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Original Research Article

Study on clinical profile and management of varicose veins of lower limbs

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ABSTRACT

Background: The venous system of the lower limbs has the burden of posture, and blood has to be forced to the heart chamber against gravity. Commonly this problem is tackled either by a conservative approach or by surgical interference, both of which have their limitations. In the present study, an attempt is being made to study various clinical presentations of varicose veins, their management and complications.
Methods: The data for the study was obtained from the patients admitted and treated in Tertiary Care Hospital, Kurnool for a period of two years from November, 2015 to November, 2017. Patients presenting with signs and symptoms of varicose veins, who were diagnosed as having varicosities of the superficial veins by clinical examination, were taken up for the study, after explaining the nature of the disease and various modalities of treatment available.
Results: It is found that varicose veins and their associated symptoms and complications constitute the most common chronic vascular disorders leading to surgical treatment. It is more common in middle-aged group and in males. Patients presented with spectrum of symptoms and signs, dilated and tortuous veins being more common presentations. Long saphenous system is the most common venous system affected.
Conclusions: Complications are negligible if cases are meticulously selected and operated. The present procedures enable the patient to lead almost normal life after surgery and the morbidity rate is very negligible. Though the newer trends in the management of varicose veins are showing good results, they need a long term follow up.

Keywords: Long saphenous vein, Lower limbs, Seroma, Varicose veins

INTRODUCTION

Varicose veins can be better defined as a superficial vein of the lower limb, which has permanently lost its valvular efficiency, and as a product of the resultant venous hypertension in the standing position becomes dilated, tortuous and thickened.[1]

The venous system of the lower limbs has the burden of posture, and blood has to be forced to the heart chamber against gravity. The human lower limbs adapted themselves to carry out the task by adopting various mechanisms which included division of the column of blood to segments by valves, constant muscular activity especially of the calf muscle to 'pump' the blood in the direction of heart, intrathoracic negative pressure to 'suck' the blood up, the capillary pressure which 'pushes' the blood forwards and the pressure grade in the blood vessel.

Thus, failure of any of these mechanisms may cause venous hypertension which may be the beginning of the onset of Varicosity. Varicosity of lower limb develops in a very slow process, asymptomatic and probably harmless and only when the complications of varicosity like pain, edema, ulcer, skin changes and thrombosis

occur, and then the patients present themselves for the relief. Commonly this problem is tackled either by a conservative approach or by surgical interference, both of which have their limitations.

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

The Edinburgh Venous study (EVS) published in 1998 examined over1500 adults in UK showed that 39.7% of men and 32.2% of women had a dilated tortuous trunk of the long and/or short saphenous vein and their first or second order branches. The prevalence of webs or small reticular varicosities was even higher at over 80% for both males and females.[2]

There are ten times as many sufferers from chronic venous disease of the lower limbs as from arterial disease of the same.[3] Incidence is comparatively low in India as Western population.[4] Patients are hospitalized more for the complications of the disease than for the disease itself in our country.[5] Although it was previously believed that varicose veins are more common in women, few other population studies confirm that varicose veins are at least as common in men.

Varicosity of lower limb develops in a very slow process, asymptomatic and probably harmless and only when the complications of varicosity like pain, edema, ulcer, skin changes and thrombosis occur, and then the patients present themselves for the relief. Commonly this problem is tackled either by a conservative approach or by surgical interference, both of which have their limitations.

In the present study, an attempt is being made to study various clinical presentations of varicose veins, their management and complications.

METHODS

The data for the study was obtained from the patients admitted and treated in Tertiary Care Hospital, Kurnool for a period of two years from November 2015 to November 2017.

Method of data collection

Patients presenting with signs and symptoms of varicose veins, who were diagnosed as having varicosities of the superficial veins by clinical examination, were taken up for the study, after explaining the nature of the disease and various modalities of treatment available. Accordingly, 50 patients with primary varicose veins of lower limbs were included in the present study. Written informed consent was taken. Various presentations, complications and treatments were noted and finally followed up for minimum of 3 months.

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 were 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.

Clinical examination

History and examinations were completed as mentioned in the proforma. The patient was examined in standing position with good illumination, exposing both the lower limbs completely. The required tests were performed such as, 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.

Color doppler ultrasonography

Using a 10MHz probe, the patient was examined in standing position along the whole length of the long saphenous and short saphenous systems. The important things noted were, saphenofemoral junction incompetence, saphenopopliteal junction incompetence, perforator incompetence, deep venous system

Operative procedures

The following operative procedures were undertaken depending upon clinical and Doppler findings.

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

After dressing the wound, graded pressure bandage was applied with the help of Elastic crepe bandage. Wound were reviewed on day five and assessed about wound healing and looked for any complications.

Follow-up

All patients were discharged around 7-10 days after surgery with elastic crepe bandage. They were all followed up at 15 days, 1, 3 and 6 months.

RESULTS

The age of the patients ranged from 10 to 75. Commonest age group affected was between 31-40 yrs. Out of 50 patients 13 were female and 37 were male. In 7 patients (14%) there was positive family history of presence of varicose veins and in 43 patients (86%) occupational influence was seen (Table 1).

Table 1: Basic characteristics of patients.

Characteristics	No. of cases	Percentage
Age (yrs)		
10-20	0	0
21-30	3	6
31-40	19	38
41-50	12	24
51-60	7	14
61-70	6	12
> 70	3	6
Gender		
Male	37	74
Female	13	26
Family and occupational history		
Family	7	14
Occupational history	43	86

Table 2: Distribution of patients according to side affected, venous system and symptoms.

Characteristics	No. of cases	Percentage
Side affected		
Left	25	50
Right	14	28
B/L	11	22
Venous system		
Long Saphenous System	31	62
Short Saphenous System	08	16
Both Systems	11	22
Symptoms		
Dilated veins	17	34
Pain in the legs	11	22
Venous ulcer	8	16
Darkening of skin (Ankle)	3	6
Itching	5	10
Chronic swelling of limbs	1	2
Bleeding from trauma	2	4
Tender swellings (Superficial phlebitis)	3	6

Most commonly affected limb was left limb, (in pts 25) 50 %, when compared to right (in 14 pts) 28%, Both the limbs were involved (in 11 pts) 22% long saphenous system was the most common venous system affected by varicosity (62%). Both the long and short saphenous system was affected in 22% of the cases. Our patients presented with varied symptoms, out of which dilated veins was most common compliant in 34% of the patients, followed by pain in the leg in 22% (Table 2).

There were totally 86 Incompetent perforators present and commonest were above ankle perforator, which was present in 34 out of 86 pts (39.5%). 9 of our patients (41%) showed symptomatic relief with conservative treatment. In 7 pts (32%) ulcer showed signs of healing with compression for 3 weeks. 3 pts (14%) had ulcer recurrence. In 23 cases SFJ ligation with stripping of LSV with incompetent perforator ligation was done and in 3 pts only SPJ ligation was done. 26 patients developed complications post operatively. Delayed wound healing was commonest among all and was seen in 8 (31%) cases (Table 3).

Table 3: Distribution of patients according to performance incompetence, compression therapy, treatment given and complication.

Characteristics	No. of cases	%
Perforator Incompetence		
Thigh	10	11.6
Below knee	31	36.04
Above ankle	34	39.5
Unnamed	11	12.79
Compression therapy		
Symptomatic relief	9	41
Signs of ulcer healing at the end of 3 wks	7	32
Ulcer Healing after surgery	18	82
Ulcer recurrence	3	14
Treatment Given		
SFJ flush ligation with stripping of LSV	9	18
SFJ flush ligation with stripping of LSV with incompetent perforator ligation	23	46
SFJ, SPJ ligation with stripping of LSV with incompetent perforator ligation	12	24
SPJ ligation without stripping of SSV	3	6
Conservative management	3	6
Complication		
Seroma	4	15
Haematoma	2	8
Infection	3	11
Limb oedema	2	8
Paraesthesia	0	0
Delay healing	8	31
Residual varicosity	7	27

Out of 44 limbs that were operated for SFJ junction, 4 cases had recurrence and out of 15 limbs for SPJ 3 (20%) developed recurrence. Out of 50 patients, 32 patients were discharged at the end of 10 days. 4 pts (8%) had to

stay for more than 15 days (Table 4).

Table 4: Distribution of patients according to recurrence and hospital stay.

Characteristics	No. of cases	%
Recurrence		
Sapheno Femoral (n=44 limbs)	4	9
Sapheno Popliteal (n=15 limbs)	3	20
Days of Hospital stay		
7-10	32	64
10-15	14	28
15-20	4	8

Doppler showed 139 incompetence totally, out of which clinically 92 were detected (Table 5).

Table 5: Distribution of patients according to clinical signs and colour Doppler findings.

Findings	Clinical signs	Colour doppler
Sapheno femoral Jn.	33	38
Sapheno popliteal Jn.	4	15
Thigh	3	10
Below knee	26	34
Above ankle	21	31
Unnamed	5	11
Total	92	139

DISCUSSION

The age distributions of varicose vein show majority of patients are between the age of 20 to 40 years which correlates well with study conducted by Mirji P et al and Campbell WB et al.[6,7]

Mirji P et al, in his descriptive study reported that youngest was 20 yrs and oldest was 65 yrs most common age group of incidence of varicose veins being 21-30.[6]

Das K et al, in his study of outcome of surgical management and recurrences of varicose veins showed patients were found mostly in the age group of 41 to 60 and the second most common age group was between 21 t0 40 years of the age.[8] These results might be due to significant risk of advancing age. Prasad P et al reported the commonest age at presentation to be 30-40 yrs.[9]

In the Edinburgh vein study, the prevalence of trunk varicosities in the age groups 18-24 years, 25-34 years, 35-44 years, 45-57 years and 55-64 years was 11.5, 14.6, 28.8, 41.9 and 55.7 percent, respectively.[2]

Maximum number of patients 19 (38%) presented in the 31-40 years age group. The next common age group of presentation was 41-50 years with 12 patients (24%). This age distribution correlates well with other studies conducted by Campbell et al, who showed the commonest age at presentation to be 30-40 yrs.[7] Varicose veins is a common condition in the young and middle aged peoples.

Sex distribution

This study suggests higher frequency of male patients (74%) being affected by varicose veins is probably due to their lifestyle. This disparity may be due to the fact that patients are from the low socio-economic background and cosmetics is not a concern, as these patients do not wear clothes exposing their legs, and female patients of poor socioeconomic status are less likely to seek medical advice.

Edinburgh et al, study showed that the age adjusted prevalence of trunk varices was higher in men (39.7%) than women (32.2%).[2] Whereas all other studies such as, Bulgarean study, Finland, Bobek et al, showed women to be affected more than men. Pavan BK et al showed higher prevalence of varicose veins in males (78%) than female (22%).[9]

The major finding from this study was the significantly higher prevalence of varicose veins in men as compared to women. Higher prevalence of men has been reported in another Indian study and Edinburgh study.[2]

The percentage of women suffering from varicose veins was low as compared to western study done by Kontosic et al, Baric et al and Mimica et al.[10-12] Sakurai T et al, showed female preponderance (F-77.5% Vs M-22.5%).[13] Vaidyanathan S et al, showed equal distribution among males and female population.[14]

According to Mirji P et al, incidence of varicose veins is are among males (75%) in comparison with females (25%).[6]

This finding does not correlate well with studies done by Campbell WB et al, in which cosmetic symptoms were in 90% and aching pain 57%.[7] The reason for this could be people from low socio-economic background whose cosmetic demands are low and also poor self care and delay in seeking a doctor for treatment.

Side effected

In present study, in 19 (48%) cases, left lower limb was involved and in 11 (27%) cases right lower limb was involved and in 10 (25%) both the limbs were involved.

In a study conducted by Ahmdur, Mackaay AJC et al, left side more common involved 51.45% and 48.55% in right side.[15]

Mirji P et al, showed left lower limb is more commonly involved in comparison with right lower limb.[6] In a study

by Staniszewska et al, majority of patients had unilateral lower limb varicose veins which correlate with our study.[16]

Family history

Mirji P et al, in their descriptive study out of 32 patients 8 patients (25%) were suffering from varicose veins had family history of close relatives suffering from varicose veins.[6]

The occurrence of varicose veins in several members of the same family suggests that hereditary factors may be important in causation of varicose veins. Autosomal dominant penetrance has been identified as the underlying genetic factor for developing varicose veins.

Occupation distribution

A positive occupation history was present in 86% of the cases, in that 21, who required standing for long duration during their work, contributing to development of varicose veins. This is due to gravity causing pooling of blood in lower extremities while standing still for longer periods resulting in dysfunction of venous valves finally resulting in venous hypertension.

A 14% (7 cases) familial incidence was noted in this series. Effect of family history, Finland study showed high prevalence rate but incidence substantially less than usually proposed in literature. This suggests occupation has a definite role as a causative or a contributing factor.

Das K et al, in their study of outcome of surgical management and recurrences of varicose veins showed that, occupational status majority of the cases seen in the prolonged standing workers, farmers were found 22.5% of the cases, Cooks 15%, house wife 20%, laborer 17%, teacher 07.5% and others.[8]

Similar results were seen in the study of Mirji P et al, in his study farmer 17 and house wife's were affected in majority.[6] Ziegler et al, was reported that from "209" workers of the hospital, (34%) with chronic venous diseases were standing longer at work than their colleagues who were free of chronic venous disease.[17]

Symptomatology

In the present study, the commonest compliant was Dilated and tortuous veins in 32% of cases. 10 (25%) cases had complaints of pain in the affected limb and 4 (10%) cases had darkening of skin around ankle. Venous ulcer was present in 6 (15%) cases.

Venous system involved

In this series, long saphenous vein was involved in 62% of cases, the short saphenous vein in 16% and both long and short in 22% (11 cases). Delbe and Mocquet in their study had found varicosity of long saphenous vein in 98% and 2% in short saphenous vein.[18] In present study we had a total of 92 perforators incompetent by clinical examination and 139 by colour Doppler.

Treatment: compression therapy

Compressive treatment was given to all the patients who presented with venous ulcer with the idea of improving the limb. Out of 22 patients, 7 patients showed signs of healing at the end of 3 weeks. All were taken for surgery following which in 18 patients (82%) ulcer healed. Ulcer recurred in 3 patients (14%). Barwell JR ET al and also Michaels JA, Campbell WB, Brazier JE, et al showed similar findings.[19,20] Out of 50 cases, 3 cases were conservatively managed. No further complications were reported by the patients who were kept on compression therapy.

Surgical procedures performed

Saphenofemoral junction ligation including the ligation of tributaries at its termination with stripping of long saphenous vein by Myers stripper up to the knee and ligation of incompetent perforator was done in 23 cases. Saphenopopliteal flush ligation was done in 3 cases.

SFJ and SPJ ligation with stripping of LSV in 12 cases. SSV was not stripped to avoid nerve injury. Flush ligation of SFJ and stripping of LSV was done in 9 cases. (Perforators were not addressed in these patients)

In this series surgery was the mainstay of treatment. Of total 50 cases 47 patients (94%) were treated surgically and rest of 6% were managed conservatively. In Pavan BK et al series all patients were managed surgically and patients were managed conservatively till surgery was feasible.[6]

Post op complications

Defty C et al, reported around 18-20% of post op complications.[21] There was no incidence of deep vein thrombosis or pulmonary embolism post operatively in this series. Literature shows the incidence to be very low at 0.01%.

Recurrence of incompetence was found in 5% at SFJ and 26% at SPJ. This pattern is very similar when compared to van Rij AM et al who showed similar results.[22] However, the time period for follow up was not sufficient and also number of cases included could be small to assess the true incidence of recurrence.

About 64% of the patients were discharged in 10 days and 28% had to stay for 15 days, 8% of the patients were discharged after 15 days. The mean time taken to return to normal activities were 15 to 18 days.

Comparative analysis

In our study findings are depicted considering duplex findings as the 'reference gold standard'. Clinical examination detected saphenofemoral junction incompetence in 33 cases out of 41, making clinical testing 80% sensitive. Sensitivity of clinical examination for detecting SPJ and perforator incompetence with reference to Doppler are 36% and 90 % respectively.

These findings are almost similar to the findings of Wills V et al, who showed that sensitivity of clinical and Doppler assessment at saphenofemoral junction incompetence, saphenopopliteal junction incompetence, perforator incompetence was 71.2 %,36.1%, and 43.6% respectively.[23]

Complications are negligible if cases are meticulously selected and operated. The present procedures enable the patient to lead almost normal life after surgery and the morbidity rate is very negligible.

CONCLUSION

From the present study, it is concluded that, varicosity of the lower limb is a fairly common clinical entity. The number of cases reporting to the hospital is much less than the real incidence; because in absence of troublesome symptoms, patients do not seek treatment in our country. No definite conclusion could be drawn from the present series regarding etiology, as the number is small. However, a definite relationship exists between the occupation and the incidence of varicose veins.

The involvement of long saphenous system is more common than the short saphenous system and left limb is affected more than right limb. Clinical examination has got good predictive accuracy. It gives sufficient information to treat the patients in centers where colour Doppler is not available or affordable. The use of colour Doppler is a valuable supplement to clinical examination. And it can be used as an adjuvant to prevent recurrences and reduce morbidity. SPJ junction is highly variable and should always be marked pre-operatively using Doppler.

Conservative treatment though relieves symptoms, it cannot be the definitive treatment and it has to be followed by some form of definitive treatment. Operative line of treatment is a primary procedure in the management of varicose veins of lower limbs. LSV tripping up to knee and non stripping of SSV is associated with less morbidity.

Recommendations

Though the newer trends in the management of varicose veins are showing good results, they need a long term follow up.

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REFERENCES

1. Callam MJ. "Varicose Veins" in Essential surgical practice, Module 34. 4th ed. Hodder Arnold Publications; 2002:879-890.
2. Bradbury A, Evans C, Allan P, Lee A, Ruckley CV, Fowkes FG. What are the symptoms of varicose veins? Edinburgh vein study cross sectional population survey. Bmj. 1999 Feb 6;318(7180):353-6.
3. Baver G, Canonico S, Campitiello F, Santorillo A. Sutureless skin closure in varicose vein surgery. Dermatol Surg. 2001;27(3):306-8.
4. Deodhar SD. Varicose veins. Indian J Med Sci. 1963;19:431.
5. Cranely JJ. Varicose veins, deep vein thrombosis and hemorrhoids, epidemiology and suggested etiology. Br Med Jr. 1972;2:556.
6. Mirji P, Emmi S, Joshi C. Study of clinical features and management of varicose veins of lower limb. J Clin Diagn Res. 2011;5(7):1416-20.
7. Campbell WB, Halim AS, Aertssen A, Ridler BM, Thompson JF, Niblett PG. The place of duplex scanning for varicose veins and common venous problems. Annals Royal College Surg Eng. 1996 Nov;78(6):490.
8. Das K, Ahmed S, Abro S, Arain MS. VARICOSE VEINS. The Professional Medical J. 2014;21(03):509-13.
9. Pavan Prasad BK, Prem Kumar A. Clinical study of varicose veins and their management. Int J Biomed Advance Res. 2015;6(08):564-8.
10. Kontosic I, Vukelic M, Drescik I, Mesaros-Kanjski E, Materljan E, Jonjic A. Work conditions as risk factors for varicose veins of the lower extremities in certain professions of the working population of Rijeka. Acta Medica Okayama. 2000;54(1):33-8.
11. Baric LJ. The disease of aorta, arteries and veins. In: Internal Medicine in Practice, Skolska Knjiga, Zagreb; 1984:683-699.
12. Mimica M, Pavlinović Ž, Malinar M. Varices of legs in a working population. Arhiv Higijenu Rada Toksikologiju. 1977;28(2):145-55.
13. Sakurai T, Gupta PC, Matsushita M, Nishikimi N, Nimura Y. Correlation of the anatomical distribution of venous reflux with clinical symptoms and venous haemodynamics in primary varicose veins. British J Surg. 1998;85(2):213-6.
14. Vaidyanathan S. Deep vein obstruction: management strategies. In: Chronic venous disorders of the lower limbs. Springer; 2015:195-203.
15. Dur AHM, Mackaay AJC. Duplex assessment of clinically diagnosed venous insufficiency. Br J Surg. 1992;79:155-61.

16. Staniszewska A, Tambyraja A, Afolabi E, Bachoo P, Brittenden J. The Aberdeen varicose vein questionnaire, patient factors and referral for treatment. European J Vas Endovas Surg. 2013;46(6):715-8.
17. Ziegler S, Eckhardt G, Stöger R, Machula J, Rüdiger HW. High prevalence of chronic venous disease in hospital employees. Wiener Klinische Wochenschrift. 2003;115(15-16):575-9.
18. Delbe and Mocquet. Varicose veins and deep vein thrombosis: epidemiology and suggested aetiology. Br Med J. 2005;2:556.
19. Barwell JR, Davies CE, Deacon J, Harvey K, Minor J, Comparison of surgery and compression with compression alone in chronic venous ulceration (ESCHAR study): randomised controlled trial. Lancet. 2004;363(9424):1854-9.
20. Michaels JA, Campbell WB, Brazier JE, Macintyre JB, Palfreyman SJ, Ratcliffe J, et al. Randomised clinical trial, observational study and assessment of cost-effectiveness of the treatment of varicose veins (REACTIV trial). NIHR J Library. 2006;10:1-196.
21. Defty C, Eardley N, Taylor M, Jones DR, Mason PF. A comparison of the complication rates following unilateral and bilateral varicose vein surgery. Eur J Vasc Endovasc Surg. 2008;35:745-9.
22. van Rij AM, Jiang P, Solomon C, Christie RA, Hill GB. Recurrence after varicose vein surgery: a prospective long-term clinical study with duplex ultrasound scanning and air plethysmography. J Vas Surg. 2003 Nov 1;38(5):935-43.
23. Wills V, Moylan D, Chambers J. The use of routine duplex scanning in the assessment of varicose veins. Australian and New Zealand J Surg. 1998 Jan;68(1):41-4.

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