



# *Venous Disease and Phlebology*

Venous disease is progressive and chronic in nature. The earlier the disease is detected, the faster the family physician can refer the patient to a phlebologist.

By Anne-Marie Lessard, MD, LCMC

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Notions of the cardiovascular system were illustrated by the Egyptians as early as 1500 B.C. The first sclerotherapy was apparently performed by Hippocrates. The treatment did not consist of injections, however, but rather of “a prick without asepsis that provoked infection and secondary thrombosis.”

The superficial venous system was identified in the 4th century A.D., and at the beginning of our era Aulus Cornelius Celsus first described the ambulatory phlebectomy with multiple incisions. Over time, surgical techniques have been refined and sclerotherapy as we know it (injections that provoke endophlebitis

rather than thrombosis) was introduced in the mid-19th century. Today, clinical examinations and new assessment techniques enable surgeons and phlebologists to work in tandem to obtain better results.

## *Epidemiology and Medical History*

Superficial venous disease affects 30% to 40% of the population. It is estimated that only 8% to 10% of the individuals affected see a physician about their condition. The incidence is higher in women (80%) than in men (20%), and varicose lesions increase with age. The incidence also

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varies geographically. For instance, it is high in Western countries, but minimal in the Orient, Africa and in Third World nations. Globally, the proportion of varicose lesions is low in areas where the population maintains a traditional lifestyle.

The factors that motivate patients to consult a phlebologist are pain, esthetic considerations and complications from venous disease (*e.g.*, superficial thrombophlebitis, edema, stasis dermatitis, varicose ulcers, local hemorrhaging). The type of pain or discomfort may vary, and include heaviness in the lower limbs, cramping, shooting pains or burning sensations. The symptoms intensify toward the end of the day, after prolonged standing, during premenstrual syndrome and in hot weather. Symptoms diminish when the individual is in a decubitus position. It is important

to note pain symptoms in order to rule out other disorders of an arterial, neurologic or muscular nature.

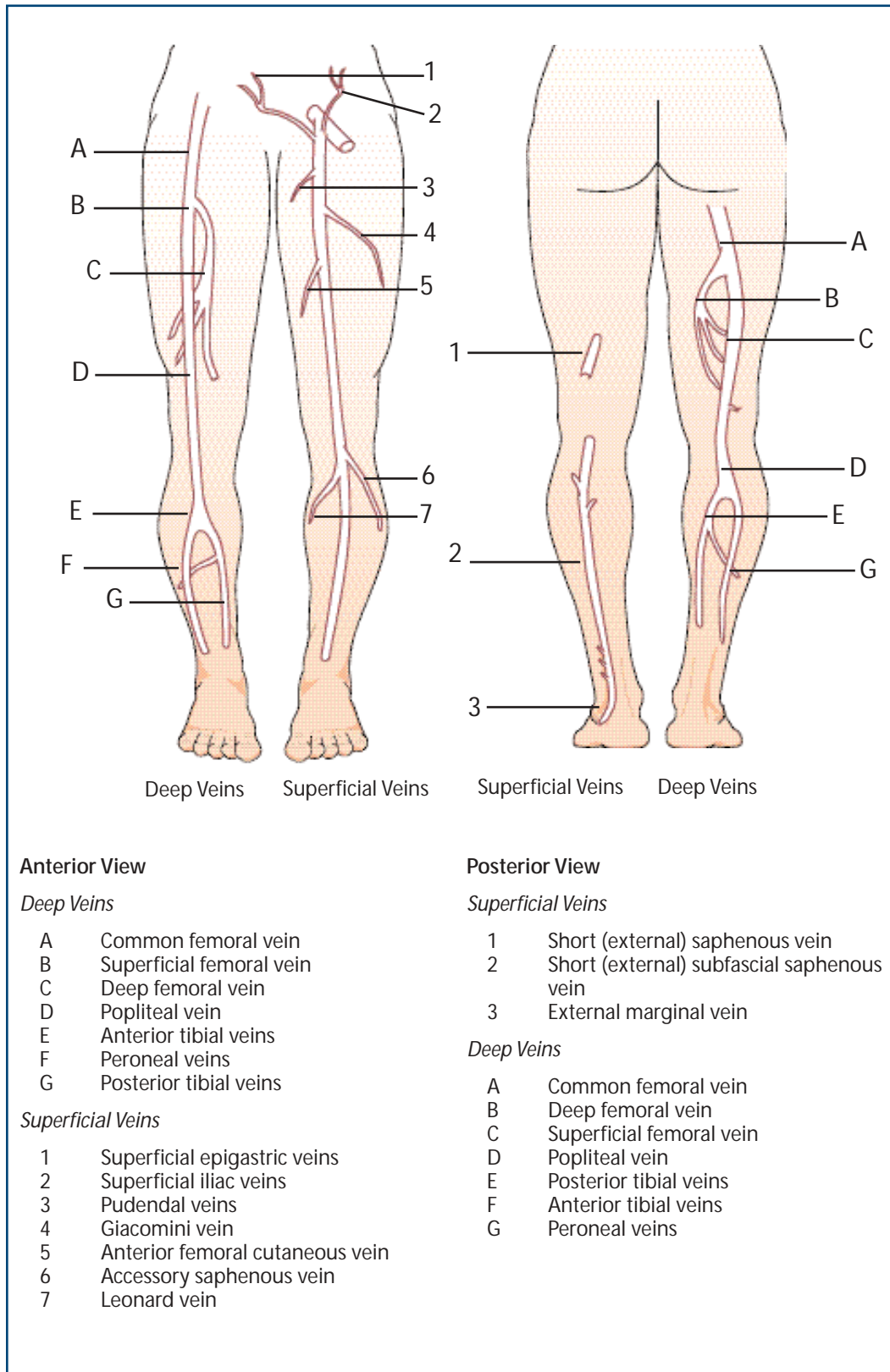
The patient questionnaire should include queries about such information as age, reasons for seeking medical attention (including the type of symptoms, aggravating factors and any changes in the condition over time), medical history (especially a history of thrombophlebitis or a concomitant vascular or neurologic condition), as well as surgical and family histories.

Heredity plays a preponderant role; at least 80% of patients have a family history of varicose veins (parents or grandparents). Work activity also is an important consideration, since remaining standing for a prolonged period is a determining factor in the progression of superficial venous disease. Hormonal changes that occur during adolescence, pregnancy, menopause and while taking oral contraceptives also can aggravate venous disease. Varicose veins often occur during pregnancy. In 10% to 20% of the cases, they appear during the patient's first pregnancy. The proportion doubles for the second pregnancy and triples or quadruples in subsequent pregnancies.<sup>1</sup>

A history of local trauma also can be significant. Certain sports, such as volleyball, tennis and weightlifting, can worsen the condition. Activities such as walking, swimming and cycling are preferable. Lastly, it is important to inquire about patient allergies and any medication being taken.



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**Anterior View**

*Deep Veins*

- A Common femoral vein
- B Superficial femoral vein
- C Deep femoral vein
- D Popliteal vein
- E Anterior tibial veins
- F Peroneal veins
- G Posterior tibial veins

*Superficial Veins*

- 1 Superficial epigastric veins
- 2 Superficial iliac veins
- 3 Pudendal veins
- 4 Giacomini vein
- 5 Anterior femoral cutaneous vein
- 6 Accessory saphenous vein
- 7 Leonard vein

**Posterior View**

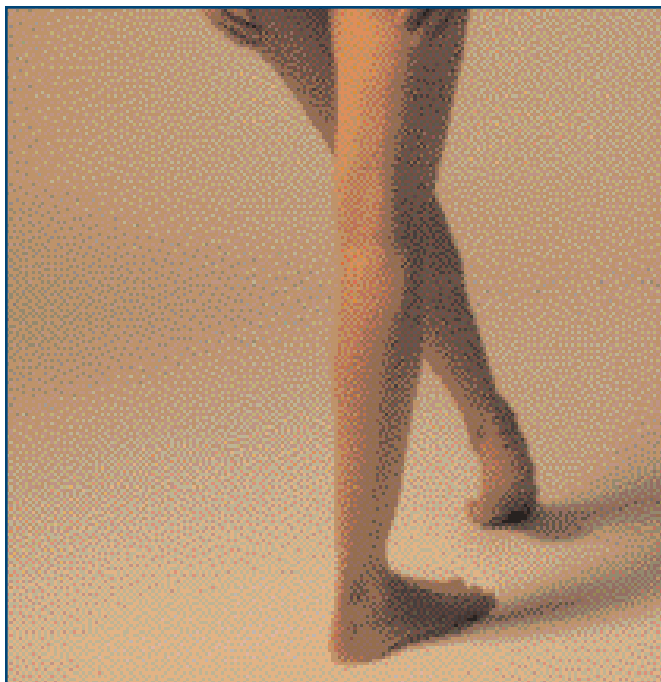
*Superficial Veins*

- 1 Short (external) saphenous vein
- 2 Short (external) subfascial saphenous vein
- 3 External marginal vein

*Deep Veins*

- A Common femoral vein
- B Deep femoral vein
- C Superficial femoral vein
- D Popliteal vein
- E Posterior tibial veins
- F Anterior tibial veins
- G Peroneal veins

Figure 1. Veins of the lower limbs.



### *Physical Examination*

For a phlebologic examination, the patient must undress from the waist down (with the exception of underpants). During the examination, the patient must remain standing, preferably on a surface approximately two feet off the floor, in a well-lit area. This allows the physician to examine the surface of the patient's legs (front, back and sides). It is important to thoroughly assess the long and short saphenous veins, and to seek any perforating veins (veins that connect the deep venous system with the superficial venous system), as well as any significant pigmentation or dilation on the legs or ankles that could indicate a problem stemming from the saphenous junctions (Figure 1).

Palpation and percussion are used to follow the venous pathway and detect any reflux (by impulse when the patient coughs and by means of a fluid wave). A perforating vein can be sensed with the pad of the finger, by palpating a dehiscence on the vascular wall and on the fascia. Comparative measurements of both legs (at the calves and above the ankle) help detect unilateral or bilateral edema. Peripheral pulse palpation helps assess the integrity of the arterial system of the legs. The knees and feet also should be observed in order to detect any osteoarthritic conditions (*e.g.*, arthritis, flatfoot).

With the technology currently available, a mini-Doppler can be used to assess the junctions of the long and short saphenous veins. If any incompetence is noted, a duplex Doppler exploration of the venous system should be ordered to confirm and further explore the findings of the physical examination. This test is available in some phlebology and vascular clinics. Lastly, a general clinical examination should complement the examination of the lower limbs.

### *Diagnosis and Differential Diagnosis*

Varicose veins can be considered primary, in which case they are confined to the superficial venous system, or they can be considered secondary. The latter are caused by perforating veins, deep thrombophlebitis, constitutional valvular insuf-

iciency or angiodysplasia. Note that myofascial hernias in the legs must be distinguished from varicose veins. This type of herniation manifests itself as small, soft bumps, approximately 1 cm in diameter, on the anteroexternal facet of the legs. They do not disappear upon elevation of the limb, but only upon dorsiflexion of the foot when the patient is standing.

### *Stages of Venous Disease*

There are four stages of venous disease:

- Stage 0: Occurs in young patients with a family history of venous disease; asymptomatic; normal clinical examination and Doppler results.
- Stage 1: The first symptoms appear; clinical examination and Doppler results show a slight reflux (saphenous incompetence).
- Stage 2: Varicose disease takes hold; may be symptomatic or asymptomatic; unilateral or bilateral saphenous incompetence is confirmed by a duplex Doppler, and may involve perforating veins.
- Stage 3: Complications appear, microcirculation is affected and secondary trophic disorders occur (*e.g.*, ulcers, varicose eczema and hypodermatitis).

### *Treatment*

The choice of therapy will depend on the patient's age, conditions noted during the physical examination and the Doppler results. The diagnostic stage is, therefore,

supremely important to chart a topographical and hemodynamic map of varicose lesions.

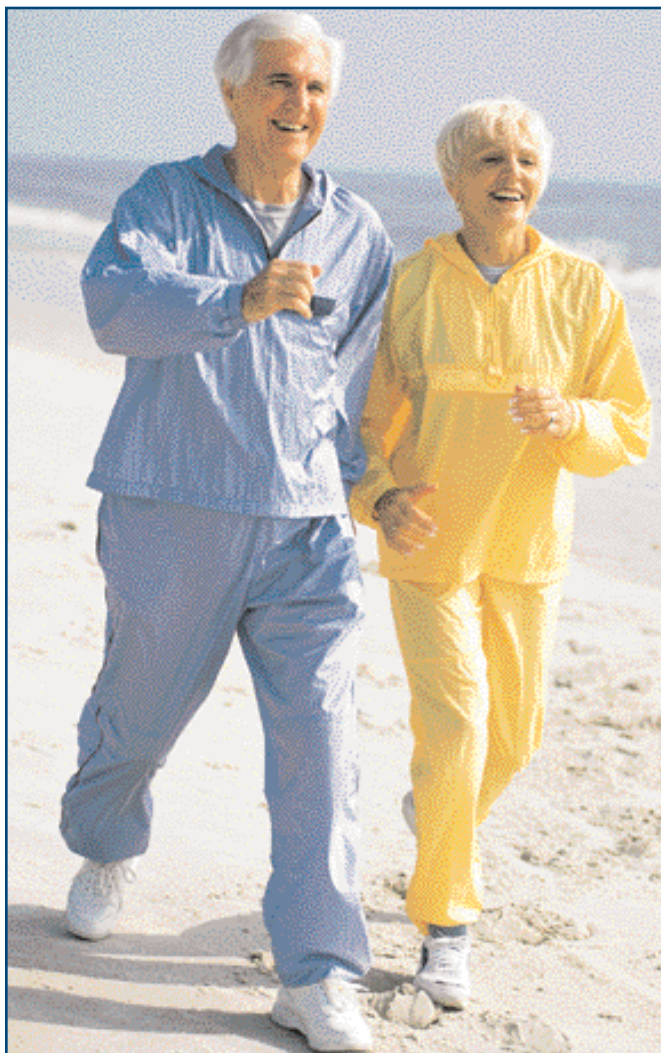
### *Ultrasound-guided Sclerotherapy*

When incompetence of a long or short saphenous vein is diagnosed, either unilaterally or bilaterally, the patient can be given two treatment options. The first, more definitive option, is surgery (*i.e.*, stripping). The second is ultrasound-guided sclerotherapy, which consists of injecting a sclerosing agent with ultrasonographic guidance. While not covered by Quebec medicare (the Régie de l'assurance-maladie), this relatively new technique is a viable alternative to surgery. Moreover, ultrasound-guided sclerotherapy is highly effective in treating new saphenous veins that become apparent after surgery, and in injecting perforating veins and long saphenous veins.

It is supremely important to chart a topographical and hemodynamic map of varicose lesions during the diagnostic stage.

### *Classic Sclerotherapy*

In the case of a diagnosis of scattered varicose veins without saphenous junction incompetence, classic sclerotherapy is indicated. This technique involves chemically injuring the endothelium of the vein by provoking endophlebitis, which, in



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turn, results in connective-tissue scarring. This scarring eventually disappears.

There are various products available, administered at different dosages and in

different concentrations according to the caliber of the vein, its topography and the individual sensitivity of each patient. The primary goal is to eliminate reflux at its highest point. Treatment should begin with the largest-caliber blood vessels and conclude with the capillaries and telangiectasia. For treatment of post-phlebotic varicose veins, a duplex Doppler of the deep and superficial venous system is recommended. It also is recommended that the physician verify the integrity of the coagulation parameters and wait at least one year after a thrombotic event before attempting any treatment.

For pregnant women, support stockings are recommended. Treatment can be carried out three months after childbirth, or later if the mother is breast-feeding. The frequency of treatments can range from one to four weeks. The dosage should be adjusted according to the patient's reaction to treatment.

Contraindications for sclerotherapy are acute febrile or infectious diseases, heart or liver failure, unstable coronary artery disease, breast feeding, and progressive or repetitive deep vein thrombosis.

The most common side effects are ecchymosis (lasting 10 to 15 days) and localized pain. A vein that has undergone sclerotherapy may form a bump, or turn yellow or green before eventually disappearing. These are signs of normal sclerosis. The local inflammatory response is sometimes more severe, however, resulting in redness, a burning sensation, induration and sensitivity, which consti-

tute venitis. In such instances, an anti-inflammatory should be prescribed for one week. The patient should apply warm, damp compresses on the affected area. There may be an increase in pigmentation, which should eventually disappear, failing which peeling can be done. In less common cases, eschar may occur because of the extravasation of the sclerosing agent in the skin, or the patient may experience a vagal attack or an ophthalmic migraine. When the major venous axes are being treated, it is extremely important that no arteries be injected. This, of course, is a rare occurrence—an accident that all phlebologists dread.

In the long term, it is recommended that patients with varicose disease try to lead a healthy lifestyle. Lifestyle recommendations should be made to prevent the development and aggravation of varicose symptoms, as well as the complications that may result. Exercise is key in the prevention of venous stasis. It allows for drainage of both the deep and superficial blood vessels toward the iliac veins, inferior vena cava and heart, because of the muscular pumping mechanism.

Walking is the best exercise, as it compresses the plantar vessels, mobilizes the arteries and increases muscle mass. Patients should avoid prolonged standing or else wear support hose. They should avoid excessively hot baths and prolonged exposure to the sun, and take measures to combat obesity. Lymphatic massage and drainage can help the circulation. There are no dietary restrictions. Prolonged sit-

ting should be avoided, of course, as it can cause stasis, edema and thrombosis.

According to Vin and Schadek, support hose remain an effective therapeutic tool and are invaluable at all stages of the disease.<sup>1</sup> The compression provided by support hose promotes blood drainage toward the heart, as it affects both the deep and superficial veins, as well as valve function and subcutaneous tissue. This helps reduce edema.

## Conclusion

Venous disease is progressive and chronic in nature. The earlier the disease is detected, the better the prognosis. Consultation of a phlebologist can prevent complications. An assessment is recommended for pregnant women and patients with a family history of varicose disease or who work in an orthostatic position. Follow-up is also very important, as it enables the physician to monitor the progression of the disease and carry out maintenance treatments that keep the legs in good condition, both physiologically and esthetically.

### References

1. Vin F, Schadek M: *La maladie veineuse superficielle*. Masson, Paris, 1990, pp. 205.

### Recommended Reading

1. Winkelaar GB, Taylor DC: How to manage varicose veins. *The Canadian Journal of Diagnosis* 1998; 16(5):85.
2. Wallois P: Les principes de la sclérothérapie. *Revue de la société canadienne de phlébologie* 1998; p2.