Use of a two-layer compression system in severe bilateral leg lymphoedema with ulceration: A case report

Malou van Zanten1, Beth Kean2

1Lymphoedema Research Unit, PhD candidate, School of Medicine, Department of Surgery, Flinders University, South Australia
2Lymphoedema Research Unit, School of Medicine, Department of Surgery, Flinders University, South Australia

Background

A 61-year-old Caucasian male presented at the Lymphoedema Research Unit at Flinders University early April 2013. He had severe bilateral lymphoedema, which had progressed since he ceased all lymphoedema treatment in 2011 due high treatment costs (Picture 1).

The cause of lymphoedema has been traced back to a severe bilateral deep soft tissue wound infection in the groin after surgical removal of fibroma in 2009 (Picture 2).

In addition to the lymphoedema he has several comorbidities including morbid obesity, hypertension, and diabetes (type 2) impacting his health and complicating the lymphoedema. At time of presentation the skin on his lower legs showed signs of dryness, fissures, and distal bilateral posterior weeping ulcers. He also suffered recurrent episodes of erysipelas, further compounding the lymphoedema.

Aim

Reduce lymphoedema, facilitate wound healing and reduce associated wound discomfort.

Materials and Methods

Both lower limb were bandaged to the knee with 3M™ Coban™ 2 Layer Compression System using the toe-boot application method (3M,2011) for four weeks.

42–45mm/hg garment pressure, was required to reach the desired 50mm/hg of under- bandage pressure when standing (Kikuhime TT-MediTrade). Whole limb volume was measured using perometry (Pero-System) and both bio-impedance (In-Body) and site-specific tissue fluid (MoistureMeter-D, Delfin) was measured at anterior and posterior mid-thigh and both calf as well as dorsal site of the feet. Wound circumference was measured with a grid placed over the wound (Visitrak, Smith&Nephew). Measurements were obtained at baseline, three times per week during treatment, at the end of the four week treatment, and at the eight week follow up.

Results

Treatment with the Coban 2 Layer Compression System resulted in a clinically relevant reduction of limb volume (Graph 1, Picture 3) and facilitated wound healing (Table 1, Picture 3)

Total wound size in cm²

<table>
<thead>
<tr>
<th></th>
<th>Left leg</th>
<th>Right leg</th>
</tr>
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<tbody>
<tr>
<td>Baseline</td>
<td>25.8</td>
<td>29.7</td>
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<tr>
<td>Final</td>
<td>4.1</td>
<td>12.0</td>
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<tr>
<td>Follow up</td>
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<td>9.75</td>
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<tr>
<td>Total reduction</td>
<td>21.7</td>
<td>19.95</td>
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</table>

Table 1: Wound size reduction monitored with Visitrak grid

Graph 1: Fluid and volume reduction as measured by Bio-Impedance, perometry and circumference.

Conclusion

• This case report demonstrates two tenets of lymphoedema treatment.
  1. Early detection is crucial to prevent further progression in lymphoedema, including skin breakdown and the appearance of chronic wounds.
  2. Correctly applied bandaging using the right pressure, pressure gradient, and adapting to the individual patient’s needs (including mobility, comfort, and cost) can be effective even in severe cases as presented here. In addition to volume reduction and cessation of leakage, removal of excess fluid in the interstitial space is also thought to be an essential component for wound healing.

Acknowledgements

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References
