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Original Research Article

Varicose veins: a clinical study

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ABSTRACT

Background: Varicose veins are a common condition affecting the lower limbs. Apart from being a cosmetic problem, it can have some serious complications if not treated in time. Multiple modes of surgical management exist for the disease. Complications of the surgery are troublesome and difficult to treat.
Methods: This is a prospective study done in inpatients of SDM college of Medical Sciences, Dharwad, Karnataka, India. A total of 70 patients were included in this study and various general, demographic, clinical and surgical data outcomes were studied over a period of 4 years.
Results: In our study of 70 patients we found the mean age of the study population to be 45.6% with a range of 21 to 70 years. Male patients (80%) outnumbered the females (20%). Among the 70 limbs studied, 30 (42.85%) patients had the involvement of GSV and communicating system, 6 (8.57%) had involvement of GSV and SSV systems, whereas SSV and CS were affected in 2 (2.85%) patients. 2 (2.85%) had all the three systems involved. Complications of surgery were noted in 22 (31.42%) patients, seroma formation (10%) was the commonest, followed by recurrence of the disease (8.57%), hematoma (4.28%), wound infection (2.85%) and neuropathy (5.71%).
Conclusions: Varicose veins are a frequent occurrence. Commonly affect middle aged males, required to work standing for prolonged hours. The great saphenous and the communicating systems are most commonly involved, followed by great saphenous system alone. Pain is the most common presenting symptom and pigmentation the most common complication of the disease. The treatment depends on the site of incompetence and should hence be tailor-made for each case.

Keywords: Complications, Spider veins, Varicose veins, Varicose ulcer, Varicose surgery

INTRODUCTION

Varicose veins are described as abnormal dilated and tortuous veins seen in the leg, they are seen in 10 percent of the general population.[1] The venous drainage of the lower limb is done by the superficial and deep venous systems, named so because of their relation to the deep fascia of the leg. The superficial system comprises of the great saphenous and short saphenous venous systems, with intercommunicating veins, which have a complex and highly variable anatomy. Superficial systems drain into the deep venous system comprising of the anterior tibial, posterior tibial, peroneal, popliteal and femoral veins. This communication between the superficial and deep venous system is achieved through perforators. Effective venous drainage is maintained because of the unidirectional flow of blood, by means of valves. Any pathology causing these valves to not function properly may lead to formation of varicose veins.[2] Varicose veins can be caused by several other patho-physiological mechanisms, common among them are venous hypertension, incompetence of valves, changes in vein structure, inflammation and sheer stress, venous outflow obstruction or calf pump failure.[3]

Clinically varicose veins are described by the universally accepted CEAP classification, first proposed in 1993 by the American venous forum. It was based on the clinical features (C), etiological factors (E), anatomicall distribution of the disease (A) and the pathophysiological features (P).[4] The clinical classification is elaborated below (Table 1).

Table 1: CEAP classification, clinical grading of varicose veins.

C0	**No visible or palpable signs of venous disease**
C1	Telangiectasies or reticular veins
C2	Varicose veins; distinguished from reticular veins by a diameter of 3 mm or more
C3	Edema
C4	Changes in skin and subcutaneous tissue secondary to CVD
C4a	Pigmentation or eczema
C4b	Lipodermatosclerosis or atrophie blanche
C5	Healed venous ulcer
C6	Active venous ulcer

The symptoms depend on the stage of the disease, early disease is usually asymptomatic, except for visible small veins, however as the disease progresses it manifests as pain in the legs, cramping, hyperpigmentation, edema, specific skin changes (lipodermatosclerosis), ulceration and bleeding. The diagnosis of varicose veins is done by clinical tests such as Brodie-Trendeleberg and Perthes test in addition to investigative modalities. Imaging is primarily done using duplex ultrasound as it is easily available, sensitive, non-invasive, and relatively cost effective.[5]

Figure 1: Clinical appearance of varicose veins and pigmentation around ankle.

The treatment is determined by the stage f the disease, early cases are treated with limb elevation and compressive bandages. As the disease progresses there is need for invasive procedures, which include sclerotherapy, surgeries like Trendelenberg's procedure, SPJ ligation, GSV stripping, perforator ligation, stab avulsion and SEPS. Endovenous techniques are providing a great alternative to surgery as they achieve similar results with minimum insult (Figure 1).[6]

METHODS

This prospective study on outcome of stab avulsion in conventional varicose vein surgery was conducted in department of surgery at SDM College of Medical Sciences and Hospital, Dharwad, Karnataka, India between July 2011 to July 2015. During this period 70 patients having primary varicose veins were selected randomly. All cases of varicose veins presenting to the OPD were subjected to duplex scan to rule out secondary causes. Patients admitted with varicose vein who satisfied the inclusion and exclusion criteria were included in the study. All the required data was collected from patients during their stay in the hospital, during follow up at regular intervals and from medical records.

Inclusion criteria

All patients clinically diagnosed of symptomatic or complicated primary lower limb varicose veins with saphenofemoral and/or saphenopopliteal incompetence with or without perforator incompetence.

Exclusion criteria

- Patients presenting with recurrent varicose veins.
- Patients with concurrent deep venous thrombosis.
- Patients having secondary varicosities.
- Patients less than 18 years of age.
- Patients not fit for surgery

Figure 2: Various surgeries performed for varicose veins.

All 70 patients were inpatients in the surgical ward, their history was taken, symptoms and signs recorded followed by general and local examination. Secondary causes were ruled out using the duplex scan. Cases with complications were initially treated conservatively in order to improve the associated complications like ulcers eczema and dermatitis and later subjected to operative treatment.

Patients who presented with bilateral varicose veins with symptoms in one leg got their symptomatic limb operated on first. No bilateral surgeries were performed. Surgeries were performed based on the site of incompetence. Post-operative compressive dressing was applied for 6 months (only during daytime). Follow-up was done on regular basis for up to 6 months (Figure 2).

RESULTS

In our study of 70 patients we found the mean age of the study population to be 45.6% with a range of 21 to 70 years. Male patients (80%) outnumbered the females (20%). Of the 70 patients who were included in the study, 33 (47.14%) were farmers, 11 (15.71%) were businessmen, 9 (12.85%) were homemakers, 3 (4.28%) were students, 2 (2.85%) were teachers, 2 (2.85%) were policemen and 10(14.28%) were either unemployed or had other occupations (Table 2).

Table 2: General and demographic data.

General/ demographic data	Observed	Percentage
Age		
Mean	45.6 years	
Range	21-70 years	
Sex		
Male	56	80.00
Female	14	20.00
Occupation		
Farmer	33	47.14
Businessman	11	15.71
Homemaker	9	12.85
Student	3	04.28
Teacher	2	02.85
Policeman	2	02.85
Others	10	14.28

Among the 70 limbs studied, 30 (42.85%) patients had the involvement of GSV and communicating system, 6 (8.57%) had involvement of GSV and SSV systems, whereas SSV and CS were affected in 2 (2.85%) patients. 2 (2.85%) had all the three systems involved. Only communicating system was affected in 8 (11.42%) limbs, GSV alone was affected in 18 (25.71%) limbs and SSV was the sole system involved in the rest 2 (5.71%) limbs. Also among symptomatic patients, pain was seen in 51 (72.85%) of patients and was by far the commonest complaint, followed by edema (20%) and disfigurement (12.85%). A total of 35 (50%) of patients presented to us with complications such as pigmentation of the limbs (30%), dermatitis (17.14%), ulcer (5.71%) and superficial thrombophlebitis (2.85%) (Table 3).

Table 3: Clinical data.

Clinical data	Observed	Percentage
Systems involved		
GSV+CS	30	42.85
GSV+SSV	06	8.57
SSV+CS	02	2.85
GSV+SSV+CS	02	2.85
CS	08	11.42
GSV	18	25.71
SSV	04	5.71
Symptoms		
Pain	51	72.85
Edema	14	20.00
Cramps	00	--
Disfigurement	09	12.85
Asymptomatic	07	10.00
Complications of the disease		
Haemorrhage	00	--
Thrombophlebitis	02	02.85
Pigmentation	21	30.00
Dermatitis	12	17.14
Ulcer	4	05.71

Table 4: Type of surgery performed.

Surgery	No.	Percent
Tr + str + perf lig + st av	27	38.57
Tr + str + SPJ lig + st av	05	7.14
SPJ lig + perf lig	02	2.85
Perf lig + st av	02	2.85
Tr + str + SPJ lig + perf lig + st av	01	1.42
Tr + str + st av	13	18.57
SPJ lig + st av	04	5.71
Tr + perf lig + st av	09	12.85
Tr	06	8.57
Tr + SPJ lig + perf lig + st av	01	1.42

Table 5: Complications of surgery.

Complications	No. of patients	Percentage
Hematoma	03	4.28
Seroma	07	10.0
Wound infection	02	2.85
Recurrence	06	08.57
Neuropathy	04	05.71

The type of surgeries performed and their distribution is shown in the chart below (Table 4).

Complications of surgery were noted in 22 (31.42%) patients, seroma formation (10%) was the commonest, followed by recurrence of the disease (8.57%), hematoma

(4.28%), wound infection (2.85%) and neuropathy (5.71%) were also noted during the study (Table 5).

DISCUSSION

Varicose veins and their treatment have been commented upon since antiquity.[7] Although the surgical treatment of ligation and stripping of the greater saphenous veins has been fairly standard for nearly the last 100 years, more recent studies have questioned this approach.[8-11] It is the purpose of this study is to review the pathophysiology, diagnosis, surgical treatment of varicose veins, and their outcomes.

In 1978 Widmer reported data from a defined population of factory workers'.[12] He found a higher incidence of varicose veins in men (5.2%) than in women (3.2%), with the overall incidence of varicose veins being 4.2 %. The prevalence of venous disease increases with age.[13]

Varicose veins are a known occupational disease, found in people required to stand for prolonged periods. We found that our study had 47.14% farmers, who admitted that their occupation required standing for long intervals. Also worth noticing was the fact that the other people affected were policemen and teachers, jobs associated with prolonged standing.

Analysing the data regarding systems involved, we derive that the great saphenous system is the most commonly involved (75.71%), the communicating system is the next commonest (60%), the small saphenous is the least involved system. Two or more systems were seen to be involved frequently than isolated system insufficiency. In accordance with other studies we too noted that pain was the commonest presenting symptom and pigmentation was the commonest presenting complication.[14]

Surgeries were based on the site of incompetence, junctional reflux noted on duplex scanning was treated by either by Trendelenberg's procedure (flush ligation of the SFJ) or by ligation of the SPJ, whichever was involved. The GSV was stripped, interrupted or preserved as per surgeons' preference. The perforator incompetence was dealt by sub-fascial ligation. The blowouts and tributaries were stab avulsed using a small incision overlying the area with a stab knife. Multiple such avulsions were carried out depending on the size and extension of the varicosities. When each component is considered alone, Trendelenberg's procedure was done in 62 (88.57%) limbs, stripping was done for 46 (65.71%), SPJ ligation was done in 13 (18.57%) limbs and perforators were ligated in 40 (57.14%) limbs. So, Trendelenberg's surgery amounts for the maximum number of cases, followed by stripping, perforator ligation and SPJ ligation, in that order of frequency. It should be borne in mind that procedures are combined based on the patient's requirements. Hence multiple combinations of the above mentioned procedures are done to alleviate the patient's symptoms.

Among complications of surgery a total of 6 (8.57%) recurrences were noted, most of them were secondary to new perforator incompetences occurring atleast an year after primary surgery. Other complications such as seroma, hematoma, wound infection and neuropathies were noted and were treated accordingly.

CONCLUSION

Varicose veins are a frequent occurrence. Commonly affect middle aged males, required to work standing for prolonged hours. The great saphenous and the communicating systems are most commonly involved, followed by great saphenous system alone. Pain is the most common presenting symptom and pigmentation the most common complication of the disease. The treatment depends on the site of incompetence and should hence be tailor-made for each case. These surgical procedures are associated with complications, seroma being the commonest. Our experience had a recurrence rate of 8.57%; these patients may require additional surgeries.

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