

A Comparative Study on the Outcome of the Clinical Outcome of Varicose Veins Treatment by Flush Ligation of Saphenofemoral Junction with and Without Stripping of Long Saphenous Vein

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Abstract:

Background: Varicose veins are dilated, tortuous, thin elongated vessels usually associated with valvular incompetence. With a shift to less invasive, endovenous treatment modalities in recent years, much attention and interest has been drawn to venous disease. Flush ligation at the saphenofemoral junction and stripping of the great saphenous vein is being increasingly replaced by endovenous methods such as radiofrequency or endovenous laser ablation for the treatment of varicose veins.

Objective: This hospital-based prospective and comparative study aimed to study the clinical outcome of varicose veins treatment by flush ligation of saphenofemoral junction with and without stripping of long saphenous vein.

Materials and Methods: A total number of 50 patients in whom the clinical and radiological diagnosis of unilateral/ bilateral varicose veins was established and were investigated for a period of 12 months (October 2022 to October 2023) were considered in this single-center study conducted at Sri Venkateshwaraa Medical College Hospital and Research Centre, Ariyur, Puducherry. Inclusion criteria included all patients in whom the clinical and radiological diagnosis of unilateral/ bilateral varicose veins was established, aged 18 years to 60 years and having CEAP classification C₂₋₆ E_p A_{S/P} P_R. Patients admitted under general surgery with varicose veins were included in the study after taking their consent. Detailed history & thorough physical examination of the patients to be included under the study was done and recorded in a proforma for each patient separately. This study analysed both groups for postoperative complications like severe pain, hematoma formation, delayed ambulation, limb oedema, wound infection.

Result: The most common age group in the study was 31-40 years. Out of 50 patients, 11 (22%) were male and 39 (78%) were female with a male to female ratio of 0.28:1. Unilateral Left limb was more commonly involved than the bilateral left limb in 19 (38%) patients among the study population. There was no recurrence of the disease in patients of group A and group B for both 1st month and 2nd month. Group A patients recorded recurrence of the disease in 4th, 5th and 6th month at 2 cases, 1 case and 2 cases respectively.

Conclusion: This study concludes that there is not much significant differences in recurrence rate of both groups but there is delayed recurrence in those patients who under SFJ ligation WITH stripping of GSV.

Keywords: Varicose veins, Great saphenous vein, Saphenofemoral ligation.

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Introduction

Varicose veins are multiple elongated dilated and tortuous and palpable veins that are typically larger than 3mm. Varicosities are manifestations of chronic venous disease, which includes various other venous abnormalities, such as dilated intradermal veins, spider veins, reticular veins and telangiectasia. [1-6] Varicose veins range in severity from telangiectasia to protuberant

superficial varicose veins with or without oedema, dermatitis, lipodermatosclerosis and venous ulceration. [7-9] It is a complex and multifactorial development involving genetic makeup of the individual and predisposing risk factors that include age, female sex, family history, pregnancy, obesity and prolonged standing. It is likely that genetic variation, persistent venous hypertension, and the

consequence of chronic inflammation with in the venous wall may be independent contributory elements. [10-12]

Surgery in the form of saphenofemoral ligation (SFL), great saphenous vein (GSV) stripping and multiple phlebectomies remains the gold standard treatment for primary great saphenous varicose veins. Unfortunately, recurrence rates remain high, despite attempts to improve outcomes by ensuring that procedures are performed by appropriately trained surgeons.

The majority of research aimed at decreasing recurrence has concentrated on the role of stripping the GSV. Previous research has shown that whilst stripping the GSV reduces the rate of early recurrence the long-term rate of recurrence is the same. [13-15]

In view of the above, we sought to study the clinical outcome of varicose veins treatment by flush ligation of saphenofemoral junction with and without stripping of long saphenous vein.

Method

A total number of 50 patients in whom the clinical and radiological diagnosis of unilateral/ bilateral varicose veins was established and were investigated for a period of 12 months (October 2022 to October 2023) were considered in this single-center study conducted at Sri Venkateshwaraa Medical College Hospital and Research Centre, Ariyur, Puducherry. Inclusion criteria included all patients in whom the clinical and radiological diagnosis of unilateral/ bilateral varicose veins was established, aged 18 years to 60 years and having CEAP classification C₂₋₆ E_p A_{S/P} Pr. Exclusion criteria included patients with Deep Vein Thrombosis (DVT), recurrent varicose veins and varicose veins during pregnancy.

During this study, a total of 50 varicose veins patients admitted in ward were divided into the 2 groups of 30 patients in each group who underwent flush ligation of saphenofemoral junction with stripping of long saphenous varicose vein and subfascial ligation of perforators and other group of patients with ligation of saphenofemoral junction without stripping of long saphenous varicose vein

and subfascial ligation of perforators. Patients admitted under general surgery with varicose veins were included in the study after taking their consent. Detailed history & thorough physical examination of the patients to be included under the study was done and recorded in a proforma for each patient separately.

This study analysed both groups for postoperative complications like severe pain, hematoma formation, delayed ambulation, limb oedema, wound infection.

Flush ligation of saphenofemoral function with stripping: The equipment used for stripping was Myer's stripper. Patients were admitted one day prior to surgery, their investigation completed and they were subjected to pre-anesthetic checkup. After clearance from anesthesia, varicose vein of the patients was marked.

In the morning, patients were shifted to general operation theatre where stripping of long saphenous varicose vein was performed; either under general anesthesia or spinal anesthesia, flush ligation of saphenofemoral junction was done the same way as shown above. A small incision was made just below the knee around the long saphenous vein through which the stripper was past and taken out through above opening and vein stripped from below downwards. This was immediately followed by compression bandaging to prevent hematoma formation. Post operatively the patients were shifted to ward with legs kept elevated.

Statistical Analysis: The data was collected, coded and recorded on Microsoft Excel Spread sheet program and descriptive statistical analysis was performed. Data analysis was performed using Statistical Package for the Social Sciences (SPSS) software (version 23.0).

Results

The most common age group in the study was 31-40 years. Out of 50 patients, 11 (22%) were male and 39 (78%) were female with a male to female ratio of 0.28:1. Unilateral Left limb was more commonly involved than the bilateral left limb in 19 (38%) patients among the study population.

Table 1: Tabulation of study variables

Category	Number of patients (n, %)
Number of patients recorded in our study	50 (100%)
Gender of patients recorded in our study	
Male	11 (22%)
Female	39 (78%)
Total	50 (100%)
Ratio of male: female	0.28:1
Age range of patients recorded in our study (in years)	
18 to 30	5 (10%)
31 to 40	26 (52%)

41 to 50	17 (34%)
51 to 60	2 (4%)
Distribution of the diseased limb	
Unilateral	
Left	21 (42%)
Right	10 (20%)
Bilateral	
Left	19 (38%)
Right	0 (0%)

SFJ & Perforators were more commonly employed in group A patients (60%) versus group B patients (48%). There was no recurrence of the disease in patients of group A and group B for both 1st month and 2nd month. Group A patients recorded recurrence of the disease in 4th, 5th and 6th month at 2 cases, 1 case and 2 cases respectively. Whereas,

group B patients recorded recurrence of the disease in only 5th month at only 2 cases. Group A patients recorded higher incidences of hematoma, severe pain, delayed ambulation and wound infection than group B patients. Only, the Post-operative complication known as limb edema was greater in Group B patients than group A patients.

Table 2: Assessment of the technical parameters

Technical parameters	Group A (Patients who underwent SFJ ligation with stripping of GSV and subfascial ligation of perforators (as applicable).)	Group B (Patients who underwent SFJ ligation without stripping of GSV and subfascial ligation of perforators (as applicable).)
	Number of patients (n, %)	Number of patients (n, %)
Status of SFJ & Perforators		
With incompetent SFJ & perforators	15 (60%)	12 (48%)
With incompetent SFJ & competent perforators	10 (40%)	13 (52%)
Revised venous clinical severity scoring		
Pre-Operatively		
10 to 15	16 (64%)	9 (36%)
16 to 20	7 (28%)	13 (52%)
21 to 25	2 (8%)	3 (12%)
Post-Operatively		
10 to 15	18 (72%)	8 (32%)
16 to 20	8 (32%)	12 (48%)
21 to 25	2 (8%)	4 (16%)
Recurrence		
1 st month	0 (0%)	0 (0%)
2 nd month	0 (0%)	0 (0%)
3 rd month	0 (0%)	1 (2%)
4 th month	2 (4%)	0 (0%)
5 th month	1 (2%)	2 (4%)
6 th month	2 (4%)	0 (0%)
Post-operative complications		
Hematoma	20 (40%)	2 (4%)
Severe pain	18 (36%)	6 (12%)
Delayed ambulation	16 (32%)	5 (10%)
Wound infection	3 (6%)	2 (4%)
Limb edema	4 (8%)	5 (10%)

Discussion: In this study, the outcome of two surgical treatment modalities of varicose surgery with and without venous stripping was compared based upon a follow-up period of six months.

Saphenofemoral ligation with or without stripping is equally effective in long saphenous varicosities. However, saphenofemoral ligation with stripping which aims to remove the varicose

vein produces lasting results and results in better overall outcome. Saphenofemoral junction ligation with stripping of long saphenous varicosities is associated with greater morbidity due to bleeding and wound infection, which may result in prolonged hospital stay. More importantly there is increased incidence of injury to the saphenous nerve when the LSV is stripped from ankle to groin. But the incidence of injury to saphenous nerve may be reduced if LSV is stripped from upper calf to groin. Saphenofemoral junction ligation without stripping does not involve general anaesthesia and is an outpatient procedure. It allows preservation of patent great saphenous vein, which can be used as an arterial conduit at a lateral date. However, it fails to normalize the venous function. [15]

In the current study, 52% of patients were of the 31 to 40 years age group with a female preponderance of 78%. This is in accordance to the observations by studies conducted by Natraj et al [16] and Balasubramaniam et al [17].

Regarding post-operative complications, in the current study, hematoma was recorded as 40% in Group A patients versus 4% in group B patients. Our results are in agreement with the study conducted by Balasubramaniam et al [17] which reported that the hematoma formation in the thigh was seen in 28% of patients who underwent venous stripping whereas it was seen in 4% who underwent without venous stripping, which was compared to the present study.

Additionally, in the study of Natraj et al [16] the hematoma formation after venous stripping was 28% whereas it was only 4% in the other group. The increased incidence of hematoma formation in the thigh in patients who undergo stripping was due to tissue trauma that occurs during venous stripping. A randomized controlled trial comparing flush ligation of saphenofemoral junction with and without stripping of long saphenous vein had better outcomes, and that without stripping of long saphenous vein had the fewest procedural complications. [1] Surgery remains the most commonly performed procedure for varicose veins, despite the high rates of recurrent varicose veins. There is, however, no long-term data on clinical outcomes, although some authors suggest that there is less post-operative pain and a faster return to work with flush ligation of saphenofemoral junction. [21]

The recurrence of the disease was also found to be similar in both groups, Group A had a slightly delayed recurrence than group B. And, the occurrence of wound infection and limb oedema were similar in both groups. Both the observations are in agreement with the studies conducted by Natraj et al [16] and Balasubramaniam et al [17].

In this study, severe pain was seen in 36% of those patients in Group A versus 12% of those patients in Group B. All these findings are comparable with the studies of Natraj et al [16] and Christenson et al [20]. In another study by Agarwal et al [19] similar findings were noted, showing better results with patients who underwent SFJ ligation with stripping of GSV.

The small number of patients and single-center nature of this study are the major limitations. In addition, this study does not include long-term follow-up data. Hence, to endorse our findings, we recommend conducting appropriately designed prospective studies in our setting in the future.

Conclusion

In this comparative study which was done in 50 patients, the observations of short term variables have shown that there was a significant difference in the immediate postoperative period like hematoma formation, severe pain and delayed ambulation. Complications are less in those patients who underwent SFJ ligation without stripping of GSV when compared with patients who underwent stripping of GSV. No significant differences in improvement of rVCSS in both groups. From this study with the observed variables, it is concluded that there are not much significant differences in recurrence rate of both groups but there is delayed recurrence in those patients who under SFJ ligation WITH stripping of GSV.

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