Management of Varicose vein –An update

Definition

Varicose veins are defined as dilated tortuous veins in a subcutaneous plane, in an erect posture, due to reflux of blood from deep to superficial venous system in lowers limbs

Global Prevalence: Approximately **10% to 30%** of the general population worldwide is affected by lower extremity varicose veins.

Gender Differences: The condition is more common in women (up to **50%**) than in men (**30%**) at some point in their lives.

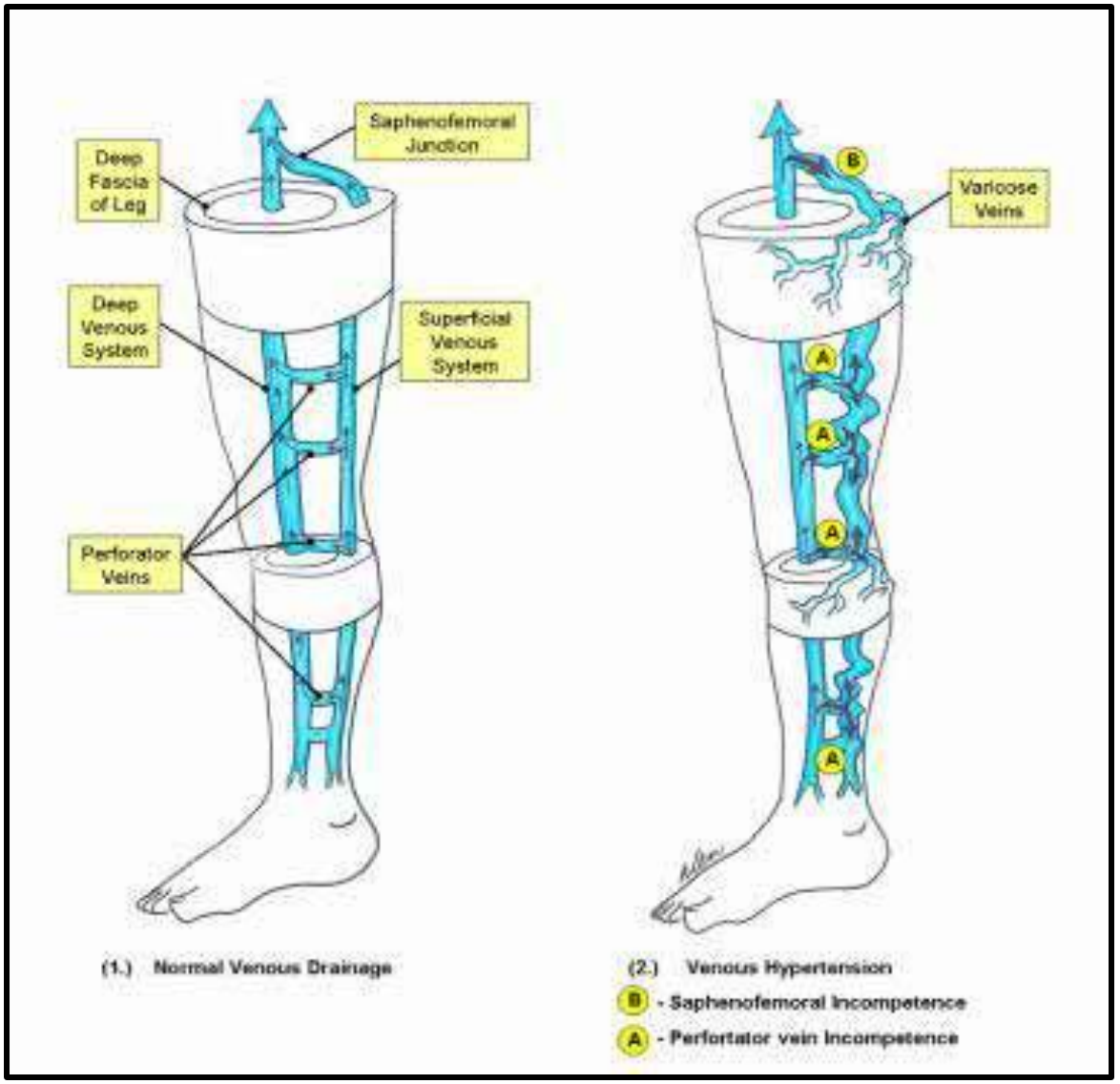
Risk factors

- **Age, Gender, Pregnancy**
- **Obesity**
- **Prolonged Standing or Sitting** (e.g.,Police, nurses, teachers)
- **Genetics**
- **History of Deep Vein Thrombosis (DVT)**
- **Race**-Lower among Asian(about 5% among Indians)

Two systems of veins in lower limbs

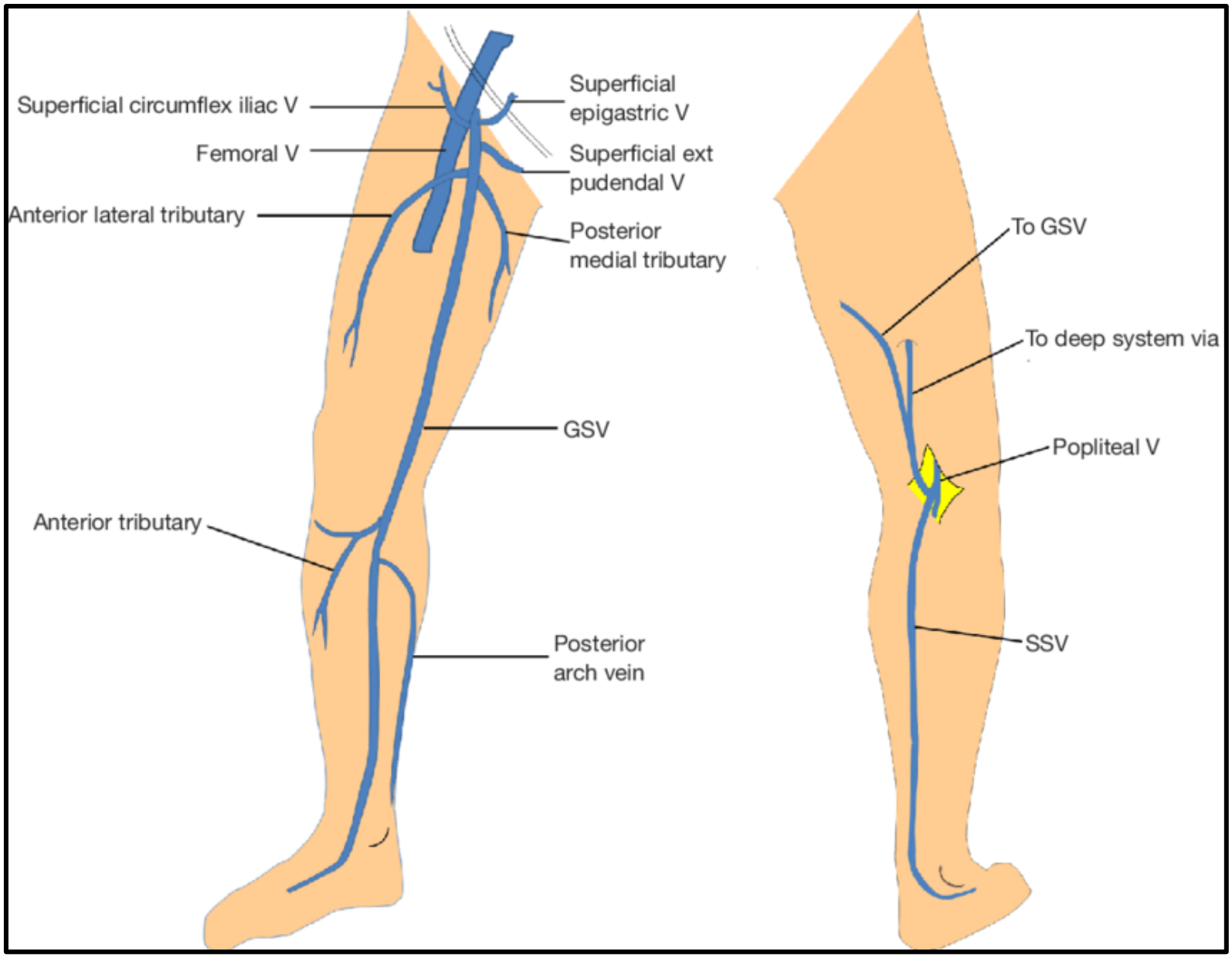
- Superficial-Long saphenous and short saphenus
- Deep-Femoral and popleteal

Deep and superficial venous system of the lower limb



Deep and superficial venous system of the lower limb

- Long saphenous is connected with the femoral vein at the sapheno-femoral junction and multiple perforators in the thigh and leg
- Short saphenous vein is connected to popleteal vein at the sapheno-popleteal junction.

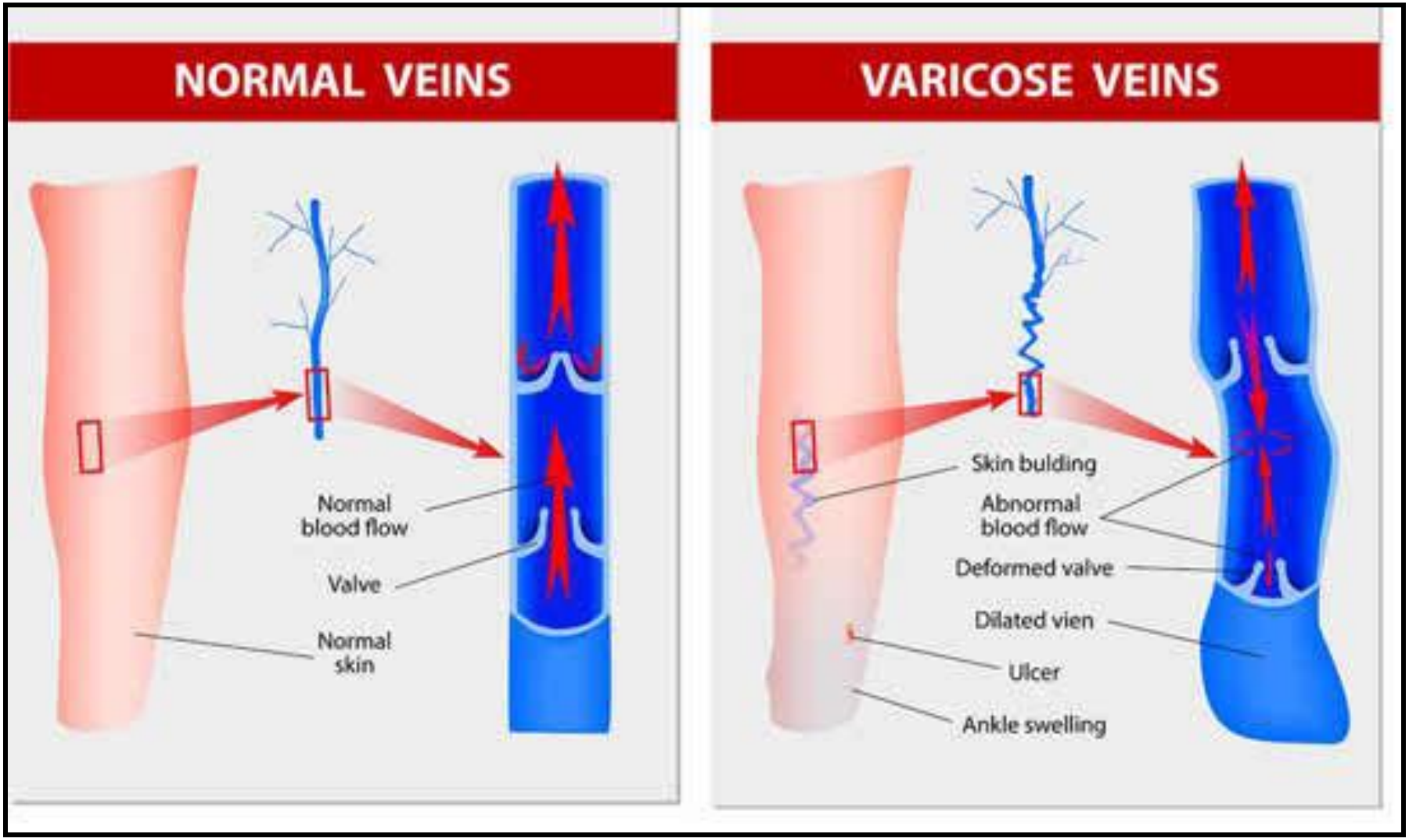

Superficial circumflex iliac V
Femoral V
Anterior lateral tributary
Anterior tributary
Superficial epigastric V
Superficial ext pudendal V
Posterior medial tributary
GSV
Posterior arch vein
To GSV
To deep system via
Popliteal V
SSV

Pathophysiology

Causes of varicose vein of the long and short saphenous system

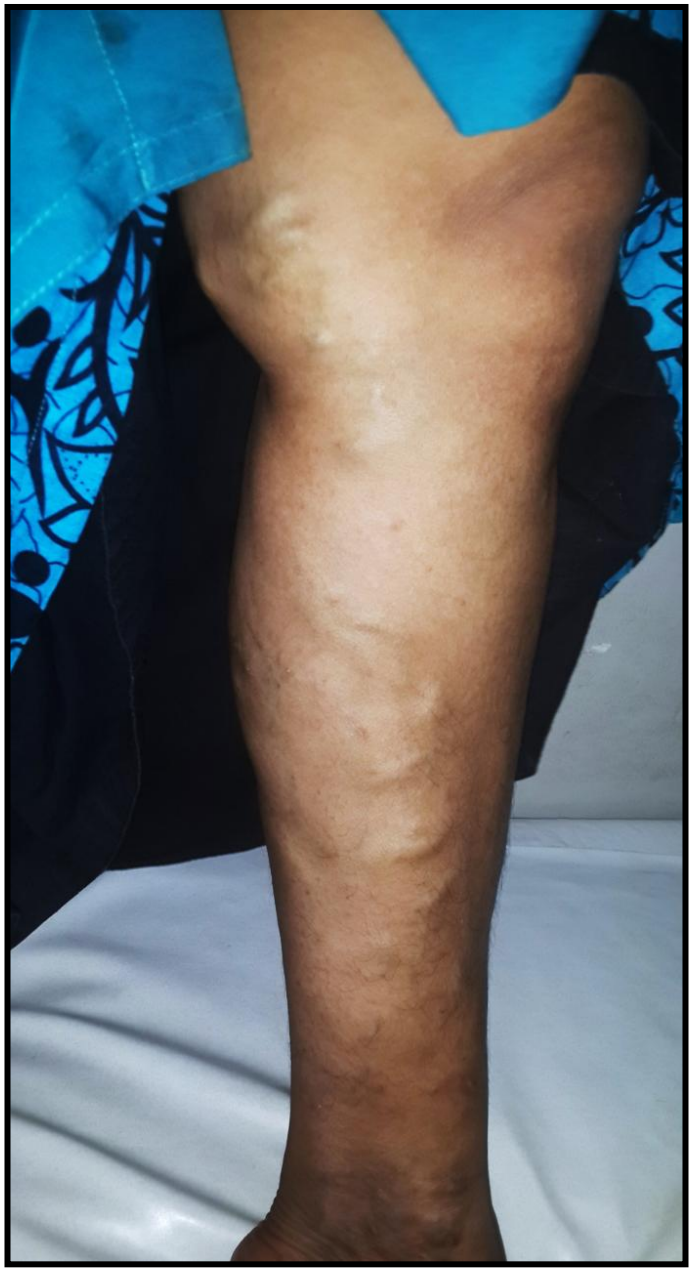
- Incompetent sapheno femoral junction or sapheno-popleteal junction,
- Incompetent Valve in LSV
- Incompetent perforators in the leg

Pathophysiology



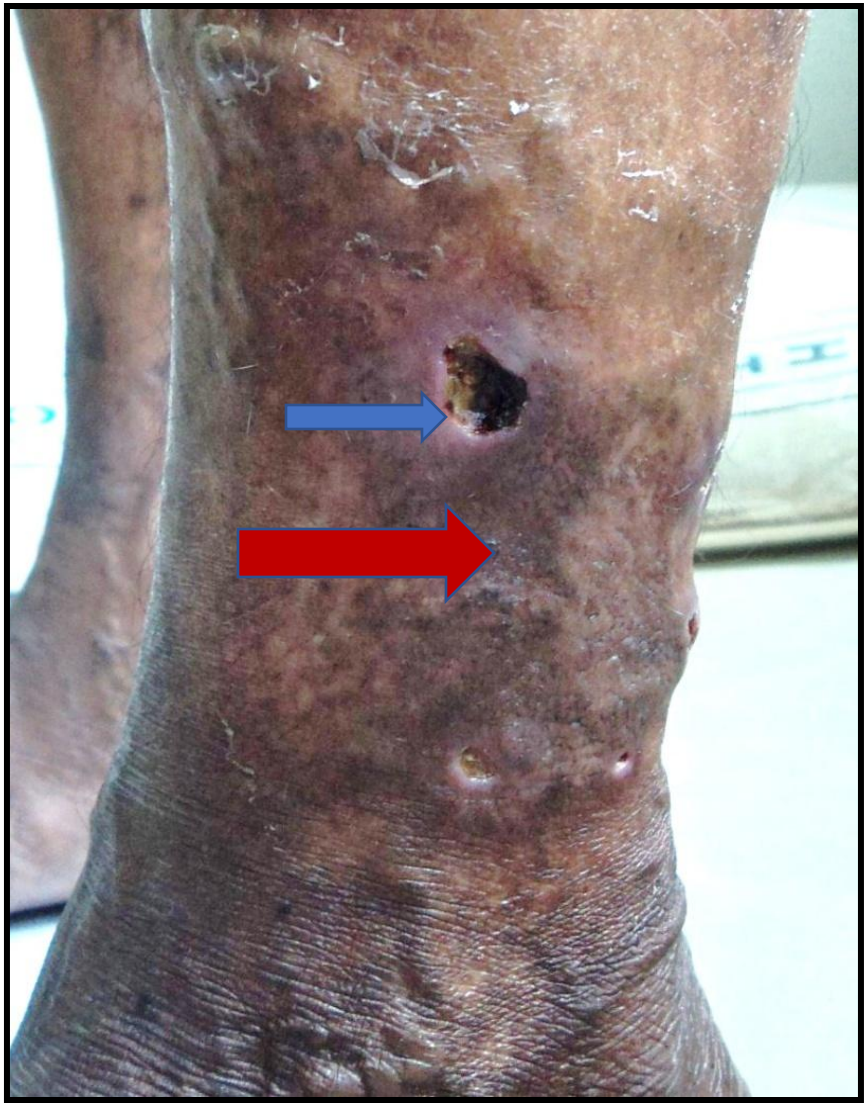
Presentation

- Dilated ugly veins
- Dull pain
- Ankle swelling
- Bleeding
- Thrombophlebitis,
- Eczema
- Lipodermatosclerosis
- Venous ulcer



Saphena varix

Venous ulcer and lipodermatosclerosis

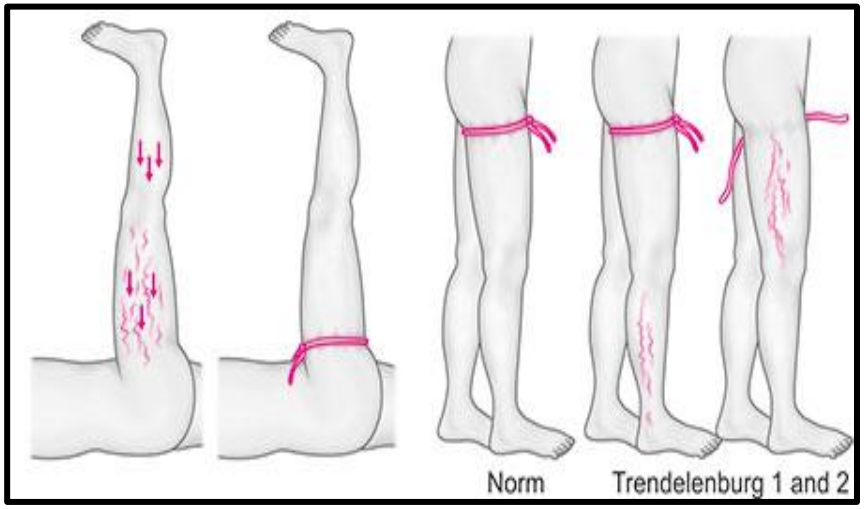


Lipodermatosclerosis

Gradual replacement of subcutaneous fat by fibrous tissue due to leakage of protein rich exudate due to increased venous pressure

Investigation

- Doppler USG
- Duplex imaging is gold standard investigation
- Venography



Classical Tredelenburg test is unreliable

Mark the sites of leg varicosities by hand held color dopller

Marking done before surgery

Purpose of duplex imaging

- Identification of Incompetent sapheno-femoral junction or sapheno-popleteal junction,
- Incompetent perforators in the leg
- Patency of deep venous system

Treatment

- Conservative
- Surgery
- Endovenous laser ablation(EVLA)
- Endovenous radiofrequency ablation (EVRA)
- Injection sclerotherapy

Conservative

Compression stocking

Gradual compression therapy

Gradual compression therapy for non healing venous ulcer

ulcer post-debridement and cleaned with saline

sterile gauze to cover the ulcer

First layer: cotton role

Second layer: cotton crepe bandage

Third layer: elastic extensible bandage

Fourth layer: elastic cohesive bandage

Surgery

For LSV varicosity

(Trendelenburg operation)

1. Saphenofemoral junction ligation
2. Stripping of long saphenous vein
3. Multiple phlebectomy in leg (stripping in contraindicated in leg due to damage of subcutaneous nerves)

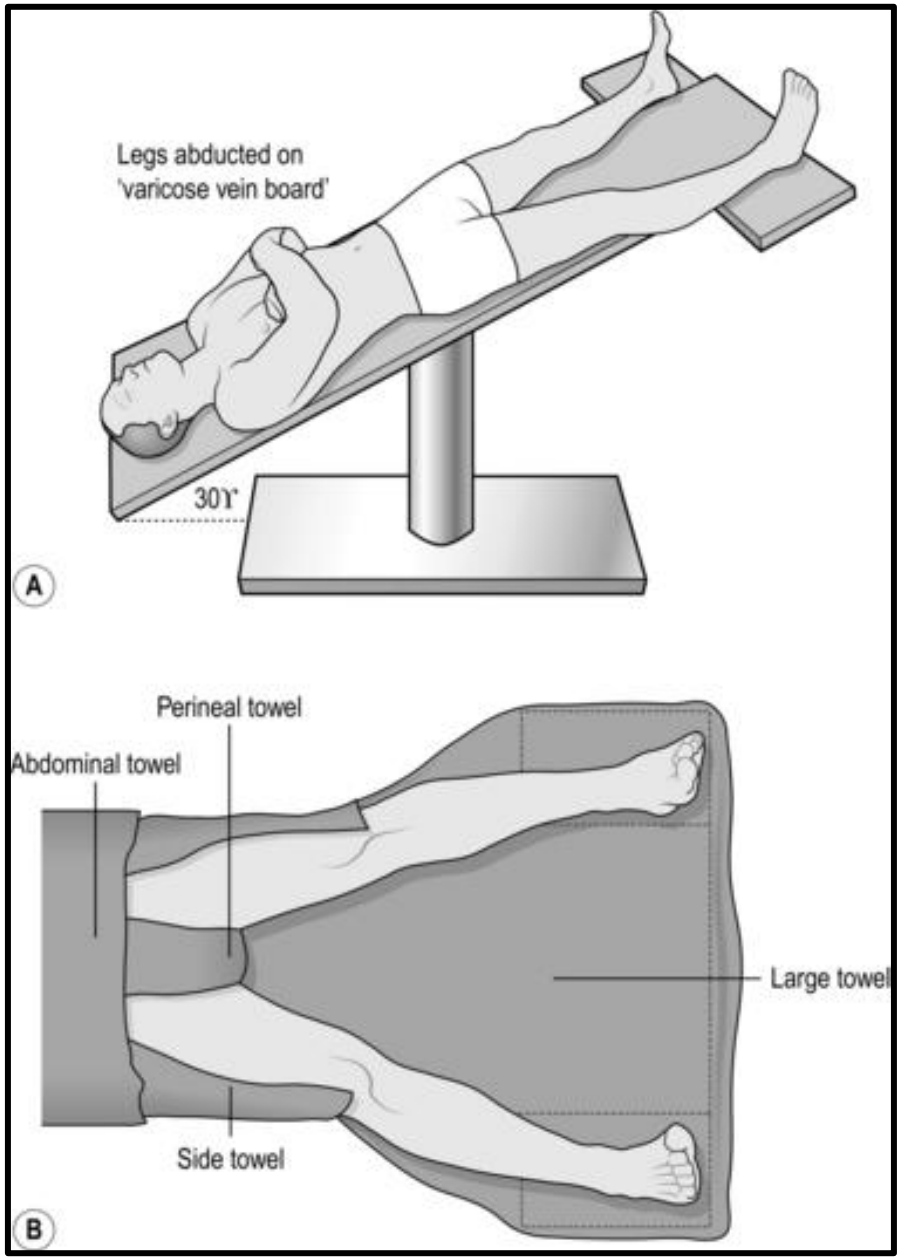
Surgery

For SSV varicosity

- Sapheno-popleteal junction ligation
- Multiple phlebectomy in leg

Trendelenburg operation

Pioneered by German surgeon Friedrich Trendelenburg (1844–1924) in the late 19th century



Study of varicose vein surgery From Jan 2015 to Jan 2025

- We operated 48 patients (59 limbs) in AWMCH and JIMCH
- Followed for a period of 1 year after surgery
- Long saphenous stripping for all patients
- Excision of SSV for 12 patients
- All patients had multiple phlebectomy for leg varicosities

Duplex imaging

All patient had duplex imaging done before surgery to see

- SFJ or SPJ incompetence
- location of perforators
- and patency of deep veins

Materials and method

Male/female ratio	**41:7**
Age range	**18-52 years**
Unilateral/bilateral=total	**37/11=59 limbs**
Venous ulcer	**8**
LSV+SSV	**59+12**

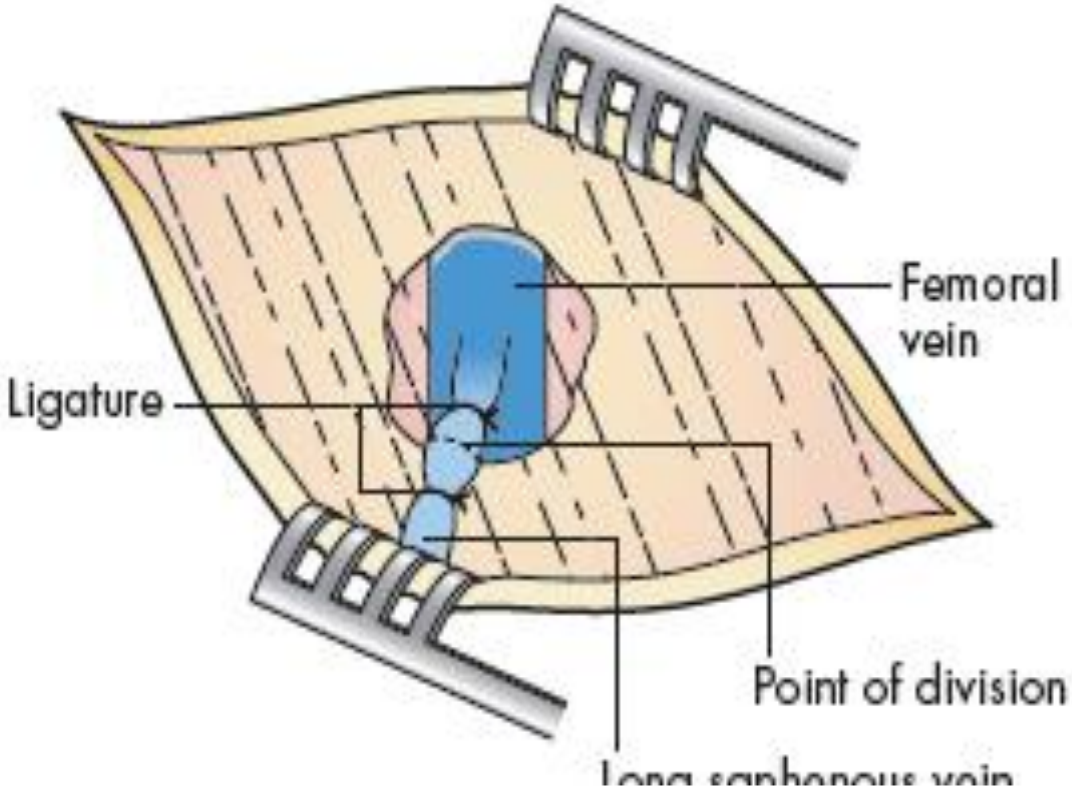
Results

- 40 patients (53 limbs) did not have any complication.
- 2 patient developed DVT- treated with warferine+ compression stocking
- 3 patient developed post op ulcer- all healed on compression bandage/stocking.
- All venous ulcers got healed
- One patient had recurrence(about 2%) within 3 months- missed SFJ –reoperated.

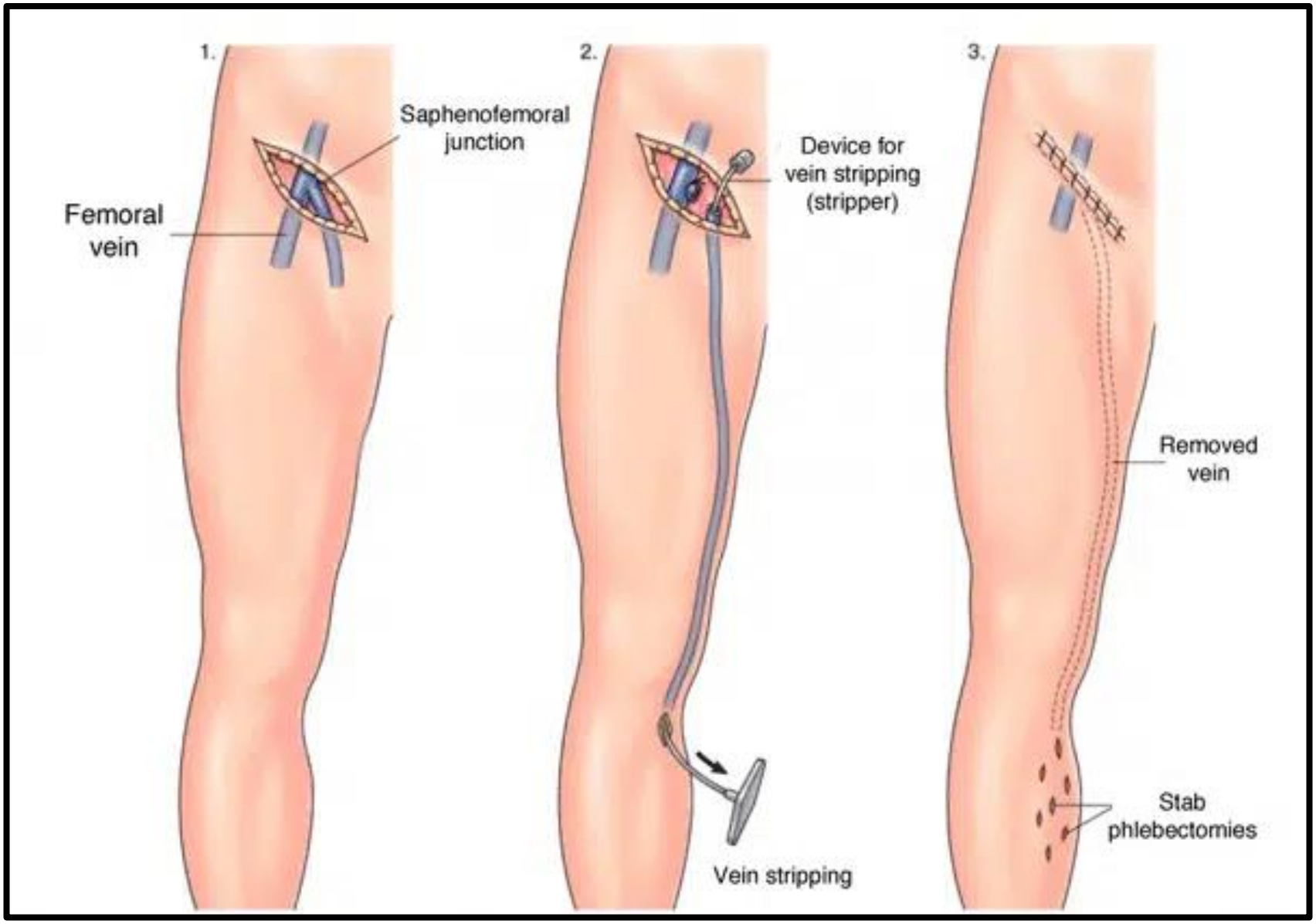
Summery of outcome

Parameters of outcome	Result
Post operative DVT	2
Post operative ulcer	3
Recurrence(due to missed LSV- re-operated)	1
Healed without complication	53 limbs
Average healing time	50±6
Eight venous ulcer	All healed

Sapheno-femoral junction ligation

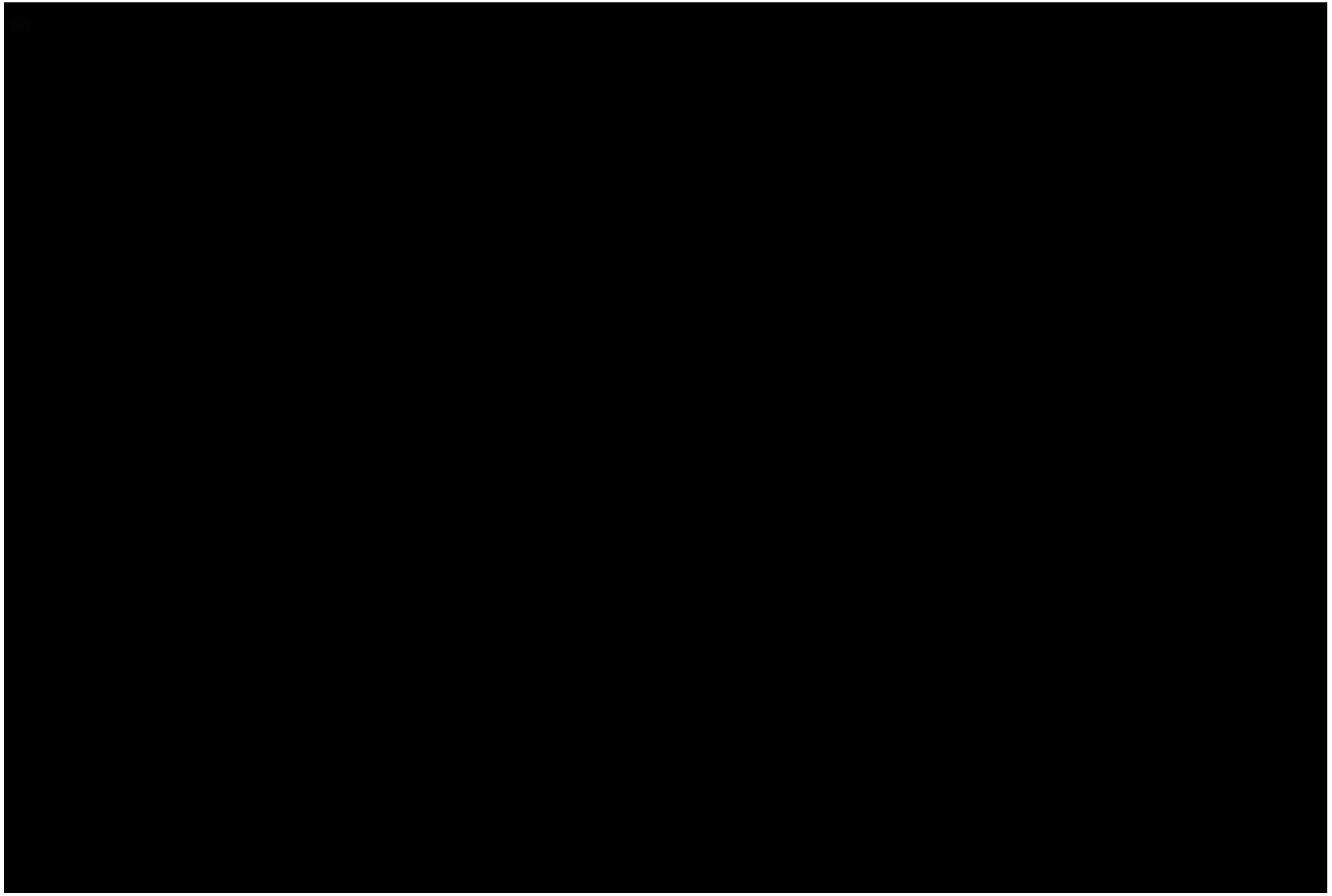


LSV stripping



Insertion of the stripper

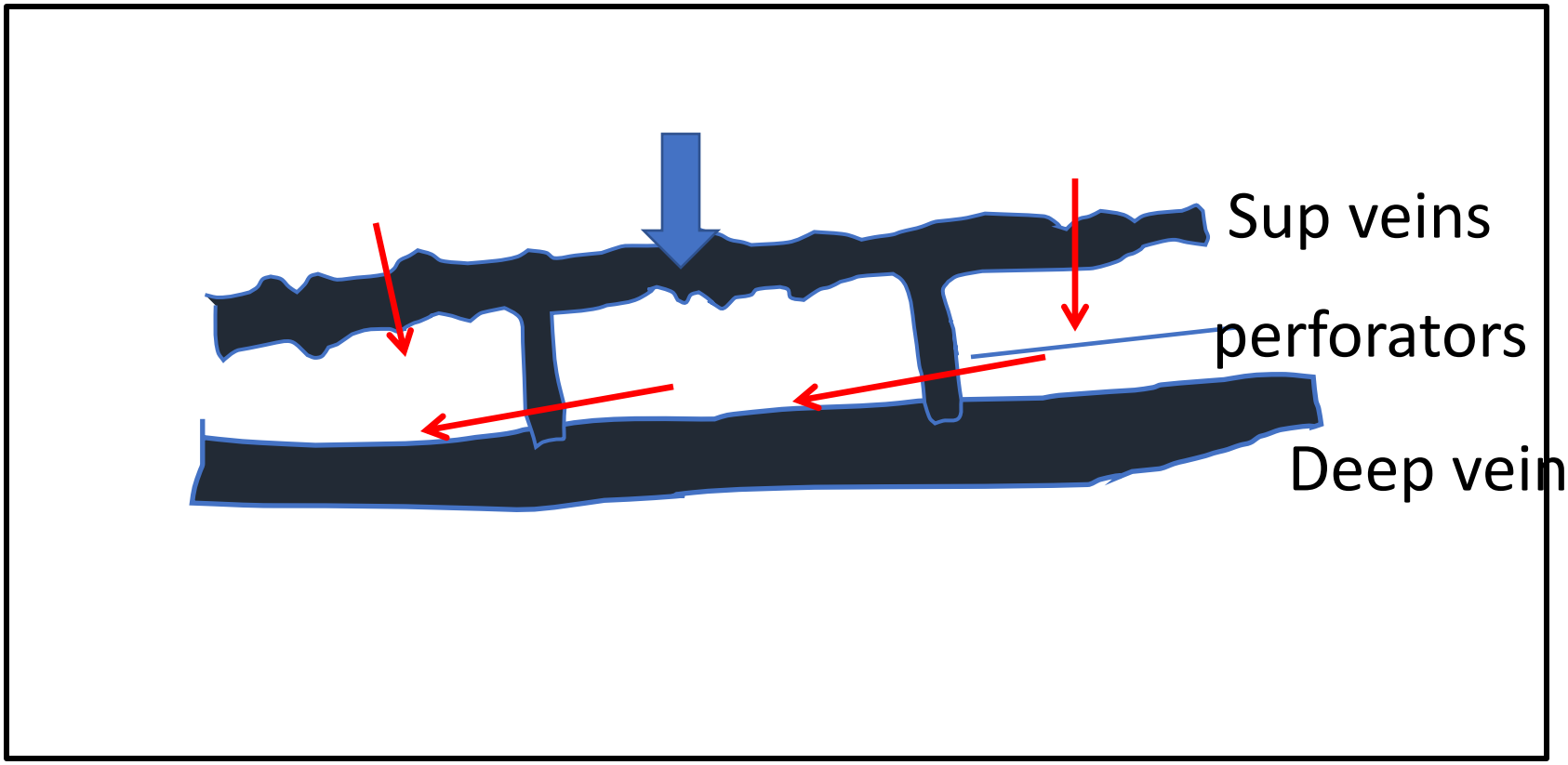
LSV stripping video



LSV on stripper

Marking before phlebectomy

Multiple phlebectomy



Closure of the phlebectomy wound

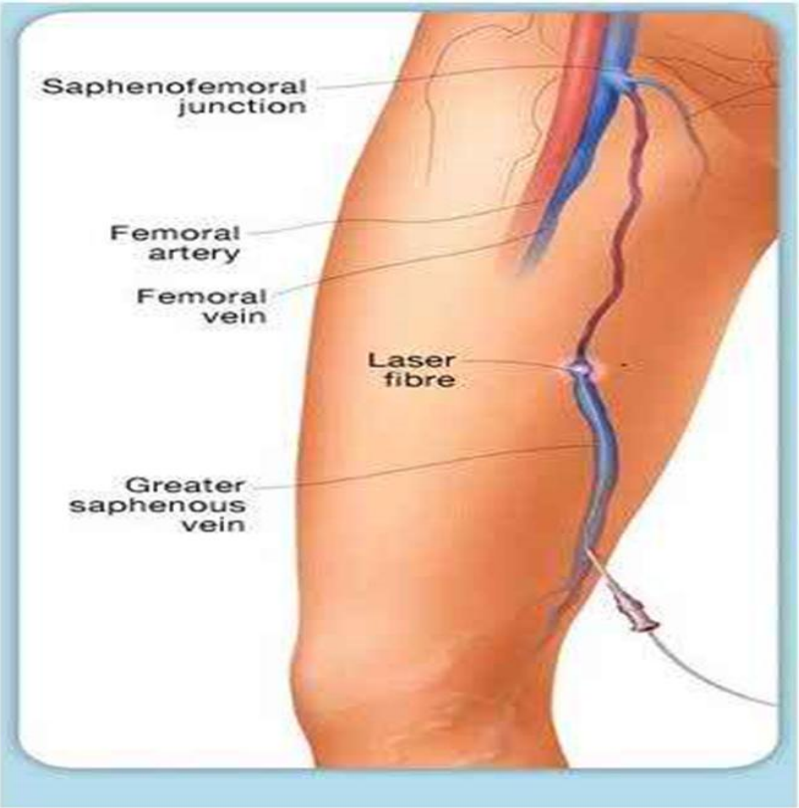
Groin incision is closed

Post operative picture

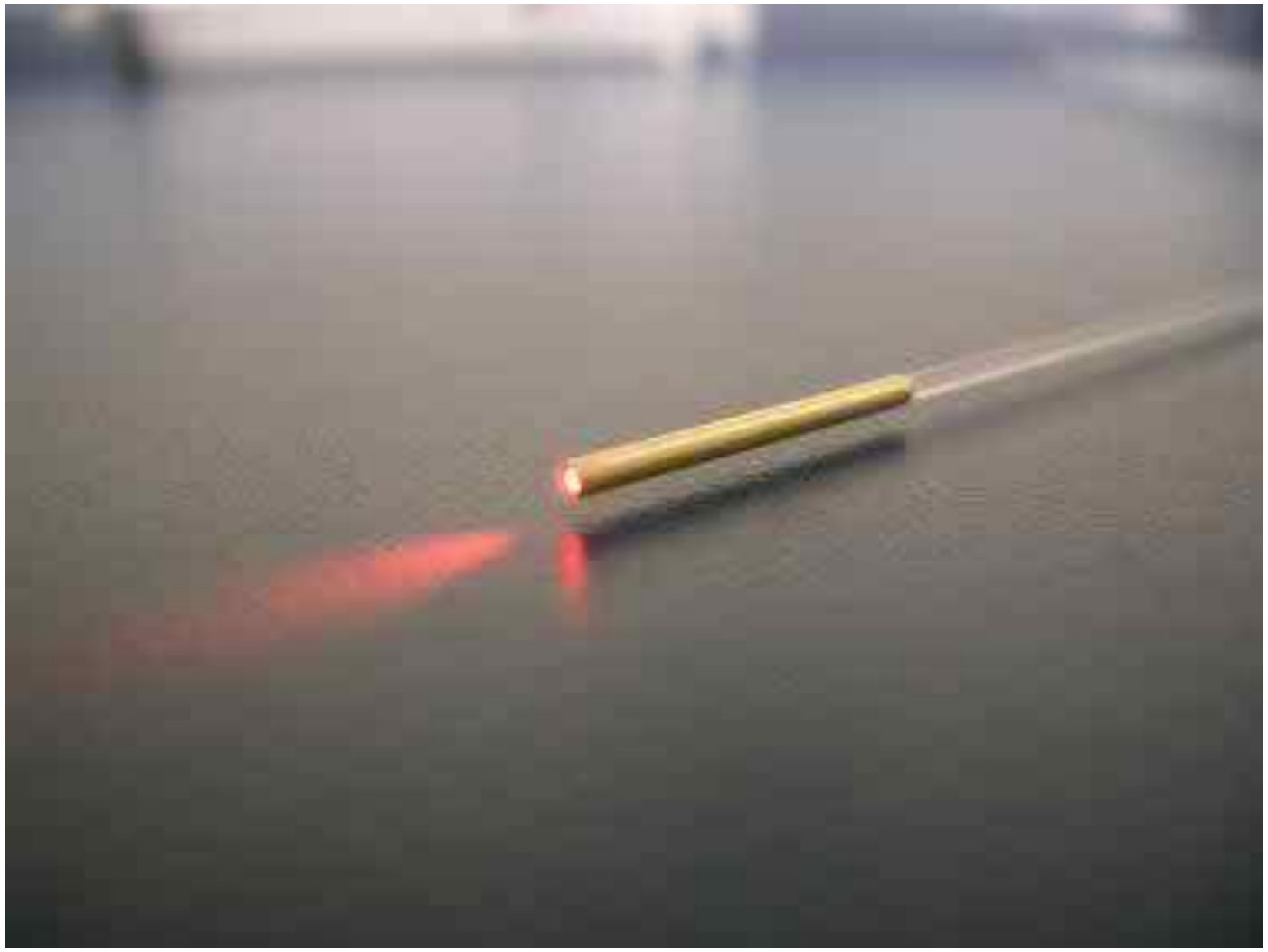
Endovenous laser ablation(EVLA)

Endovenous laser ablation(EVLA)

A catheter delivers heat (laser or radiofrequency) into the vein, causing it to shrink, collapse, and seal shut.

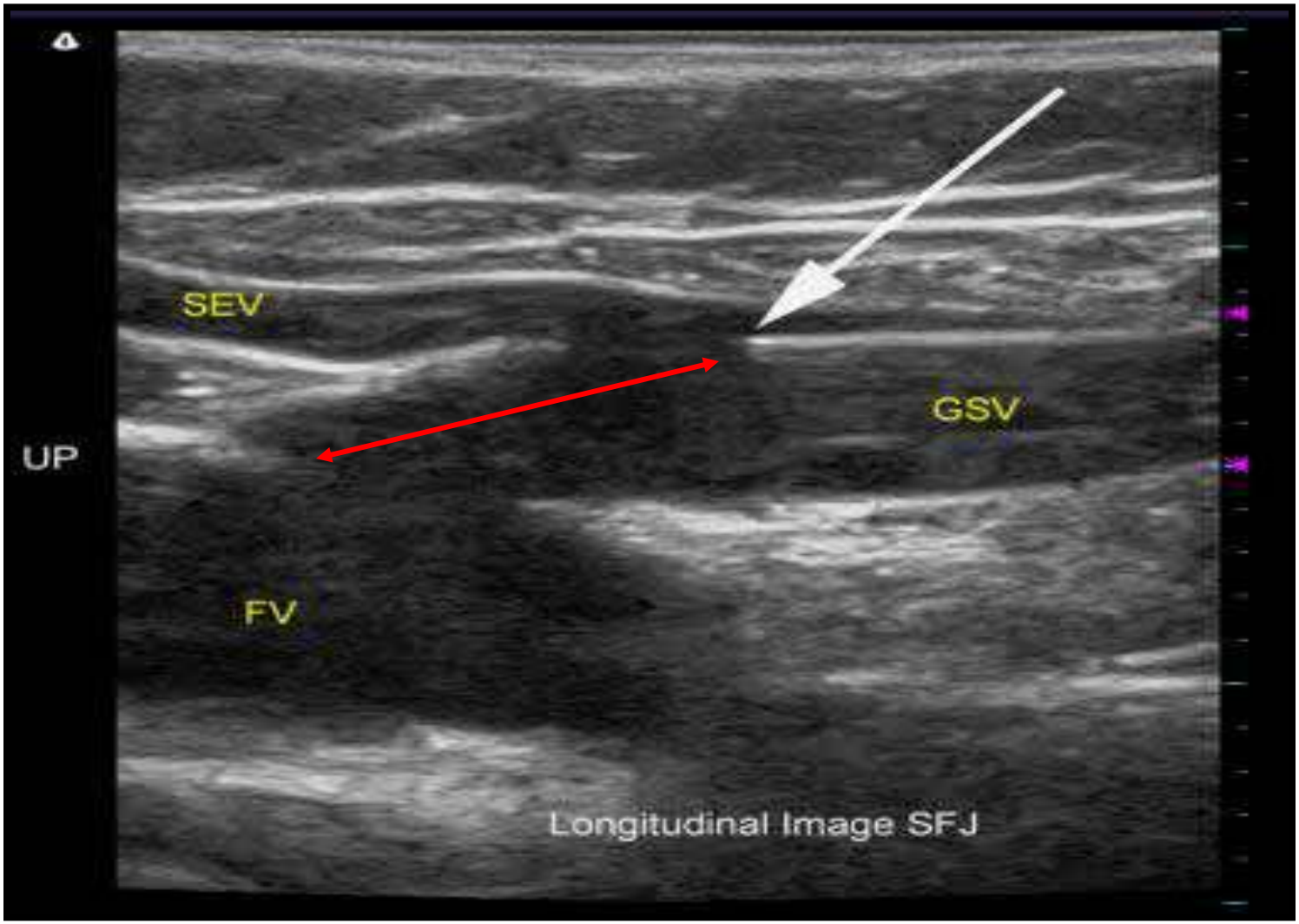


Endovenous laser fiber

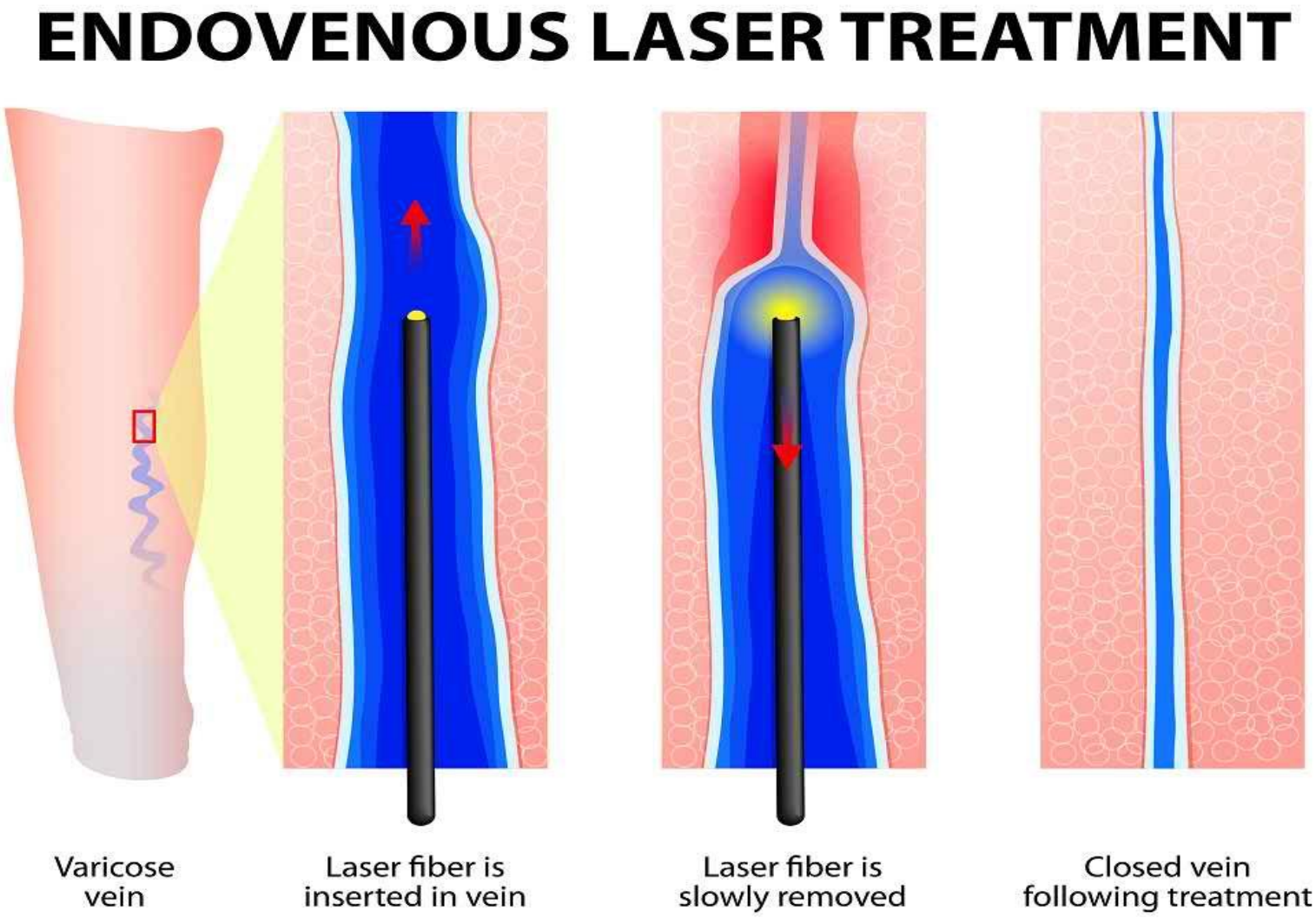


Endovenous laser ablation

USG guided placement of the laser probe



EVLA procedure



EVLA procedure

Sclerotherapy for small veins in the leg varicosity

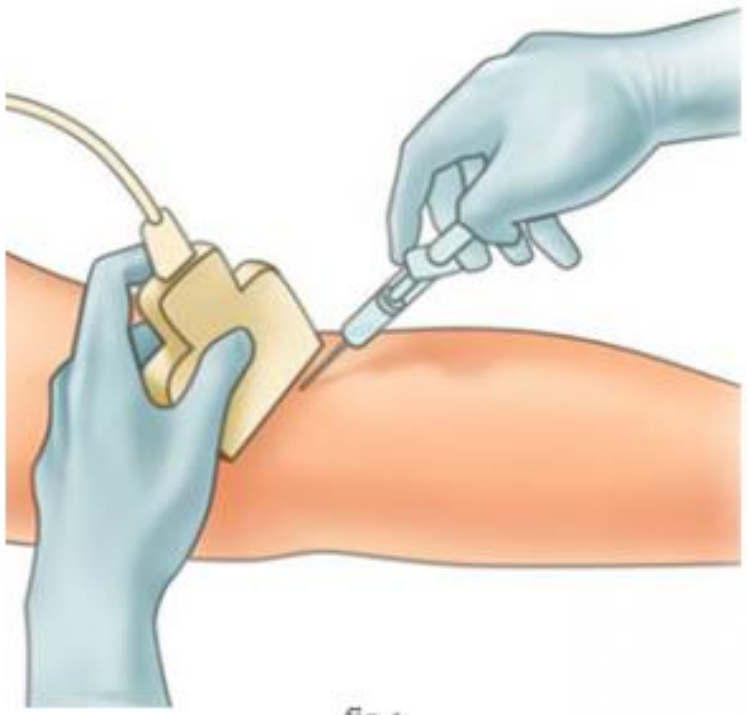


fig.1

FIG 1:

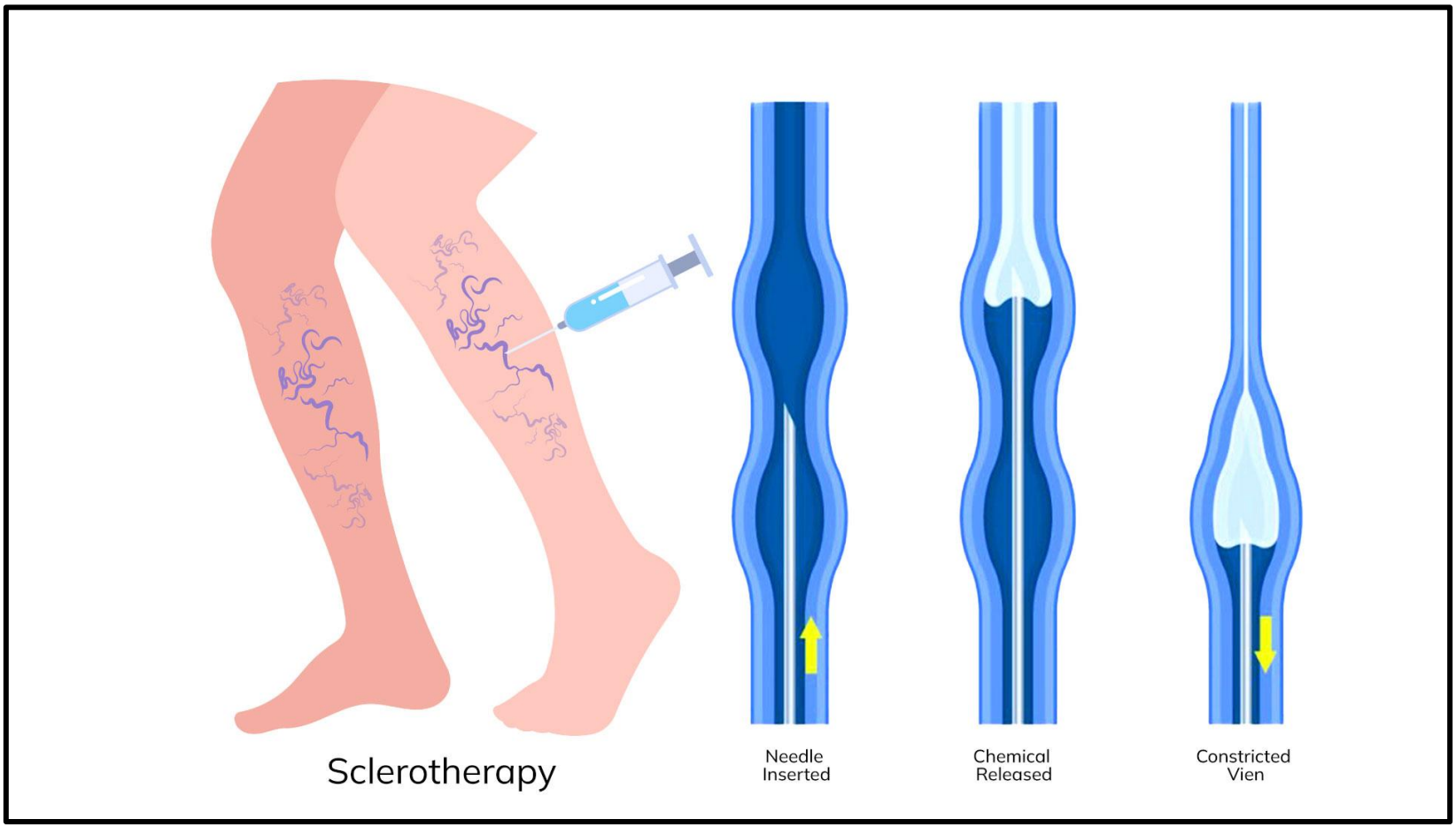
Utilizing ultra sound technology, the varicose vein is located to allow for precision injection of the sclerosant agent.

fig.2

FIG 2:

Once the sclerosant agent is injected into the vein, it causes the varicose vein to collapse.

Sclerotherapy for leg varicosities



Contraindications to EVLA

- Allergy to local anesthetic
- Hypercoagulable states
- Infection of the leg to be treated
- Lymphedema
- Nonambulatory patient
- Peripheral arterial insufficiency
- Poor general health
- Pregnancy
- Recent/active venous thromboembolism
- Thrombus or synechiae in the vein to be treated
- Tortuous great saphenous vein
  (it may be difficult to place the laser fiber)

Three procedure compared

	Median time to normal function (days)	Recurrence
Stripping	4	4%
Laser ablation	2	5.8%
Radiofrequency ablation	1	4.8%

British Journal of Surgery, 2011;**98**:1079-1087

Endovenous laser ablation versus conventional surgery (ligation and stripping) for primary great saphenous varicose vein: a systematic review and meta-analysis.
Annals of medicine and surgery, July 2023, vol-85 4509-4519

- This study identified 18 publications (10 randomized controlled trials) with a total of 1936 patients.
- There was no significant difference in procedural time, recovery time, recurrences at 1, 2, and 5 years.

Conclusion

- Technical failures were more common in EVLA,
- Postoperative complications (treatable) were more common in surgery.
- Cost-effectiveness needed to be assessed before choosing the best modality(surgery is definitely cheaper)


THANK
YOU!