 4 cases.<sup>[8]</sup>

In our series recurrence seen after only Sapheno femoral junction Ligation (SFJL) is 50% which is slightly more than Sarin et al that is 45% in Indian population.<sup>[9]</sup>

In our series recurrence is 0% with Sapheno femoral junction Ligation (SFJL) with stripping as compare to Sarin et al<sup>10</sup> who had 18 % recurrence. this difference could be because of long follow up in their study as compare to ours that is 6 months to 1 year. With SFJ ligation and perforators ligation also we found less recurrence 7.1% as compare to 18.5% of Sarin et al <sup>10</sup> In this study we found ulcer recurrence in 4(20%) patients out of 21 patients who presented with venous ulcer.

### **Complications:**

Patients were observed for complications both intra operatively and post operatively. In our study, we encountered 11 patients (22%) with post operative complications, the commonest being haematoma in 4 cases i.e. 8% followed by wound infection in 2 cases (4%). There was no incidence of deep vein thrombosis. Literature shows the incidence to be very low at 0.01%. None

The study conducted by Haggmuller G.W. showed incidence of some major complications which are very rare and none of which occurred in the present study group.

Sutures were removed after 7 to 10 days and patients were advised compression stockings for one year post operatively. Patients were followed up for six months.

**CONCLUSION**

- It was found that varicose veins and their associated symptoms and complications constitute the most common chronic vascular disorders leading to surgical treatment.
- The incidence is on the rise.
- It is more common in middle-aged groups.
- The majority of the patients were males in the study.
- Patients presented with spectrum of symptoms and signs, with dilated veins and pain being the most common presenting symptom with or without venous ulcer.
- The study revealed increased incidence of varicosity in the left lower limb as compared to the right lower limb.
- Most of the patients presented to the hospital with some severe symptoms rather than cosmetic reason.
- Long saphenous venous system is the most common venous system affected.
- Operative line of treatment is the primary procedure in the management of varicose veins of lower limb and venous ulcer.
- Saphenofemoral junction ligation with Stripping of LSV with perforators ligation is a better approach.
- There is need for general health education and awareness about varicose veins in the society in order to achieve timely treatment with good outcome and to reduce the morbidity.

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