

Rethinking decongestive lymphoedema treatment during the pandemic

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During the COVID-19 pandemic, clinicians have had to adapt how they implement intensive treatments for patients with lymphoedema and chronic oedema. With many clinics postponing intensive treatments due to national lockdowns, staff being redeployed to other areas and many clinics closing, those that are still able to provide treatment have had to find different ways of achieving reduction and maintenance. This article explores how management has been modified and how novel approaches, which would normally be indicated during the maintenance phase of treatment, have enabled reduction of oedema. It also discusses how partnering with patients has enabled patient-led, clinician-supervised modified decongestive treatment to the benefit of patients.

Decongestive lymphoedema treatment

Decongestive lymphoedema treatment (DLT) is indicated for patients with lymphoedema or chronic oedema who

require an intensive phase of treatment to reduce limb volume, improve limb shape and soften firm tissues, or where there is leakage of lymph fluid (lymphorrhoea) or a wound. DLT comprises manual lymph drainage (MLD) and multilayered lymphoedema bandaging (MLLB), and it is traditionally administered every day over a 2–4 week period, and then gradually reduced (International Lymphoedema Framework (ILF), 2012). DLT, sometimes referred to as complex decongestive treatment, is upheld as the gold standard of lymphoedema treatment (ILF, 2006; Zucher, 2012; NHS, 2019). The benefits of DLT are well documented, but the treatment regime is time and labour intensive, and high staff and bandaging costs have prevented many services from sustaining these levels of activity. The additional pressures on services during the pandemic have resulted in many clinics being unable to offer the recommended protocol for DLT to their patients. In addition, with the safety of both patients and staff being a necessary priority, risk assessing any face-to-face clinical interventions remains extremely important.

The benefits of DLT can be appreciated by the way in which MLD and MLLB work, both individually and complementary to one another. Historically, MLD has been shown to increase lymphatic contractions (Hutzschenreuter et al, 1989), increase protein reabsorption (Leduc et al, 1988), reduce micro-lymphatic hypertension (Franzeck et al, 1997) and improve collateral lymphatic drainage (Ferrandez et al, 1996), thereby enabling fluid to be redirected away from oedematous areas towards unaffected, functioning lymph nodes (Clemens et al, 2010). In addition, more recent work using near-infrared fluorescence lymphatic imaging has demonstrated the effect that MLD has on the filling of the lymphatics by the application of pressure on the tissues and by deep thoracic and abdominal breathing techniques (Belgrado, 2014).

MLD must be carried out by specially trained and experienced practitioners. This training may not be easily accessible for health practitioners. Therefore, to ensure that lymphatic drainage (massage) is available to as many patients as possible, most lymphoedema clinics also teach their patients a simplified form of MLD, known as simplified, or self lymphatic drainage (SLD).

ABSTRACT

During the course of the COVID-19 pandemic, lymphoedema and community clinicians have had to modify how they implement intensive treatments for patients with lymphoedema and chronic oedema. Using novel approaches to treat and move patients towards self-management regimes has enabled patients to be in control of their condition, particularly if they are unable to attend normal clinic appointments. This article explores how using Haddenham easywrap instead of time- and resource-intensive bandaging regimes, alongside the Haddenham LymphFlow Advance, as part of self-management programmes, can benefit patients' quality of life, reduce costs and resource use and enable patients to self-manage this long-term chronic condition more effectively.

KEY WORDS

- ◆ Lymphoedema ◆ Chronic oedema ◆ Pandemic ◆ Self-management
- ◆ Compression

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Self-management

Teaching and demonstrating SLD gives patients the opportunity to self-manage their lymphoedema and reduces the need for regular clinic attendances. In addition, upskilling family members in this non-complex management technique enables them to become more involved as caregivers, helping to enhance treatments (Nelson and Rankin, 2019). Furthermore, Barley and Lawson (2016) recognised that, in the case of a long-term condition such as lymphoedema, where the aim is to slow disease progression, improve symptoms and enhance quality of life, self-management is key to successful treatment outcomes.

Underpinned by the promotion of self-efficacy, psychological support is also seen as a fundamental part of encouraging self-management (Barley and Lawson, 2016), with Fetzer and Wise (2015) maintaining that counselling can help patients feel less isolated and better able to cope with the psychological impact of their disease. However, during the COVID-19 pandemic, many patients have had to self-isolate or shield, and the experiences of loneliness and isolation have become a national concern, with anxiety and depression recognised as possible inevitable consequences, further impacted by lack of access to counselling and support services (National Health Executive, 2020; Roberts, 2021).

However, some clinicians have been innovative in adapting to this new situation, providing easily accessible and readily available virtual support and counselling, with some lymphoedema services making online instruction and group teaching programmes (including SLD) available to patients. These innovations are supported by McGowan et al (2013), who underlined emerging evidence to support the use of group education programmes as an effective approach in supporting self-management. Their retrospective evaluation of a group self-management programme identified that all the patients questioned felt more confident and more knowledgeable about their lymphoedema, and all were enabled to take greater control of their condition, make lifestyle changes and become more proficient in their self-management regimes.

Compression

To further enhance self-care and in addition to being able to learn the technique and apply SLD remotely, self-measuring for compression garments has also been made easier for patients. In addition, Haddenham now have a facility for patients to be able to order repeat garments online, where they have been measured for an initial garment by a health practitioner with the necessary training (www.lymphshop.com/). Compression is recognised as a core component of treatment in lymphoedema or chronic oedema (International Lymphoedema Framework (ILF), 2006), and along with skin care, exercise and movement and lymphatic drainage, it is acknowledged as the mainstay of lymphoedema care (ILF, 2012; Todd, 2015).

Compression bandaging is recommended as part of DLT, but may also be used with MLD, SLD or intermittent pneumatic compression (IPC) when there is limb shape distortion; tissue thickening; a limb too large to fit into a compression garment; lymphorrhoea; skin changes; fragile, damaged or ulcerated skin; or pronounced skin folds (ILF, 2012). Mosti

et al (2019) suggested that being able to correctly apply compression bandages may be difficult even for experienced health practitioners. Hence, bandages may not always be applied consistently, with different practitioners employing different techniques or applying differing pressures, with bandage slippage causing possible skin damage. The bulkiness of bandages with the necessary padding underneath makes it difficult for patients to wear suitable footwear and to be safe when mobilising. Additional pressures on both lymphoedema and community services during the pandemic have challenged the implementation of time- and labour-intensive bandaging regimes. Anecdotally, the use of wraps (adjustable Velcro wrapping devices (AVWDs)), both for limb reduction and for maintenance, seems to have increased.

Wraps

Wraps can support self-management for patients with lymphoedema or chronic oedema, can be used in place of lymphoedema garments (stockings and sleeves) and are a good treatment choice for patients who struggle to don and doff hosiery. However, wraps should also be considered as a replacement for bandaging, both as a treatment for patients with chronic oedema or leg ulcers or as part of DLT for lymphoedema; for those patients able to carry out their own SLD, wearing a wrap instead of being bandaged provides more control of their condition and further enhances self-care (Damstra and Partsch, 2013; Mosti and Cavezzi, 2019).

Compression therapy enables movement of fluid to an area where drainage is not compromised. In this respect, wraps act in a similar way to short-stretch bandages. Some wraps are designed to mimic the standard 50% overlap of traditional bandaging systems and provide graduated compression to the limb while also applying low resting and high working pressures, ensuring comfort (Lee and Lawrance, 2017; Williams, 2017). Haddenham easywrap has an easy-to-feel lockout point, which ensures that consistent graduated compression is achievable and makes this a safe treatment option for patients to use themselves, supporting them in self-management (Lee, 2018). Its unique UK-patented technology and the specific way the bands have been engineered ensure that accurate overlap and compression are achieved (Lee and Lawrance, 2017), and, with the advantage of wraps being less bulky than bandages, mobility is not restricted (Ehmann et al, 2016).

Several studies have demonstrated cost savings with the use of wraps instead of compression bandages. Damstra and Partsch (2013) compared compression wraps with compression bandages and found that, although bandages had a greater stiffness than wraps, wraps showed a greater ability to reduce limb volume. They concluded that this was because patients were able to tighten the wrap themselves, thereby ensuring that adequate and accurate pressure was maintained, and that, if used in place of compression bandages, wraps can reduce the number of clinic appointments, reduce the overall costs of treatment and enable patients to be able to perform their daily skin care. Further, wraps are safe for patients to apply themselves.

Mosti et al (2019) found wraps to be significantly cheaper than bandages and more effective (although not significantly

so) in achieving ulcer healing. Additionally, they maintained compression pressures more accurately over time. The authors concluded that wraps are a cost-effective alternative to compression bandages.

Lee (2018) studied five patients who had chronic oedema and concluded that, within just 1 month of treatment, cost savings were demonstrated when using easywrap instead of a three-times-per-week bandaging regime. These cost savings were replicated within 7–8 weeks even when bandages were changed twice weekly, with patient feedback highlighting improvements in quality of life due to the reduced clinic visits.

Both Williams (2017) and Lee (2018) agreed about the positive aspects of using wraps: the need to buy additional hosiery at the end of the intensive treatment period is eliminated; they are reusable; clinic and staff time is freed up because patients wearing wraps need fewer clinic appointments; concordance with treatment is better, as patients are able to remove or adjust the wrap if it becomes uncomfortable; and patients achieve greater autonomy as they are able to carry out their own skin care regimes, preventing the skin dryness so often seen when bandages are removed.

In addition, the new Haddenham Fusion Liner (Figure 1), which provides compression in the foot but not in the leg and is worn beneath easywrap in place of the foot-piece, enables patients to wear their own footwear, improving safety and further enhancing self-care.

Intermittent pneumatic compression

In addition to MLD and bandaging, DLT often includes IPC. However, during the pandemic, IPC has had an important role to play in self-care management as an adjuvant treatment alongside SLD and wraps.

Pneumatic compression systems use single- or multi-chamber garments that inflate with air to apply external pressure to compress the limb. These systems have formed part of lymphoedema management for many years (ILF, 2006), with several different pneumatic compression devices available. The Haddenham LymphFlow Advance was developed in 2016 in line with changes that had occurred in the understanding of

fluid exchange and lymphatic function. Levick and Michel (2010) found that only minimal transient interstitial fluid actually returns via the venous circulation, with more fluid returning to the circulation via the lymphatic system than was previously thought. Further, Mortimer and Rockson (2014) agreed that the capacity at which the lymphatic system functions is actually much greater than was previously thought. The LymphFlow Advance is unique, in that it allows for more individualised treatments, and specific (problem) areas can be targeted due to the seven different cycles available, reflecting understanding of lymphatic drainage. In addition, treatment of midline oedema, which was previously not possible with IPC, is now possible for patients due to the shoulder cap, waist attachment and trouser garments (Figure 2); this wider range of garments has extended treatment to those patients who were previously excluded (Lee et al, 2016).

Furthermore, patient feedback has suggested that IPC can assist in successful self-management regimes (Lee et al, 2016), and clinics able to loan patients IPC units for home use have found that time, resources and costs can be saved. Lee et al (2016) discussed several small-scale studies that demonstrated by limb volume reductions (also confirmed by imaging with lymphoscintigraphy) that home use of IPC can increase lymphatic flow by aiding in the re-establishment of lymphatic pathways. Additionally, using near-infrared fluorescence



Figure 1. Haddenham Fusion Liner



Figure 2. LymphFlow Advance. Thigh with waist attachment (a) and arm with shoulder cap (b)

imaging, Adams et al (2010) demonstrated a statistically significant improvement in lymphatic function and increased propulsion rates of lymph flow using IPC.

Case studies

The following case studies demonstrate the positive outcomes achieved by patients using the above-mentioned self-management regimes during the pandemic.

Case 1

Mr T began having problems with chronic oedema in July 2020, when he developed deep vein thrombosis (DVT) in the left leg and was admitted to hospital. He also had other comorbidities that made his situation more complex: type 2 diabetes, peripheral neuropathy, chronic obstructive pulmonary disease (COPD) and ventricular ectopic beats. He was discharged with a compression stocking, but no other follow-up. In September 2020, he developed a DVT in his right leg, along with symptoms of breathlessness and an irritating cough. Following admission to hospital, he was diagnosed with significant pulmonary embolisms. On discharge, he was again issued with a compression stocking, but no follow-up or advice.

The combination of breathlessness and a back injury severely impeded his mobility, resulting in weight gain (BMI=50). Despite using the garments (it is unclear what they were exactly), his feet remained very swollen, limiting footwear options, and his ankles ‘overflowed his shoes’. Mr T’s problems escalated during the COVID-19 pandemic: in August 2020, he developed severe cellulitis, attended the emergency department and was discharged later that evening on oral antibiotics. Over the next 10 days, the situation deteriorated despite further oral antibiotics, and he was readmitted with sepsis and discharged 3 weeks later (Figures 3 and 4). At this stage, his legs were so big and heavy and his mobility was so severely restricted that Mr T was bedbound.

Community occupational therapy and physiotherapy teams became involved to improve his mobility, and district nurses attended to dress a pressure ulcer on his heel. The cellulitis was still settling, so no compression was applied, but an appointment was made for ankle brachial pressure index (ABPI) measurement once this resolved.

In the interim, the family sought further advice regarding ongoing management for Mr T.

As the local lymphoedema service was not in operation due to COVID-19, a local MLD therapist was contacted. Along with support from the Haddenham clinical team, a plan of treatment was devised to support the district nurses. Part of the aim was to reduce pressure on a district nursing service overstretched because of the pandemic, as well as to enable self-management.

Prior to obtaining an ABPI, a reduced compression bandage system had been applied, which was then changed to full compression with a short-stretch bandage system. The delay in effective management at this stage could, with hindsight, have been reduced by following the British Lymphology Society (BLS) position document on vascular assessment (BLS, 2016), whereby compression could have been introduced at an earlier

stage. This, in combination with a programme of skin care, exercise, elevation and weight management, began to have an impact on the oedema, especially on the left leg, although the right leg remained more fibrotic, with less reduction (Figure 5).

To enable independence and to reduce the need for district nurses to continue with care, Haddenham easywrap strong full-leg systems were introduced to replace the bandage system, and Mrs T was taught to apply them (Figure 6).

Long-term management of this chronic condition can be difficult, especially if there are several comorbidities as previously discussed, and these were all taken into consideration when developing a treatment plan for Mr T. As part of a package of management, Mr T was offered a trial of Haddenham LymphFlow Advance IPC, in combination with thigh-length Comfiwave garments, and this combination significantly reduced the oedema and reshaped his legs (Figure 7).

At present, ongoing maintenance continues with LymphFlow Advance 2–3 times a week; Haddenham Pertex, class 2, made-to-measure, below-knee garments overlapped by Haddenham Pertex, class 2, made-to-measure Capri shorts; and Comfiwave



Figures 3 (top) and 4 (bottom). Case 1: On discharge home. extensive oedema with skin changes to both legs



Figure 5. Case 1: 2 November 2020. After use of short-stretch bandaging. Limb reduction with skin loosening can be seen



Figure 6. Case 1: 13 November 2020. Haddenham easywrap in situ



Figure 7. Case 1: 1 December 2020. After use of Haddenham Comfiwave thigh garment and LymphFlow Advance. The ridging is normal and indicates changes in tissue pressure to enhance reduction in limb volume

for night-time use. Mr T is now able to wear normal shoes and drive his car, and he is pleased to be much more mobile.

Case 2

Mr D is an 83-year-old man who had, for several years, been seen on an ad hoc basis by the practice nurse team. They had managed his chronic oedema with class 1 circular-knit garments and an AVWD (wrap). Mr D was referred to his local lymphoedema clinic for further advice by his GP, as Mr D was concerned his oedema was deteriorating. The garments were not fitting properly, restricting movement below the knee, and he was struggling with the wrap he had been using. His past medical history included chronic venous disease, hypertension and prostate cancer diagnosed in 2016. At the time of referral, the clinic was closed for face-to-face contacts due to the COVID-19 pandemic and the first lockdown (May 2020). Contact with the practice nurse revealed that his last appointment was in 2018, so any garments were old and ineffective. They, too, were unable to see him face-to-face, so a virtual assessment was arranged with Mr D.

Initial discussions revealed that Mr D had bought some compression garments on the internet, similar to flight socks, which were, again, not fitting and uncomfortable. He also revealed that his wife had died in 2019, and he had been neglecting himself since then. A management plan was initiated, Mr D sent photographs of his leg (Figure 8), and it was decided that the most appropriate garment would be a Haddenham flat-knit Pertex Light, class 1, below-knee stocking.

Mr D was sent a simplified below-knee measurement form along with clear photographic instructions (devised by Haddenham) to allow self-measurement for a basic garment. Basic self-management of skin care, exercise and elevation were reinforced, and Mr D was also sent a patient information sheet devised by the clinic. This included online

links to various websites such as Legs Matter, Accelerate, Haddenham Lymphshop and the Lymphoedema Support Network (LSN), which included videos and advice on exercise and self-management for patients in response to reduced clinic availability.

The self-measured garments were a success; they were easy to don and doff and much more comfortable, and Mr D was happy with this interim situation and a review in September 2020.

However, Mr D contacted the clinic again in August to report that he had seen his oncologist, and that there was a relapse of his cancer and he was being started on a course of chemotherapy. This meant he felt too vulnerable to attend clinic when it re-opened in September, so remote support continued.

In December, Mr D reported that he was getting above-knee oedema, which was new, so he agreed to a face-to-face clinic appointment, provided it was the first of the day. On examination, his right lower leg had increased slightly in size, with some soft, pitting oedema around the knee, and he was complaining of hip pain. Initial concerns were that his cancer had progressed, and there was now lymph node involvement. Bearing in mind his ability to apply garments and his isolation from visitors and family, various options were discussed to reduce the knee oedema. To reduce the initial oedema and bridge the gap while waiting for a made-to-measure garment, Mr D was issued with a Haddenham easywrap light knee/thigh piece. His preferred ongoing knee/thigh support was a Haddenham 'thigh sleeve' to overlap the below-knee garment, and Mr D felt this was a flexible option allowing him to alternate as required.

An MRI was performed, which did not show any cancerous lymph node involvement, but it did indicate bone metastases around his right hip/pelvis. This explained the pain he was experiencing, which, in turn, was affecting his mobility and, hence, his right leg oedema. Blood tests also revealed that his serum albumin level was low, potentially exacerbating the oedema, so increasing protein in his diet was discussed. A course of radiotherapy followed in late December, and there was an improvement in both his pain and mobility.

Mr D returned to clinic in January. On examination, the oedema had reduced as indicated by a 3–4cm reduction in



Figure 8. Case 2: May 2020. Before treatment

KEY POINTS

- ◆ Encouraging self-management for patients with chronic oedema/lymphoedema can help reduce the extra pressures being faced by community and lymphoedema services
- ◆ Easywrap can be effectively used in the intensive or maintenance phases of treatment and can successfully replace bandaging in decongestive lymphoedema treatment (DLT)
- ◆ Using a self-management regime, which includes easywrap, can empower patients to take control of their condition
- ◆ Haddenham LymphFlow Advance can significantly improve outcomes for patients when part of a combined course of DLT

CPD REFLECTIVE QUESTIONS

- ◆ What benefits would you expect to see by changing some patients from bandaging to easywraps?
- ◆ What issues would first need to be addressed before being able to put in place a self-management care plan for these patients?
- ◆ What support would you need to move your patients into self-care?

circumference of both his ankle and calf, and his mobility had also improved. He reported that he was eating more healthily and generally looking after himself better, physically and psychologically. He was extremely relieved that the oedema was not due to disease, and that it could be reduced and managed with garments and exercise, allowing him to maintain his independence. New garments were ordered and another review booked for April 2021.

Conclusion

The COVID-19 pandemic has placed additional pressures on all healthcare services, and, within lymphoedema and community settings, clinicians have had to adapt how they implement intensive treatments for patients with lymphoedema and chronic oedema. Moving patients towards self-management regimes puts them in control of their condition. This article has explored how, by using Haddenham easywrap in place of time- and resource-intensive bandaging regimes, alongside the LymphFlow Advance and the usual program of exercise and movement, skin care and SLD, patients' quality of life can improve, with evident cost and resource savings. The case studies presented demonstrate these positive outcomes, showing that, by patients using the treatments discussed, positive steps towards self-management can be achieved. **BJCN**

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