



## **COMPARATIVE STUDY AND TREATMENT OF VARICOSE VEIN: A REVIEW ARTICLE**

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### **ABSTRACT**

To compare different surgical procedure regarding varicose vein with different clinical presentation. There are a variety of treatment modalities for varicose veins and approach to treatment is solely based on the clinical presentation of the cases.

**Key words:** varicose vein , surgical procedure

## MATERIALS AND METHOD

The papers on the management of varicose veins were reviewed and the postoperative complications and efficacy were compared. Electronic and paper-based databases were performed to identify studies related to the treatment of varicose veins with particular emphasis on the last one year from March 2017 to March 2018.

## RESULTS

Among the majority of patient combined traditional and laser technique with higher ligation was done and has shown more efficient and long lasting with more postoperative complications of pain, swelling and prolonged duration of hospital stay than injecting sclerosing agent alone to the cases with c1 and c2 cases and shown great efficacy...the cases with c3 and more have been surgical interventions through various procedure

Hence combined traditional technique with laser is more effective during treatment of varicose vein with patient presenting classical signs and symptoms.

## DISCUSSION

Varicose veins are nowadays common problem among middle aged and older patients associated with disfigurement, disability and impairment in the quality of life (QoL). Varicose veins are dilated branches of the great saphenous vein and small saphenous vein; the incidence of varicose veins varies from 10% to 30%.<sup>[1]</sup> Risk factors of varicose veins include family history, age, and pregnancy; a possible risk factor is standing for a long period of time.<sup>[1-3]</sup> Conservative methods like compression bandaging for ulceration can also be expensive. Varicose veins are, therefore, of significant clinical and economic importance to the health service and also have a major concern for good health of the patients.

### Statistical analysis:

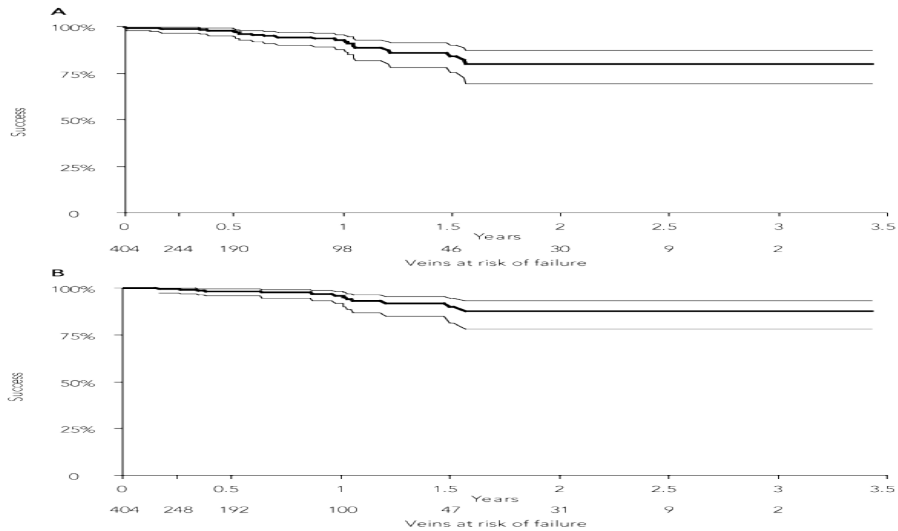
Patients with varicose veins present from asymptomatic to significant symptoms, including discomfort, aching, pain, itching or eczema, and deep vein thrombosis (DVT). <sup>[4]</sup> The diagnosis of varicose veins is based on clinical manifestation and ultrasound. Duplex ultrasound is considered the gold standard for diagnosis of superficial venous incompetence.

A randomized controlled study of 200 cases visited in our surgery department has been taken with various presentation of varicose vein based on CEAP Classification (clinical, etiology, anatomy, pathophysiology) is used to describe the degree of varicose veins. 150 cases (75%) were presented with (c3&c4a,c4b), 20 cases(10%)with combined c1&c2, 12 cases( 6% ) were presented

with active venous ulcer, 17 cases (8.5%) were presented with healed venous ulcer with visible varicose vein only one 1.5% case were found to be asymptomatic.

Observational studies found that success rates vary from 82% to 100%,<sup>[10]</sup> 95% cases with C1&C2 have shown great improvement with less reoccurrence and improved quality of life

Kaplan–Meier life table analysis of success rates after endovenous laser therapy for all veins treated



**A:** Primary success rates. **B:** Secondary success rates. The numbers along the lower axis represent the numbers of veins available for analysis at intervals through the study. Thin lines represent 95% confidence intervals.

The CEAP (clinical, etiology, anatomy, pathophysiology) classification is used to describe the degree of varicose veins.

**Table 1:** CEAP classification: C (clinical component)

- Telangiectases (dilated interdermal venules ,1 mm) or
- C1 reticular veins (nonpalpable subdermal veins 1–3 mm)
- C2 Varicose veins (diameter of vein .3 mm)
- C3 Edema
- C4a Pigmentation or eczema
- C4b Lipodermatosclerosis
- C5 Healed venous ulcer
- C6 Active venous ulcer

Venous clinical severity scoring has been used to measure clinical improvement after treatment of varicose veins<sup>[5]</sup>



**Various modalities of treatment have been tried**

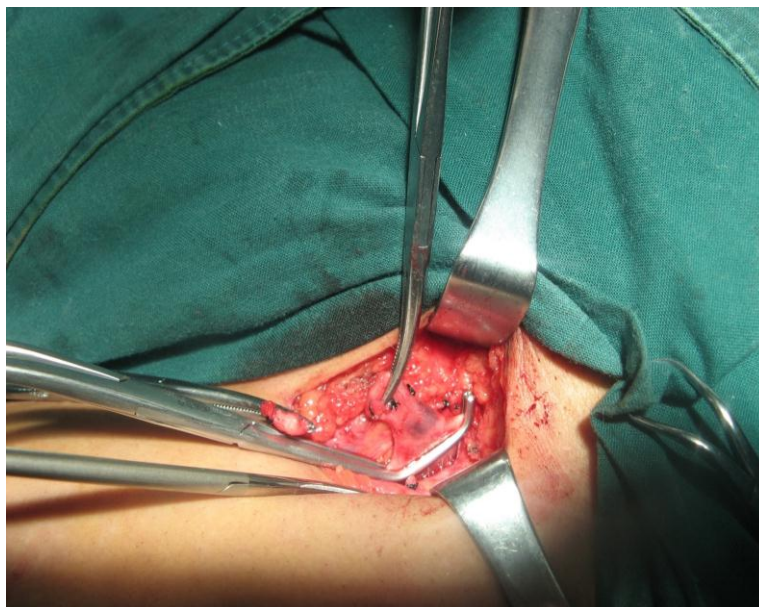
1. Injecting sclerising agents/foam sclerotherapy
2. Traditional cutting of dilated vein/Conventional surgery
3. Endovascular laser coagulation with higher ligation

Sclerotherapy is the treatment of choice for superficial reticular varicosities and telangiectasia. It was considered ineffective for treating varicosities involving larger and medium veins with haemodynamically significant reflux of blood flow and used only to decrease the residual varicosities after surgery or in those patients not fit for surgery. Duplex ultrasonography has improved the safety and efficacy of conventional sclerotherapy, allowed a better evaluation of its results, and an understanding of the advantages of using sclerosing agents. The superiority of foam over liquid sclerosant has been clearly demonstrated.<sup>[6-7]</sup>Recent studies report a high immediate success rate, low cost and acceptable complication rate with foam sclerotherapy.<sup>[8]</sup> Foam is a mixture of carbon dioxide with liquid sclerosant. Its durability is related to bubble size, tensioactive property of the sclerosant and conditions under which the foam is prepared and maintained. <sup>[9]</sup> The smaller the bubble size, the higher the sclerosant concentration in the foam, the lesser its dilution with blood and greater the sclerosant activity. The foam pushes the blood proximally and into the collaterals and maintain a uniform contact of the sclerosant with the endothelium thus improves the venospasm following injection of sclerosant hence better adhesiveness, echovisibility due to mixing with air and increased safety, enhancement of sclerosing power and reduction of doses and concentration of sclerosing agent.

It has become popular because of low cost, quick recovery time, minimal post-procedural pain and other less complications.



**Traditional cutting of dilated vein/Conventional surgery:**



It involves the stripping of the Great saphenous vein (GSV) at Saphenofemoral junction and removal of superficial varicosities by cutting them off. This eliminates venous reflux during exercise allowing the calf pump to reduce superficial venous pressure to near-normal levels. It is associated with better immediate result and diminished chance of recurrence. It may also associate with various postoperative complications as shown in table.

**Table 2:** Postoperative complications:

1. Bleeding
2. Subcutaneous haematoma along the length of the stripped vein or at avulsion sites
3. Bruising
4. Pain
5. Groin wound problems – haematoma, seroma, cellulitis, infection, abscess, reaction to suture material, wound breakdown, lymphatic leaks and fistulae particularly in recurrent surgery
6. Nerve injury manifesting as numbness, decreased or altered sensation, paraesthesia, dysaesthesia
7. Residual veins
8. Thrombosis in residual varices
9. Telangiectases over avulsion sites
10. Skin discolouration or pigmentation
11. Scarring
12. Recurrence
13. Femoral vein injury during surgery
14. DVT and pulmonary embolism

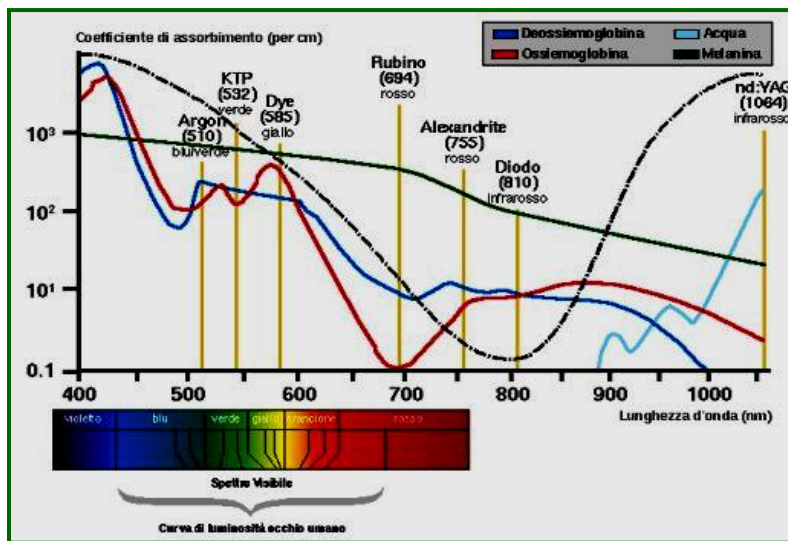
It is very time taking procedure involves major blood vessels and recovery time is relatively longer duration

Endovascular laser coagulation with higher ligation: Endovenous thermoablation approaches include EVLA and radiofrequency ablation; these belong to the category of minimally invasive catheter-based procedures.<sup>[11]</sup> In this procedure, a catheter is inserted.

Endovascular laser coagulation uses laser energy delivered via a 600  $\mu$ m (400–750  $\mu$ m) laser fiber to obliterate the vein. Steam bubbles generated from boiling blood in the lumen cause heat injury to the vein wall.<sup>[12]</sup> Lower wavelengths have a shallower depth of penetration and are better absorbed by blood causing lesser damage to surrounding non-target tissue and better homogeneous heating of the vein.<sup>[13]</sup> The procedure is usually performed under perivascular tumescent local anesthesia. The GSV or small saphenous vein (SSV) is cannulated at the ankle by 18G cannula or either by needle puncture or via a cut down. EVLASER leads to clinical and symptomatic improvement in over 95% of patients.<sup>[14,15]</sup> A study of active ulcers showed 83% healed after EVLASER.<sup>[16]</sup> Patient satisfaction is high<sup>[16]</sup> and patients return to normal activities<sup>[15]</sup>



almost immediately. Post-procedure bruising, pain and phlebitis rarely persist beyond 4 weeks. Heat-induced paraesthesia and superficial burns resolved completely with time..



No surgical incision and early resumption of daily activity or work are advantages of this procedure. However, like other surgeries, EVLA still can cause operative or postoperative complications, such as hematoma, infection, skin burn, bruising, and catheter stabbing by laser fiber, or the broken catheter can be left in the body.<sup>[3,17,18]</sup>

Many clinical studies and randomized controlled trials of high quality compared EVLA and conventional surgical procedures and showed no differences in postoperative pain, recurrence rates, or returning to work or normal activity.<sup>[19<sup>20</sup>]</sup> Clinical experience shows that the pain after laser ablation contributes to the skin contusion caused between skin and uneven bandages used after the procedure,

blisters induced by skin burn, and endovenous thermal-induced thrombosis and thrombophlebitis<sup>[19]</sup>; all of these problems can be prevented with careful manipulation during the procedure. Using proper compression stocking rather than bandage may reduce the risk of skin contusion. In addition, early ambulation is always critical to preventing DVT.<sup>[21,22]</sup>

## CONCLUSION

Sclerotherapy and radiofrequency ablation were associated with less pain and faster recovery than endovenous laser ablation and surgical stripping. Patients undergoing endovenous laser ablation and radiofrequency ablation are most likely to have a faster recovery time and earlier return to work in comparison with those undergoing conventional high ligation and stripping.

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