

# A Comparative Study of Trendelenburg's Procedure Vs Ultrasound Guided Foam Sclerotherapy in Primary Varicose Veins

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## Abstract

**Background:** 10 million people are affected by primary varicose vein per year.

**Aims and objectives:** To compare the efficacy of Trendelenburg's procedure with stripping and perforator ligation with ultrasound guided foam sclerotherapy in patients with primary varicose vein.

**Materials and methods:** A total of 100 patients with primary varicose vein attending the general surgery OPD in GMKMC from Jan 2017 to Dec 2018 were randomized into surgical group and USG FST group, results obtained were compared.

**Observation and results:** In our presence study it was observed that USG FST is advantageous than conventional surgery. Based on shorter hospital stay, no need for anaesthesia with almost similar complications.

**Conclusion:** USG FST is advantageous than Trendelenburg's procedure. However follow up is necessary to know the rate of recurrence after 5 years in the above procedure.

**Keywords:** Great saphenous vein, Short saphenous vein, Primary varicose vein, USG FST, Trendelenburg's procedure.

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## I. Introduction

Varicose vein are relatively common problem affecting more than 10 million per year in India. Woman are affected twice as affected as men.

Varicose veins are superficial dilated, elongated and tortuous veins. They occur just beneath the skin in the legs. Usually patients have few symptoms, complications may include haemorrhage, superficial thrombophlebitis, eczema hyperpigmentation.

There is no specific cause for primary varicose veins. Risk factors include obesity, Family history, Pregnancy occasionally they result from chronic venous insufficiency. The underlying mechanism involves weak or damaged valves. Diagnosis is by clinical examination and supported by venous doppler ultrasound.

## II. Aims And Objectives

To compare the efficacy and complications in patients with primary varicose veins of lower limb treated by Trendelenburg's procedure with stripping and by ultrasound guided foam sclerotherapy.

## III. Materials And Methods

Patient attending surgical outpatient department of Govt Mohan Kumaramangalam medical college hospital with primary varicose vein from Jan 2017 to Dec 2019 were included in this study.

A total of 100 patients were selected based on clinical history physical examination CEAP classification and doppler ultrasound. All the selected patients were provided with detailed information related to conventional surgery- Trendelenburg's flush ligation with stripping and ultrasound guided foam sclerotherapy. Patients were allocated according to their selection. The frequency of treatment complications and doppler ultrasound findings at 90 days and 180 days and 1 year were recorded.

## INCLUSION CRITERIA:

Patients with primary varicose veins.

Age between 20 to 60 years.

No history of previous treatment for varicose veins.

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**EXCLUSION CRITERIA:**

Secondary varicose veins.  
History of previous treatment for varicose veins.  
History of DVT  
Post thrombotic syndrome  
History of immobilization.  
Diabetic foot.

**VARIOUS METHODS OF TREATMENT OF VARICOSE VEINS**

The treatment for varicose vein should be minimally invasive and capable of being used in primary and recurrent varicose veins. There should be few complications and the treatment should have good efficacy in abolishing reflux in saphenous trunk.

Primary varicose veins are commonly treated by Trendelenburg's procedure with stripping and phlebectomy of saphenous tributaries and ligation of incompetent perforator veins.

Other less invasive methods include ultrasound guided foam sclerotherapy, endovenous laser ablation, radio frequency ablation have been increasingly using in patient with varicose veins.

**SURGICAL TECHNIQUE:**

Surgical approach involves saphenofemoral flush ligation combined with stripping of long saphenous vein upto the just below the knee and phlebectomies for tributaries and ligation of incompetent perforating veins.

All surgical techniques were carried out under regional anaesthesia in a single session and the treated limbs were bandaged immediately using elastocrepe bandage. After one week the bandages were replaced by graduated compression stockings for 3 months.

**USG GUIDED FOAM SCLEROTHERAPY**

Foam sclerotherapy is a technique that involves injecting foam produced with sclerosant into a blood vessel using syringe under ultrasound guidance. The original Tessari method is now modified by Whiteley - Patel which uses three syringes which are silicon free. The sclerosant drugs like Sodium tetradecyl sulphate or Polidocanol mixed with air in a syringe. This increase the surface area of the sclerosant. The foam is more effective than the liquid in causing sclerosis as it does not get mixed with blood in the vessel and it displaces the blood thus avoiding dilution and causing maximal sclerosant action. Thus, it is useful in larger and longer veins.

Volume of foam per session at a concentration of 1 to 3 %

Great saphenous vein - 8- 10 ml of foam

Short saphenous vein - 5ml of foam

Perforating veins - 1-2 ml of foam

A maximum of 10 ml of foam was injected per session. Session were repeated up to 3 times as required at 30 days interval.

Foam was injected at the site, its progress is monitored along the saphenous vein by USG imaging. Soon after completion of injection the lower limb was elevated and observed till it reaches the SFJ. If the foam was identified in deep veins. Patient was asked to perform ankle dorsiflexion to promote clearance of foam from deep veins. Manual compression was performed for 10-15 minutes the limb was bandaged for 3-5 days. Using elastocrepe bandage followed by graduated compression stocking for 3 months.

**TREATMENT ASSESMENT**

Clinical assessment of the two methods were based on the presence of Pain, Oedema, inflammation thrombophlebitis, Hyperpigmentation and Haematoma

An assessment was carried out 8 days after the procedure to detect DVT in femoral and popliteal veins. Duplex ultrasound was performed after 90 days and 180 days and after one year to asses treatment effectiveness.

In the surgery group failure was defined as presence of reflux in GSV or residual varicose veins.

In foam sclerotherapy success was assigned based on grades

- 1 - Total occlusion
- 2 - Partial recanalization without reflux
- 3 - Partial recanalization with reflux
- 4 - Total recanalization

The procedure was considered to be successful when there is total occlusion or partial recanalization without reflux the remaining 2 categories were considered as treatment failure.

#### IV. Results

Out of 100 patients 58 were subjected to surgery and 52 underwent USG guided foam sclerotherapy. The mean age of patient in surgical group was 53 years and 47 years in sclerotherapy group. Females formed the majority in both the groups

In surgery group male 38% female 62%

In sclerotherapy group male 22% female 78%

#### COMPLICATIONS IN SURGICAL GROUP

Haematoma	-	2 patients	- 3.4 %
Infections	-	2 patients	- 3.4 %
Seroma	-	3 patients	- 3.4%
Wound gaping	-	2 patients	- 3.4%

#### COMPLICATIONS IN FOAM SCLEROTHERAPY

Haematoma	-	2 patients	- 3.8%
Thrombophlebitis	-	5 patients	-9.6%
Inflammation along the course of veins	-	6 patients	- 11%
Recurrence on 180 days follow up			
Surgery	-	NIL	- 0%
FST	-	1 case	-1.9%
On 1 year follow up			
surgery	- 1 case	1.7%	
FST	- 2 cases	3.8%	

#### V. Discussion

Still surgery remains the most common treatment modality for primary varicose veins.

Now treatment methods are comparable to surgery in safety and efficacy. USG guided foam sclerotherapy was found to be successful in causing total occlusion or partial recanalization without reflux in 98% of patients after 1-year follow up.

USG FST is considered advantageous as it avoids the need for anaesthesia, hospital admission, absence from work, short recovery period. The complications in both groups were almost equal. No serious adverse effects were observed in both the groups.

The results obtained in our study were similar to several clinical trials with absence of reflux in around 98% of patients.

#### VI. Conclusion

USG FST is advantageous than Trendelenburg's procedure with flush ligation and perforator surgery based on shorter hospital stay, early recovery. However, these study needs further follow up as the rate of recurrence of varicose veins after 5 years may vary from 20% to 80% depending on the modality of the treatment, with more recurrence rates in foam sclerotherapy group.

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