Venous Leg Ulcers

Appearance
Venous ulcers are usually large, shallow, painless and situated around the medial or lateral malleoli. They are associated with other signs of venous hypertension such as varicose veins, varicose eczema, haemosiderin pigmentation, atrophie blanche and venous flare. Oedema of the lower leg may be present and chronic venous stasis can lead to warty hyperplasia of the skin or thickening of the subcutaneous tissues.

Venous ulcers are caused by incompetent valves in the veins of the lower leg, especially in the perforators. These incompetent valves cause blood to be squeezed out into the superficial veins, when the calf muscles are contracted, instead of upwards towards the heart. Dilation of superficial veins occurs (varicosities) and the subsequent raised venous pressure results in oedema, venous eczema and ulceration. Valves may also become damaged following the venous hypertension that occurs in pregnant women and there may be congenital absence of valves.

Epidemiology
The prevalence in the UK is 1-3 per 1,000. It increases with age and reaches 20 per 1,000 in the 80-plus age group. There is no socio-economic predilection but ulcers take longer to heal in lower socio-economic groups. This may be due to difficulties in accessing evidence-based management, such as Doppler assessment and compression therapy.

Diagnosis
The diagnosis is usually made clinically. A leg ulcer is defined as the loss of skin below the knee on the leg or foot, which takes more than two weeks to heal.

History
The following history may suggest venous ulceration:

- Pre-existing varicose veins.
- Deep vein thrombosis.
- Phlebitis.
- Previous fracture, trauma or surgery.
- Family history of venous disease.
- Symptoms of venous insufficiency - for example, pains or heaviness in the legs, aching, itching, swelling, breakdown of the skin surface, pigmentation, eczema.

Features in the history which suggest a non-venous cause include:

- Family history of non-venous ulcers.
- History of heart disease, stroke, transient ischaemic attack.
- Diabetes mellitus.
- Peripheral arterial disease or intermittent claudication.
- Cigarette smoking.
- Rheumatoid arthritis.

Examination
80% of all leg ulcers are venous ulcers and a large shallow relatively painless ulcer with an irregular granulating base in the ‘gaiter’ region of the leg (between the knee and ankle) is likely to be venous in origin. There may be surrounding stasis dermatitis.
When to refer

Better results can be expected if the patient is mobile, able to walk and has no significant comorbidities.

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Prognosis

Better results can be expected if the patient is mobile, able to walk and has no significant comorbidities.
Referral is indicated in the following situations:

- After failure to respond to two weeks of primary care treatment.
- Diabetes mellitus.
- Peripheral arterial disease (ABPI <0.8).
- Rheumatoid ulcer.
- Suspicion of malignancy.
- Atypical distribution of ulcers.
- Dermatitis resistant to topical steroids.
- Patients who may benefit from venous surgery or skin grafting.
- Failure to progress (especially in patients with significant comorbidity).

Intermittent pneumatic compression\[13\]
A Cochrane review found that this improved re-ulceration rate but found no evidence to support the selection of any particular type, length or brand.

Hyperbaric oxygen therapy
This is being increasingly used but further research is needed to confirm its benefits.\[14\]

Clinical Editor Notes (July 2017)
Dr Hayley Willacy draws your attention to a recent review of topical haemoglobin spray - Granulox\[15\]. RCT and observational study evidence has been presented to support the use of this spray, with further supporting evidence provided from case series data. Within both RCTs, the primary endpoint was met and no treatment related adverse events were reported. However, limitations surrounding the studies should be acknowledged, particularly potential methodological weaknesses in the observational studies. The economic evaluation presented provides evidence that Granulox® is likely to be effective and produce resource savings.

Venous surgery
This is indicated in the following situations:\[16\]

- The patient is fit for surgery (local anaesthesia if necessary).
- There is sufficient mobility to activate a calf muscle pump.
- The patient is prepared to attend hospital for investigation and surgery.
- Obesity is controlled (body mass index <30).
- Superficial venous incompetence: no deep venous incompetence on duplex imaging, or predominantly superficial venous incompetence on ambulatory venous pressures with tourniquet occlusion of the superficial veins.

Skin grafting
Pinched skin grafting may be indicated in patients with extensive areas of ulceration. This has been done successfully by nurses in the community who have been trained in the technique.\[16\] However, a Cochrane review has found that further evidence is required to support the use of skin grafting apart from bilayer artificial skin which was supported by evidence. Trials showed that bilayer skin grafts were effective when combined with compression bandaging.\[17\] For complicated ulcers, artificial dermis combined with a thin skin graft has shown promising results.\[18\] A minced skin graft has also been developed which is faster than the pinched skin method and may produce better cosmetic results.\[19\]

Prevention\[3\]

Primary prevention of venous insufficiency
Avoidance of prolonged standing or sitting, control of risk factors (eg, obesity) and use of compression hosiery when there are early signs of venous insufficiency (eg, stasis dermatitis) can all help to prevent the development of ulcers.

Secondary prevention of a recurrent ulcer

- Correctly fitted compression hosiery should be worn for five years after an ulcer.
- Underlying comorbidities - eg, diabetes, rheumatoid arthritis - should be managed appropriately.
- Vascular surgery should be considered if the patient fits the criteria (see above).

Further reading & references

- Venous Ulcer Guideline; Association for the Advancement of Wound Care (AAWC) (2010)
1. **Leg ulcer - venous; NICE CKS, February 2016 (UK access only)**
3. **Management of chronic venous leg ulcers; Scottish Intercollegiate Guidelines Network - SIGN (August 2010)**
15. Granulox® haemoglobin spray - Innovative Medical Technology Overview: Number 006/2016; Healthcare Improvement Scotland

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