

INDICATIONS AND OUTCOMES OF SURGERY IN VARICOSE VEINS – A PROSPECTIVE OBSERVATIONAL STUDY

Vascular Surgery

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ABSTRACT

Background: Varicose veins of the lower extremities are the most common peripheral vascular disease and their treatment is as old as mankind. This prospective clinical study of varicose veins was conducted to assess clinical grade, an indication of surgery at the time of presentation, and outcomes of surgery in terms of symptom relief and short-term complications. **Methods:** Prospective study was conducted in our institution from July 2018 to July 2019 and 60 patients with varicose veins were studied. With a total of 83 limbs. Clinical grade at the time of presentation, the indication of surgery, surgery performed, and the outcome was noted. **Results:** Out of 60 patients 77% were males with middle age being the commonest. Unilateral presentation (62%) was more common than bilateral presentation (38%). 57% of patients had an occupation history of prolonged standing. Dull aching pain was the most common presenting complaint. 32% of cases had skin changes or venous ulcers. The most common surgery was a SFJ ligation. About 68% of patients were satisfied, 12% of patients were somewhat satisfied & 20% of patients were not satisfied with their surgery. Duration of hospital stay was significantly higher (9.5 days) in ulcers as compared to patients without ulcers (3 days). **Conclusions:** Most patients were in 2nd or 3rd decade of life with cosmesis and physical fitness being their main considerations. Patients with bilateral disease can be operated on in a single sitting without any added morbidity. The most commonly done operation is either a SFJ ligation or multiple phlebectomy or a combination of the two.

KEYWORDS

Varicose Veins-Saphenous Vein-Ligation

INTRODUCTION

Varicose takes its origin from the Latin word 'varix' which means 'dilated' or 'twisted' (1). According to Arnoldi varicose veins are "clearly visible, dilated, tortuous and possibly prominent subcutaneous veins of lower extremities". Dodd and Cockett defined varicose veins as "dilated veins secondary to loss of valvular efficiency". WHO defines varicose veins as "saccular dilatation which is often tortuous" (2). The prevalence of varicose veins has been reported variously from as less as 2% to over 20% in population studies due to differences in definition in epidemiological studies (3). The unique arrangement of two systems of veins in lower limbs and the bipedal posture of humans play important role in the development of varicose veins. The risk of varicose veins is increased by various factors like increased intravenous pressure caused by certain jobs that involve long hours of standing, raised intra-abdominal pressure caused by obesity, pregnancy, abdominopelvic mass, chronic constipation, and chronic cough. American Venous Forum was the first to propose CEAP classification and imaging in 1993 which includes clinical features (C), etiological factors (E), anatomical distribution of the disease (A), and pathophysiological features (P) (4). Duplex USG is used as an imaging modality due to its being sensitive, non-invasive, easily available, and cost-effective. Various treatment options are available for varicose veins e.g. injection sclerotherapy, compression stockings, ligation of perforators, multiple stab avulsion of veins, and stripping. Minimally invasive procedures like endovenous laser ablation, radio-frequency ablation, and foam sclerotherapy are alternatives to and complementary to traditional venous surgeries (5). This study was done to explore the spectrum of this vast and interesting venous disease and illuminate its various aspects, like its wide range of clinical presentation, site of incompetence on duplex imaging, indication for surgery, a wide range of surgical options available, the role of stripping in the current era and assessing the surgical outcome in terms of symptom relief and short term complications

MATERIAL AND METHODS

This prospective observational study was carried out over 12 months in the Department of General Surgery, Himalayan Institute of Medical Sciences, SRHU, Swami Ram Nagar, Dehradun. This study was done on 60 patients (more than 18 years of age) of varicose veins to assess

clinical grade, indication of surgery at the time of presentation, and outcomes of surgery in terms of symptom relief and short-term complications. In patients who presented with bilateral disease, each lower limb was evaluated separately hence a total of 83 limbs were studied. A complete history and detailed general, systemic and local examination of patients was performed after obtaining the written informed consent of the patients. The affected limb was evaluated in the following terms of Clinical grading only [excluding the other components i.e. E.A.P], skin changes, and any ulcer. Each limb was evaluated by Duplex ultrasonography. The specific operation (multiple stab avulsions, SPJ and SFJ ligation, perforator ligation, or a combination of any of these) done was noted in each case along with the indication for surgery and any intra-operative difficulty encountered. Patients whose indication of surgery was pain were assessed by a visual analogue scale both preoperatively and postoperatively to look for pain relief after surgery. Improvement of 4 or more was considered good pain relief. Surgical outcome was assessed at 2nd week and 6th week regarding morbidity (Haemorrhage, Wound infection and Dehiscence, Hematoma, Seroma, Stitch Sinus, Paraesthesia), relief of symptoms, healing of any ulcer (if present) and residual varicose veins. Patients who have been previously operated on for varicose veins and now presented with recurrent or residual varicose veins, patients with concurrent deep venous thrombosis, or having secondary varicosities were excluded from the study.

RESULTS

Out of 60 patients, 46 patients (77%) were male and 14 were female (23%) with the unilateral presentation in 37 (62%) and bilateral in 23 (38%) patients. Maximum patients were from the 2nd to 3rd decade of their life. The majority of the patients had occupations that involved standing for prolonged hours. Housewife (10 patients), and Labourer/Factory (9 patients) were most common in our study. The main presenting feature in our study was pain (35%) in the limbs, followed by visible dilated veins (28%) and superficial skin changes and ulcerations. Swelling and superficial thrombophlebitis were the other presenting symptoms.

Only perforator incompetence was the major contributing factor associated with varicose veins in nearly 34 (41%) patients. Sapheno

femoral junction incompetence along with perforators (30%) was the second followed by Sapheno femoral with saphenopopliteal junction incompetence with perforators (21). Pain (37%) and cosmesis (25%) formed the major indication of surgery followed by ulceration (10%) and physical fitness (5%). AS the perforator incompetence was the major factor, hence only Stab avulsions at multiple perforators site were performed in 32 (39%) patients. Saphenofemoral junction ligation was done in 26 (31%) patients whereas stripping through an obsolete procedure was done in 4 (5%) patients.

As seen above in Table II, total 11 patients had post-operative complications. Wound infection was the major postoperative complication in 3 (8%) patients followed by Hematoma (3%), Wound dehiscence (3%), paraesthesia (3%), and stitch sinus and abscess in 1 patient each.

Of the Total 60 patients that were included in the study and treatment given, about 41 patients (68%) were satisfied with the outcome of surgery. 7 patients (12%) were somewhat satisfied and the remaining 12 patients (20%) were unsatisfied with their surgery. Continuing symptoms (2), the persistence of pain (5), and poor cosmesis (4) was the major factor in determining the satisfaction of the patient.

The duration of hospital stay in 8 cases with ulcers was significantly higher (9.5 days) as compared to a patient without ulcers (3 days).

DISCUSSION

Varicosity of the lower limb is the most common peripheral vascular disease of mankind. It often starts early in life but assumes a silent course for a variable length of time, before they develop complications due to venous hypertension.

In this study of 60 patients of varicose veins, 14 were female, which is low compared to most of the western studies quoted. Callam MJ reported a higher percentage of women than men (women 50-55%; men 40-45%) (6). However, most studies in India have reported male preponderance. In studies conducted by Prasad et al and Mulla et al, they found 80% of cases were males (7, 8). Unilateral presentation (62%) was found to be more common than bilateral presentation (38%) which correlates with the findings of Mishra et al in which 54 cases out of 60 had unilateral limb involvement (9). The age distribution in the study was characteristically between 21-50 years of age which included 67% of the cases which correlates well with the study done by Lateef in which 65% of patients were in the age group of 20-40 years (10). So it is a disease that affects the middle age population. 57% of patients in our study had an occupation history of prolonged standing which was inconsistent with the findings of Lateef et al in which 35% of patients had a history of prolonged standing (10). A notable feature was that the most common group in our study were housewives (10 patients) who are presumed not to be standing for long hours during their daily household activities. In this study, the commonest clinical feature that patients presented with was dull aching pain associated with night cramps in 35% of cases (limbs). The same was found by Kompally et al, in which 75% of patients had heaviness in their legs as the most common symptom (11). Only dilated veins were the predominant symptom in 28% of cases (limb). The majority of the cases (67%) in this study were of Clinical Grade 2 which either had dilated veins only or had associated dull aching pain which is comparable to a study done by Mirji et al in which 65.6% of patients were of clinical grade 2 or 3 (12). Staniszewska et al also reported the maximum number of patients who had varicosities in the C2 class (13). In this study majority of the cases (41%) had only multiple perforator incompetence on duplex imaging with normal SFJ and SPJ. This was comparable with the study conducted by Samane et al in Maharashtra in 60 patients in which 43.3% of patients had isolated multiple perforators incompetency (14).

Campbell et al in their study found that 21% of patients underwent surgery for cosmesis and 64% due to constant dull aching pain (15). In our study, 26% of patients underwent surgery just for cosmesis whereas 34% of patients were taken up for surgery for dull aching pain in their lower limbs. 5% opted for surgery for physical fitness, out of which 2 patients wanted to join the army and 1 patient was a sportsman. Some surgeons advocated operating one limb at a time however in this study majority of patients (21 patients) with bilateral varicose veins were operated on in a single sitting. There was no added morbidity in the patient in which both limbs were operated on simultaneously in our study. The time of ambulation, the average duration of stay, and the use

of compression stockings were almost similar in both groups. Multiple stab avulsions were given in all patients combined with other procedures whereas SFJ ligation was done in almost 50% of cases. This correlates well with the study done by Mulla et al in which stab avulsions and SFJ ligation were done in 89% of patients each in combination with various procedures (8).

In contrast in the study by Mirji et al stab avulsions were given in only 5.7% of patients (12). In the present study greater use of simple phlebectomy was seen as compared to perforator ligation. Only 12% of cases underwent perforator ligation. On the contrary in the study by Karmacharya et al Perforator ligation was done in 62% of patients (16). In a study by Karmacharya et al, the outcome of surgical management of varicose veins with and without venous stripping was compared. He concluded that total hospital admission days, pain-free days attained and days in which patients were able to walk normally were significantly lesser in which stripping was not performed (16).

In the study, 8 patients had intraoperative complications/ difficulty. SPJ which was incompetent on duplex imaging either could not be identified or ligated in 6 patients. 2 patients had excessive intraoperatively bleeding at the SFJ ligation site, one of which had preoperative thrombocytopenia. No patient had an injury to the femoral veins or artery during SFJ ligation. In a study by Nwarof, about 5% of patients had an injury to the femoral vein (17).

Venu et al in their study of 50 patients with varicose veins encountered complications in 15 cases, the commonest being hematoma in 5 cases which cleared conservatively, and wound infection in 4 cases (18). In this study, 11 patients developed postoperative complications.

The majority (7 patients) of patients had wound-related complications like wound infection, wound dehiscence, stitch sinus and stitch abscess. 2 patients in which hematoma formed post-surgery at SFJ ligation site, one had preoperative thrombocytopenia and in other GSV stripping was performed along with SFJ flush ligation.

In a study by Campbell et al in which he followed up patients initially for a few months and then at 10 years. Overall, 59 (84%) patients were pleased with their early results, but only 46 (66%) were pleased after 10 years. Among 24 (34%) patients who were not pleased with the long-term result of their operation, only 3 patients gave continuing symptoms as the reason (15). Similarly in this study 12 (20%) patients were not satisfied with the outcome of surgery. The majority of them (5 patients) were not satisfied due to persistence of pain whereas 4 patients complained of poor cosmesis after surgery.

In the study by Roychowdhury after a follow-up of 6 months in 27 patients who underwent surgery, one patient developed a recurrence of varicosity (19). Katari et al in their study of 42 patients reported residual varicosity in 2 patients (20). In this study, residual varicosity after a 6-week follow-up is seen in 2 patients which led to their dissatisfaction. On the contrary in the study by Naik et al no recurrence was reported after 4 months of follow-up (21).

The duration of hospital stay in 8 cases with ulcers was significantly higher (9.5 days) as compared to a patient without ulcers (3 days). Similarly in a study by Jaykar et al average duration of hospital stay in patients with ulcers was 15 days and without ulcers was 10 days (22).

CONCLUSION

From this observational study of varicose veins and their treatment important points that emerge are the majority of patients (62%) were of Clinical Grade 2. The majority of a patient were in 2nd or 3rd decade of life which shows that young patients are turning up to the hospital for seeking treatment. Patients with bilateral disease can be operated on in a single sitting without any added morbidity. The most commonly done operation was either a SFJ ligation or multiple phlebectomy or a combination of the two. Clinically marking the dilated vein is good enough and Doppler marking of an incompetent perforator should not be done routinely. 68% of patients were satisfied with the outcome whereas 12% were somewhat satisfied. Poor outcome in 20% of cases is due to the advanced nature of their disease on presentation.

Limitations of the study

Endovenous procedures and sclerotherapy have not been included as these are not done at our center, so results do not reflect the role of these modalities in treatment.

Author Contribution:

Ankit Aggarwal-Data collection, Chetna Choudhary- Data Analysis, Jitendra P Ray- Data Analysis, Babar Rehmani- Analysis and Interpretation, Vinamra Mittal-Analysis and Correspondence

Author Approval:

All authors read and approved the final version of the manuscript.

Table I: Clinical Grading

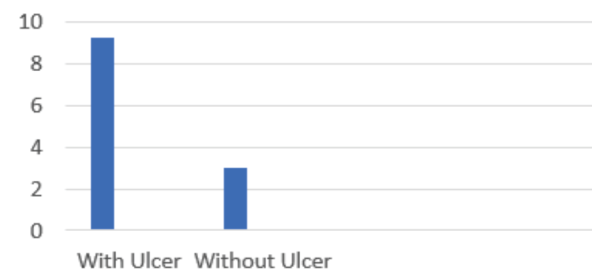
Class	Total no. of Lower Limb (Percentage)	Total no. of Patients (Percentage)
Clinical Grade 2	55 (67%)	41 (62%)
Clinical Grade 3	1 (1%)	1 (2%)
Clinical Grade 4	C4a 9 (11%)	8 (12%)
	C4b 9 (11%)	7 (10%)
Clinical Grade 5	1(1%)	1 (2%)
Clinical Grade 6	8 (9%)	8 (12%)

Table II:- Post-Op Complications of surgery

Complication	Number of patients	Percentage of Patients
Hematoma	2	3%
Wound Infection	3	8%
Wound Dehiscence	2	3%
Paraesthesia	2	3%
Stitch Sinus	1	0%
Stitch Abscess	1	0%
Total	11	17%

Table III: Outcome of Surgery

	Total Number of Patients	Percentage
Satisfactory	41	68%
Somewhat Satisfactory	Delayed Healing of the wound	4
	Delayed healing of an ulcer	1
	Paresthesia	2
Unsatisfactory	Non healed ulcer	1
	Persistence of Pain	5
	Poor Cosmesis	4
	Residual Varicose veins	2

**Fig I: Duration Of Hospital Stay****REFERENCES**

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