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Recognition and Management of Venous Leg Ulcers

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A B S T R A C T

The management of venous leg ulcers can pose quite a challenge to patients and health care providers. This condition can significantly impact quality of life and impose a huge financial burden on the patient and health care system. This review article will discuss the importance of early recognition of high-risk patients, with evaluation and initiation of appropriate multimodality treatment, which must be done in a timely and efficient manner.

Background

According to the data published in 2016, chronic lower extremity wounds affect 1% to 2% of the population. Venous leg ulcers (VLUs) account for 60% of chronic lower extremity wounds, and 30% of VLUs will fail to heal despite best practices (Parker, Finlayson, & Edwards, 2016). Patients can develop chronic venous disease from primary venous valvular insufficiency or deep vein thrombosis (DVT). Risk factors for primary venous valvular insufficiency include obesity, pregnancy, smoking, family history, and occupations that involve prolonged standing. Primary venous valvular insufficiency is more prevalent in women, increases with age, and worsens with pregnancy (Neglen & Raju, 2009). Risk factors for DVT include recent surgery, trauma, cancer, immobility, hormonal therapy, and inherited thrombophilias.

Patients with chronic venous disease can present with an array of symptoms, including leg pain, throbbing, heaviness, cramping, itching, and burning. Venous symptoms often are alleviated with leg elevation, although patients with large ulcers may experience local pain irrespective of the limb's position. Common clinical signs include varicose veins, edema, and in advanced cases, skin changes ranging from discoloration or brown staining (hemosiderosis) to lipodermatosclerosis or atrophie blanche. The latter changes in skin integrity can signify a higher risk for VLU development. VLU typically presents on the medial lower leg above the medial malleolus but can also appear in other areas of the lower leg and ankle (Figure 1). The wound is usually shallow and irregular in shape, although there is significant variability. The wound bed often appears to be bright red and has moderate to heavy drainage (Sieggreen & Kline, 2004).

Best clinical practices

- When performing patient evaluation, a thorough patient history and physical examination should be obtained, focusing on the aforementioned risk factors, symptoms, and clinical signs.
- To assess whether peripheral arterial disease (PAD) may be present, consider risk factors such as smoking, hypertension, diabetes, hypercholesterolemia, and family history. An ankle-brachial index should be performed, and if abnormal, the patient should be referred to an interventional specialist and consider Duplex ultrasound testing.
- To assess whether chronic venous disease may be present, consider the risk factors in the aforementioned background section as well as the character of the patient's symptoms and physical findings. Refer to a specialist and consider if ultrasound imaging should be performed to evaluate for DVT or valvular reflux (reflux >0.5 s is abnormal) (Society for Vascular Ultrasound, 2010).
- Use the Clinical presentation, Etiologic factors, Anatomic location, Pathologic process classification system (Table 1) to descriptively classify chronic venous disease (Eklof et al., 2004) as well as venous clinical severity scoring to guide the pretreatment and post-treatment assessments (Vasquez et al., 2010).
- For VLUs, compression therapy should be initiated as soon as possible (O'Donnell et al., 2014; O'Meara, Cullum, Nelson, & Dumville, 2012). In general, multilayer inelastic compression systems are preferred, but other forms of compression

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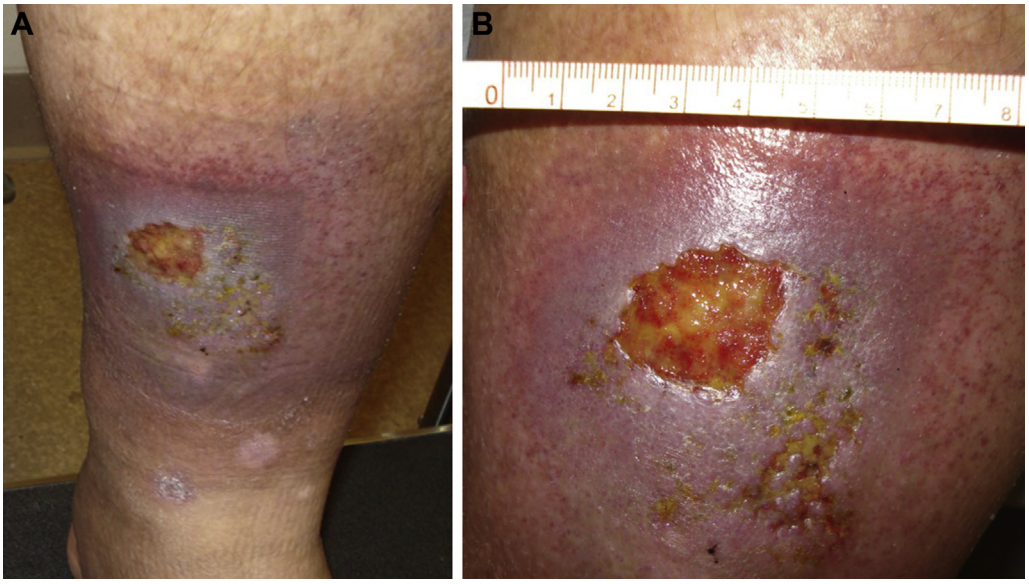

Figure 1. (A and B) Digital photographs of a patient with severe left lower extremity post-thrombotic syndrome and a venous leg ulcer that had not healed for more than 9 months. Observe the typical medial lower calf location and the surrounding skin changes including erythema.

(e.g., high-strength elastic compression stockings) may also be used. Do not use compression if the patient has severe PAD (Keaney et al., 2013).

- Initiate referral to specialized wound/ulcer care clinic—care is likely to include cleansing of the wound, control of wound exudate with dressings, layered compression wraps, antibiotics if bacterial superinfection is suspected, and in some cases, debridement of necrotic tissue (O'Donnell et al., 2014).
- Lifestyle modification is an important intervention and should be encouraged. This includes leg elevation, ambulation, weight control, good nutrition, and smoking cessation (Vasquez et al., 2010).
- Consider use of pentoxifylline 400 mg orally three times daily for up to 6 months because it has been shown to increase VLU healing in randomized studies (Jull, Waers, & Arroll, 2002).
- Quality nursing can benefit the patient in many ways. The ability to recognize the signs of venous disease is important and will provide opportunities for patient education, including topics such as lifestyle modifications, wound care, medication teaching, and tips for achieving quality compression, which is important in VLU healing and prevention of recurrence. The nurse should also investigate who is coordinating the patient's care. Does the patient have a primary care physician, a vascular specialist, or a wound care specialist? Discuss the importance of specialized care and make the appropriate referrals as needed.

Endovascular interventions

Endovascular Treatment of Venous Obstruction

Once referred to a specialty clinic and after undergoing an appropriate evaluation, appropriately selected patients have been shown to benefit from surgical and endovascular interventions. *Chronic iliac vein obstruction* is frequently found in patients with a history of DVT and can result in severely elevated ambulatory venous pressures—this form of chronic venous disease is known as post-thrombotic syndrome (PTS) (Kahn et al., 2014). Iliac vein obstruction should be suspected when the venous symptoms (e.g., pain, swelling) involve the thigh, when there is a history of or

Table 1
Clinical-etiologic-anatomic-pathophysiologic (CEAP) classification system

C: Clinical classification	E: Etiologic classification	A: Anatomic classification	P: Pathophysiologic classification
C0: no visible or palpable signs of venous disease	Ec: congenital	As: superficial veins	Pr: reflux
C1: telangiectasies or reticular veins	Ep: primary	Ap: perforator veins	Po: obstruction
C2: varicose veins	Es: secondary (post-thrombotic)	Ad: deep veins	Pr,o: reflux and obstruction
C3: edema	En: no venous cause identified	An: no venous location identified	Pn: no venous pathophysiology identifiable
C4a: pigmentation or eczema			
C4b: lipodermatosclerosis or atrophie blanche			
C5: healed venous ulcer			
C6: active venous ulcer			
S: symptomatic including ache, pain, tightness, skin irritation, heaviness, and muscle cramps, and other complaints attributable to venous dysfunction			
A: asymptomatic			