

The difficulty and the solution of compression therapy in a healed venous leg ulcer

Abstract

Continuing preventative treatment once a venous ulcer is healed is fraught with dangers, with the most common problem being the inability of the wearer or their carer to apply compression therapy. A new novel compression modality has been introduced to solve the dilemma of applying compression

once an injury has healed. This compression is also time-saving for practitioners who wish to heal leg ulcers. This will have an impact on the time restrictions of practice and district nurses—who have a 10 minute to 15 minute slot to dress and bandage their patients' venous ulcers.

■ dexterity ■ pathophysiology ■ compression wrap ■ time-saving

Chronic venous insufficiency affects up to 50% of the adult population, and it is estimated that 1% of these individuals will suffer from venous leg ulceration during their lifetime (Coleridge-Smith, 2006). Venous ulceration can be extremely distressing for an individual and can represent a significant financial burden for the NHS. In the UK, venous leg ulcers cost £168–198 million per year (Posnett and Franks, 2007). Leg ulcers are debilitating and greatly reduce patients' quality of life; furthermore, clinical infection can lead to death (Collier, 2004). In the course of a lifetime, almost 10% of the population will develop a chronic wound, with a wound-related mortality rate of 2.5% (Chatterjee, 2012).

An ideal management plan for patients with chronic leg ulcers should involve an early strategic and coordinated approach to delivering the correct treatment option for each individual patient, based on accurate assessment of the underlying pathophysiology (Ghuri and Nyamekye, 2010)—with compression being one of the mainstays in the management of patients with venous disease, chronic oedema and lymphoedema (, 2014).

There are many bandage systems on the market, and a full range of hosiery for those patients who are either healed or wish to self-care. Most venous ulcers will heal in 3–4 months using these systems, with a small proportion taking considerably longer and some taking considerably less time to full closure. Although the skin is then intact, the underlying problem with the veins remains and precautions must be taken in order to prevent the ulcer from quickly recurring. This means that compression must be continued for life, and, apart from Leg Clubs and similar Healthy Legs Clinics—of which there are few—means the patient must apply the compression themselves. Arthritic hands and

weakness associated with age means that the patient may not be dextrous enough to apply compression hosiery.

The application of compression is known to assist in the healing of venous leg ulceration and, on average, people receiving hosiery are less likely to experience ulcer recurrence with hosiery being shown to be cost-effective (Ashby et al, 2014). However, the inability to apply compression hosiery and the inability to obtain assistance in applying them, will certainly lead to recurrence. The 12-month recurrence rates vary between 26% and 69% (Nelson et al, 2000). This has a cost to the patient, including:

- Further suffering
- A loss of confidence in the professionals providing care
- A very large cost implication for the NHS.

So much effort appears to go toward healing ulcers—and rightly so—but there absolutely should be increased efforts in developing new methods of prevention.

Also, we are aware that compression therapy is often not used to its full potential in practice, because of a lack of knowledge and confidence in relation to assessing patients using Doppler ankle brachial pressure index (ABPI) measurement and applying compression bandaging (Royal College of Nursing (RCN), 2006).

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Figure 1. Mr P prior to the tendon injury. This patch had been there for 40 years



Figure 2. Aircast boot



Figure 3. Mr P's left foot post operation

A new novel compression modality in the form of an adjustable compression wrap (ReadyWrap) has been designed to assist with both bandaging leg ulcers, and for patients to be able to apply independently or, perhaps, with assistance from friends or relations. The system is simple to apply, even with arthritic hands, and carers can easily be taught to apply it. ReadyWrap provides an answer for professionals who know their patients require compression post-wound closure, but also know that they are not going to be able to apply it and find themselves powerless to help once the ulcer is healed. These patients are the 'boomerang' patients who will quickly bounce back into care with another wound.

A modified compression regimen is necessary when pain is present. This may be achieved by providing periods of relief until pain is controlled or removing the compression at night when the leg is elevated (Adeyi et al, 2009). Removal and re-application is easily achieved with the ReadyWrap system.

A small service evaluation was undertaken involving several wound healing centres. The evaluation included 10 clinicians' views of the ease of using this new system. They were asked to comment on ease of application and ease of adjustability. These were found to be either 'very easy' or 'easy' on both accounts.

One problem identified was the fit of shoes. The system can be bulky over the foot. However, this can be adjusted to suit, and it was identified in the evaluation that, very quickly, the foot reduced in size and the shoe would then fit. This could not always be so as, in the author's experience, ladies sometimes prefer a fashionable shoe, and as a result they are reluctant to change for a large better-fitting shoe.

Case study

Mr P is a 78-year-old gentleman who had a left leg venous ulcer 40 years ago, which healed but left hemosiderin and atrophe blanche patch (Figure 1). Mr P climbed a ladder in 2009 to mend guttering on his roof. Having stood on the ladder for some time, he suddenly found an intense pain in the left foot.

He suffered this pain for some years, finding it extremely difficult to walk. He saw podiatrist after podiatrist, wore the foam inserts he was given, but had little relief. He went to his GP, who again sent him to see podiatrists. Finally, in December 2014, he went to see a foot surgeon privately and had a tendon operation which lasted several hours and was the worst case the surgeon said he had ever had. He had to replace the tendons and fit screws in the foot.

After the operation he was non-weight bearing for 4 months and he adhered to the instructions of not walking for 4 months. His muscles became very weak in this time and this took him to April 2015.

When he did begin to mobilise he had to wear an Aircast Boot (Figure 2). He had just begun to mobilise when he suffered a cerebrovascular accident (CVA) in May 2015. This meant the little mobility he had was greatly reduced, for some months this was a real issue for him. His left foot was double its normal size and his right foot also began to swell (Figure 3).

He had a Doppler undertaken which recorded an ABPI of 1.1 in each leg. A normal ABPI would be 1, acceptable would



Figure 4. ReadyWrap in situ on day 1

be 0.8 to 1.3; therefore, Mr P's ABPI was normal and that meant he has no arterial impairment in his legs. Therefore, his wife began to apply class-2 hosiery. Mrs P had arthritic thumbs and found it extremely difficult applying the hosiery, but she struggled on for several months.

Mr P was then supplied with a ReadyWrap for valuation. This revolutionised both of their lives. Mrs P found it extremely easy to apply and Mr P was delighted as it did not have the appearance of a bulky bandage.

Prior to application his measurements were 27 cms over the ankle; 38.5 cms over the calf and 40 cms under the knee. The garment was then applied (Figure 4).

Mr P found the garment extremely comfortable and easy to wear and his wife found it very easy to apply. He had to wear larger shoes in the beginning, but the measurements dropped very quickly to an ankle measurement of 24.5 cms (reduced by 2.5 cms or 1 inches); a calf measurement of 37 cms (reduced by 1.5 cms) and a below-the-knee measurement of 39 cms (reduced by 1 cm). He found he

could now wear his normal shoes. He is now learning to walk again and managed to walk a mile with the aid of a walker and sitting on four occasions. He now always wears the ReadyWrap garment, although he cannot not apply it himself as his large stomach prohibits him bending down. His wife is finding it extremely easy to apply and to achieve the optimum compression—which is demonstrated by the dramatic loss of fluid in the leg. Mr P finds it extremely comfortable, and, if he does leave it off for any reason, his foot swells again, so he tends to wear it continuously.

Conclusion

This new garment is an interesting and novel compression therapy and may be an answer to the problem of application for some patients. Not all patients will be able to apply it and not all carers will be dextrous enough to help, but in a majority of patients, this garment would certainly solve their dilemma of applying compression.

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KEY POINTS

- Leg ulcers are extremely distressing for patients and 69% can recur
- Compression must be continued after wound closure to prevent recurrence
- Patients with poor dexterity are unable to pull on hosiery or bandage
- A new novel compression therapy is an answer to the problem of application