

Successful outpatient management of lymphoedema and lymphorrhoea with wrap around compression: a case study

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Abstract: Referral to specialist centres for treatment of lymphoedema can often have long waiting times. Management of a patient with massive lymphoedema and lymphorrhoea was provided in a vascular outpatient setting. A new form of compression using a wraparound system was used for the management (Juxta-Fit, Medi UK). Despite having previously been non-concordant with treatment options, the patient was

independent with product use. Lymphorrhoea ceased and there was a marked decrease in girth size. The patient's quality of life improved and maintenance treatment was provided. The use of this compression system could be a valuable treatment alternative to compression bandaging for a select patient group for the treatment of lymphoedema.

Declaration of interest: No conflicts of interest to declare.

lymphoedema • lymphorrhoea • compression therapy • Juxta-Fit

Lymphoedema of the lower limb is a slowly progressive often-debilitating disease caused by intrinsic or acquired defects resulting in the accumulation of protein-rich fluid in the interstitial tissue.¹ It is limiting to patient's health both physically and psychologically.² There are two classifications of the condition primary and secondary. Primary lymphoedema is a result of genetically mediated abnormalities in the lymphatic system. Secondary lymphoedema develops in patients who otherwise have a normal lymphatic system that sustains an injury. This can be acquired from direct trauma, surgical trauma, radiotherapy, infection or obesity.¹ Non-cancer-related lymphoedema is frequently unrecognised until it has advanced and therefore presents substantial management challenges.³

Compression is the cornerstone of lymphoedema treatment.⁴ However, local access to specialist lymphoedema centres for suitability and initiation of compression therapy is limited. This is complicated by ongoing debate on how to clinically assess the arterial supply of lymphoedema patients when an ankle-brachial pressure index (APBI) is practically impossible due to limb size and an inability to lie flat. This often means extended waiting times to access specialist treatment and centres often require a long commute, which is an obstacle for patients who have ambulatory problems. Therefore an option for a patient-centred treatment with community support needs to be considered.

Case study

A 55-year-old man was referred to the vascular surgeons from the admitting medical ward with bilateral leg cellulitis. Besides a raised body mass index (BMI) of 51, he did not suffer any major comorbidity. He did not have any previous surgical procedures in the abdomen, pelvis or lower limbs. He had presented with symptoms of pyrexia, rigors, leg swelling, extensive lymphorrhoea, acute redness to legs and was generally unwell. Blood results confirmed raised inflammatory markers, c-reactive protein (CRP) 261 mg/l (normal range: 0–7 mg/l), white cell count (WCC) $18 \times 10^9/l$ (normal range: $4 \times 10^9/l$ – $11 \times 10^9/l$) and he was started on intravenous (IV) antibiotics (benzylpenicillin, 1.2g QD, flucloxacillin, 2, QD). On assessment by the vascular surgical team, it became apparent that he had a history of longstanding, worsening primary lymphoedema, that progressed on to constantly weepy lymphorrhoea and exacerbations of infection in his legs. His raised BMI limited his physical mobility.

The patient had previously tried compression hosiery prescribed earlier that year, however he struggled to maintain its use. Despite having extensive lymphorrhoea he obtained no assistance from the community nurses as he refused any form of bandages. Before admission he had developed lymphorrhoea, which leaked onto the stockings. The patient was unable to regularly change the stockings due to his habitus precluding certain manoeuvres and the shape and size of his legs. This resulted in admission with bilateral cellulitis evident by his raised WCC and inflammatory markers (as noted above). On examination the legs were massively swollen, hardened with widespread papillomatosis and profuse

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Fig 1. Bilateral legs at referral to service



Fig 2. Left foot at referral to service



lymphorrhoea complicated by infection and malodour (Fig 1 and 2). The patient's mood was low and found the legs to be a source of embarrassment to the point of being housebound.

The patient reported his extensive lymphoedema and lymphorrhoea had rendered him immobile. He lived alone and found activities of daily living (ADL) increasingly difficult. His carpet had become stained due the lymphorrhoea and he no longer invited guests due to the odour. He had become socially isolated and depressed due to his current

circumstances. He was getting no input from the district nurses due to previously refusing treatment. There was lack of limb elevation at night due to inability to care for his house and storage issues resulting in no suitable bed.

His arterial supply was clinically intact although a formal ABPI was not feasible. Triphasic signals were heard with use of the Doppler machine and the patient was deemed suitable for compression by the vascular surgical consultant. We decided to offer the patient a trial of a new compression garment, Juxta-Fit, with interlocking foot wrap (Fig 3). This garment offers a wraparound compression system giving the patient independence in their bandaging. He had already refused bandaging in the community and there was no service available for daily bandaging on an outpatient basis. Due to his level of oedema and lymphorrhoea, frequent re-bandaging would be required and, as compression bandaging is a trained skill, he would be unable to do this independently. The efficiency of the compression would be reduced if staff were unable to reapply as required. The wraparound system gives patients the ability to adjust the product independently, tightening the product as the swelling reduces. As the patient had been managing dressings independently we were aware he was unlikely to be concordant if we removed his independence.

We explained that the garment would require some self-management and at least daily visits from the district nurses to support inner absorbent dressing changes. Measurements were taken from around the ankle, mid-calf and upper leg. It was decided to trial one leg initially as patient concordance needed to be ascertained with insight that the patient had refused previous compression options. We put in some simple skin care measures, suggesting use of the UCS debridement wipes (Medi, UK) to clean lymphorrhoea and remove areas of the hyperkeratosis. As this patient was unable to wash his legs independently, the USC wipes gave him some independence. A simple primary layer of Atrauman (Hartman, UK) was applied to protect the skin with a superabsorbent layer KerraMax (Crawford Healthcare, UK) to manage exudate. At index visit before our initiation of compression therapy with the Juxta-Fit the left leg was 51 cm at the ankle, mid-calf 64 cm and upper leg 63 cm, the exudate was heavy. Education was given on ankle flexion and extension to increase calf pump action.

Full education was given on the application of the product. An explanation was given on the need to frequently change the absorbent pad independently due to high-levels of lymphatic leak. The patient remained withdrawn during this consultation and although verbally agreeing did not seem engaged with the treatment plan. We discussed pain relief and the need for continued wear of the product. We explained that as swelling reduces the leg shape will alter requiring the need to adjust the garment thus ensuring graduated compression. The district nurses

Fig 3. Application of the product



Fig 5. After 23 weeks compression



were initially concerned about the input the patient would require. Reassurance and support was given to assist in initial increase in district nurse demand.

Results

When the patient returned to the clinic 11 weeks later he reported initially wearing the product for a few hours at a time due to discomfort secondary to topical pressure, however, the time of wear rapidly increased with reduction of lymphorrhoea. The lymphorrhoea had completely subsided in his left leg; his measurements were ankle 42cm, mid-calf 48cm and upper leg calf 60cm, a reduction of 9cm, 16cm and 3cm, respectively (Fig 4, Table 1). The patient was delighted with the product he reported an increase in his ADL, being able to provide better self-care and hygiene due to the reduction in lymphorrhoea. He was also starting to engage socially again. He requested the same product on his right leg due to still having extensive lymphorrhoea.

Due to his obvious concordance and success with the product we continued the treatment plan on his right leg. The measurements for his right leg on fitting were 51 cm at the ankle, 58 cm at mid-calf and 68 cm at his calf. For cost purposes it was decided to use the same product, moving it from the left to the right leg with a change in size to meet the needs of the right leg. With an aim of maintaining treatment of lymphoedema to decrease risk of breakdown, measurements were taken for a new compression garment with interlocking foot wrap on the left leg. We advised he continued using the UCS wipes for hyperkeratosis of the skin. There was a marked improvement on areas the patient had treated. The importance of continuing with good skin care to reduce skin breakdown was reiterated. An outpatient appointment was made for 2 months later.

Fig 4. After 11 weeks compression



Table 1. Reduction in circumference left leg

Left Leg	0 weeks	11 weeks	23 Weeks	45 Weeks	Total Loss
Ankle	51 cm	42 cm	34 cm	32 cm	19 cm
% reduction*		18 %	33 %	37 %	
Mid – Calf	64 cm	48 cm	48 cm	50 cm	14 cm
% reduction*		25%	25%	22%	
Calf	63 cm	60 cm	52 cm	50 cm	13 cm
% reduction*		5%	17%	21%	

*from index visit

3 Leard, T., Barrett, C. Successful Management of Severe Unilateral Lower Extremity Lymphedema in an Outpatient Setting. *Phys Ther* 2015; 95: 9, 1295–1306.
4 Damstra, R.J., Partsch, H. Prospective, randomized, controlled trial comparing the effectiveness of adjustable compression Velcro wraps versus inelastic multicomponent compression bandages in the initial treatment of leg lymphedema. *J Vasc Surg Venous Lymphat Disord* 2013; 1: 1, 13–19.

Fig 6. Application of thigh piece with existing compression wrap



Fig 7. Application of thigh piece with existing compression wrap



When the patient returned 12 weeks later (total of 23 weeks treatment to his left leg, 12 weeks to his right leg) both of his legs were completely free of lymphorrhoea (Fig 5). His right leg now measured 34 cm at the ankle, 48 cm at the mid-calf and 52 cm at the calf, a reduction of 17 cm, 10 cm, 16 cm respectively (Table 2). The left leg measurements were checked showing 34 cm at the ankle, 48 cm mid-calf and 52 cm at the calf, a total reduction in girth at 23 weeks treatment on the left leg of 17 cm, 16 cm and 11 cm, respectively (Table 1). At the same time the 45 week measurements for the left leg were 32 cm at the ankle, 50 cm at the mid-calf and 50 cm in the calf. The patient discussed how he had been more proactive in the last few months adjusting the straps as his leg reduced in size. He also commented he had worn it for longer periods of time due to having faith in its efficiency.

On previous outpatient visits a hospital ambulance was required and the patient was wheelchair bound. On this visit he was mobilising independently and had returned to driving. His social interaction and ability to

Fig 8. After 45 weeks compression



Table 2. Reduction in circumference right leg

Right Leg	0 weeks	12 weeks	34 Weeks	Total
Ankle	51 cm	34 cm	33 cm	18 cm
%Reduction*		33 %	35 %	
Mid-calf	58 cm	48 cm	49 cm	9 cm
%Reduction*		17 %	16 %	
Calf	68 cm	52 cm	51 cm	17 cm
%Reduction*		24 %	25 %	

*from index visit

perform ADL had also further increased. He was now able to go to bed at night and his carpet was being cleaned to remove the offensive odour from the house.

Maintenance treatment was very challenging due to the shape of his limb. The ultimate treatment aim had always been long-term flat-knit hosiery. His calf and ankle had reduced dramatically, however, he was still left with a substantial level of oedema in the thighs. This shape proved very difficult to fit with hosiery. To treat this area of oedema a thigh wrap was fitted with the aim of reducing his thighs to a suitable level for hosiery. The patient was measured and fitted

from groin to knee meeting the original compression garment (Fig 6 and 7).

After 6 months the patient returned to clinic with a reduced thigh, the hyperkeratosis in the skin had completely disappeared with no evidence of any at-risk areas of skin (Fig 8). The thigh measurements had reduced despite difficulty in wearing the garment due to slippage of the thigh piece on mobility. The patient felt able to apply hosiery and maintain good skin care that was reinforced in clinic. Class-2 RAL bilateral thigh length flat-knit hosiery was ordered for maintenance treatment. Risk factors for further deterioration of condition were discussed including his raised BMI and weight loss.

Limitations

Limitations to this case study need to be considered; this was not carried out by a nurse trained in lymphoedema care but treatment was initiated by vascular surgeon and followed-up regularly in vascular clinic with a vascular clinical nurse specialist (CNS). The measurements were taken the same CNS at every visit. Although a single case report, it has brought to light issues on concordance, patient morale, use of new products like the compression garment and scope for managing this in a setting that does not have easy access to lymphoedema services so still falls into the remit of vascular surgery.

Discussion

Clinical perspective

The ability to manage massive lymphoedema with perfuse lymphorrhoea on an outpatient basis with

community support offers a promising option for patients. The use of the compression garment enabled this patient to be managed in a local hospital with routine follow-up.

Nursing perspective

For the product to be effective, patient concordance and initial community support is vital. The latter was largely due to the engagement of the vascular CNS with the patient's practice nurses. Without either of these components the treatment would not have been successful. The patient must also have good dexterity to not only apply the product but also adjust as necessary when fluid reduces.

Patient perspective

Although initially the patient did not seem engaged with the suggested treatment. With some community support he became empowered to take control of his own treatment. Independence in adjusting and applying the garment resulted in increased wear and concordance. The patient stated his quality of life had increased from being housebound and socially isolated to driving and attending social activities.

Conclusion

The use of this compression system could be a valuable alternative to compression bandaging for the treatment of lymphoedema in a select group of patients. **JWC**

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