Treating and healing a leg ulcer in a diabetic patient in Wyke Regis Leg Club

Venous leg ulcers occur when there is a problem with the function of the venous system (venous insufficiency). If not treated appropriately with compression, then fluid will leak from the veins into the skin tissue, where the static blood backs up and causes a condition known as hypostasis (the pooling of blood in the dependent parts of an organ or body). The ulcer will then become chronic, and the wound can persist for months and even years.

The arteries carry blood to the tissues from the heart under relatively high pressures, whereas the veins carry deoxygenated blood back to the heart and rely on low blood pressure within the veins and not on force from the heart.

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Figure 1. Arterial leg ulcer with the tendon exposed

Demelza Spencer-Veale, John Timmons, Sylvie Hampton

Demelza Spencer-Veale, Lead Nurse, Wyke Regis Leg Club

John Timmons, International Medical Director, Molnlycke Health Care, Registered Nurse; former Tissue Viability Nurse

Sylvie Hampton, Independent Tissue Viability Consultant Nurse; Director of Wound Care Consultants Ltd.

sylviehamptom@outlook.com

Depending on which of these two systems is affected, the resultant wound types will differ. Arterial wounds are often 'stamped' out like an apple corer with or without tendon exposure, and they can occur anywhere on the leg (*Figure 1*). In contrast, venous wounds tend to be shallow and situated over the gaiter area (*Figure 2*).

The way that blood successfully returns to the heart despite the low pressure in the veins is via the contraction and expansion of the calf muscles in order to propel the blood through the one-way valves in the veins on its way back to the heart and through intrathoracic pressure. Intrathoracic pressure relies on the expansion and collapse of the chest wall. During inspiration, venous return increases as the pressure in the thoracic cavity becomes more negative. This reduced intrathoracic pressure draws more blood into the right atrium. During expiration, the pressure increases in the thoracic cavity and the pull stops.

The importance of muscular contraction during exercise and the intrathoracic pressure built up during breathing explains why it is so important to exercise. Therefore, employment that involves standing still (such as hairdressing and butchering) will increase the risk of venous stasis.

Figure 2. Venous leg ulcer

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Individuals with roles that involve standing with little movement should use compression in order to prevent stasis. However, these individuals rarely use compression, either because they do not know they need this intervention or because they do not like compression or have never been advised to use it.

The case

Mr Barnes (name has been changed) had a leg ulcer on his right leg that persisted for 6 months. He had been a butcher all of his life and had worked till he was 72 years old (he is now 76 years old). He also has type II diabetes, which is tablet controlled, and cares for his partner, who recently suffered a stroke at the age of 79 years. Wound healing has been delayed in this case due to the stress Mr Barnes is under and his comorbidity.

Mr Barnes was previously advised to attend the Wyke Regis Leg Club for treatment of a left leg ulcer 1 year previously, where the nurses undertook Doppler assessment to establish that the cause was venous and not arterial insufficiency. The assessment showed that the leg ulcer was venous in origin and that compression therapy could be safely applied, and the Leg Club nurses had successfully healed that ulcer. Unfortunately, Mr Barnes developed another ulcer on the left leg following a knock.

Patients will often say the ulcer was caused by a knock, which it often is, but it is also because of the body's proclivity to develop these (usually poor venous return and/or diabetes). Although the knock causes the wound, without the venous stasis, the wound would heal in a timely fashion.

Mr Barnes was absolutely delighted to be re-referred to the Wyke Regis Leg Club as he had seen such good success with his first leg ulcer. He said it was:

'A really brilliant idea and much preferred this to attending a clinic. It is easy to get to and there are nurses with a speciality in leg ulcer and this gives more options for treatment.'

Mr Barnes attends the Leg Club twice weekly, and the ulcer is slowly healing with the use of professionally applied compression therapy.

There is a clear correlation between blood glucose and wound healing, with poor glycaemic control being significantly associated with worse outcomes (Endara et al, 2013). This is because high blood sugar prevents nutrients and oxygen from energising cells, thereby affecting the immune system's ability to defend the body and increasing inflammation in the cells. A high level of glucose can also lead to fungal and bacterial infections. Therefore, Mr Barnes' wound will be slower to heal than a wound where there are normal blood glucose levels.

Another confounding factor in this case is that Mr Barnes' partner had recently had a stroke, and he was caring for her, which naturally led to a fair amount of stress. Psychological stress can have a substantial and clinically relevant impact on wound repair, and stress responses can directly influence wound healing processes (Gouin et al, 2011). It has been identified that patients who experienced the highest levels of depression and anxiety (based on a median split of the Hospital Anxiety and Depression Scale) were four times more likely to be categorised in the delayed healing group than those who had low anxiety scores (Cole-King and Harding, 2001).

Wyke Regis Leg Club

Wyke Regis Leg Club is organised and run by a team of nurses, healthcare assistants and volunteers and is held in Wyke Regis Community Centre. It is run as a club, where members primarily attend to meet and socialise and to have their legs assessed and treated if required. It has been successfully run for some period of time, and Mr Barnes feels he is very lucky to be one of its club members. **CWC**

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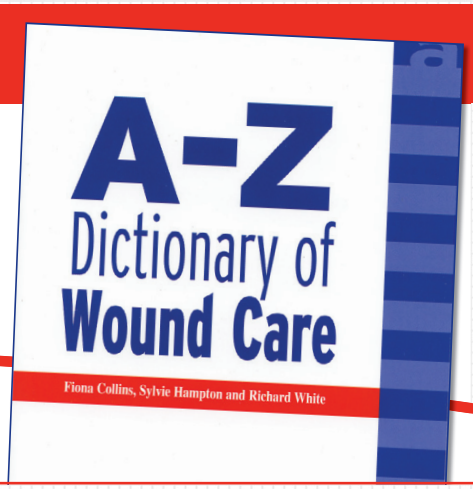

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