CASE STUDY

A new cohesive short-stretch bandage and its application

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Venous leg ulcers (Figure 1) can be a disabling condition, affecting lifestyle, producing pain and forcing social isolation as malodour and exudate may cause embarrassment to the patient. Quality of life and effective healing are prime concerns when reviewing treatment options. However, cost is an issue when deciding venous ulcer management, particularly if techniques are adopted of proven efficacy offering improved outcome and considerable cost savings (Thompson, 1993).

It has been suggested that each unhealed ulcer can cost the NHS approximately £1200 per year to treat (Callum et al, 1985). There are between 1.5 and 3.0 per 1000 patients currently suffering from venous leg ulceration (Callum et al, 1985). Three to four times this number with healed ulcers are at risk of recurrence (Callum et al, 1985).

Active and effective clinical management is a priority if the number of recurrent leg ulcers are to be reduced. However, this objective relies on patient compliance. Non-compliance can lead to delayed healing, with an associated increase in treatment cost. It is possible that patients are more likely to accept treatment for compression if they are involved in the decision-making process. This would include decisions on bandage type, i.e. multilayered, long-stretch or short-stretch, as only the patient can genuinely understand the significance of a wound and the concomitant treatment (Price, 1996). The selected bandage should be both clinically and cost effective, while offering the patient a solution to the immediate body image problems that may well lead to non-compliance when the patient does not wish to be seen in bulky bandages, or when there is difficulty with fitting shoes over bandages.

AETIOLOGY OF LEG ULCERATION

Venous ulceration is the result of many factors and is identifiable through certain signs:

- Hydrostatic pressure, leading to ankle oedema — a result of inefficient venous valves within the deep veins, allowing blood backflow into the superficial veins
- White cell trapping theory (Coleridge-Smith et al, 1988) — a result of venous hypertension which may aggravate the trophic changes, shown by hard scaly skin, seen in patients with leg ulceration
- Lipodermatosclerosis (Burnand et al, 1982) — a brown staining associated with a woody appearance of the tissues and firm unyielding skin due to the leakage of red blood cells and fibrin through veins dilated by hypertension. The red blood cells stain the tissues brown and it is thought that fibrin forms a cuff around the capillaries, preventing the passage of nutrients and oxygen. The skin becomes firm and the leg is often misshapen (upside down milk bottle shape).

Abstract

The undisputed optimum treatment for venous leg ulcers is compression therapy, where an external appliance (multilayer, short-stretch bandaging and compression hosiery) promotes venous return through graduated compression of the tissues and capillaries. However, this is not always acceptable to the patient, particularly when the patient’s social life is affected with malodour and pain associated with venous leg ulcers, thereby reducing quality of life. There is a psychosocial consideration when the bandaging system is bulky, hot and difficulty is found with the fitting of shoes. An alternative and clinically effective solution is essential if the wound is to heal. In this case study, the patient was provided with a cohesive and short-stretch compression bandage (Actico), which allowed her to continue her social life while effectively treating her ulcer.

Figure 1. Venous leg ulceration.
These conditions may not be completely cured through the use of compression therapy, but they will often be reduced and may even disappear during treatment. This provides a strong argument for continuing compression therapy after healing.

A German study (Klyscz et al, 1997) reviewed the effect that compression therapy had on the skin microcirculation in patients with chronic venous insufficiency. They found little difference in comparisons of microcirculation in both treatments but an overall improvement was shown in the function of skin microcirculation with compression therapy.

**COMPRESSION THERAPY FOR VENOUS ULCERS**

A literature review concluded that 40%–80% of venous leg ulcers appear to heal in 12 weeks when compression therapy is applied (Nelson, 1996a). However, choice of a suitable compression bandage is affected by three factors:

- The level of knowledge of staff responsible for bandaging,
- The physiосosocial needs of the patient
- The range of products that are available to practitioners.

Given that most compression therapy bandages are now available on the Drug Tariff, availability is no longer an issue. Insufficient knowledge of bandaging techniques could be a problem. If the nurse is not updated on the different types of bandages available and of the different techniques of application, choice of a suitable bandage may be limited, with a resultant reduction in patient compliance.

Moffatt (1992) stated:

‘Nurses have the responsibility to provide the most effective research-based care for their patients. Therefore they must be given the resources and training to achieve this. They must look at the research available on compression critically and ensure the system they use is safe and well validated by research.’

However, community nurses are often working alone, without the opportunity to share knowledge with their peers (Jones, 1997), and this could increase the potential for developing idiosyncratic practices which are not informed by relevant research evidence (Luker and Kenrick, 1992).

It is vital that good practice is supported with continuous education. If this is not achieved, unsuitable bandaging techniques could be used, or compression may be applied to problematic wounds such as arterial ulcers (Figure 2), with a resultant reduction in peripheral blood flow.

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ability to sustain a specific amount of tension over a period of time (Nelson, 1996b). The practitioner needs to be aware of how tightly the bandage should be applied, as difficulties with circulation can arise if the bandage is too tight around the leg. Only education and practice can teach the practitioner which tension is too tight.

Short-stretch bandaging is probably the easiest method which practitioners are taught (Melhuish et al, 1997). It is a simple routine, offering a solution to patients who find multilayer bandaging bulky and hot. Nelson (1996b) found no evidence distinguishing short-stretch bandages from the four-layer system in terms of efficacy. Scriven et al (1998) came to a similar conclusion when they examined the safety and efficacy of four-layered bandages compared with short-stretch bandages.

One factor against short-stretch bandages is that they can slip, particularly within the first 24-hour period when oedema is often reduced (Hampton, 1997). A new cohesive short-stretch bandage, Actico (Figure 3) removes the potential of slippage and resolves the problem; although, like multilayer bandages, there is the possibility it will be looser during the first application following the reduction of oedema. This is resolved on the second application.

**SHORT-STRETCH BANDAGE APPLICATION**

Short-stretch bandages are applied at full stretch, creating a firm ‘tube-like’ structure around the calf. When the calf muscle contracts, it rebounds against the walls of the firm tube and this pressure causes the blood in the deep veins to progress towards the heart. The firmness of the tube discourages the backflow of blood that causes hypertension, thereby reducing ankle oedema.

**COHESIVE SHORT-STRETCH BANDAGE IN PRACTICE: CASE STUDY**

Mrs X is 68 years old, well presented, smartly dressed and elegant, living alone in a large house in a prestigious part of South London, where she enjoys a very hectic social calendar. Although Mrs X has suffered intermittent leg ulceration over a 14-year period, she has a history of non-compliance with compression bandaging. Her social life appeared to take priority over bulky bandages, regardless of their clinical effectiveness.

Mrs X had been suffering a non-healing leg ulcer continually for the previous 4 months when her GP referred her to a specialist vascular wound care unit. The wound care unit performed a full and comprehensive assessment, including nutritional and medical status. Doppler assessment revealed an ankle brachial pressure index (ABPI) of 0.94 with an ankle circumference of 22 cm on the right leg. Diagnosis of venous ulceration was confirmed.

The wound was sloughy with low exudate level and no detectable odour. Its circumference was 4 cm x 2.5 cm with 0.4 cm depth. The surrounding skin was red and angry in appearance, but swab results did not reveal clinical infection. Mrs X reported that pain from the ulcer site was severe at times and occurred both during the day and at night.

**TREATMENT**

Treatment was discussed with Mrs X, and the advantages of compression therapy were clearly explained. The consequences of non-compliance were also discussed and Mrs X agreed to compression therapy. A four-layer bandage of orthopaedic wool, crepe, a long-stretch bandage and a cohesive bandage were applied to maintain a graduated pressure of 40 mmol at the ankle to 17 mmol at the knee according to the manufacturer’s recommendation. An appointment was made for one week later for remeasurement of ankle circumference and for change of dressing and bandages.

Mrs X returned 4 days later due to a problem with the bandage. A social outing at the weekend had led to the removal of the four-layer bandage to accommodate new shoes. In the view of this problem, the nurse and patient discussed the potential of an alternative, less bulky, compression bandage.

Both Mrs X and the nurse agreed that Actico short-stretch compression cohesive bandage would be a more appropriate system. It would be applied over a single layer of orthopaedic wool, thus reducing the bandaging to two layers instead of the four originally used. The bandage was applied and an appointment was made for 4 days later to assess whether the bandage was suitable and to assess the healing process.

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It was interesting and satisfying that Mrs X arrived at the appointment with the Actico bandage still in place and that she appeared to be happy with the bandage regime.

Visits to the wound care unit were then altered to weekly appointments and at each following assessment the wound showed improvement. Pain and periwound redness disappeared within the first week. By the seventh week, the ulcer had healed and Mrs X was delighted.

The Actico bandage therapy was continued for a further 3 weeks in order to allow the new skin to strengthen. Following healing under compression bandaging, it was vital to prevent recurrence of the wound. It was also important to the patient that her social life could be maintained. Treatment was changed to compression hosiery and Mrs X became responsible for monitoring the condition of the skin on her legs. The wound care unit will continue to review Mrs X on a 6-monthly basis to ensure that there is no recurrence.

CONCLUSION

Mrs X wished her ulcer to heal, but her immediate psychosocial needs sometimes overrode the long-term desire for healing. It was evident that compression was required to heal the wound and that the selected compression bandage should be clinically effective while supporting quality of life for Mrs X.

Actico cohesive short-stretch bandage was shown to be the optimum choice of treatment as the wound healed within 7 weeks (under the national average, i.e. 12 weeks, for healing with compression; Nelson, 1996a).

The bandage remained in place without slippage and the treatment allowed patient compliance. The cohesiveness offered security with lack of bulk, leading to patient compliance and reducing the need to rebandage at regular periods. Actico cohesive bandage was also a cost-effective option as only one or two layers were required instead of four.

This case also highlights the importance of skills in bandaging techniques. Without the knowledge and skills of the nurses at the wound care unit, the potential of Actico short-stretch compression bandage may have been overlooked and Mrs X could still be nursing a leg ulcer, with its associated pain and distress.


