ADEQUACY OF USING LEG SEGMENTS GREATER THAN FOUR CENTIMETERS TO ASSESS LEG VOLUME CHANGES IN PATIENTS WITH BILATERAL LYMPHEDEMA

HN Mayrovitz, PhD, J Macdonald, MD, S Davey, OTR/L, CLT-LANA, K Olson, DPT, CLT, E Washington, BS

Purpose: Volume changes are often used to evaluate progression and outcomes of therapy for limb edema and lymphedema. A widely used clinical method employs tape-measure circumferences from which limb-volumes are estimated based on a geometric limb-model and mathematical algorithm. Historically it has been assumed that circumferences should be measured every four centimeters to achieve needed accuracy. Our goal was to compare outcome assessments with different separations.

Methods: In 70 patients with bilateral leg-lymphedema, leg-volume (140 legs) and its change with lymphedema-therapy were estimated using circumference separations of 4, 8 and 12 cm. Leg-volumes were determined before and after at least 10 CDP treatments using a truncated-cone model and validated automated software†. Outcome efficacy, which is the primary clinical parameter of interest to patient and therapist, was assessed by comparing leg-volume reductions for each circumference separation.

Results: Pre-treatment and post-treatment leg-volumes differed slightly but significantly (p<0.01), with 4 cm separations yielding the smallest volume and 12 cm separations the largest. However, therapy-related volume reductions assessed by each method were not different being 17.2±7.1%, 17.1±7.2% and 17.4±7.0% for separations of 4, 8 and 12 cm respectively.

Conclusions: Measurements at 4 cm intervals are not generally necessary to adequately assess clinical outcomes.

†Limb Volumes Professional 4.0, www.limbvolumes.org