

Juxta CURES: An innovative method of providing compression for leg ulcer management

KEY WORDS

- ▶ Adjustable venous compression system
- ▶ Compression bandaging
- ▶ Leg ulcer

Many patients with leg ulcers require compression therapy to help heal the wound, but often, patients find their treatment challenging and difficult to tolerate. Since the 1990s, the mainstay of treatment in the UK has been compression bandaging of one sort or another, alternatively, ulcer kits comprising of compression hosiery are an added choice. This article describes three case studies in which a leg ulcer compression system called Juxta CURES™ (medi UK) has been successfully used to provide therapeutic compression on patients for whom compression bandages or hosiery were found to be unsuitable, not tolerated, or did not fit in with their lifestyle.

In the UK, it has been estimated that leg ulcers affect between 1% and 2% of the population (Graham et al, 2003). This equates to between 70 000 and 190 000 individuals with an open ulcer at any time (Posnett and Franks 2007).

The prevalence of leg ulceration increases with age and is higher among women. Often, these individuals suffer with pain, social isolation and restricted mobility not to mention altered body image and low self-esteem (Van Hecke et al, 2007)

Leg ulcers are caused by a number of conditions such as arterial disease, rheumatoid arthritis and diabetes, but venous disease is the most common cause (Bianchi et al, 2013). Research demonstrates that at least 80% of leg ulcers have a venous component (Nelson, 2011). Whether it is venous reflux or obstruction, both lead to poor venous return and venous hypertension, which cause venous insufficiency and, ultimately, ulceration (Simon et al, 2004). Simka and Majewski (2003) estimate the cost of chronic venous insufficiency in the UK to be between £400 million and £600 million and a study by Ragnarson Tennvall and Hjelmgren (2005) reported that the average cost of treating one venous leg ulcer varies between £894–£1 735 per annum.

It is by attempting to reverse increased hydrostatic pressure caused by venous insufficiency in leg veins, that compression therapy in various forms has been applied. Indeed, the benefits of using compression therapy for the management and prevention of recurrence of leg ulcers are well documented (Eagle, 2001).

Additionally, a systematic review of compression for venous leg ulcers found that multi-component bandages worked better than single-component systems and that multi-component systems (bandages or stockings) appear to perform better when one part is an elastic bandage (O'Meara et al, 2009). Indeed, more ulcers heal with compression than without, but we do not know which bandaging technique is most effective (Nelson, 2011).

Compression is usually achieved by the application of bandages, stockings or intermittent pneumatic compression (O'Meara et al, 2009; Nelson et al, 2011). There are a plethora of different bandages to choose from. These include short-stretch bandages and single-layer, long-stretch bandages and the original Charing Cross four-layer bandage regimen, as well as many more multilayer systems. Additionally, there are two-layer systems that use a combination of both long- and short-stretch bandages.

Choosing which system is best for each patient can be a daunting task, but usually depends upon the aetiology of the ulcer, limb size, and whether there is associated oedema. Patient choice is also an important factor. Many articles advocate that 35–40 mmHg is the optimum level of compression required to reverse venous hypertension, but documented evidence to uphold this theory is difficult to find (Moore, 2002; Thomas and Fram, 2003). Sometimes lower levels of compression are used when there is an arterial component to an

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ulcer or if the patient has diabetes, but this should only be administered under specialist advice with close monitoring (Scottish Intercollegiate Guidelines Network [SIGN], 2010).

In the UK, bandages used for compression are classified as providing the following compressions levels at the ankle when applied in a simple spiral: class 3a – light compression 14–17 mmHg; class 3b – moderate compression 18–24 mmHg; class 3c – high compression 25–35 mmHg; class 3d – extra high compression up to 60 mmHg. Class 1 is a retention bandage and class 2 is a support bandage (Finnie, 2002; British National Formulary, 2010; SIGN, 2010).

Each type of bandage system requires a different technique to apply and whether using long stretch, short stretch or a combination of both, ensuring compression is applied at the required level is challenging, even for the most experienced practitioner (Todd, 2011). As an alternative to bandages, there are various two-layer ulcer kits, consisting of two different forms of hosiery that, when worn on top of each other, are designed to apply 40 mmHg of compression at the ankle and aims to be equivalent to four-layer compression bandaging.

With all this choice available, it should be possible for the practitioner to select a suitable compression system that their patients find comfortable to wear but, in practice, patients often find compression difficult to tolerate. There is clear, documented evidence outlining the many reasons for this, such as not understanding the theory of compression, increased pain on application, previous poor experience of therapy, and social pressures, such as being unable to work (Hopkins and Worboys, 2005; Moffatt, 2007; Moffatt et al, 2009).



Figure 1. Juxta CURES (medi UK).

Clinicians should not rush to attach a non-concordant label to patients, but must strive to find the right solution for each one of them (Gray, 2013). Some individuals want to know the details of their treatment options and to be involved with their care with as little disruption to their day-to-day life as possible.

A number of patients want treatment options that meet their clinical, quality of life, and psychological needs (Dowsett, 2005). Patient concordance with treatment can improve through shared care, which helps build excellent working relationships between patients and clinicians. Finding a compression regimen that individuals can adopt without discomfort while being able to wear their usual footwear is important for many patients, and this can help them maintain mobility and improve concordance. This will be illustrated by three case studies that describe how the Juxta CURES™ compression system has been used in treating a variety of patients with leg ulceration who found bandages or stockings difficult or impossible to use.

JUXTA CURES: PRODUCT REVIEW

Juxta CURES (medi UK; available on Drug Tariff, Part1XA, Venous Ulcer Compression Systems) consists of a legging, anklet and liner, and a Built-In Pressure System™ (BPS™; medi UK) guide card (Figure 1). These components are used in conjunction with each other to form a bespoke system and provide a measurable level of compression. Following instruction, many patients are able apply the product for themselves.

Juxta CURES comes in three lengths: short (28 cm), standard (33 cm) and long (38 cm). Ankle circumference, in conjunction with the BPS guide card (medi UK) are used to measure the amount of compression applied. The BPS measures the amount of stretch in a compression garment wrapped around a limb of known circumference, the pressure applied to the limb can be predicted. The greater the tension that is applied to the garment, the further it stretches and greater compression is applied to the limb. When establishing which Juxta CURES length is required, one simple measurement is taken from the ankle to just below the popliteal fossa following the contour of the limb (Figure 2).

Case study 1

Mrs A is a 52-year-old woman who has experienced venous leg ulcers on and off for more than 10 years. Mrs A was so scared of losing her job as a school cleaner that she self-treated her ulcers for nearly 2 years before seeking help. When she was finally referred, she was diagnosed with a venous leg ulcer measuring approximately 8 cm × 5 cm. A Doppler assessment excluded arterial disease (ankle brachial pressure index [ABPI], 1.0) and, therefore, she was able to have 40 mmHg pressure applied. Following local protocol, four-layer compression bandages were used.

As a direct result of having treatment for her ulcers, Mrs A lost her job. Her employer was unable to keep her on as she was unable to wear what they considered “suitable, safe footwear” with her treatment regimen.

Mrs A continued to have her ulcer treated with compression bandages for a month and the ulcer was responding well. However, she started a new job and work commitments meant early starts most mornings, as well as long days. She was unable to attend clinics on a regular basis for dressing changes and the ulcer remained static. It was at this point that Juxta CURES compression system was considered for use because – with appropriate instruction and support – Mrs A could learn how to change her own dressings and reduce her treatment visits. The ulcer was dressed with Aquacel® foam (Convatec) non-adhesive dressing, which maintained the moderate exudate level well, minimising strike through and Cavalon™ No Sting Barrier Film (1 mL foam applicator; 3M) was used to protect the periulcer area.

Mrs A required the standard length Juxta CURES. She quickly understood how to use it and still attends clinic when she can. She is able to self-manage her dressings and compression therapy, while still being able to work. The ulcer was healing well and, at the time of writing, the wound had reduced to 2 cm × 2 cm and was almost ready for compression hosiery to help prevent recurrence.

Case study 2

Mr B is a young professional male aged 33 years. He is morbidly obese and developed a leg

ulcer which had been present for approximately 6 months at the time of presentation. On examination, venous disease and associated oedema were present. The ulcer was situated on his left medial calf and was not clinically infected. Mr B had a normal ABPI (1.02) and was deemed suitable for compression.

Bandages were applied, but due to having a large calf in proportion to his ankle, this proved challenging, despite four-layer and various two-layer systems. On return to the clinic the bandages had already been removed by the patient because he said they slipped down, were painful around his ankle and he did not want bandages on his leg. Clinicians spoke to Mr B in an attempt to understand his issues. He understood why compression therapy was necessary to heal his leg ulcer, but said having bandages on his leg was a problem. He is a civil servant and needs to wear a suit and dress shoes to work and compression bandages made this very uncomfortable. He explained it was embarrassing when bandages slipped down around his ankle. Mr B also did not like the odour he noticed from his leg, which he attributed to the bandages and he thought they needed to be changed frequently to reduce this.

The limb was too large for a leg ulcer hosiery kit. Therefore, Juxta CURES was used for providing therapeutic compression. By taking a measurement from the ankle to just below the popliteal fossa, following the contours of the leg as described earlier, it was established that this patient needed a size “long”. Initially, the ulcer measured approximately 12 cm × 10 cm and was superficial with a low exudate level. A simple non-adherent dressing was chosen, as well as Atrauman® (Hartmann) in keeping with the local wound dressing formulary was applied. Juxta CURES was able to accommodate the patient’s large limb circumference and he was shown how to adjust it to ensure a good therapeutic fit that stayed secure and did not slip down.

The patient’s leg ulcer responded well to compression and healed completely. He still continued to attend clinic and was measured and fitted with an off-the-shelf RAL standard class 2 below knee stocking which gives between 23 mmHg and 32 mmHg compression at the ankle and remains effective for 6 months (Anderson,

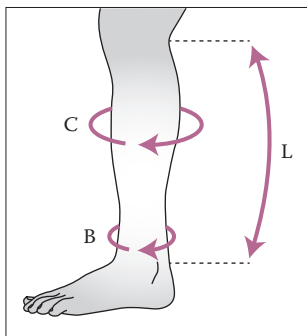


Figure 2. One simple measurement is taken from the ankle (B) to just below the popliteal fossa (C) following the limb’s contour (L).

2013). RAL is the German Institute for Quality Assurance and Certification (Gütezeichengemeinschaft Medizinische Kompressionsstrümpfe, 2014) and these stockings were selected because they are available in a wider size range that could accommodate this patient's large leg size. The ulcer has remained healed for 12 months and the patient has been provided with replacement maintenance stockings as required.

Case study 3

Mr C was an 82-year-old male who presented with bilateral, weeping, oedematous legs and feet and two ulcers in the malleoli and gaiter areas of his left leg. Mr C has type 2 diabetes, which is reasonably well controlled with medication. He has some mobility problems and uses a wheeled tripod to walk. His poor mobility is mainly associated with osteoarthritis and an ankle injury sustained many years ago, but pain from leg ulceration has compounded this issue. He also has peripheral vascular disease, mainly affecting the distal vessels and neuropathy in his feet, both of which are closely associated with diabetes.

His ABPI was reduced, at 0.64 in his left leg and 0.75 in his right, however, Mr C was considered suitable for reduced compression (Arthur and Lewis, 2000; RCN, 2006). Following arterial duplex, which demonstrated heavily calcified distal vessels and consultation with the Consultant Vascular Surgeon, the patient was considered unsuitable for surgical intervention, but as per RCN guidance, it was recommended that compression may be beneficial (RCN, 2006).

Mr C found even low-level compression painful, especially over his left ankle, which still had metalwork *in situ* from his previous injury, which was not suitable for removal. Compression was stopped. Even highly absorbent dressings became saturated within a day and needed changing frequently. Mr C helps care for his wife and does all the shopping but his ability to undertake these tasks was being compromised. Once again, Juxta CURES was considered. Aquacel was used to dress the ulcers and the patient was able to tolerate compression of 20mmHg. Compression at 20mmHg was applied by using the BPS guide card. This level of compression is the lowest accurate level attainable when using Juxta CURES in combination with the BPS guidecard.

The Juxta CURES needed adjusting frequently over the first 2 days to ensure a good fit as the oedema reduced rapidly. The ability to provide accurate,

measurable compression without any restriction to the range of movement in his ankle resulted in a treatment that Mr C could wear comfortably and having the compression anklet aided reduction of the foot oedema. At the time of writing, he still has ulcers on his left leg and the wetness and oedema have resolved. He did try to use compression hosiery on his right leg, but it began to weep again. Therefore, he continued to wear Juxta CURES on both legs to help maintain his skin integrity.

DISCUSSION

There will always be patients who find it difficult to adhere to compression, despite it being considered the best treatment option for their leg ulcers. Juxta CURES is an alternative to bandages and stockings. This case study review only examined complex cases; Juxta CURES was not used routinely as a first-line treatment option to provide compression therapy as current local protocol is to use compression bandages. Nurses and patients in the author's clinic report Juxta CURES to be quick and easy to apply, making it likely to reduce the amount of time clinicians spend on dressings and the number of clinic visits patients require. There is no reason why this device cannot be used for routine venous leg ulcer management.




Figure 3. Mr C's leg (a) with, and (b) without, Juxta CURES (medi UK) applied.

As outlined in the NHS Quality, Innovation and Productivity and Prevention (QIPP) agenda (DH 2010), careful use of costly resources is of paramount importance. Although this case study review did not take costs into account, there may be potential cost savings with the use of this product. Further research is needed to compare its use with bandages and hosiery kits.

As a direct result of this short study, the author found that Juxta CURES was specifically useful for those patients with large lower limbs and narrow ankles who struggle with bandage or hosiery slippage. Additionally, the ease of application of Juxta CURES makes it a beneficial system for patients who wish to self treat and be involved in their own care, as well as being helpful for those who are unable or unwilling to regularly attend clinic for dressing changes.

CONCLUSION

When compression therapy is considered an appropriate treatment for the management of leg ulcers, there are various systems for application available. Juxta CURES is one system by which compression can be applied. It will accommodate almost any leg size and shape, but more importantly, it provides and maintains therapeutic compression at the desired, measurable level. Patients find it comfortable to wear and it could help improve patient concordance with treatment. Compression bandages continue to be the mainstay of treatment, but with further research to compare its effectiveness against compression bandages and hosiery, a new innovative system, such as Juxta CURES, could potentially change how leg ulcers are routinely treated. 

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