



Fig. 2. Creation of a three-dimensional face avatar and analysis with MeshLab v.1.3.2. Direct measurements such as maximal eyelid aperture are possible.

and gross brow hairline distortion. (See **Figure, Supplemental Digital Content 2**, which shows frontalis muscle contraction, <http://links.lww.com/PRS/B284>.) When ordering palpebral voluntary closure, the patient could not completely close his left eyelid. The problems seem to affect mainly the upper and middle thirds of the face, as good excursion of the oral commissures was seen.

Concerning thermographic analysis, when comparing the measures to a control group (28 normal subjects), he showed a persistent tendency for contralateral thermal asymmetries, with the highest values of surface temperature on the right side, and the highest values on the right forehead area. [See **Figure, Supplemental Digital Content 3**, which shows average temperature and standard deviation (area 1) and left (area 2) forehead areas during the four facial expressions (patient 1). The *hatched bars* represent the mean values and standard deviations of the control group for the same task, <http://links.lww.com/PRS/B285>.] Surface temperature reduction on the left labial commissure was also seen. (See **Figure, Supplemental Digital Content 4**, which shows smiling analysis, <http://links.lww.com/PRS/B286>.) These findings were probably a consequence of muscular damage, fibrosis, facial nerve paralysis, and decrease of the regional blood flow. These technologies could have a place in the management of facially disfigured patients, and further studies are needed.

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PATIENT CONSENT

The patient provided written consent for the use of his images.

DISCLOSURE

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Ricardo Horta, M.D.

Rita Valença-Filipe, M.D.

Ricardo Nascimento, M.D.

Alvaro Silva, M.D.

José Manuel Amarante, M.D., Ph.D.

Department of Plastic, Reconstructive, and Maxillofacial Surgery, and Burn Unit
Centro Hospitalar de São João
Porto Medical School
Porto, Portugal

Correspondence to Dr. Horta

Avenida Meneses, No. 234

Bloco 2, 4° Frente Esquerdo

4450-189 Matosinhos Sul, Porto, Portugal

ricardojmhorta@gmail.com

Lymph Node Transplantation and Quantitative Clearance Lymphoscintigraphy

Sir:

Lymphedema remains a serious burden of disease, with physical therapy the primary readily available treatment option with limited success. Multiple surgical procedures aimed at improving the lymphatic physiology of affected extremities are being performed at many institutions worldwide. However, no ideal method of evaluating the severity of disease and results of these procedures has been agreed on.¹ We offer the first report of quantitative clearance lymphoscintigraphy in the preoperative and postoperative evaluation of a lymph node transplantation.

A 61-year-old woman with an 8-year history of left upper extremity lymphedema following a left axillary dissection for breast cancer management presented to the University of Florida. The patient's lymphedema was staged as a Hung-Chi Chen IIIb/Campisi III.^{2,3} Lymph node transplantation was performed based on the superficial circumflex iliac vessels in the right groin to the left wrist. Preoperative and postoperative quantitative clearance lymphoscintigraphy was performed using technetium-99m sulfur colloid (10 percent filtered, 1 μ m; 90 percent unfiltered) injected into the first webpace. Twenty-four-hour clearance values were obtained after each injection.

Preoperative quantitative lymphoscintigraphy demonstrated 18 percent removal of colloid from the injection site at 24 hours with slow uptake at the supraclavicular nodes, no identifiable axillary lymph nodes, severe dermal backflow, and no hepatic clearance (Fig. 1). At 3-month follow-up, repeated injection at the same site 24 hours later revealed visualization of the transplanted nodes, 40 percent removal of colloid from the injection site, persistent slow uptake at the supraclavicular nodes, marked improvement in dermal backflow, and the presence of hepatic clearance (Fig. 2).

To adequately compare procedures and results, surgeons undertaking physiologic procedures for lymphedema must develop standardized techniques to

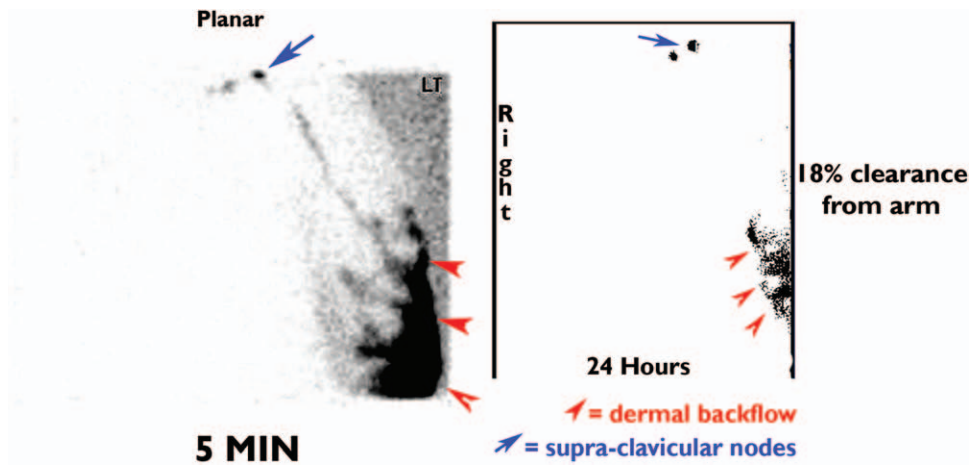


Fig. 1. Preoperative quantitative clearance lymphoscintigrams at 5 minutes and 24 hours following injection of technetium-99m sulfur colloid; 18 percent clearance of the colloid is noted at 24 hours.

accurately quantify levels of success or failure. Current methods of quantification such as circumferential measurements and volumetry are user dependent, thereby complicating our ability to compare results between patients, surgeons, and institutions. Although our experience is early, quantitative clearance lymphoscintigraphy appears to offer confirmation of lymph node viability, qualitative information regarding lymphatic flow patterns, and objective lymphatic clearance values.
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Dhruv Singhal, M.D.

Department of Surgery
Division of Plastic and Reconstructive Surgery
University of Florida Health System
University of Florida Medical School
Gainesville, Fla.

Lisa Spiguel, M.D.

Christiana Shaw, M.D.

Department of Surgery
Division of Surgical Oncology
University of Florida Health System
University of Florida Medical School
Gainesville, Fla.

Stamatis Sapountzis, M.D.

Department of Plastic and Reconstructive Surgery
China Medical University Hospital
Taichung, Taiwan

Bruce Mast, M.D.

Department of Surgery
Division of Plastic and Reconstructive Surgery
University of Florida Health System

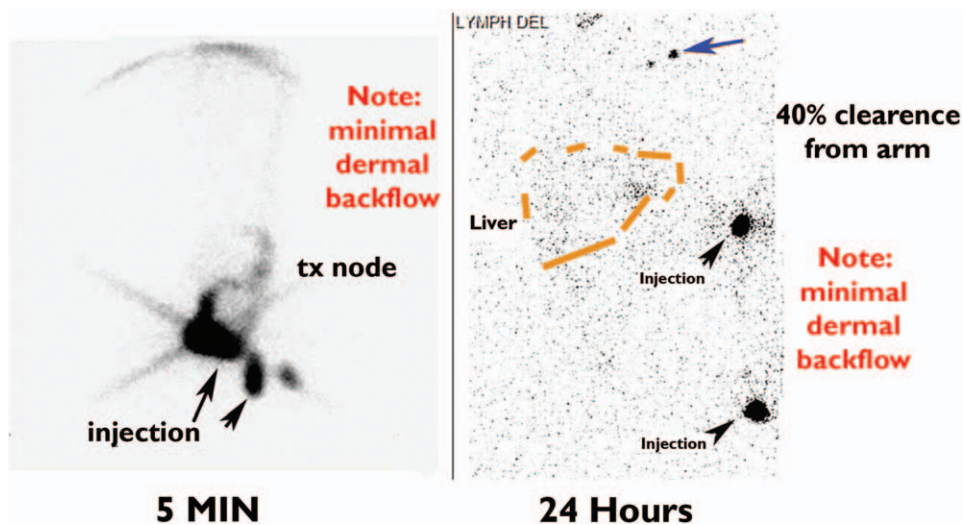


Fig. 2. Three-month postoperative quantitative clearance lymphoscintigrams following lymph node transplantation to the wrist. Transplanted (tx) nodes are identified with 40 percent clearance of the colloid at 24 hours.

University of Florida Medical School
Gainseville, Fla.

Hung-Chi Chen, M.D.

Department of Plastic and Reconstructive Surgery
China Medical University Hospital
Taichung, Taiwan

Walter Drane, M.D.

Department of Radiology
University of Florida Health System
University of Florida Medical School
Gainseville, Fla.

Correspondence to Dr. Singhal
Division of Plastic Surgery
University of Florida
1600 Archer Road
P.O. Box 100138
Gainesville, Fla. 32610-0138
dhruv.singhal@surgery.ufl.edu

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The Incidence of Donor-Site Morbidity after Transverse Cervical Artery Vascularized Lymph Node Transfers: The Need for a Lymphatic Surgery National Registry

Sir:

Surgical treatment for lymphedema is expanding at a rapid pace. The following case demonstrates a critical need for communication between surgeons, whether they are invested in microsurgical techniques or debulking liposuction.

A 57-year-old woman with bilateral lower extremity primary lymphedema tarda underwent a right transverse cervical artery vascularized lymph node transfer to the left lower extremity (the first surgeon was Marga F. Massey, M.D.; the second surgeon is not identified but was in an independent practice in a different state than Dr. Massey). Her preoperative lymphoscintigram (Fig. 1, left) demonstrated no lymph node tracer uptake in either groin. Eight months after surgery, the patient



Fig. 1. (Left) Lymphoscintigram of the patient obtained preoperatively, 4 hours after injection before right transverse cervical artery vascularized lymph node transfer to the left groin for left lower extremity lymphedema tarda. Bilateral axillary regional lymph node uptake of tracer is denoted by the red arrow, suggesting normal anatomy and function of the upper extremities. Lack of bilateral inguinal uptake is denoted by the green arrow and is consistent with her clinical presentation. (Right) Lymphoscintigram of the patient 8 months postoperatively, 4 hours after injection. The red arrow highlights a lack of right axillary tracer uptake. This combined with new right arm dermal backflow (blue asterisk) correlates with the postoperative presentation of right upper extremity lymphedema believed to be iatrogenic. New right inguinal tracer uptake is denoted by the green arrow. This finding begs further investigation of variable imaging techniques versus a dynamic physiologic state of primary lymphedema tarda. No tracer uptake is noted in the location of the vascularized lymph node transfer in the left groin, which is consistent with prior published reports, that only 30 percent of vascularized lymph node transfers take up tracer despite clinical improvement of lymphedema (Becker C, Assouad J, Riquet M, Hidden G. Postmastectomy lymphedema: Long-term results following microsurgical lymph node transplantation. *Ann Surg*. 2006;243:313–315).

presented with intermittent mild right arm swelling. Repeated lymphoscintigraphy showed no tracer uptake in the right axilla (ipsilateral to the cervical donor site) and a new finding of tracer uptake in the nonoperative right inguinal region (Fig. 1, right). The patient was subsequently lost to in-person follow-up after having

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