

VARICOSE VEINS- A REVIEW ARTICLE

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ABSTRACT

Introduction: When a vein becomes dilated, elongated and tortuous the vein is said to be varicose. The condition is caused by valvular dysfunction, resulting in venous reflux with a subsequent increase in ambulatory pressure in the venous system. The majority (80%) of varicose veins originate from long saphenous vein and remaining 20% of varicose veins originate from short saphenous vein. This article reviews the anatomy, indications, treatment options, and potential complications related to varicose veins. **Method:** Descriptive Study of Varicose veins. **Result:** Conservative management involves Avoid prolonged standing, crepe bandage elastic stockings, bicycle riding. Operative management involves Endothermal ablation, sclerotherapy, endovenous glue, Fegan's injection, Open surgery involving ligation and ligation with stripping.

KEYWORDS: Varicose veins, bicycle riding, ablation, fegan's injection.INTRODUCTION^[1]

Dilated, tortuous and elongated superficial veins of the limb are called varicose veins.

Examples of varicosity

- Long saphenous varicosity
- Short saphenous varicosity
- Oesophageal varices and fundal varices
- Haemorrhoids
- Varicocele
- Vulva varix and ovarian varix

Epidemiology^[2]

The adult prevalence of visible varicose veins is between 30% and 50%. Factors affecting prevalence include:

- **Gender:** the vast majority of studies report a higher prevalence in women than men, though community prevalence may differ.
- **Age:** the prevalence of varicose veins increases with age.

In the Edinburgh Vein study, the prevalence of trunk varicosities in the age groups 18–24 years, 25–34 years, 35–44 years, 45–57 years and 55–64 years was 11.5%, 14.6%, 28.8%, 41.9% and 55.7%, respectively.

- **Ethnicity:** does seem to influence the prevalence of varicose veins.
- **Body mass and height:** increasing body mass index and height may be associated with a higher prevalence of varicose veins.

- **Pregnancy:** increases the risk of varicose veins.
- **Family history:** evidence supports familial susceptibility to varicose veins.
- **Occupation and lifestyle factors:** there is inconclusive evidence regarding increased prevalence of varicose veins in smokers, patients who suffer constipation and occupations that involve prolonged standing.

PRIMARY VARICOSE VEINS^[1]

They occur as a result of congenital weakness in the vein wall due to defective connective tissue and smooth muscle.

- It can also be due to muscular weakness or due to congenital absence of valves.
- Very often, the valve at the saphenofemoral (SF) junction is incompetent/absent. The valves can also be absent where the superficial veins join the deep veins.
- Klippel-Trenaunay syndrome is a congenital venous abnormality wherein superficial and deep veins do not have any valves. It is also called valveless syndrome.
- Primary varicosity can also be genetic. Some patients inherit abnormalities in the FOXC2 gene. These factors, in addition to prolonged standing (agriculturists, traffic police, hotel workers), contribute to the development of varicose veins.

SECONDARY VARICOSE VEINS

Women are more prone for varicose veins because of the following reasons:

- **Pregnancy and pelvic tumours** cause proximal obstruction to the blood flow.
- **Pills** (oral contraceptive pills) alter the viscosity of blood.
- **Progesterones dilate vessel wall.**
- **Congenital arteriovenous (AV) fistula** increases blood flow and increases venous pressure.
- Deep vein thrombosis can occur as a result of road traffic accidents, postoperatively, etc. This can lead to **destruction of valves** resulting in varicose veins.

SURGICAL ANATOMY OF THE VENOUS SYSTEM OF LEG

It can be discussed under the following headings.

- I. Superficial system-long and short saphenous veins and their tributaries.
2. Perforators.
3. Deep system of veins.

SUPERFICIAL VENOUS SYSTEM^[1]

Anatomy of the long saphenous vein (LSV)

It starts in the foot from the tributaries of dorsal venous arch, permits reverse flow through its competent valves, ascends in front of medial malleolus and runs along the medial side of the leg. It then ascends in the thigh and ends at the saphenofemoral junction (SF) by joining the femoral vein, which is 1 Yi inches (4 cm) below and lateral to the pubic tubercle. It has 15 to 20 valves. Absence of valves results in varicose veins.

Tributaries

Tributaries near the termination

1. Superficial circumflex iliac vein.
2. Superficial epigastric vein.
3. Superficial external pudenda) vein.

Tributaries in the lower thigh

1. Lateral superficial femoral vein.

2. Medial superficial femoral vein.
3. Transverse suprapatellar vein.
4. Transverse infrapatellar vein.

Tributaries in the leg

1. Anterior vein of the leg
2. Posterior arch vein lies parallel to and behind the main trunk of long saphenous vein. It anastomoses with small venous arches connecting the medial perforating veins. These tributaries connect the long saphenous with short saphenous veins (SSV). They are also called communicators.

Perforators

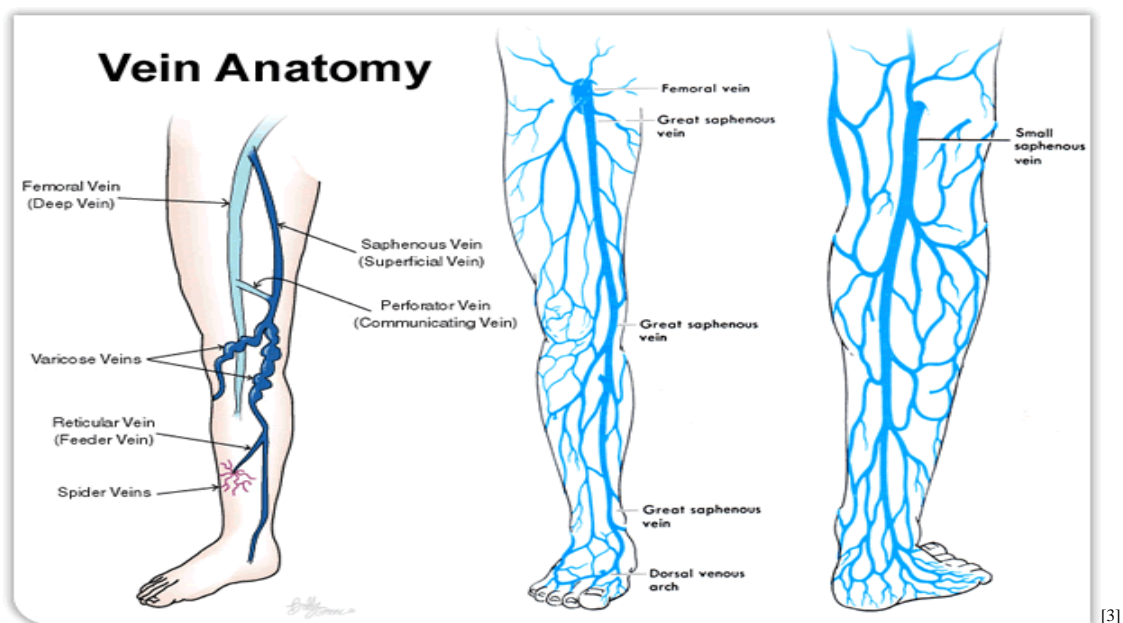
These are the veins which connect long saphenous vein with deep system of veins. Since they perforate deep fascia, they are called perforators. There are 5 constant perforators in the lower limb on the medial side.

- **Leg perforators:** They are 3 in number. The lowest perforator is situated below and behind the medial malleolus. The middle perforator is 10 cm above the tip of the medial malleolus. The upper perforator is 15 cm above the medial malleolus.
- **Knee perforator:** It is situated just below the knee.
- **Thigh perforator:** It is situated a palm-breadth above the knee.

A knowledge of perforators forms the basis of multipletourniquet test. Most of the perforators are provided with valves. Weakness of these valves or damage to valves results in varicosity.

Deep venous system

This comprises the femoral and the popliteal veins, veins or venae comitantes accompanying anterior tibial, posterior tibial and peroneal arteries and valveless veins draining the calf muscles (soleal venous sinus).



Symptoms^[4]

The commonest symptom is the pain which is aching sensation felt in the whole of the leg or in the lower part of the leg according to the position of the varicose vein particularly towards the end of the day. The pain gets worse when the patient stands up for a long time and is relieved when he lies down. One thing the student must always remember that it is not the varicose veins which produce the symptoms, but it is the disordered psychology which is the root of all evils. So it is not impossible to come across asymptomatic varicose veins on one side and severe symptoms with very few visible varicose veins on the other side. Patient may complain of bursting pain while walking, which indicates deep vein thrombosis. Night cramps may also be present. The ankle may swell towards the end of the day and the skin of the leg may be itching. Some patients complain of severe cramps at nights. Varicose ulcer may be seen on the medial malleolus.

Signs^[2]

The presence of tortuous dilated subcutaneous veins is usually clinically obvious. These are confined to the GSV and SSV systems in approximately 60% and 20% of cases, respectively. The distribution of varicosities may indicate which superficial axis is defective; medial thigh and calf varicosities suggest GSV incompetence, posterolateral calf varicosities are suggestive of SSV incompetence whereas anterolateral thigh and calf varicosities may indicate isolated incompetence of the ASV. Any of the clinical features above may be present. Large dilated veins around the SFJ may present as a (usually painless) lump, emergent when standing and disappearing when recumbent. This is a saphena varix. Gentle palpation over the varix during coughing may elicit a thrill, though it may be mistaken for a groin hernia.

TESTS FOR VARICOSE VEINS AND INFERENCE^[1]

- Cough impulse test: SF incompetence.
- Trendelenburg I: SF incompetence.
- Trendelenburg II: Perforator incompetence.
- Multiple tourniquet test: Site of perforator incompetence.
- Schwartz test: Superficial column of blood.
- Modified Perthes' test: Deep vein thrombosis.
- Fegan's test: To locate the perforators in the deep fascia.

Investigations^[2]

- Tourniquet tests
- colour Doppler, hand-held Doppler
- duplex ultrasound
- pulsed wave spectral
- MR venography
- invasive such as
- contrast venography or intravenous ultrasound
- varicography

Management**Palliative Treatment^[15]**

1. Avoidance of prolonged standing
2. Crepe bandage or elastic stockings are applied from toes to thigh.
3. Whenever patient sits or sleeps the limbs should be preferably above the heart level.
4. Exercise like bicycle riding in the air while lying on the back, walking etc should be performed to strengthen calf muscles.

Many patients with asymptomatic varicose veins do not progress to develop complications, although a significant proportion do, and little is known about whether treating such patients prevents the development of future complications.^[5]

Endothermal ablation

Endothermal ablation technologies replaced surgical ligation and stripping as the gold standard treatment once randomized trials demonstrated that they were marginally safer, have extremely high technical efficacy, offer superior quality of life post procedure (with a rapid recovery) and equivalent improvements in quality of life in the longer term.

Laser Ablation

Endovenous laser ablation (EVLA) utilises a small flexible glass fibre that is inserted into the vein. Laser energy (typically at a wavelength of 1470 nm) is transmitted down the fibre and is absorbed at the point of treatment at the end of the fibre. Absorption of this radiation results in a vigorous production of thermal energy.

Radiofrequency Ablation

Radiofrequency ablation (RFA) uses the same treatment principles, but an electromagnetic current is used to create the thermal energy. A range of different devices have been created but the most popular, which has the most supportive evidence, is the ClosureFast device (Medtronic).

Non-endothermal, non-tumescent ablation

Endothermal ablation was a large step forwards in the management of superficial incompetence; however, all techniques require the injection of tumescent local anaesthetic solution and this can be uncomfortable for the patient. Other techniques that avoid injection are being developed.

Ultrasound-Guided Foam Sclerotherapy

Sclerotherapy is the original non-endothermal, non-tumescent technique and has been performed. It involves the injection of a sclerosing agent directly into the superficial veins. The most commonly used is sodium tetradecyl sulphate. The direct contact with detergent causes cellular death and initiates an inflammatory response, aiming to result in thrombosis, fibrosis and obliteration (sclerosis). Blood deactivates the action of

the sclerosing agent and the doses administered need to be limited to avoid adverse effects, causing a trade-off between poor efficacy and safety.

Catheter-Directed Sclerotherapy And Mechanicochemical Ablation

The efficacy of sclerotherapy relies on endothelial contact with fresh, undiluted sclerosant. A related technology that has shown more promise is mechanicochemical ablation.

Endovenous Glue

The final non-tumescent technique is the endoluminal application of cyanoacrylate adhesive. Again, this involves a treatment catheter placed within the vein lumen. A handle is used to infiltrate the adhesive in 0.1 mL applications via the catheter. The vein is then compressed, sealing the lumen closed.

Open surgery^[5]

1. Ligation

a) saphenofemoral incompetence- All the tributaries of the long saphenous vein are ligated and divided, it is now ligated flush with the femoral vein.

b) Saphenopopliteal incompetence- Ligature is applied at a short saphenous vein flush with the popliteal vein and another ligature distal to it. The short saphenous vein is divided between the ligatures.

2. Ligation with stripping

Stripping is mainly performed in long saphenous vein. In short saphenous stripping is not practiced. The principles of traditional ligation and stripping are to fully dissect the point of junctional incompetence and to remove the refluxing axial vein and dilated tributaries. Surgical adjuncts including phlebectomy and, occasionally, perforator ligation are much more commonly used, and the former has been shown to have a significant impact upon outcome.

Complications^[5]

1. Thrombophlebitis
2. Pigmentation
3. Eczema
4. Ankle flare
5. Venous Ulcer
6. Haemorrhage
7. Periostitis
8. Calcification
9. Equinus Deformity

DISCUSSION

Varicose veins has been seen more in long standing peoples affecting the life of the patients. Long standing cases have shown formation of venous ulcer making it more complicated to treat.

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