Wounds on the lower leg are often caused by problems with veins or arteries, or a combination of both. The further away from the heart, the longer wounds may take to heal, particularly in people over 50 years of age.

Around one per cent of the Australian population suffers from leg ulcers (chronic venous leg ulceration). The most common cause is poor blood circulation, particularly the inability of the veins to return deoxygenated blood from the legs back to the heart.

Other causes or risk factors include prolonged pressure on an area (such as long-term lying in bed in one position, which may cause bed sores), badly managed diabetes, high cholesterol, smoking, dietary problems and poor arterial circulation.

Older people are at greater risk, and the number of women with leg ulcers is slightly higher than men because women have a longer lifespan. Treatment options include compression bandages, medication, surgery and (more recently) hyperbaric oxygen therapy.

Leg ulcers, the calf muscle and poor circulation

Generally, veins carry deoxygenated blood from the body to the heart, then on to the lungs. Veins have one-way valves to prevent blood from running backwards. The contraction of muscles helps to massage blood along the veins.

The calf acts as a pump, using muscular contraction in combination with deep veins and chambers to help push the blood back up through the veins. This pumping action can be affected by a variety of problems, including blockages in the deep veins, venous insufficiency or venous disease.

It is not known how poor vein circulation triggers a leg ulcer. One theory proposes that white blood cells from the immune system are trapped inside the tiny capillaries, where they then attack and destroy the nearby skin tissue. High numbers of white blood cells and their by-products have been found in the pus of leg ulcers.

Symptoms of leg ulcers

Symptoms of a leg ulcer include:

- that they are commonly found on the lower leg and ankle
- a sunken, asymmetrically shaped wound
- the edges of the ulcer are clearly defined from the surrounding skin
- the surrounding skin is intact, but inflamed
the surrounding skin may be pigmented, hardened or calloused
yellowish-white exudate (pus)
pain, particularly while standing
varicose veins in the leg.

Risk factors for leg ulcers

A number of different factors can increase a person’s risk of chronic venous leg ulceration, including:

- Age – peripheral circulation becomes less efficient with old age.
- Varicose veins – the one-way valves that stop blood from travelling backwards in the vein stop working. The pooling of blood stretches and distorts the vein.
- Cigarette smoking – tobacco is known to constrict the vessels of the circulatory system.
- Arterial disease – vein problems are more likely if the person already has other diseases of the arteries.
- Certain disorders – these include diabetes and arthritis.
- Pressure sores – bed-bound people are at risk of pressure sores, which are areas of damage to the skin caused by constant pressure or friction.
- Medication – some cardiovascular medications can contribute to leg oedema (swelling due to a build-up of fluid) and altered circulation.

Diagnosis of leg ulcers

The doctor or specialist will take your complete medical and surgical history. They may also:

- examine the wound
- perform some tests to measure the blood flow in your lower leg, such as the ankle-brachial index. This test compares blood pressure readings taken at the ankle and at the arm using a device called a Doppler machine
- recommend an angiogram (special x-ray examination of the arteries) for an arterial ulcer, to find out if the artery needs surgery to clear the blockage.

Treatment for leg ulcers

Medical treatment aims to improve blood flow to the area and promote healing of the ulcer. The type of treatment depends on whether the wound is caused by problems with veins or with arteries.

Treatment for arterial ulcers is often urgent. Compression bandages must not be used, as this will reduce the blood supply even further. Surgery may be needed to clear out the blocked artery (angioplasty). In some cases, the section of blocked artery may require surgical replacement (by-pass surgery). In severe cases, the lower leg may have to be amputated.

Treatment for chronic venous leg ulceration includes:

- cleaning the wound – using wet and dry dressings and ointments, or surgery to remove the dead tissue
- specialised dressings – a whole range of products are available to help the various stages of wound healing. Dressings are changed less often these days, because frequent dressing changes remove healthy cells as well
- occlusive (air- and water-tight) dressings – ulcers heal better when they are covered. These dressings should be changed weekly
- compression treatment – boosts internal pressure, using either elasticised bandages or stockings. This is particularly effective if multiple layers are used
- medication – includes pain-relieving medication and oral antibiotics if infection is present
- supplements – there is evidence that leg ulcers may heal faster with mineral and vitamin supplements, but only if the person suffers from a deficiency. Zinc, iron and vitamin C may be used
- skin graft – is a surgical procedure, where healthy skin is grafted onto the prepared wound site
• skin cancer and infection – if ulcers fail to heal or if they increase in size, both these conditions will need to be ruled out
• hyperbaric oxygen – this is now an accepted treatment for ulcers that resist other methods of healing, such as diabetic ulcers.

Long-term outlook after a leg ulcer

Unless the underlying conditions that contributed to your leg ulcer are addressed and treated, you are at risk of developing other ulcers. Options can include treatment for varicose veins, quitting cigarettes, improving your diet and taking regular exercise (such as 30 minutes of walking every day).

You should avoid hot baths and sitting still for too long. It can help to keep the affected leg elevated above the level of your heart whenever practical.

Diabetics must aim for optimum control of their blood sugar and take particular care of their feet.

Where to get help
• Your doctor
• Hospital staff

Things to remember
• Leg ulcers affect around one per cent of the Australian population.
• The most common cause is poor circulation.
• The type of medical treatment depends on whether the wound is caused by problems with veins or with arteries.
• Medical treatment aims to improve blood flow to the area and promote healing of the ulcer.
• Treatment options include compression bandages, dressings and surgery.

This page has been produced in consultation with and approved by:
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