CASE STUDY:
Can Truncal Edema Be Treated With Pneumatic Compression?
By Tina Hammond, PTA, CLT-LANA

I. REASON FOR PRESENTING CASE

Investigation of treatment options for patients with truncal edema as a component of lymphedema revealed a lack of scientific evidence addressing the specific challenges of treating truncal edema. This, accompanied by a lack of available well accepted measurement techniques to evaluate the impact of treatment on truncal edema, led this therapist to investigate the response of truncal edema to lymphedema treatment, and further to question how clinicians might better target treatments to assist this patient population.

This case presentation illustrates the use of clinical experience to identify and suggest new areas of study to enhance evidenced-based practice for truncal edema. In this case the question being explored is: “can use of an advanced pneumatic device improve truncal edema and limb volume in a patient with multiple affected regions and recalcitrant truncal edema?”

II. CASE HISTORY

The patient is a female diagnosed with bilateral (right > left) lower extremity lymphedema in August 2006 at age 44. Her lymphedema was determined to be primary lymphedema based on clinical findings which included leg asymmetry, progressive swelling, fibrosis, and family history. At the time of initial evaluation her weight was 231 lbs, height was 5’1” and BMI was 43.6, within the obese range. Initially, her symptoms presented after working long hours involving prolonged sitting at a computer. Past medical history included asthma, sleep apnea, hypothyroidism, left achilles tendonitis and cholecystectomy.

III. PSYCHOSOCIAL HISTORY

The patient resides in a single family home with her family and dog. She works full time in a hospital setting as a computer system’s trainer. Her job entails a prolonged sedentary and stressful work environment with frequent 12 - 14 hour work days.

IV. FUNCTIONAL LIMITATIONS

At the initial evaluation, the patient had poor tolerance to standing and sitting for extended periods. She was unable to walk three street blocks without pain. She had limited ability to bend, squat, or kneel, and decreased range of motion in the right ankle. Her pain was rated 6 out of 10 on a pain analog scale. The most severe pain occurred in the right knee and anterior lower leg. She also had decreased sensation on the medial aspect of the right lower leg. The patient had missed one month of work due to these limitations. Daily activities such as walking her dog and driving were increasingly difficult and impaired by poorly controlled leg and truncal swelling.

V. SUMMARY OF TREATMENT GOALS

Short-term goals were to decrease right knee pain, decrease limb volume in the right lower extremity and trunk, and patient demonstration of independence in self-administered manual lymph drainage (MLD) and therapeutic home exercise. Long term goals were to decrease bilateral lower extremity and trunk LE volume, and independence with patient’s home management program to include self-MLD, therapeutic exercise, compression bandaging and compression garment donning and care.

VI. THERAPEUTIC INTERVENTION

Limb elevation and diuretics had minimal effect over a period of two months therefore in-clinic complete decongestive therapy (CDT) was indicated and initiated 9-11-06. The patient was seen three times per week for five weeks, then twice per week for two weeks for CDT including MLD, compression bandaging and garments, therapeutic exercise, skin care and patient education. A multi-chambered, calibrated, sequential Pneumatic Compression Device (PCD) that prepares and treats the trunk as well as the lower extremity was incorporated into the in-clinic treatment sessions from 9-22-06 to 10-26-06. Trigger point treatment and ultrasound to the right anterior tibialis and extensor digitorum longus were added (9-29-06 through 10-26-06).

Compression garments of 20–30 mmHg pressure were worn daily at all times practical. Maternity pantyhose were found to be the best option to accommodate the patient’s large abdomen while providing a sufficient level of compression that was well tolerated. (Other garment types had failed to provide an appropriate and comfortable fit.)
fit.) In transition to home management, she was instructed and demonstrated proficiency in self-MLD, bandaging, therapeutic exercise, compression garment wear and care, and skin care.

VII. TREATMENT OUTCOME/COMPLICATIONS

The patient was very committed to her self-management program at home and was managing her limb volumes appropriately. However, three weeks post-discharge she experienced an exacerbation of truncal swelling following air travel, necessitating a return to the clinic for additional treatment. Circumferential measurements of her trunk revealed a 5 cm increase in girth. She also reported increased stiffness and discomfort in her torso and hips. Compression shorts were added to address the truncal lymphedema, however these provided limited clinical benefit.

<table>
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<tr>
<th>Date</th>
<th>Hip</th>
<th>Waist</th>
<th>Right Leg Volume</th>
<th>Left Leg Volume</th>
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<td>118.0 cm</td>
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<td>↓ 3.0 cm</td>
<td>↓ 675 ml</td>
<td>↓ 810 ml</td>
</tr>
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VIII. FOLLOW-UP TREATMENT/OUTCOME

Based on the positive patient outcomes in the clinic with use of the advanced programmable PCD, an eight-week home PCD trial was initiated consisting of daily one-hour-long treatment sessions on each leg and trunk. In addition, the patient utilized

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There was an additional 10.5% reduction in the right leg and a 12.5% reduction in the left leg. Pain decreased from 2-3/10 to 0. Her mobility improved allowing her to resume walking her dog the usual and desired distance. She reported less stiffness in her torso, hips and abdomen.

IX. CONCLUSION

This patient received CDT with utilization of an advanced programmable PCD during the in-clinic and home maintenance phases to treat her truncal and lower extremity lymphedema. For the past two years the patient has continued to effectively control her lymphedema utilizing the advanced PCD in addition to exercise and daily garment wear. She modifies her treatment regime as needed with supplemental device programs used to target specific areas. These options are available using the programmable components of the PCD. She has required no additional in-clinic treatment for complications of lymphedema.

Based on the positive outcomes in this case and a lack of evidence that addresses assessment, treatment challenges, and outcomes measurement for truncal lymphedema, this therapist will continue her investigation in this area.

While the limb volumes showed a greater reduction with the PCD, the outcomes in the trunk do warrant further study with this device. This case study emphasizes how clinical practice can support the rationale for new areas worthy of research for the advancement of evidence-based practice in the treatment of lymphedema.

Tina Hammond, CMT, PTA, CLT-LANA
Washington Hospital,
Castro Valley, CA
tina_hammond@whhs.com