A prospective study on etiology and clinical features of varicose veins: A hospital based study

Dr. Saif Mohammed Khan and Dr. Saniya Ahmed

DOI: https://doi.org/10.33545/surgery.2019.v3.i4a.209

Abstract

**Background:** Varicose vein are abnormally dilated, tortuous, elongated veins of lower limbs which have permanently lost their valvular efficiency. The main objectives of our study was to study etiological profile (Age, sex, occupation and site pathology) and different modalities utilized in our institute and to assess and study final outcome in patients included in our study.

**Methodology:** It was a prospective study; fifty cases of varicose veins were attending outpatient Department and admitted in the Surgical Department of Deccan Medical College & Hospital from October 2018 to September 2019.

**Results:** In the present study, fifty cases of varicose veins treated in our institute form the basis of this study. The average age of the patients was 41.86 years. The youngest patient was of 19 years and the oldest was 65 years of age. Varicose veins were common in males; the male to female ratio was 3.1:1. The number of patients who were involved in occupations requiring prolonged hours of standing was 35 (70%). A positive family history of varicose veins was present in only 4 cases (8%). Deep vein thrombosis was present in 7 patients (12.72%). The commonest presentation was dilated veins. The common associated symptoms were itching and pigmentation in 27 patients (54%) and ulceration in 13 patients (26%). 5 patients had bilateral varicose veins and the remaining 45 had only one limb affected. The limb commonly affected was right lower extremity in 29 cases (52.7%). Long saphenous vein was involved in 42 limbs (76.36%) and both long and short saphenous vein were affected only in 3 limbs (5.4%).

**Conclusion:** The database of our retrospective study regarding age & sex incidence, clinicopathological features and therapeutic outcome was comparable to other studies in various literatures.

**Keywords:** Varicose veins, ulceration, deep vein thrombosis, long saphenous vein

**Introduction**

Varicose veins are a major health problem in the western countries affecting probably one in five women and one in fifteen men [1]. Because of the symptoms caused by them, varicose veins significantly reduce the person’s working capacity. Whereas in India the men are affected more than women along with its complications as compared to Western world [2]. Of the all earth’s mobile animals only man with his penchant for standing is afflicted by this abnormal condition [3]. The primary cause is the familial tendency of structural dysfunction of the vein wall and their valves. Secondarily varicosities develop after damage to valves or obstruction to venous flow. Occupational predisposition, pregnancy, hormonal changes, pelvic tumors, deep vein thrombosis, thrombophlebitis, bony displacements and tricuspid incompetence [4] Castleman’s disease [5] can lead to secondary varicose veins.

Postural discomfort like heaviness, dull aching pain, swelling, dilated veins are the usual presentations [6]. Varicose veins can complicate in form of bleeding, eczema, thrombophlebitis, ulceration, ankle deformity in form of equinus varus and deep vein-thrombosis [1].

Ever since it has been contemplated upon the management of varicose veins has been both intriguing and alluring. A perfect solution to this has still not been reached and hence the quest for the newer techniques. With the development of radiological techniques the location of the pathological veins has become quiet perfect which was solely dependent on the clinical examination. With the advent of non-invasive techniques which are easily reproducible and less expensive ones like duplex Doppler and various types of plethysmographies have replaced venography [7, 8].
Over centuries numerous modalities like puncture, avulsion, excision, cautery, ligation, injection sclerotherapy and stripping have been used with various degree of success. With the realization of importance of the vein in vascular reconstruction more vein saving procedures are coming up in recent days [6]. The aim of our present study on varicose veins is to throw light on clinical presentation in relation to age, sex, predisposing conditions with special significance to complications.

Methodology

Study design
Fifty cases of varicose veins were attending outpatient department and admitted in the surgical department of our institute from October 2018 to September 2019. The cases were studied purely on prospective basis. No retrospective cases were added in the study.

Inclusion criteria
Patients presenting with signs and symptoms of primary varicose veins that get investigated with Doppler and undergoing any 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 by 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 Parthe's test, multiple tourniquet tests, Schwartz test, Morrissey's cough impulse test, Fegan's test.

Management
After clinical examination and investigation the patients were classified into two categories.

Category I
This included patients who are having symptoms without any complication. These patients were initially treated conservatively and if not relieved of the symptoms in 6 weeks then only subjected for surgical management. Most of these patients were treated on the outpatient basis.

Category II
This included those presenting with long term symptoms with associated complications like oedema or ulceration. They were first subjected to conservative line of management with an objective to control the associated complications. Later, they underwent definitive operative treatment. The conservative treatment included.

Results
This study includes 50 cases of varicose veins that attended out patients department or were admitted for the same, from October 2018 to September 2019 at our institute. All cases were prospectively studied, no retrospective data was considered. In this study the following were the observations noted with respect to the clinical data and results.

Age incidence
The youngest patient in the present study was a 19 yr. old while the oldest patient was a 65 years old. The maximum incidence of varicose veins was seen in the age group between 31 to 40 yrs. The average age of the patients in this study was 41.86 years.

Table 1: Showing age incidence in varicose veins cases

| Age in years | No. of pts | Percentage |
|--------------|------------|------------|
| 11-20        | 2          | 4%         |
| 21-30        | 12         | 24%        |
| 31-40        | 13         | 26%        |
| 41-50        | 10         | 20%        |
| 51-60        | 10         | 20%        |
| 61 & Above   | 3          | 6%         |
| Total        | 50         | 100%       |

Sex distribution
Out of the 50 patients treated, thirty eight were males and only 12 patients were females. The male to female ratio was found to be 3.1: 1. (38: 12).

Table 2: Sex distribution of the cases

| Sex          | No. of patients | Percentage |
|--------------|----------------|------------|
| Males        | 38             | 76%        |
| Females      | 12             | 24%        |
| Total        | 50             | 100%       |

Occupation
In the 50 patients who were evaluated, 35 patients were engaged in occupations involving prolonged hours of standing. The maximum number of patients were found to be farmer.

Table 3: Shows the occupation of the cases

| Occupation                                | No. of patients | Percentage |
|-------------------------------------------|----------------|------------|
| Occupation involving prolonged standing   | 35             | 70%        |
| Occupation not involving prolonged standing| 15             | 30%        |
| Total                                     | 50             | 100%       |

Family history
Out of 50 patients, 4 of them gave a positive history of varicose veins in the family. Two had on maternal side and two on paternal side.

Table 4: Shows the occupation of the cases

| Family history | No. of patients | percentage |
|----------------|----------------|------------|
| Present        | 4              | 8%         |
| Absent         | 46             | 92%        |
| Total          | 50             | 100%       |

History of pregnancy associated varicosity
Out of 50 patients, 12 were females. 3 females of these were having presentation of varicosities during pregnancy.
Clinical presentation
All the fifty cases studied presented with the complaint of dilated veins over the lower limbs. Out of these, 10 (20%) patients had no other associated complaints. While the other 40 patients (80%) had in addition, other complaints, of which pain, itching, pigmentation and ulceration varying from 20 to 60%. No patient presented with history of bleeding.

| No. of limbs | Percentage |
|--------------|------------|
| Female having h/o pregnancy | 3 | 25% |
| Female not having h/o pregnancy | 9 | 75% |
| Total | 12 | 100% |

Site of pathology in the venous system
After examining the 55 limbs and the superficial venous system involved in them, the exact site of pathology after clinical examination were determined. They were found to be involving either the sapheno-femoral valve, the sapheno-popliteal valve or the valves of the perforators, further classified as above knee, below knee, and above ankle, mid-calf perforator. Commonest sites of defect were the perforator valves in limbs while sapheno-femoral valve was the next common site.

| No. of limbs | Percentage |
|--------------|------------|
| Sapheno-femoral valve | 20 | 36% |
| Sapheno-popliteal valve | 7 | 12.72% |
| Above knee Perforator | 17 | 30.90% |
| Below Perforator | 33 | 60% |
| Above ankle Perforator Valve | 18 | 32.72% |
| Mid-calf Perforator Valve | 10 | 18.18% |

Discussion
Man has to pay some penalty for the pleasures and benefits derived from having himself elevated to the upright position. Thus, he placed added burden on certain structures and brought pathological states seldom seen in the quadrupeds. One such pathological state is the entity of ‘Varicose veins of the low limbs’ [3]. The management of varicose veins has always been a challenge. This disease is very wide spread among the western population, affecting about 20% of the adult population [3]. In India, though it is not a major health problem, varicose vein because of their discomforting symptoms lead to significant morbidity and loss of working hours [2].

Various techniques of treatment have been carried out with an aim to completely cure this condition. Unfortunately, there has not been a single regimen that has stood the test of time. Hence, even now newer methods in the evaluation of varicose veins and newer techniques in the surgery for varicose veins are being invented [9].

No wonder, the newer diagnostic tools like phlebography, plethysmography, continuous colour doppler have made the diagnosis more specific and the newer technique of treatment like valvuloplasty [10] cryovaricectomy [8, 11] have kindled a hope in a more promising management of this entity. A total control over this is still a dream. In this study an attempt has been made to make a detailed observation of this condition in relation to its age, sex, incidence, presentation, complications and effectiveness of the commonly followed treatment modalities. Fifty cases have been evaluated and logical conclusions have been sought in this venture.

Etiological aspects
Age
Age is one of the factor blamed for development of varicose veins. 20 Various western clinical and epidemiological studies show that varicose veins is a disease of middle age group [12]. A similar Indian study, also confirms that this is a disease of middle age, the average being 41.86 years [2].
In the present study, the average age of 41.86 years is comparable with other Indian study. It is comparatively low as compared to the western studies. The youngest patient in this study being 19 yrs. and oldest being 65 are comparable to others studies.

Sex

It is well documented in the literature & various clinical studies done in the west that varicose vein is a disorder affecting females, as much as three times more commonly than the males. The hormonal & mechanical factors are believed to be the cause of increased incidence in the females. These include hormonal changes brought about during menarche, menstruation, pregnancy, lactation & menopause. The hormonal effect, particularly of progesterone on the veins causes the laxity of the venous walls & also increases the susceptibility to deep vein thrombosis. The mechanical effect of the gravid uterus on venous blood flow is also blamed.

| Study                  | Youngest | Oldest | Average age |
|------------------------|----------|--------|-------------|
| 1. Burnand KG et al.   | 30       | 70     | 50          |
| 2. Hoare MC et al.     | 45       | 77     | 58          |
| 3. Vaidyanathan S et al.| 22       | 56     | 39          |
| 4. Redwood NFW         | 24       | 82     | 50.6        |
| 5. Present Study       | 19       | 65     | 41.86       |

The above table shows the association of occupation involving prolonged hours of standing substantially correlates with the figures found in the other studies. So it can be said that prolonged standing may be an accentuating factor, rather than an etiological factor.

Family history

There is a familial tendency of weakness of vein wall & valves. In these families veins dilate under normal venous pressure & thus lead to this leads to valvular incompetency.

| Source                               | % With positive family history |
|--------------------------------------|-------------------------------|
| T.B The pathology & surgery of varicose veins by Dodd & Cocket (1976) | 70% |
| Study by Keith LM et al. (1983)      | 80% |
| Present study                        | 8%  |

Considering the low incidence of this in India as compared to western world, this association is on lower side in our study. In Indian population significance of family history cannot be stressed much.

Side of the lower extremity involved

Various western studies conducted show a marginally increased frequency of varicose veins in left extremity.

| Study                  | Rt. leg | Lt. leg |
|------------------------|---------|---------|
| Hoare MC et al.        | 11 (47.8%) | 12 (52.2%) |
| Present study          | 29 (52.7%) | 26 (47.3%) |

The findings in present study show the more incidence on right side. This may be due to that constipation is not as common in Indians as in Western people and other etiological factors may be playing more role in development of varicose veins. The relative predominance in either side of leg appears statically insignificant.

Constipation has been documented as a precipitating factor in the development of varicose veins in various medical literatures. The pressure of the loaded sigmoid on the proximal veins of the left side in the pelvis perhaps can explain the increased incidence of the left.

Mode of presentation

Obviously all the patients with varicose veins have the complaint of dilated tortuous veins of the lower extremities. The other complaints those may be present include pain, swelling, itching and ulceration.

Pain is usually dull aching after prolonged standing. This can occur due to venous stasis and increased intra-venous pressure or due to associated deep vein thrombosis. Swelling may be complained due to the oedema occurring once again as result of increased venous hypertension.

Itching occurs due to the release of various vaso-active peptides from the trapped leucocytes, and the deposition of hemosiderin from the lysed RBCs. Ulceration is due to the ischemic necrosis of the epidermal and dermal elements due to disturbance in microcirculation of skin.

Table 11: Comparison of age incidence

| Study                  | % of patients |
|------------------------|---------------|
| Jakobson BN (1979)     | 63.8%         |
| Present study          | 70%           |

Table 12: Comparison of sex ratio

| Study                  | Male: Female ratio |
|------------------------|--------------------|
| Redwood NFW (1994)     | 1:3                |
| Sethia & Darke (1986)  | 1:1                |
| Vaidyanathan S (1985)  | 2:1                |
| Present study          | 3.3:1              |

Table 13: Study of patients

| Study                  | % of patients |
|------------------------|---------------|
| Jakobson BN (1979)     | 63.8%         |
| Present study          | 70%           |
Table 16: Comparison on mode of presentation

| Study               | Pain | Swelling | Itching Pigmentation | Ulceration | Bleeding |
|---------------------|------|----------|----------------------|------------|----------|
| Seshadri Rajut [21] | 10%  | 21%      | -                    | 2.5%       | -        |
| Fegan WG [22]       | 34%  | 6.6%     | -                    | 12%        | -        |
| Verma BK et al. [33]| 85%  | 95%      | -                    | 30%        | -        |
| Vaidyanathan [34]   | -    | -        | 60%                  | 46.6%      | -        |
| Present study       | 60%  | 30%      | 60%                  | 26%        | 0%       |

The table shows less incidence of complications in western world, while the late complications like itching, ulceration, bleeding are present at the time of seeking medical help, are more common in the Indian studies. The findings of the present study also co-relate the same. This could be due to the decreased awareness in the Indian population and hence the initial negligence of this disease.

Conclusion
Varicose veins is a common disease affecting the middle aged group males rather than females and people engaged in occupations involving prolonged hours of standing. Commonest presentation is dilated veins affecting unilateral limbs, with associated symptoms of itching, pigmentation and ulceration. Common factors responsible are occupations involving prolonged hours of standing, familial predisposition and post deep vein thrombosis though its incidence is low as compared to western countries.

Acknowledgement
The author is thankful to Deccan Institute of medical Sciences & Hospital for providing all the facilities to carry out this research work.

Conflict of Interest
The author declares that, they have no conflict of interest.

Ethical approval
Ethical approval was taken from Institutional Ethics committee.

References
1. Dodd, Cockett. The pathology and surgery of lower limb varicose veins. Churchill Livingstone 12 rd edition, 1976.
2. Vaidyanathan S. Subfascial ligation of incompetent ankle perforators: Md. J Surg., 1985, 495-505.
3. Sabiston-Text Book of Surgery-15th edition, 1581-1587.
4. Rob, Smith-Operative Surgery, 5 edition; Hemodynamic of peripheral circulation, 192-210.
5. Trivisan G et al. Symptomatic varicose veins secondary to Castleman’s disease. Croatian Medical J. 39(1):69-71.
6. Bailey, Love. Short Practice of Surgery, 22uid edition, 184-186.
7. Barne RW. Non-invasive evaluation of chronic venous insufficiency. Surg. Clinics of N. America, 62:489-500.
8. Cambell WB, Nibleff PG et al. Hand-held doppler as screening test in primary varicose Br. J Surgery, 84(11):1541-43.
9. Burnard KG, O’Donell TF, Thomas ML, Browse NL. The relative importance of incompetent communicating veins in production of varicose veins and varicose ulcer. Surgery, 82:9-13.
10. Kistner RL. Surgical repair of incompetent valve. Arch. Surg. 1978; 110:136-142.
11. Chilton Carne. The surgery of varicose veins. N. American clinics surgery. 1979; 59:737-747.
12. Vasdekis SN, Hobbs JT. Evaluation of short saphenous termination: Br. J Surg. 1989; 76:929-931.
13. Hoore MC. The role of primary varicose veins in venous ulceration Surgery. 1982; 92:450-453.
14. Redwood NPW, Lambert D.; Patterns of reflux in recurrent varicose veins assessed by duplex scanning. Br. J Surg., 81, 148-50.
15. Rutherford RB. Johnson G. Non-operative management of chronic venous insufficiency.
16. Sohare M, Schields D. Leucocyte activity in patients with chronic venous system. J. Vascular Surg. 26(2):265-273.
17. Sethia SM, Darke SG. Stripping of long saphenous vein. Br. J Surg., 1986, 245-248.
18. Munn SR et al. A varicose vein trial Br. J Surg., 1981, 684, 428.
19. Jakobsen BH. The value of different forms of treatment for varicose veins. Br. J Surg. 1979; 66:182-184.
20. Keith ML, Strid WL. Saphenous vein stripping & its Complications. Surgical Clinics of N. America, 63:1303-1311.
21. Raju S. Venous insufficiency of lower limbs & stasis ulceration. Ann. Surg. 1977; 8:688-697.
22. Fegan WG, Pagum LM. Accidental intra-arterial injection during sclerotherapy. Br. J Surg. 1974; 61:124-126.
23. Verma BK et al. Correlation between peripheral venous pressure & plethysmography in post-thrombotic legs. Ind. J Surg, 1977, 649-652.

~ 10 ~