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The conventional management of chronic oedema, lymphoedema and leg ulcers using multi-layer compression bandaging can be challenging, costly and time consuming (Lawrance, 2018). Nonetheless, compression therapy is a mainstay of treatment in lymphoedema, chronic oedema and venous disease (Wounds UK, 2015), forms part of effective leg ulcer treatment (Scottish Intercollegiate Guidelines Network, 2010) and is beneficial in those with lipoedema (Lipoedema UK, 2014). The aim of long-term management of chronic oedema and venous disease is to reduce and maintain oedema, maintain skin integrity, improve limb shape and improve wound healing while achieving optimal limb function and quality of life (Lawrance, 2018). Using bandaging treatment for chronic wound and oedema management can place significant pressure on the clinician's time and budget resources, especially when patients require multiple visits per week (Wigg and Lee, 2014). Many

patients struggle with the standard compression therapy options given the challenges associated with hygiene and pain (Todd, 2011). Further, the degree of concordance required for effective self-management is often lacking, especially where stronger or stiffer inelastic garments are required. The result is often that the desired therapeutic level of compression is not achieved (Lawrance, 2008), and the patient's condition relapses. In order to improve patients' quality of life, concordance and involvement, alternative methods of compression therapy are now being considered. These could also be useful for reducing wound recurrence rates, improving healing rates and for oedema management. Using a system of self-management empowers patients to take back control of their condition (Lee and Lawrance, 2017), and while there are many wrapping devices available, which are designed for wound care and oedema management separately, wraps can and have been used interchangeably within wound care and oedema management, as well as for lipoedema.

ABSTRACT

Haddenham Easywrap has been available since 2016 and since then case studies have been presented to demonstrate the efficacy of the product in clinical practice. The aim of the article is to demonstrate how its use in chronic oedema, and wound care is beneficial and cost effective and how versatile one product can be in treating both of these conditions. Information gained from the evaluation of easywrap in wound care and management of chronic oedema, demonstrates that easywrap can be a suitable cost effective alternative to traditional compression therapy modalities, while improving concordance and quality of life.

KEY WORDS

- ◆ Compression bandaging ◆ Chronic oedema ◆ Wound care
- ◆ Adjustable Velcro wrapping device ◆ Cost effectiveness

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Incidence and prevalence of chronic oedema

In 2003, the incidence of chronic oedema was estimated at 1.33 per 1000 of the population (Moffatt, 2007). However, in Cooper and Bagnall estimated in 2016 that the incidence of all types of oedema ranges from 2.29 to 3.59 per 1000 of the population. Further, it is estimated that 10.31% of people aged over 65 years will develop oedema, since incidence increases with age, and 40% of those in this age group in the community setting were found to concurrently have a leg ulcer (Moffatt et al, 2017). The latest estimates show that over 429 000 people are thought to be living with lymphoedema in the UK (National Lymphoedema Partnership and British Lymphology Society, 2018).

According to Ritchie (2017), the burden of leg ulcers costs the NHS in the UK somewhere in the region of £400 million per year, and leg ulcers are thought to

affect around 130 000 people in the country. However, other estimates set the prevalence of leg ulcers to between 1% and 3% of the population (Todd, 2011), indicating an incidence as high as 1 950 000 (Lee and Lawrance, 2017). Venous leg ulcers are the most common form of leg ulcer and are thought to affect 60% of all individuals with a leg ulcer. Venous disease occurs when there is damage to the valves within the veins that would usually prevent backflow and venous hypertension, when a patient goes from the supine position to standing (Nazarako, 2017). This causes increased capillary filtration into the tissues, what is otherwise known as 'venous insufficiency', and leads to the formation of oedema (Elwell, 2015). Oedema develops when the lymphatic system becomes overwhelmed and is unable to transport fluid from the tissues. In addition to its function as part of the immune system, the lymphatic system plays a primary role in the transportation of 100% of interstitial fluid back into the circulatory system (Woodcock and Woodcock, 2012). If oedema is left untreated and persists for more than 3 months, it is defined as chronic oedema (Moffatt et al, 2017).

The study by Moffatt et al (2017) highlighted that within one demographic region, 22.5% of inpatients with chronic oedema overall also had a wound, and of the community patients assessed, 52.6% of those with chronic oedema presented with a wound. When assessed using the CEAP (clinical, aetiology, anatomy, pathophysiology) classification (Nazarako, 2017), oedema can present prior to the development of a wound. It is important to recognise that as the venous disease progresses, there will be a further impact on the ability of the lymphatic system to cope, thus leading to the development of oedema. When classifying the level of venous disease, it is equally important to recognise the link with chronic oedema and classify it in its own right, using the international benchmarks for classification of lymphoedema (Lymphoedema Framework, 2006).

Easywrap

Easywrap is a short-stretch adjustable Velcro wrapping device (AVWD) made with overlapping straps, with hooks and loop fasteners on one side. It is designed to mimic the standard 50% overlap of a more traditional short-stretch bandage with a weave that is designed to reduce the risk of kinking, unlike traditional non-woven or laminated fabrics. Due to its high static stiffness, Easywrap is easy to apply and provides consistent graduated compression. The graduated compression and correct pressures are achieved because of the unique weave of the fabric and how it performs when applied at near-end stretch, without the need for a pressure gauge, which is usually suggested for use to ensure correct application and safety of other AVWDs (Figure 1).

Easywrap garments consist of overlapping, single-layer textile bands that are engineered to be conforming and low profile. They come in three parts: a foot, leg and thigh piece. The thigh is made up of two parts, namely, an innovative knee wrap and separate thigh wrap. The



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Figure 1. Easywrap in situ

knee piece is a unique patented device that allows for unrestricted movement because of the way in which the material bands are cut and shaped to support normal knee movement; it also contains a removable pad insert that sits at the popliteal crease for extra comfort. The device is now available in two colours; black garments were introduced to the market at the start of 2019. Easywrap comes in five different sizes that will fit patients up to 40 cm on the foot, 70 cm on the calf and 100 cm at the thigh (see the sizing chart in Table 1). Easywrap is available in two compression levels: Easywrap light provides a pressure ranging from 20 to 30 mmHg, while Easywrap strong provides pressures of 30–40 mmHg. The leg piece can either be used with the foot piece or with a Haddenham fusion stocking, which gives compression to the foot at the abovementioned compression profiles (light and strong) (Figure 2). There is the possibility of providing half compression to the ankle, where the Easywrap leg piece can be applied with no compression in the leg part of the stocking. Further, evidence from clinical practice shows that Easywrap can be successfully used over compression garments when patients are prone to rebound and after surgery following liposuction for lipoedema or lymphoedema.

Use of AVWDs in clinical practice

According to Williams (2017), several articles detail case studies where adjustable compression wraps have been successfully used in venous leg ulcer management, demonstrating reductions in oedema and improvements in wound healing, pain and quality of life. Further, cost savings have been demonstrated when AVWDs are used instead of traditional bandaging techniques, due to the reduced frequency of visits and application, as AVWDs are reusable (Wounds UK, 2014).

Table 1. Sizing chart for Easywrap products

		XS	S	M	L	XL
	FOOT					
	a¹ Circumference	22-24	25-27	28-30	31-34	35-40
	REGULAR	14.5-16.5	16-18	17.5-19.5	19-21	21-23
	LONG	16.5-18.5	18-20	19.5-21.5	21-23	23-25
		XS	S	M	L	XL
	c Circumference	38-45	44-52	50-60	55-65	60-70
	b Circumference	23-27	28-32	33-38	39-44	45-52
	REGULAR	30-34	30-34	30-34	30-34	30-34
	TALL	34-38	34-38	34-38	34-38	34-38
		XS	S	M	L	XL
	THIGH with Knee					
	g Circumference	60-70	65-75	70-80	75-90	85-100
	e¹ Circumference	47-52	53-59	60-66	67-73	74-80
	SHORT	16-20	16-20	16-20	16-20	16-20
	REGULAR	20-24	20-24	20-24	20-24	20-24
	TALL	25-30	25-30	25-30	25-30	25-30

In the treatment of venous leg ulcers, evidence suggests that wound healing is promoted when compression of >40 mmHg is applied (Todd, 2011). Further, recurrence can be prevented by using compression therapy with a pressure of up to 35 mmHg (Moffatt, 2007). Previously, a four-layer bandaging system that acts to build an appropriate level of compression over the limb has been used in the treatment of venous leg ulcers. However, evidence suggests that this system is not well tolerated by patients, especially where oedema is present (Damstra and Partsch, 2013), as it applies a constant resting pressure and has a lower working pressure. This means

that when resting, patients often report discomfort due to the constant pressure of the bandages. This can result in concordance issues and patients removing bandages. AVWDs are manufactured to work as a short-stretch bandage would (Williams, 2017), providing a lower resting pressure and a higher working pressure when the patient goes from the supine position to standing (Damstra and Partsch, 2013). This consistent lower resting pressure means that comfort is improved and treatment is better tolerated, even in patients who have restricted mobility (Elwell, 2015). Further, short-stretch compression systems such as Easywrap are seen to have an acceptable level of static stiffness, which is appropriate for the reduction of oedema (Lee, 2017). Static stiffness is related to the difference in the pressure exerted by a material on the limb when the patient shifts from lying to standing up (Partsch, 2005). The ability of a compression device to achieve a difference in pressure of greater than 10 mmHg is thought to be more effective at reducing oedema (Damstra and Partsch, 2013). Further, Partsch (2005) stated that short-stretch compression systems have the ability to intermittently occlude the veins and reduce venous hypertension while maintaining a comfortable and effective resting pressure.

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Figure 2. Fusion stocking

Use of Easywrap in wound healing

Lee (2018) described an evaluation of Easywrap for wound healing conducted at a local wound healing centre. Five patients with lymphoedema/lymphovenous changes and a wound to the lower limb were prescribed Easywrap as the main compression therapy instead of

traditional bandaging once exudate levels were reduced; dressing regimens were selected in line with local wound care policy. All patients received standard compression therapy until their wrap garments arrived, unless a set was available at the time of assessment, and they were then shown how to self-manage with Easywrap, including application and removal of the device to perform skin care. The patients were informed that the device would need tightening if it became loose as the oedema reduced. They were reviewed at each dressing change, and their wounds were measured and evaluated every 4 weeks or if their condition changed. The patients were encouraged to wear their wrap system continuously but were allowed to remove them during daily hygiene regimens.

Time and cost savings

During the evaluation, the duration of clinic appointment times was found to have reduced (Table 2). One example of this was a daily visit reducing by 45 minutes initially and then to weekly visits, which led to a saving of 4 hours and 15 minutes of clinic time per week. This was primarily due to the patient being able to take over their own skin care, bandages not needing to be removed in clinic and the avoidance of previously used combination bandaging kits. Further, time was saved because there was no need to reshape the leg with padding to accommodate for slippage from standard compression bandaging, which occurred when the oedema had reduced and the bandages could not accommodate this change. Both the patient and staff felt that the leg shape had improved and there was less ‘slippage’ or slippage-related oedema, as the patient was able to adjust the straps on the wrap garment as often as needed.

Time and cost savings were further demonstrated in the treatment of patient 1, who was 50 years of age and had a 10-year history of bilateral below-knee oedema secondary to venous insufficiency. The patient had recurrent cellulitis of the left leg, and the oedema was further exacerbated by obesity. On discussion with the patient and after consideration of several treatment options, taking into account personal holiday and work commitments, an easywrap foot and leg piece was the choice of treatment for the left leg with standard compression hosiery being used for the right leg. The patient was trained on self-application of the device and

given patient information, with a follow-up appointment arranged for 5 weeks later. On review, the patient had managed well with self-treatment using Easywrap, with the oedema reducing by 1028ml and the excess limb volume reducing from 19% to 3% (Figures 3–5).

Initially, the cost of Easywrap seems higher than that of a short-stretch bandage, foam or combination bandage kit. However, when using the device for longer than 4 weeks, the costs starts to become comparable with that of some bandaging kits, and by 12 weeks, its costs meets that of most bandaging kits and regimes



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Figure 3. Prior to application of compression



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Figure 4. After 4 weeks of self-application of Haddenham Easywrap

Table 2. Cost comparison of Easywrap vs. compression bandages over 5 weeks

Population	Number of appointments over 5 weeks	Overall cost of bandages or Easywrap	Cost of nursing time	Total cost
Traditional lymphoedema compression bandaging	17 (8.5 hours based on 30 minute appointments for unilateral leg)	£211	£204	£415
Easywrap foot and leg piece	2 (1 hour)	£165	£24	£189
Saving				£226
Time				7.5 hours

Provided by authors



Figure 5. Patient's leg with Easywrap on

Provided by authors



Figures 6–8. Changes in surrounding skin with use of Easywrap and skin care

(Lee, 2018). Further, this cost comparison is based on equipment only and does not include staff or clinic costs. Lawrance (2019) discussed how much of a saving can be made when comparing traditional compression bandaging with Easywrap for the case study discussed in the previous paragraph. If standard lymphoedema compression bandaging had been used on the left leg, taking into consideration the cost of bandages as well as nursing time, a saving of £189 was demonstrated when

using Easywrap (Table 2). Further, if this treatment had continued for 6 months, the cost savings would have exceeded £2000.

Concordance and improvements in quality of life

In practice, a common presentation in those with chronic oedema and leg ulcers is poor skin integrity and hygiene. This can become exacerbated by compression bandaging or kits if skin care is not performed at all or frequently enough; it is not uncommon for a greater number of visits to be needed to ensure the integrity of the surrounding skin, compared to the number required for tending the wound itself. Easywrap allows for the wound to be dressed while the skin on the rest of the leg can be cleansed and moisturised daily, and this significantly improves the integrity of the surrounding skin. In the patient whose case is depicted in Figures 6–8, the surrounding tissue improved in a short space of time with a combination of skin care at appointments and daily moisturising with ointment-based emollients. The surrounding hyperkeratosis desquamated, and over the course of the treatment, it appears less fibrosed, whereby the risk of ulcer recurrence or infection is reduced. This wound had compression therapy applied solely by using Easywrap; within 1 month, the wounds had epithelialised, and within 6 weeks, they had healed completely. The patient was discharged and continues to use the wrap garments with daily moisturising. As the patients' visits to the clinic reduced, they also reported improvements in independence and quality of life, with wound care no longer being their primary focus. They reported that they could instead devote time and attention to living life, family activities and returning to employment, where possible. Further evidence to support the use of Easywrap as an option in wound healing was detailed in Lee (2018), where a patient who had anxiety and compulsive behavioural disorders chose to remain in this wrap to help with the healing of a new wound that had developed due to trauma. The patient felt empowered and in control of his care, and his wound has now healed.

Conclusion

The treatment of chronic oedema and wounds has a significant impact on resources for the NHS and quality of life for patients. The case studies and cost comparisons described in this article demonstrate that using Easywrap as an alternative to traditional bandaging techniques improves outcomes of treatment, wound healing and chronic oedema. This in turn indicates that the burden of wound care and chronic oedema management associated with traditional bandaging techniques can be reduced with the use of Easywrap, allowing for re-allocation of resources and a reduction in spending on compression bandaging systems. It is important for clinicians involved in the management of chronic oedema and leg ulcers to understand the link between wound healing and

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oedema management and consider novel alternative evidence-based approaches to make a positive impact on treatment. This will in turn enable patient inclusion and promote self-management in the case of chronic oedema and leg ulcers. **BJCN**

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KEY POINTS

- ◆ Easywrap can be effectively used in the intensive or maintenance phase of treatment in chronic oedema and venous disease
- ◆ Self-management with easywrap can improve skin care and enhance wound healing
- ◆ Using a system of self-management empowers patients to take back control of their condition
- ◆ Easywrap is easy to apply and provides consistent, graduated compression
- ◆ After 4 weeks, the cost of using easywrap becomes comparable with that of some bandaging kits, and by 12 weeks, the cost meets that of most bandaging kits and regimes

CPD REFLECTIVE QUESTIONS

- ◆ In your practice, when would you consider changing from traditional compression bandaging to using easywrap?
- ◆ What benefits do you feel easywrap would bring to your patients?
- ◆ How consistent is your current compression bandaging system within your team? Do you feel a Velcro wrap system would be more consistent?

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