Managing Venous Stasis Disease and Ulcers

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KEYWORDS

• Venous stasis disease • Venous stasis ulcers • Leg ulcers • Ankle brachial index
• Compression therapy • Compression stockings • Venous surgery
• Topical wound dressings

KEY POINTS

- A careful differential diagnostic approach to the leg ulcer is critical in the management of venous stasis disease.
- Compression therapy is the essential intervention in venous leg ulcer treatment, but coexisting arterial vascular insufficiency must be excluded before compression is initiated.
- No single topical dressing has been shown to be superior for all wounds.
- Venous leg ulcers are chronic and often difficult to heal, with only 40% to 70% of venous ulcers healing after 6 months of treatment.
- Surgical procedures to reduce venous hypertension do not accelerate healing of a chronic ulcer, but trials suggest a decreased rate of future recurrence after surgery.

Venous leg ulcers are arguably the most common type of venous ulcers seen in clinical practice.[1] Approximately 80% of all leg ulcers are of venous origin, and an estimated 1 million persons in the United States have a venous ulcer.[2] Venous ulcers are chronic, difficult to heal, frequently recur, and decrease quality of life in affected individuals (**Fig. 1**).

PATHOPHYSIOLOGY

The underlying pathophysiology of venous leg ulcers includes reflux, obstruction, or insufficiency of the calf muscle pump, involving the superficial venous system (greater and smaller saphenous vein), the deep venous system, or the veins that perforate between those systems. Chronic deep venous disease results from primary (often idiopathic) or secondary causes (postthrombotic obstruction), but most commonly represents a combination of both.[3,4] The severity of symptoms tends to increase according to the number of anatomic venous defects. Patients with isolated reflux in the perforator veins or segmental deep reflux from a single valve are generally asymptomatic.

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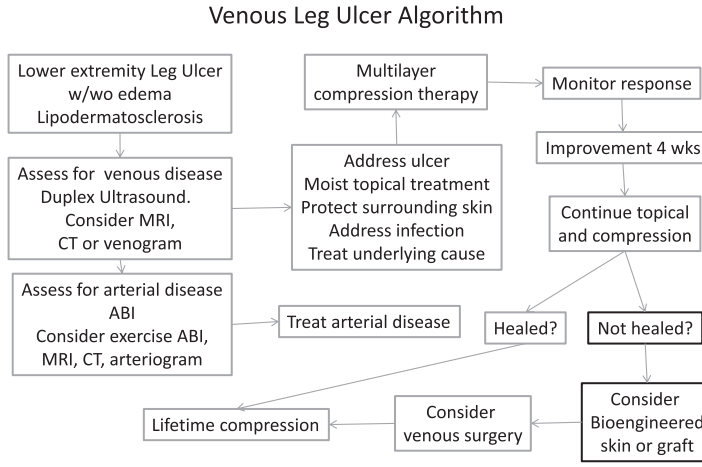

Fig. 1. Venous leg ulcer algorithm. ABI, ankle brachial index; CT, computed tomography; MRI, magnetic resonance imaging.

Reflux at multiple valve sites is required for clinical symptoms. Reflux with no competent femoropopliteal valves represents a highly symptomatic, severe form.[5]

Several theories have been offered to explain the development of venous ulceration in chronic venous disease, but the cause is ill-defined. Alterations in skin blood flow and delivery of nutrients to the skin and subcutaneous tissues has been proposed.[6] The finding of pericapillary fibrin deposits around venous ulcers has been observed, but no studies have shown a deficiency in nutrient flow or oxygen diffusion to be associated with venous ulcers. Tissue hypoxia has been suggested as a cause,[7] but microcirculation studies have not proven this theory.[8]

Venous hypertension leads to extravasation of red blood cells and macromolecules into the tissues, which leads to leukocyte migration into the dermis. This process results in lipodermatosclerosis and ulceration.[9] Tissue damage in chronic venous insufficiency results from the perivascular inflammation caused by a variety of cytokine mechanisms[10] that weaken the usual dermal barrier against pathogens and allergens.[11] Lymphatic dysfunction, detected by means of nucleotide lymphangiography, is present in up to one-third of cases of chronic venous insufficiency and may resolve with correction of the venous abnormalities.[12]

PHYSICAL EXAMINATION

Physical findings in chronic venous stasis disease include hyperpigmentation or hypopigmentation, lipodermatosclerosis, weeping of the skin, and ulceration. Edema is often present but not necessary for the diagnosis. A venous leg ulcer is irregularly shaped and shallow but with well-defined borders. Location is usually from the malleolar area upwards to the knee (the "gaiter" area, so-called because this area is covered by leggings known as gaiters).[13] The ulcer bed is often exudative, and bacterial and fungal overgrowth on the wound and surrounding skin surface is common.

DIFFERENTIAL DIAGNOSIS

Generally, the history and physical examination are sufficient to make a clinical diagnosis and begin further evaluation. However, several conditions can result in chronic leg ulcers. The most common are rheumatoid ulcers, various vasculitis conditions, malignant ulcers,