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A COMPARATIVE STUDY OF TRENDELENBURG OPERATION AND TRENDELENBURG OPERATION COMBINED WITH STRIPPING OF LONG SAPHENOUS VEIN IN THE TREATMENT OF PRIMARY VARICOSE VEINS OF LOWER LIMB

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ABSTRACT **Aims And Objectives:** To compare the effectiveness, incidence of complications and recurrence after Trendelenburg operation and Trendelenburg operation combined with stripping of the thigh segment of long saphenous vein in the treatment of primary varicose veins of lower limb. **Material & Methods:** Study is based on analysis of 100 cases of primary varicose veins of long saphenous vein with or without perforator incompetence who got treated by either simple ligation or ligation with stripping of long saphenous vein from at Department of General Surgery, Osmania General Hospital, Hyderabad Telangana. **Results:** After surgery residual long saphenous vein reflux was present in 22% cases in the group in which ligation alone was done and residual thigh perforators were identified in 11% of cases whereas in the group which underwent ligation combined with stripping of the thigh segment of long saphenous vein residual reflux was present in 6% cases and no residual thigh perforators were identified. **Conclusion:** The incidence of Residual long saphenous vein reflex and residual perforator in the thigh is less after ligation and stripping of long saphenous vein compared to Ligation of Saphenofemoral junction alone. The incidence of Nerve palsy and bleeding and hematoma is also not more in the ligation + stripping group compared to ligation alone.

KEYWORDS : Trendelenburg, Long saphenous vein, Primary varicose veins of lower limb

INTRODUCTION

Varicose veins and their associated symptoms and complications constitute the most common chronic vascular disorder of the lower limb. The term varicose is derived from the Latin word meaning abnormally swollen, dilated or knotty. Varicose veins is defined as dilated, tortuous and elongated veins.

Varicose veins are a common medical condition present in at least 10% of the general population. The symptoms of varicose veins range from asymptomatic varicose veins to more severe complications such as ulceration and bleeding.[1]

Varicose veins may cause significant morbidity including dermatitis, ankle edema, spontaneous bleeding, superficial thrombophlebitis, lipodermatosclerosis and ulceration.

Varicose veins were recognized pre historically and many inventions were made regarding the diagnosis and treatment of varicose veins by many phlebologists including many bandaging techniques, ligation and stripping of veins. The attention was mainly towards the mechanical effects of the varicosity rather than the basic cause. It is only in the recent past that considerable knowledge has been gained concerning the anatomy of the venous system of the leg, the physiological mechanism of venous return to the heart against gravity and pathology of the disorder, which has led to many newer modalities of investigations and treatment.

The Doppler ultrasound and duplex imaging has become the mainstay of investigations in the diagnosis of chronic venous insufficiency[2].

The Edinburgh venous study (EVS) published in 1998 examined over 1500 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 telangiectasias or small reticular veins was even higher. Although it was previously believed that varicose veins are more common in women, few other population studies confirmed that varicose veins are at least as common in men[3].

The prevalence of varicose veins raise with age in virtually all published studies; the prevalence of trunk varicosities in the EVS rose from 11.5% in the 18-25 year old group to 55.7% in those aged 55-64 years. Although there is considerable evidence to suggest that varicose veins are less common in developing countries like ours, the absence of adequate epidemiological data leaves the question open[4].

The treatment options for varicose veins includes Trendelenburg operation, Stripping, Subfascial ligation of perforators, Laser, Sclerotherapy, Subfascial endoscopic perforator surgery & Radiofrequency ablation. In the recent past, minimally invasive procedures are replacing the more invasive procedures.

Recurrence after varicose vein surgery is common in the range of 20-40%. Such massive rates of recurrence have been attributed to various factors such as Anatomical variations of the superficial venous system of lower limb, Neo vascularisation, incomplete primary surgery and whether stripping of the long saphenous vein is performed or not. This dissertation aims to assess the efficacy of stripping of long saphenous vein in the prevention of recurrent varicosities after surgery for primary varicose veins involving the long saphenous vein.

AIMS & OBJECTIVES

1)To compare the effectiveness of Trendelenburg operation and Trendelenburg operation. combined with stripping of the thigh segment of long saphenous vein in the treatment of primary varicose veins of lower limb.
2)To compare the incidence of complications after ligation versus ligation with stripping of long saphenous vein.
3)To compare recurrence between Trendelenburg operation and Trendelenburg operation combined with stripping of the thigh segment of long saphenous vein.

MATERIAL & METHODS

This prospective randomized study is based on analysis of 100 cases of primary varicose veins of long saphenous vein with or without perforator incompetence who got treated by either simple ligation or ligation with stripping of long saphenous vein from the period of June 2018 to December 2020 at Department of General Surgery, Osmania General Hospital, Hyderabad Telangana.

Inclusion Criteria

Patients with primary varicose veins of long saphenous vein with incompetent sapheno femoral junction with or without thigh perforators and with or without below knee perforators.

Exclusion Criteria

1) Patients with secondary varicose veins.
2) Patients with short saphenous vein varicosities.
3) Patients with Long Saphenous Vein varicosities without sapheno femoral incompetence.

RESULTS

Age Incidence

AGE	No. of Cases
10-20	0
21-30	17
31-40	29
41-50	31
51-60	18
61-70	5

Limb Incidence

AGE	No. of Cases
Right	39
Left	61

Management Options

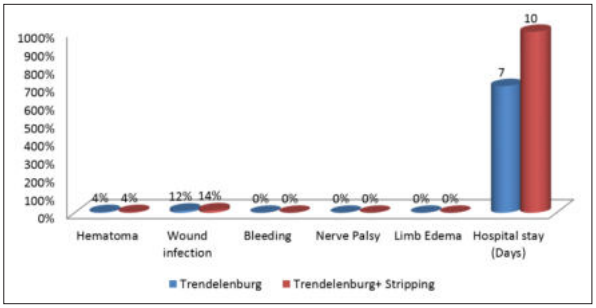
Operation	No. of Cases
Trendelenburg Operation	50
Trendelenburg Operation + Stripping of LSV	50

Management Results

Operation	Before Surgery		After Surgery	
	SFJ reflux LSV reflux	Thigh Perforators	Residual LSV reflux	Residual perforators
Trendelenburg	50	4	11 (22%)	1 (2%)
Trendelenburg + Stripping	50	38	3 (6%)	0

Post Operative Complications

Complications	Trendelenburg	Trendelenburg+ Stripping
Hematoma	2 (4%)	2 (4%)
Wound infection	6 (12%)	7 (14%)
Bleeding	Nil	Nil
Nerve Palsy	Nil	Nil
Limb Edema	Nil	Nil
Hospital stay (Days)	7 days	10 days



DISCUSSION

Recurrence after varicose vein surgery is common in the range of 20-40%. Such massive rates of recurrence have been attributed to various factors.

1) Anatomical variations of the superficial venous system of lower limb.
2) Neo vascularisation.
3) Incomplete primary surgery.
4) Whether stripping of the long saphenous vein is performed or not.

The present study is intended to assess the efficacy of stripping of the long saphenous vein in the prevention of recurrent varicosities after surgery for primary varicose veins involving the long saphenous vein.

Out of 100 patients studied maximum number of patients is in the 40-50 year age group and 93.4% of cases are in the 20-50 year age group. Out of 100 patients 86 patients were male and 14 females indicating that varicose veins is not uncommon in males. This may be due to male persons stand longer time times and exert more effort. These results are consistent with Christenson et al[5] in 2010 had published a study on 200 cases, one hundred cases in each group, and the mean age was 45 in the laser group and 46 in the patients underwent surgical ligation and stripping. Pronk[6] published his study which was done on 130 patients and also had documented older mean age which was 50 years in the surgical group, and 49 years in the laser group.

The right limb was involved in 39 cases and the left limb in 61 cases. This is probably because the loaded left colon constantly compresses the left iliac veins, the left common iliac artery crossing over the left common iliac vein and the longer course traversed by left iliac veins.

Out of the 100 limbs involved 50 cases were managed by ligation of the sapheno femoral junction alone and 50 cases were managed by ligation combined with stripping of the long saphenous vein from groin to just below knee level.

In the group that underwent ligation alone, thigh perforators were present in 8% cases whereas in the group that underwent ligation combined with stripping thigh, perforators were present in 76% of cases. After surgery residual long saphenous vein reflux was present in 22% cases in the group in which ligation alone was done and residual thigh perforators were identified in 11% of cases whereas in the group which underwent ligation combined with 74 stripping of the thigh segment of long saphenous vein residual reflux was present in 6 % cases and no residual thigh perforators were identified. The benefit of stripping the long saphenous vein from groin to upper calf probably derives from disconnection of mid-thigh communicating veins.

Of the post operative complications compared the incidence of hematoma and wound infection were the same in both the groups. There was no recorded case of intra operative bleeding or saphenous nerve palsy or limb odema in both the groups. The hospital stay of patients in the group in whom the long saphenous vein was stripped was 10 days mean, while that of patients in the ligation alone group was 7.0 days mean. These results are consistent with Siribumrungwong[7] and his colleagues 2012 reported that patients treated with surgical ligation of SFJ had higher rates of hematoma compared with those who were treated with laser ablation.

A follow-up period of 3 months was selected because it has been showed that limbs without reflex in the residual part of long saphenous vein 3 months after surgery are more likely to be free from clinical recurrence at 21 months. The presence of non-competent tributaries after ligation is another possible cause for recurrence. These results are consistent with recurrence is caused by a connection between the remaining segment of GSV and new vessels or incompetent tributaries Bush et al[8].

Our study consistent with Bush and colleagues that the most important factors associated with varicose veins recurrence included a new or recurrent perforator veins incompetence, recanalized GSV and reflux in anterior accessory great saphenous vein Bush et al. 15; 23:189-92.
In 2004, Winterborn[9] and his team, 20 documented that up to one-third of patients may remain unsatisfied in the long term after both surgical ligation and laser ablation.

The present study demonstrates that the results of surgery for primary varicose veins 3 months after surgery in the distribution of long saphenous vein are improved by addition of long saphenous vein stripping from groin to just below knee level to the standard operations of sapheno femoral ligation and multiple avulsions.

CONCLUSION

1) The incidence of Residual long saphenous vein reflex is less after ligation and stripping of long saphenous vein compared to Ligation of saphenofemoral junction alone.
2) The incidence of residual perforator in the thigh is less after ligation and stripping of long saphenous vein compared to ligation of saphenofemoral junction alone.
3) The incidence of Nerve palsy is not more in the ligation and stripping group compared to ligation alone group when the Long saphenous vein is stripped from groin to just below knee.
4) The incidence of bleeding and hematoma is also not more in the ligation + stripping group compared to ligation alone.
5) There is a slight increase in the mean hospital stay in the group in whom the long saphenous vein is stripped.
6) If stripping is not done, long saphneous vein may be needed for vascular graft surgery at a future date (especially in DM, HTN and Smoker).

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