

Chronic Superficial Venous Insufficiency

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CHRONIC SUPERFICIAL VENOUS INSUFFICIENCY (CSVI)

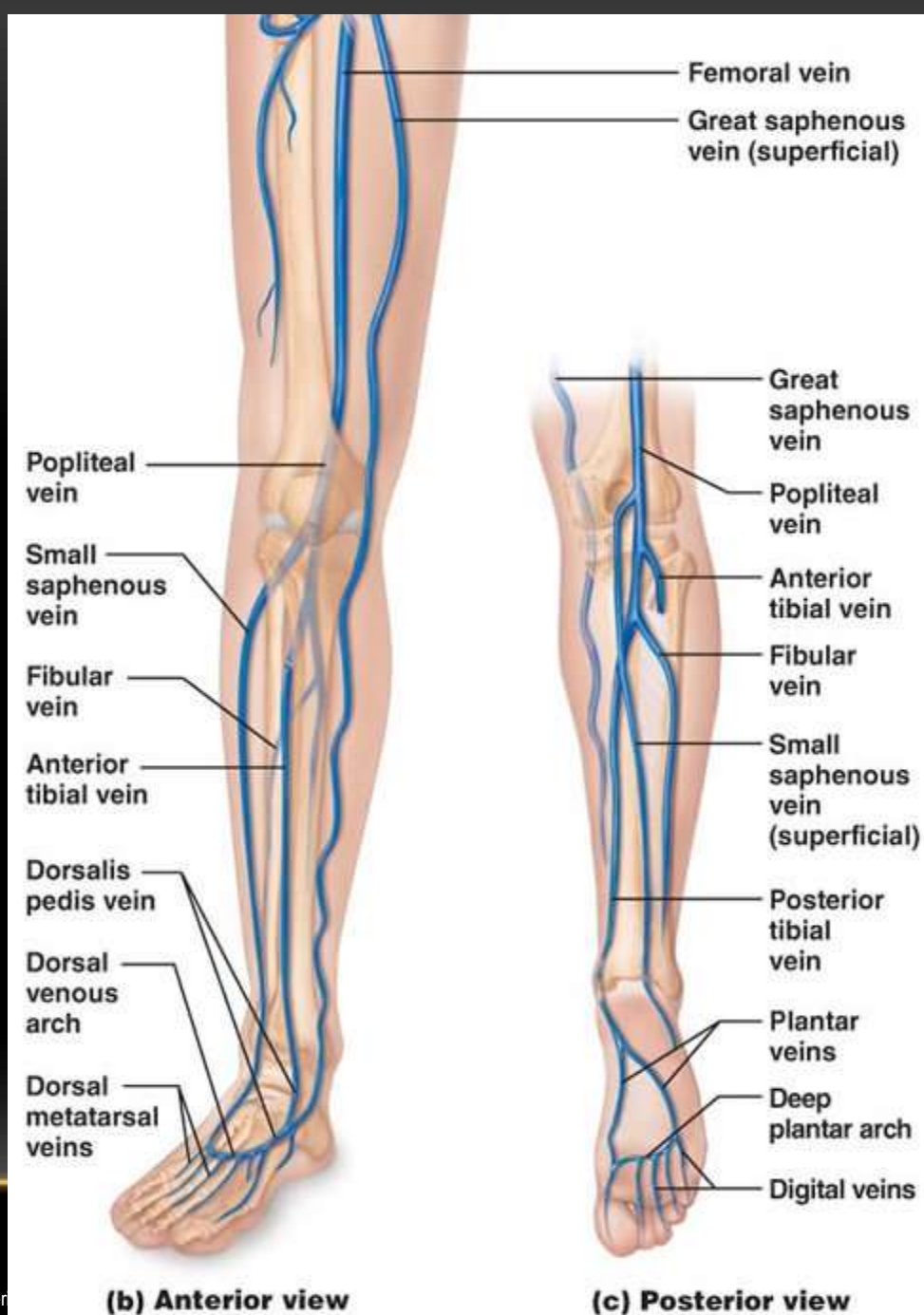
- occurs when the venous wall and/or valves in the superficial leg veins are not working effectively, making it difficult for blood to return to the heart from the legs.

Clinical hallmarks:

Distal venous hypertension, which follows the development of valvular incompetence, reflux, and/or venous obstruction.

VENOUS SYSTEM

- ✓ Superficial venous system
 1. Saphenous veins
 2. Lateral venous complex
- ✓ Deep venous system
- ✓ Perforating veins

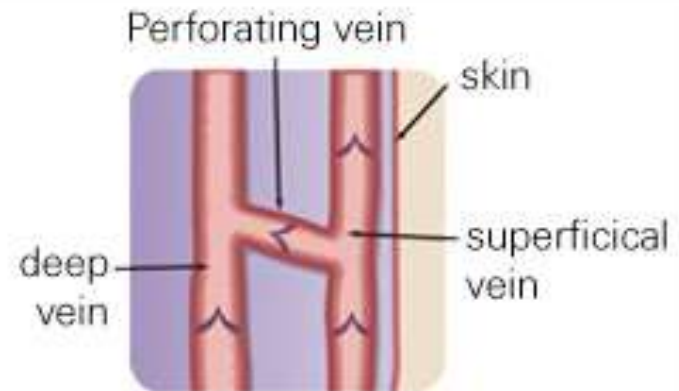


PERFORATING VEINS AND REFLUX

Maintain one-way flow from superficial to deep veins

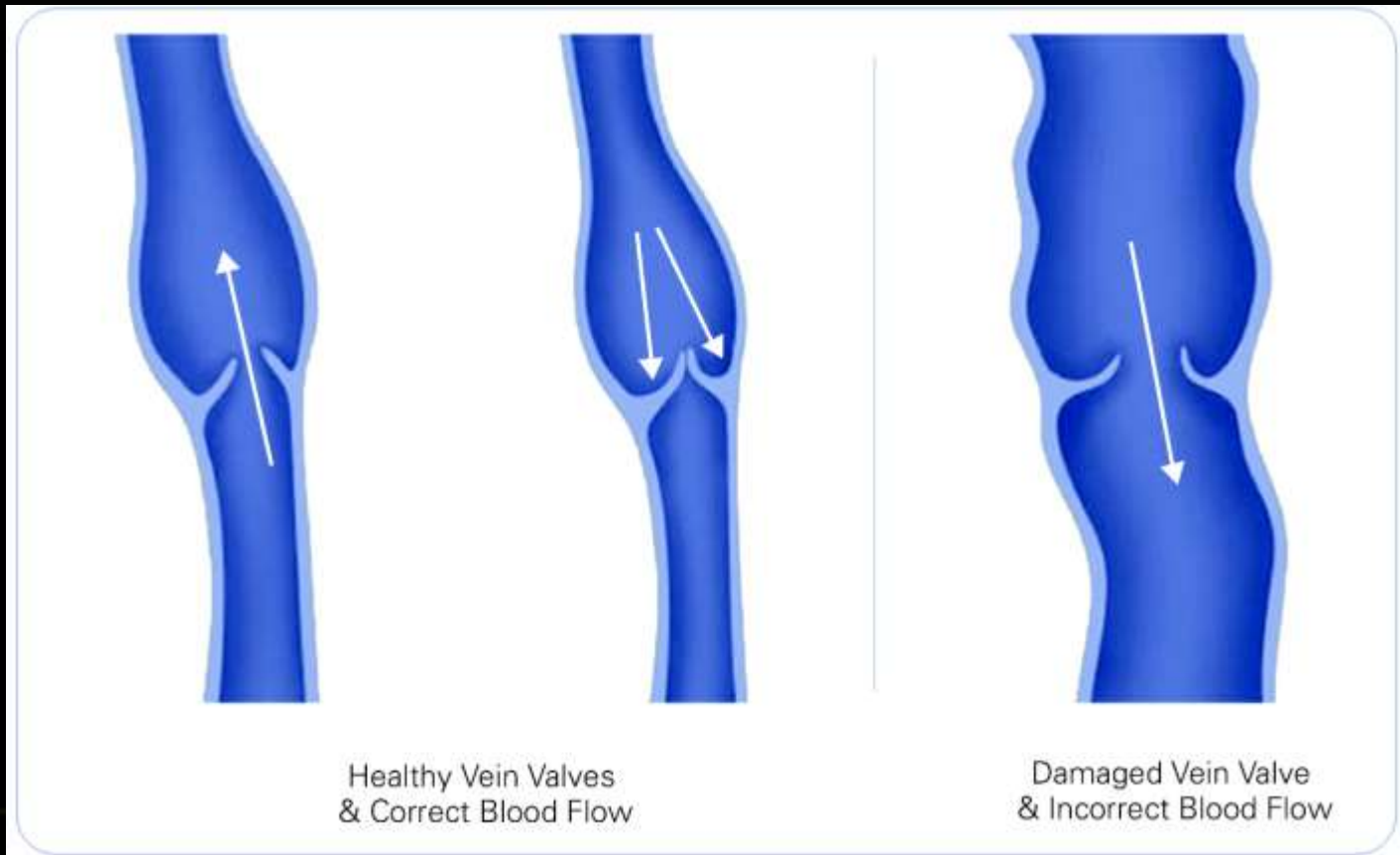
Perforator valve failure causes:

- Higher venous pressure and GSV/branch dilation
- Increasing pressure results in GSV valve failure
- Additional vein branches become varicose
- Further GSV incompetence and dilation



Perforating veins connect the deep system with the superficial system

PATHOPHYSIOLOGY OF VENOUS INSUFFICIENCY



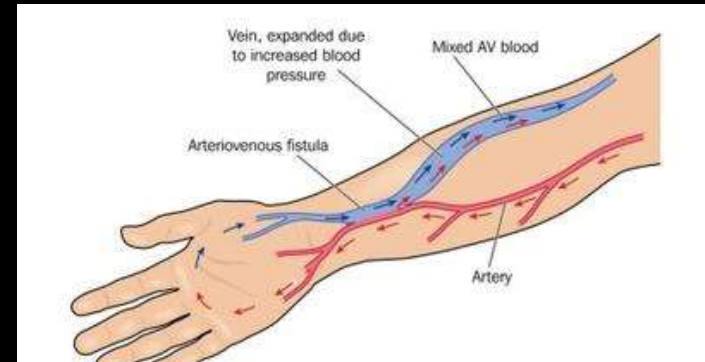
RISK FACTORS

- Advancing age
- Family history of venous disease
- Prolonged standing
- Increased body mass index
- Smoking
- Sedentary lifestyle



RISK FACTORS CONTD.

- Lower extremity trauma
- Prior venous thrombosis
- Arterio-venous shunt
- High estrogen states
- Pregnancy
- Ligamentous laxity (hernia, flat feet)



CEAP classification

– an international consensus conference initiated the Clinical-Etiology-Anatomy-Pathophysiology classification.

C: Clinical

E: Etiology

A: Anatomy

P: Pathophysiology

CEAP classification cont.

- C 0 - no evidence of venous disease.
- C 1 - telangiectasias/reticular veins.
- C 2 - varicose veins.
- C 3 - edema associated with vein disease.
- C 4a - pigmentation or eczema.
- C 4b - lipodermatosclerosis.
- C 5 - healed venous ulcer.
- C 6 - active venous ulcer.

CEAP classification cont.

- E c - congenital
- E p - primary venous disease.
- E s - secondary venous disorder.
- E n - not specified.

CEAP classification cont.

- A s - superficial veins.
- A d - deep veins.
- A p - perforating veins.
- A n - not specified.

- P r - venous reflux.
- P o - venous obstruction.
- P n - not specified.

Manifestations of Venous Insufficiency

Superficial venous reflux is progressive and if left untreated, may worsen over time.

Below are manifestations of the disease.⁵



20+ million



2 to 6 million



500,000

Systemic Reflux in Venous Ulceration



Photos courtesy of Steven A. Kaufman, MD.

Sources of Reflux in Venous Ulcer Patients ⁸		
Superficial	Perforating	Deep
79%	63%	50%

Incompetent perforators found in 63% of venous ulcer patients

Comprehensive care treats all sources of reflux

SKIN CHANGES AT CSVI

- ✓ Gravitational dermatitis
- ✓ Hyperpigmentation
- ✓ Lipodermatosclerosis

LIPODERMATOSCLEROSIS

There is a proliferation of the dermal capillaries and fibrosis on subcutaneous tissue

It is a combination of:

- induration
- pigmentation
- inflammation

VENOUS ULCER

Clinical Findings:

Inner aspect of the distal third of the leg
(commonly the pressure areas)

- ✓ **Shape** - rounded, elongated or very large like a cuff
(so-called gaiter ulcer)
- ✓ **Base** - flat, covered with fibrous slough
- ✓ **Margins** - sharp or rolled

CLINICAL CHARACTERISTIC

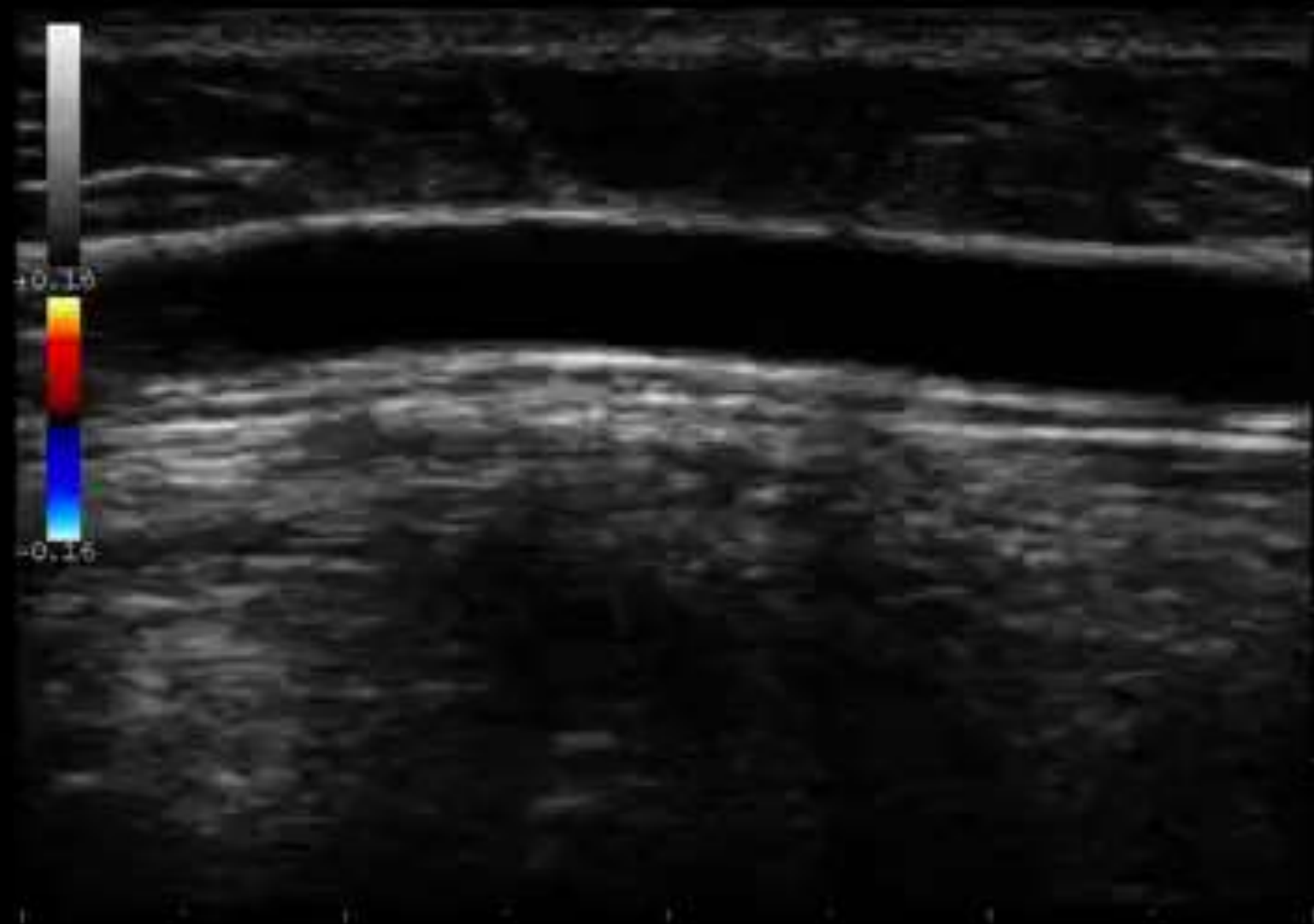


Diagnostic Evaluation

- ❑ Level 1 : history and clinical examination.
 - ❑ Level 2 : non-invasive vascular laboratory testing which now routinely include Duplex color scanning.
 - ❑ Level 3 : invasive investigations or more complex imaging studies including ascending and descending venography, Varicography, venous pressure measurements, magnetic resonance imaging.
-

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Management of Venous Stasis Ulcers

- Dressings
 - Occlusive dressings
 - Low adherent gauze dressings
- Surgical debridement
used to remove devitalized tissue.
- Enzymatic agents
used to break down necrotic tissue (Santyl).

MANAGEMENT contd.

- Growth factors
synthesized by many cell types such as platelets, neutrophils, and epithelial cells (e.g. Regranex).
- Bioengineered tissue
used for a variety of non-healing ulcers (e.g. Apligraf, Dermagraft).
- Skin grafting
an option for non-healing ulcers.

MANAGEMENT OF CHRONIC SUPERFICIAL VENOUS INSUFFICIENCY

- A. Conservative treatment
- B. Vein ablation treatments
- C. Surgical procedure

1. Conservative Treatment

- Avoiding long periods of standing
- While sitting, legs should be above the thigh
- Avoiding crossing legs
- Ideal body weight
- Walking programme
- Compression therapy
- Micronised purified flavonoid fraction (diosmin+ hesperidin)

Compression therapy

- elastic compression bandages
- compression stockings
- Pneumatic compression therapy



2. Vein ablation treatments

- Sclerotherapy



- Foam sclerotherapy
(USG guided)



Alternative techniques

- ✓ Radiofrequency ablation
- ✓ Endovenous laser ablation therapy.

Indications

- Persistent signs/symptoms of venous disease after a minimum of 3 months of medical therapy
- Documented reflux (e.g. >0.5 seconds of reflux GSV).

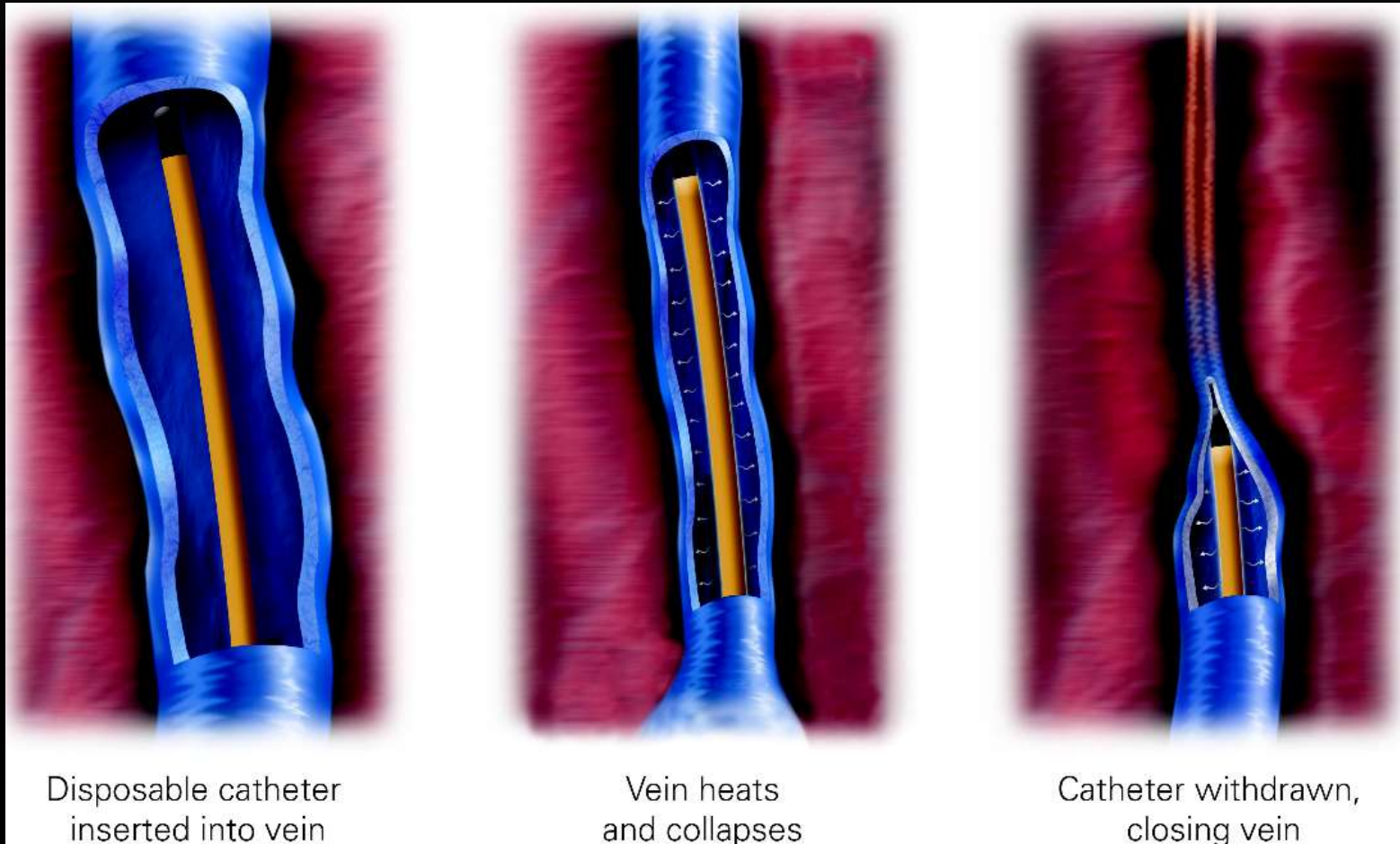
Radiofrequency ablation

- Radiofrequency devices generate a high frequency alternating current for which the energy heats the adjacent vein walls to the probe which alters the protein structure of the vein effecting its closure.

Endovenous laser ablation therapy

- Lasers emit a single, coherent wavelength of light. Laser therapy of venous structures is based upon the concept of photothermolysis. Vein wall injury is mediated directly by absorption of photon energy by the vein wall and indirectly by thermal convection from heated blood.

ENDOVENOUS LASER ABLATION THERAPY



Endovenous RF ablation

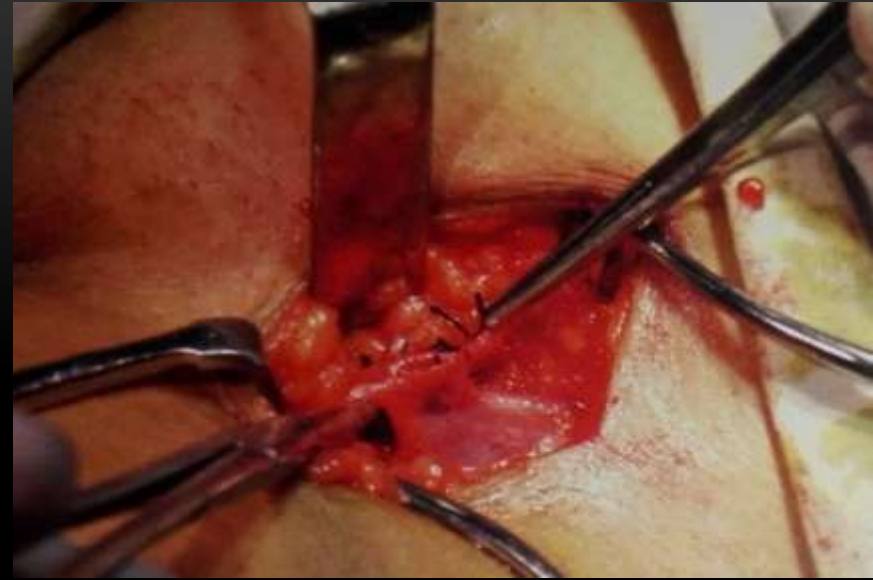
3. SURGICAL OPTIONS

1. Sapheno-femoral/ sapheno-popliteal flush ligation
2. Venous stripping
3. Multiple phlebectomies
4. Ligation of the perforators

SAPHENO-FEMORAL FLUSH LIGATION VENOUS STRIPPING

- SFJ is identified after giving a groin incision lateral to pubic tubercle.
- LSV tributaries are ligated and divided
- A flush SFJ ligation is then performed
- LSV retrogradely stripped to the knee
- Tributaries of varicosities then avulsed through small incisions

- The sapheno-femoral junction, where all the tributaries have been ligated.



- Sutured small groin incision



Stripper passed from groin to upper leg.



Post-operative care

- Graduated compression stockings or bandages are worn day & night for 7-10days; thereafter they are worn only during day for one month
- Patient should sit with his feet elevated
- Patient should return to work and driving within 10days of surgery
- Swimming and cycling are allowed after dressing have been removed

Venous Ulcer Patient Outcomes

- Treating the underlying cause of venous ulceration results in improved clinical outcomes
- Treating both the superficial and perforator hypertension results in:
 - Faster ulcer healing time
 - Lower ulcer recurrence ratethan with compression therapy alone^{9,10}

Complication

- Eczema
- Ulcers
- Bleeding
- Thrombophlebitis
- DVT

Prevention

- ✓ Weight control
- ✓ Adequate physical exercise
- ✓ Avoidance of smoking
- ✓ Avoidance of sedentary activities
- ✓ Control of hypertension
- ✓ Modification of profession

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A close-up photograph of a surgeon's gloved hand performing a surgical procedure. The hand is holding a scalpel and is in the process of making an incision on a patient's skin. The background is a sterile operating room environment with green drapes and various surgical instruments visible. The text "Thank you" is overlaid in a yellow, cursive font in the center of the image.

Thank you