Original Article

Study of Clinical Features and Management of Varicose Veins of Lower Limb

Surgery

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ABSTRACT

Varicose veins are a common condition that the current paper elaborates the features of the condition in a local Indian population.

Methodology: Over a two year period all admitted patients to a government tertiary level district hospital of varicose veins were evaluated for demographics ,clinical manifestations, treatment and outcome.

Results: This study reveals that the disease is more prevalent during the active adult life in their 3rd and 4th decades and males were more affected. The occupations needing prolonged standing and use of violent muscular efforts is found to be a contributing or precipitating factor for varicose veins. Hereditary factors may play an important role in the development of varicose veins. 25% of patients had a family history of varicose veins occurring in close relatives. Majority of patients presented to the hospital for complications of the disease (60%) rather than for cosmetic purposes. The commonest symptoms in the study were prominent swellings in the lower limb and pain. Majority of the patients had combined valvular incompetence (71%). The most common post-operative complication observed was wound infection (25%).

Key Words: Surgery, Varicose, Limb swelling

INTRODUCTION

Varicose veins have always bothered 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 [1]. The condition, affected by man's upright position and by gravitational forces, is wide spread, involving at least one out of five individuals in the world, hence making this a very common condition. 20% of the population suffers with varicose veins and 2% have skin changes that may precede venous ulceration [2]. The term varicose is derived from Latin word varicous, which means dilated. Varicose veins are not only dilated veins but also tortuous and elongated, but physiologically speaking a varicose vein is one which permits reverse flow through its faulty valves. Varicose veins, though a common condition, many time remains asymptomatic. In the 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 brings the patient to the doctor. In Indian scenario the disease is one of the common surgical problems in low socio-economic class people, which at times compel the patient to change his occupation which is very disturbing.

With continuing advances in methods of evaluating venous anatomy and haemodynamics the therapy for varicose veins is in a period of change.

OBJECTIVES

1. To study the age, sex, occupational distribution of varicose veins of lower limb.
2. To study the clinical manifestations of lower limb varicose veins.
3. To study the management of varicose veins of lower limbs at a tertiary Medical College Hospital and District Hospital in Sourthern India and to study the outcome.

METHODOLOGY

Source of Data

In the present study the clinical material consists of all the patients admitted with varicose veins of lower limb in the Department of Surgery in a tertiary Medical College Hospital and District Hospital in Sourthern India.

Sample Size

Thirty two cases admitted and operated from all the surgical units during the period of July 2003 to June 2005 were studied.

Collection of Data

All the patients presenting with varicose veins of lower limb, which met the inclusion and exclusion criteria were selected for this study.

Inclusion Criteria

The inclusion criteria, being, patients presenting with symptomatic varicose veins, those patients presenting with complications of the disease such as pigmentation, eczema, ulceration, superficial thrombophlebitis, etc. and patients with cosmetic concern. The most specific criteria was patients with primary varicose veins of lower limb.

Exclusion Criteria

The patients who were treated on an outpatient basis were not included in the study. Patients with secondary varicose veins due to deep vein thrombosis and other causes of venous obstruction

like a mass per abdomen and pregnancy were also excluded.

So this study consisted of thirty two patients who met with these criteria. Informed consent was obtained from each patient before any investigation or intervention.

A thorough history was taken in all the patients. A detailed clinical examination was done. All the clinical tests were applied to arrive at a probable diagnosis. Then the patients were subjected to duplex ultrasonography to confirm the diagnosis. The routine investigations were also done. The patients underwent suitable treatment based on their clinical and investigational profile. The post-operative course was noted. Further the patients were followed up and final outcome evaluated. Ethical clearance was obtained from the ethical committee prior to conducting the study.

RESULTS

A total of 32 patients (35 No. of limbs) with primary varicose veins admitted, investigated, operated and followed-up are studied. Results are as follows:

Age Distribution

Age	Patients	%
10 – 20	1	3.12
21 – 30	12	37.5
31 – 40	8	25.0
41 – 50	4	12.5
51 – 60	3	9.37
61 – 70	4	12.5
> 70	-	-

[Table/Fig-1]: Age distribution

The youngest in the study was 20 years old and the eldest was 65 years.

Sex Distribution

Only 25% (8) of the total patients in this study were females as compared to males who made 75% (24) of total cases.

Occupation

Sl. No.	Occupation	Patients	%
1.	House wife	6	18.75
2.	Coolie	7	21.87
3.	Bus conductor	1	3.12
4.	Police trainee	1	3.12
5.	Farmer	8	25.0
6.	Machine turner	1	3.12
7.	Carpenter	2	6.25
8.	Bakery supplier	1	3.12
9.	Hotel cook	1	3.12
10.	Hotel vendor	1	3.12
11.	School teacher	2	6.25
12.	Construction worker	1	3.12

[Table/Fig-2]: Occupation Distribution

Out of 32 patients studied 26 patients in their occupation involved, either prolonged periods of standing or violent muscular efforts or both.

Occupation Distribution by Place of Work

Occupation	Working place		Percentage from the group	
	Urban	Rural	Urban %	Rural %
House wife	4	2	66.66	33.34

[Table/Fig-3] Occupation distribution by place of work

Family History of Varicose Veins

Out of 32 patients with varicose veins studied 8 patients had family history of varicose veins occurring in several members of same family.

Clinical Manifestations

Symptoms	No. of Patients	%
Pain and prominent veins	12	37.5%
Prominent veins with swelling	10	31.25%
Eczema and pigmentation	4	12.5%
Ulcer, eczema and pigmentation	6	18.75%

[Table/Fig-4]: Clinical Manifestations

Limb Involvement

Limb involved	Patients	%
Right	14	43.75
Left	15	46.87
Both	03	9.37

[Table/Fig-5]: Limb involvement

Venous System Involvement

System Involved	Limbs	%
Long saphenous	29	90.62
Short saphenous	01	3.12
Both	02	6.25

[Table/Fig-6]: Venous System Involvement

Clinical Class of CEAP

Class	Limbs	%
0	-	
1	-	
2	14	40.00
3	10	28.57
4	04	11.43
5	01	2.86
6	6	17.14

[Table/Fig-7]: Clinical class of CEAP

Site of Incompetence

Sl. No.	Site of incompetence	No. of limbs	%
1.	Saphenofemoral junction	4	11.43
2.	Saphenofemoral + perforator	25	71.43
3.	Perforator	3	8.57
4.	Saphenopopliteal	1	2.86
5.	Saphenofemoral + sapheno poplitial + perforator	2	5.71

[Table/Fig-8]: Site of incompetence

Requirement of Duplex Ultrasonography for Accurate Diagnosis

Site of incompetence	Requirement of duplex USG for accurate diagnosis
Sapheno femoral junction incompetence	4
Saphenopopliteal junction incompetence	1
Perforator incompetence	8

[Table/Fig-9]: Duplex USG requirement

Surgical Procedures Performed

Sl. No.	Surgery	Limbs	%
1.	SFFL	4	11.43
2.	SFFL+STR	5	14.28
3.	SFFL+MSFL	10	28.57
4.	SFFL+MSFL+STR	7	20.00
5.	SFFL+MSA	2	5.71
6.	SFFL+MSFL+SG	1	2.86
7.	SFFL+SPJL+STR+SG	1	2.86
8.	MSFL	2	5.71
9.	SPJL	1	2.86
10.	SFJL+SPJL+STR+MSFL	1	2.86
11.	MSFL+SG	1	2.86

[Table/fig-10] Surgical procedures
SFFL: Saphenofemoral flush ligation
STR: Stripping
MSFL: Multiple subfascial ligation
MSA: Multiple stab avulsion
SG: Skin grafting
SPJL: Saphenopopliteal junction ligation

Complications

Complications	Patients	%
Wound infection	8	25
Haematoma	2	6.25
Residual varicosity	1	3.12
Saphenous neuritis	-	-
Femoral vein injury	-	-
Femoral artery injury	-	-
Deep vein thrombosis	-	-
Pulmonary embolism	-	-

[Table/Fig-11]: Complications

One patient underwent repeat surgery for residual varicosity. The surgery done was multiple subfascial ligation of the perforators which were unidentified at earlier surgery.

DISCUSSION

In the present study a total of 32 patients (35 limbs) with varicose veins, were admitted, investigated, operated and followed up. The analysis of these results are as follows:

Age Distribution

Age in Yrs	Lateef Series [3]	Present Series
Below 20	5%	3.12%
20 – 40	65%	62.5%
Above 40 years	30%	34.37%

[Table/Fig-12]: Age distribution comparison

Age Range

Study	Present Study	Khan series [4]	Singh S Series [5]
Age range in years	20-65 years	22-69 years	18-66 years
Total No. of patients	32	80	49 years

[Table/Fig-13] Age range comparison

The age distribution as shown in [Table/Fig-12] shows majority of patients are between the age of 20 to 40 years. In this study they made 62.5%, which correlates well with study done by Lateef, which showed 65%. The youngest in this study was 20 years and the eldest was of 65 years. The age range in the present study is almost similar to study done by Khan B and Singh SM in their study.

Sex Distribution

Sex	Present Study		Singh S series [5]		Sakurai T series [6]		Vaidyanathan S Series [7]	
	No.	%	No.	%	No.	%	No.	%
Male	24	75	15	30.61	43	22.5	8	50
Female	8	25	34	69.38	148	77.5	8	50
Total	32		49		191		16	

[Table/Fig-14]: Sex distribution comparison

In this present study of 32 patients of varicose veins 8 were females accounting to 25%, which is low compared to western studies quoted, study done by Vaidyanathan et al and studies done by Callam MJ [8]. The female patients in this study mainly sought treatment for symptoms and complications rather than for cosmetic reason. The low incidence seen in present study is most probably due to less cosmetic concern in our Indian middle and lower class women.

Occupation Distribution

Occupation	Lateef Series [3]	Present Series
Occupation involving prolonged standing	35%	81%

[Table/Fig-15]: Occupation distribution comparison

The present study showed 81% of the patients had occupation history of prolonged standing, which suggests that occupation has a definite role as a causative or a contributing factor.

The occupation of these patients studied with respect to the area of work showed that varicose veins are more common among urban housewives, probably as a result of their habit of prolonged standing during work [Table/Fig-3].

Family History

Eight patients out of 32 patients (25%) had family history of close relatives suffering from varicose veins. The occurrence of varicose veins in several members of the same family suggests that hereditary factors may be important in causation of varicose veins. Works of many others like, Basle study, studies of Hirai, Mekkay and Colleagues, Prerovsky and study by Belcaro agree for positive family history in patients of varicose veins, but in all these studies[9] none of the relatives were assessed clinically, importance was given only to the history given by the patient [8].

Clinical Manifestation

Majority of the patients in this study reported to the hospital for some complications of the disease (60%) rather than for the treatment of the visible veins itself (40%). The most common symptom was pain with prominent veins which occurred alone or in combination with oedema, eczema, pigmentation or ulceration. It is evident that cosmetic purpose is not a factor which prompts the Indians to seek treatment for varicose veins as do those in the west [8].

Limb Involvement

Limb	Present Series		AHM Dur, AJC Mackaay et al[9]
	No. of patients	%	
Right	14	43.75	48.55%
Left	15	46.87%	51.45%
Both	03	9.37%	-

[Table/Fig-16]: Comparison of limb involvement

The present study showed slightly increased incidence of varicosity on the left limb. This compares with the study conducted by AHM Dur, AJC Mackaay et al [9]. The cause of increased incidence of left side is not known. The probable reason for increased incidence on left side is that the venous drainage of the left leg follows a more tortuous course through the pelvis, with left common ileac vein traversed by the right common ileac artery [8]. The bilateral varicose veins were seen in 9.37% of patients.

Venous System Involvement

System involved	Present Series		Al Mulhim et al [10] King Fahed hospital %
	Limb	%	
Long saphenous vein	29	90.63	68.42
Short saphenous vein	01	3.13	7.02
Both	02	6.25	24.56

[Table/Fig-17]: Comparison

The present study showed long saphenous system involvement in 90% of cases and in the study conducted by Al-Mulhim et al of Saudi Arabia, it was 68.42%. Both systems were involved in 6.25% of cases and isolated short saphenous vein was involved in 3.13% of cases.

CEAPeap Classification

Class	% in present series	Stuart WP series [11]
0	-	16%
1	-	-
2-3	65.62%	30.54%
4	12.5%	18.64%
5-6	21.87%	34.52%

[Table/Fig-18]: Comparison of patients by CEAP classification

Majority of patients in the present series were patients of CEAP class 2 and 3 which included patients presenting with only varicose veins and patients with limb oedema which is comparable to study done by Stuart WP series. The patients seeking medical help for uncomplicated varicose veins in present study were 40% [Table/Fig-7].

Correlation between CEAP Class and Site of Incompetence

CEAP Class	Limbs	Incompetence				
		Sapheno femoral	Sapheno popliteal	SF+ perforator	SF+SP+ perforator	Perforator
0	-	-	-	-	-	-
1	-	-	-	-	-	-
2	14	4	1	8	-	1
3	10	-	-	8	1	1
4	4	-	-	4	-	-
5	1	-	-	1	-	-
6	6	-	-	4	1	1

[Table/Fig-19]: Correlation between CEAP class and site of incompetence

The patients with higher grade of clinical class of CEAP had combined valvular incompetence. All the patients with ulcer had perforator incompetence.

Site of Incompetence

Majority of the patients in the present study had incompetence at multiple sites. Almost 71% had combined saphenofemoral and perforator incompetence, followed by combined sapheno politeal and perforator incompetence in 5.7% [Table/Fig-8]. Only isolated site incompetence was less commonly observed. Isolated perforator incompetence occurred in (8.57%) patients. Isolated saphenofemoral incompetence seen in 11.4% and isolated sapheno popliteal incompetence observed in 2.8% limbs. Perforator incompetence in total occurred in 30 limbs (87.6%).

Requirement of Duplex USG For Diagnosis

All the patients in the present study underwent duplex USG evaluation for confirmation of diagnosis. This investigation was required to accurately diagnose 4 cases of saphenofemoral incompetence, 1 case of saphenopopliteal incompetence and 8 cases of perforator incompetence [Table/Fig-9].

Treatment

Surgery was the mainstay of treatment. The surgical modality was selected on the basis of the age, severity and occupation of the patient. When complications like oedema, eczema and ulcer were present, conservative treatment was given with compression dressings, elevation of limb, antibiotics and other general supportive measures. Conservative therapy was continued till surgery was feasible. Various operative procedures either individually or in combination were used in all 32 patients of this study depending upon individual case.

Complications

Total complication rate observed during the post-operative period and follow-up was 34%. Most were managed conservatively. The incidence of sensory impairment following surgery was nil. This could be because the long segment stripping of saphenous vein whenever possible, was avoided, and our patients mostly villagers and workers may not have been able to notice slight change in sensation.

CONCLUSION

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. Duplex ultrasonography is the investigation of choice in the management of varicose veins. Combined valvular incompetence is more common than individual incompetence. Saphenofemoral junction flush 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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