A novel approach to the treatment of lower extremity lymphedema by transferring a vascularized submental lymph node flap to the ankle

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Objective. Vascularized groin lymph node flaps have been successfully transferred to the wrist to treat post-mastectomy upper limb lymphedema. This study investigated the anatomy, mechanism and outcome of a novel vascularized submental lymph node (VSLN) flap transfer for the treatment of lower limb lymphedema.

Methods. Bilateral regional submental flaps were dissected from three fresh adult cadavers for histological study. A unilateral submental flap was dissected in another six fresh cadavers after latex injection. The VSLN flap was transferred to the ankles of seven lower extremities in six patients with chronic lower extremity lymphedema. The mean patient age was 61 ± 9.4 years. The average duration of lymphedema symptoms was 71 ± 42.2 months.

Results. There was a mean of 3.3 ± 1.5 lymph nodes around the submental artery typically at the junction with the facial artery, on the six cadaveric histological sections. Mean of 2.3 ± 0.8 sizable lymph nodes were dissected and supplied by the submental artery in six cadaveric latex-injected submental flaps. All seven VSLN flaps survived. One flap required re-exploration for venous congestion but was successfully salvaged. There was no donor site morbidity. At a mean follow-up of 8.7 ± 4.2 months, the mean reduction of the leg circumference was 64 ± 11.5% above the knee, 63.7 ± 34.3% below the knee and 67.3 ± 19.2% above the ankle.

Conclusion. The transfer of a vascularized submental lymph node flap to the ankle is a novel approach for the effective treatment of lower extremity lymphedema.