Using an adjustable compression device to manage venous leg ulcers

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This article focuses on the work of a team of community nurses running a primary care drop-in centre. As well as a full range of clinic services, the team sees a lot of leg ulcer patients for compression bandaging. A common problem with traditional compression bandaging is the amount of time that community nurses have to spend on the procedure, as well as the dangers of maintaining pressure and bandage slippage between dressing appointments, which can result in discomfort for patients and even skin damage in some cases. This also has implications for patient concordance. This article looks at a review by the team of a new compression system (juxtacures®, medi UK), which offers measurable and adjustable compression and a greater involvement by patients in their own care, which in turn can minimise the time nurses need to spend on dressing changes.

KEYWORDS:
- Wounds
- Leg ulcers
- Skin damage
- Adjustable compression

The authors work in a busy treatment room service, which functions as a primary care drop-in clinic within the local health centre. The team serves the local community by carrying out a range of treatments, including taking bloods, dressing wounds such as burns, postoperative wounds and leg ulcers, as well as performing compression bandaging. The team also performs catheter changes (suprapubic and urethral), tracheostomy maintenance, suture removal and gastrostomy tube changes. Patients range from retirement age to children and, on average, the team sees 130 patients each day. The team sees a high number of patients with venous leg ulcers, particularly those with mixed aetiology.

BACKGROUND

The age range of the leg ulcer patients seen in the authors’ service varies between 40–87 years. Each patient receives compression bandaging two to three times per week, however, treatment is often made more complicated by the variety of comorbidities experienced by the patients, such as obesity and chronic vascular insufficiency.

CHANGE IN PRACTICE

Compression is the key to healing venous leg ulcers and ulcers of mixed aetiology (National Institute for Health and Clinical Excellence [NICE], 2006; Scottish Intercollegiate Guidelines Network [SIGN], 2010), however, traditional bandaging can slip and cause skin trauma through shearing, or where compression bandaging adheres to the primary dressing and the skin becomes too dry (Knight, 2008). When this happens, compression bandages are often either removed by the patient as they are too painful, or the patient is left in discomfort until a return visit to the treatment room.

After liaising with the vascular team, the authors decided to evaluate a change from traditional compression bandaging to an instantly adjustable Velcro compression device, which has built-in juxtaposed straps for ease of readjustment. This feature means that these adjustable devices can improve patient safety by allowing nurses, carers and patients to measure the amount of compression being delivered to the lower limb using the built-in pressure system (BPS). The authors felt that changing from traditional compression to this new technology would benefit their patients, but would also require a change in practice for the treatment room nurses (Department of Health [DH], 2010).

What is an adjustable inelastic Velcro compression device?

Juxtacures® (medi UK) is an instantly readjustable device for the healing of venous leg ulcers and is available in three lengths: short (28cm); standard (33cm); and long (38cm). It has a detachable ‘spine’ that enables the garment to be bespoke for each patient. Adjustable Velcro compression devices such as juxtacures have been proven to be more effective than inelastic bandages at reducing venous oedema and maintaining a precise and consistent measurable therapeutic level of compression (Mosti et al, 2015). Juxtacures also has the BPS, which helps to ensure specific compression levels by using a calibrated card (the BPS card or built-in pressure system), which allows the nurse, carer or wearer to readjust the system back to the optimum compression level if it becomes loose.

Moira Bradley, sister; Linda Nelis, staff nurse; Mary Reagen, staff nurse; Sue Collins, staff nurse; Rhona Paterson, staff nurse; Patricia Munro, staff nurse; Lorraine Cannon, staff nurse; Geraldine Rankin, sister, Scotland
We know what our pressures are – can you be certain you know yours?

juxtacures – awarded as “Most Innovative Product in Wound Care”

- Delivers safe, measureable compression
- Instantly adjustable
- Enables self care

Discover the medi Wound Care Therapy Chain within the medi World of Compression.
The team were keen to evaluate the device to see if it could improve patient outcomes and quality of life.

**STUDY**

**Aims**
The aims of the trial were to evaluate the clinical and cost-effectiveness of juxtacures when used to treat venous leg ulcers. The authors also wanted to examine the effect on nursing time of managing venous leg ulcers with juxtacures compared to traditional compression bandaging.

**Method**
All patients were informed of the products available, including compression stockings, compression bandages (two-, three- or four-layer) and the new juxtacures system. The patients were then offered the choice of being part of the evaluation and changing from traditional bandaging to juxtacures (Knight, 2008); if the team member felt that the juxtacures could reduce the patient’s lower limb oedema and swelling, the juxtacures was recommended.

Ten patients (four females and six males), all of whom had been in compression bandages for more than five months, agreed to evaluate the product over a 12-week period. Six of these patients had unilateral ulcers and four had bilateral ulcers. Three had mixed aetiology leg ulcers and seven had chronic venous leg ulcers. Two of the patients’ ulcers had been present for over three years.

The aim of the evaluation was to see if juxtacures could positively improve the patient experience of living with a leg ulcer. During the evaluation, patients were reviewed at the treatment room three times a week for the first two weeks. A procedure was put in place whereby the patient would contact the team if they had any issues with the system. After the initial two-week period, the patients were assessed weekly. In between treatment room appointments, patients were able to perform their own skin and wound care due to the simplicity of the Velcro device, for example showering and moisturising daily to improve their skin integrity.

The sizes of the patients’ wounds were measured at every visit, including depth where possible.

The patients were asked to tell the nurses if they felt the juxtacures were being applied too tightly; they were also advised to check the juxtacures several times a day to confirm that the compression was being applied at the correct level using the BPS.

**Results**
Between weeks one and three, the team noted a deterioration in nine out of ten patients’ wound size and depth and an increase in exudate levels; immediately following this, however, there was a dramatic improvement by approximately 1–2 mm in wound depth and circumference. It was felt on reflection, and as confidence in the system increased, that the initial findings were due to the change in practice where patients and carers were not used to readjusting bandages and forgot to readjust the juxtacures between clinic visits or during the day. Following on from this, patients were advised to check the compression levels 3–4 times a day to ensure they were wearing the correct level of compression prescribed for their condition. This ability to alter compression levels in response to changing circumstances is unique to the juxtacures system and improvements were noted immediately.

By weeks three and four there was a marked improvement in the patients’ wounds, with staff noting a reduction in exudate levels. The wounds had also become shallower and had reduced in size, with the
Therefore did not cause any skin trauma such as shearing. Although often superficial initially, skin shearing when using compression bandages can result in the development of further ulcers where the patient’s circulation is already compromised. The team did not notice any shearing with the juxtacures system, due to the readjustability of the device, which prevented slippage. Where there was occasional friction at the site of the juxtacures fastening mechanism (this occurred in three of the patients), the team added some wool under the juxtacures to protect the skin.

**Cost-effectiveness**

As well as a time factor, there was also a reduction in dressings costs during the evaluation as the patients’ wounds began to produce less exudate at week three (see Figure 1 for a breakdown of the expenditure involved in using traditional compression versus juxtacures). The juxtacures system is supplied with two product liners (so that one can be washed while the other is being worn) and two compression anklets for the foot. Initially, a primary waterproof dressing that can absorb exudate, such as a foam, is also required until the exudate reduces — then a simple non-adhesive dressing is all that is required.

While there is an initial one-off cost for juxtacures, each system is guaranteed to last for six months and is machine-washable, thereby demonstrating long-term cost savings over traditional bandaging, which has to be thrown away once used (Figures 1 and 2).

All of the patients who took part in the evaluation had been in compression bandages for more than five months; after 12 weeks of juxtacures all of the ulcers were healed or on the verge of healing. Using juxtacures resulted in a £4,000 saving (Figure 1) on primary dressing costs over the course of the evaluation period, alongside a saving of £8,400 on traditional bandaging (Figure 2).

**DISCUSSION**

Despite an initial deterioration in the wounds during the first two weeks of the evaluation, improvements in weeks three and four highlight that nurses and patients were getting used to dealing with the juxtacures system. The reduction in the hours it took the team to treat leg ulcers was significant, and, as well as being positively regarded by the patients (the patients were questioned at every visit on how they were finding the juxtacures system), freed up nurses to spend time with other patients (Figure 3).

Juxtacures built-in pressure system also optimised patient safety as the patients could regularly monitor their own compression levels and lessen or increase this accordingly. Using juxtacures also resulted in faster ulcer healing times because of the consistent compression delivered. This led to a significant reduction in costs — much more than we had considered before the evaluation.

**Patient experience**

Patients reported that using the juxtacures was ‘life changing’. They were able to shower and moisturise, free-up nurses to be able to address the needs of other patients.

**CASE STUDY**

This patient was a 47-year-old male with a mixed aetiology venous leg ulcer. Figure 1 below shows the leg at the beginning of treatment with the juxtacures system.

![Figure 1](image1)

The patient attended the authors’ clinic twice weekly and Figure 2 below shows the wound after six weeks following commencement of the juxtacures system. The patient’s skin integrity has improved and the ulcer has reduced in size and depth. The patient was managing his wound excellently with the help of the juxtacures system and eventually began attending the clinic on a weekly basis.

![Figure 2](image2)
which helped give them back control over their treatment; others were delighted to be able to wear normal-sized shoes that did not have to accommodate compression bandages.

Patients also reported that traditional bandaging caused mobility problems, for example walking long distances would result in bandage slippage, which in turn caused tissue damage and shearing (Herber et al, 2007). Often, suitable footwear was difficult to obtain, with the patient either requiring a larger size shoe or wearing slippers. Due to the thin compression anklet contained in the juxta pack, the adjustable Velcro compression device allowed them to purchase their correct shoe size and mobilise more easily. As one patient commented:

‘Traditional bandaging causes mobility problems and bandage slippage. Good footwear is hard to find, resulting in having to buy shoes a size too big’.

Using juxtacures became easier for patients and nurses as time progressed — once applied the compression could be set at the level required using the compression measuring tool. This also allowed patients to self-manage their compression therapy, providing them with ownership and control of their condition. Mobility also improved as patients were no longer frightened that the bandages would slip during exercise and had the confidence to readjust the juxtacures system.

CONCLUSION

Despite the treatment room nurses’ extensive experience of compression bandaging, they were surprised by the performance of juxtacures. The evaluation results showed that the system provides a credible alternative to compression bandaging and hosiery for venous leg ulcer patients.

The patients found that the versatility of juxtacures gave them control of their condition and improved their skin integrity. Similarly, the instant readjustability of the product guaranteed that the nurses could continue to provide the correct level of compression — it is this provision of a consistent level of compression that was key to wound healing. Similarly, the authors found that the patients were concordant with treatment because they were heavily involved in their own care.

REFERENCES

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- Is there any one patient episode that stands out as exceptional practice in challenging circumstances?
- How has this contribution affected patient care?
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