

Correlation between Quantity of Transferred Lymph Nodes and Outcome in Vascularized Submental Lymph Node Flap Transfer for Lower Limb Lymphedema

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Background: Vascularized lymph node transfer has shown promising results in the treatment of lower limb lymphedema, but little is known about the number of lymph nodes needed for the transfer to achieve optimal results. This study investigated the correlation between number of transferred lymph nodes in submental vascularized lymph node transfer and outcomes regarding limb circumference reduction and cellulitis incidence.

Methods: Thirty-five patients who had received vascularized submental lymph node transfer to an ankle for lower limb lymphedema following gynecologic cancer treatment were included in the study. Limb circumference was determined by means of tape measurement preoperatively and postoperatively and was used to calculate the circumferential difference. Ultrasonography was performed postoperatively to determine the number of lymph nodes within the transferred flap. Patients were divided into groups A through C depending on the number of transferred lymph nodes: 1 or 2 ($n = 10$), 3 or 4 ($n = 14$), and 5 to 8 ($n = 11$), respectively.

Results: The mean age of the patients was 60.0 ± 9.2 years. All flaps survived. The mean improvement of circumferential difference for the whole cohort was 19.8 ± 9.2 percent. Groups B and C both had significantly higher improvements in the circumferential difference than group A ($p = 0.04$ and $p = 0.02$, respectively), but when compared to each other, the difference was nonsignificant. All groups had significant reductions in the incidence of cellulitis postoperatively.

Conclusions: Submental vascularized lymph node transfer for lower limb lymphedema reduced the incidence of cellulitis, regardless of the number of transferred lymph nodes. The transfer of three or more lymph nodes provided significantly better outcome regarding limb circumference reduction than the transfer of two or fewer lymph nodes. (*Plast. Reconstr. Surg.* 142: 1056, 2018.)

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, III.

Lymphedema is a pathologic condition that can be either primary or secondary. Primary lymphedema is a heterogeneous group of conditions with congenital dysfunction of the lymphatic system, such as congenital hereditary lymphedema, familial lymphedema praecox,

or lymphedema tarda.^{1,2} Worldwide, secondary lymphedema is most commonly caused by infection (filariasis), but in the Western world, the most common reason is iatrogenic because of cancer surgery with or without radiation therapy: upper extremity lymphedema resulting from breast cancer treatment and lower extremity lymphedema resulting from pelvic surgery for gynecologic cancers.^{3,4} Irrespective of cause, the dysfunction in the lymphatic system causes an accumulation

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