

The Use of Magnetic Resonance Angiography in Vascularized Groin Lymph Node Transfer: An Anatomic Study

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Abstract

Vascularized groin lymph node transfer (VGLNT) has been successfully used to treat lymphedema. However, lack of familiarity with the inguinal node anatomy and concerns regarding donor site morbidity have limited its widespread use. The purpose of this study was to use magnetic resonance angiography (MRA) to clarify the inguinal anatomy and provide a reliable method for identifying the location of the superficial transverse inguinal lymph nodes. In this study MRA was used to evaluate the superficial inguinal lymph nodes in 117 patients. Coordinates of lymph nodes were plotted relative to an axis from the anterior superior iliac spine (ASIS) to the pubic tubercle (PT). The nodes were also plotted relative to the superficial circumflex iliac vein (SCIV) and superficial inferior epigastric vein (SIEV). A total of 1,938 lymph nodes were identified. These lymph nodes were concentrated on one-third the distance from the PT toward the ASIS and 3 cm perpendicularly below this line. About 67% of the superficial inguinal nodes were located within the bifurcation of the SIEV and SCIV. The results from this study provide useful guidelines for locating lymph nodes targeted for VGLNT.

Keywords

- ▶ vascularized lymph node transfer
- ▶ magnetic resonance angiography
- ▶ lymphedema
- ▶ lymphatic anatomy
- ▶ superficial circumflex iliac artery
- ▶ groin flap

Lymphedema is one of the most dreaded sequelae of breast cancer treatment.^{1–4} Decongestive physiotherapy and lifelong compression of the upper extremity has been the standard of care. However, compliance is difficult and many patients still have progression of their disease and episodes of cellulitis despite strict adherence to their regimen.

Vascularized groin lymph node transfer (VGLNT) has recently gained increasing popularity among microsurgeons as successful use of this technique has been reported in the treatment of lymphedema.^{5–9} VGLNT involves harvest of lymph nodes and perinodal fat based on the superficial

circumflex iliac artery (SCIA). These lymph nodes typically drain lymph from the lower abdomen. This flap is transferred to the affected extremity with a venous and arterial anastomosis. Induction of lymphangiogenesis into the transplanted nodes with shunting of lymph into the venous circulation is one hypothesis that has been proposed, although a definitive explanation of the underlying mechanism has yet to be established.^{5,7,10}

While an increasing number of microsurgeons are performing this technique, there is sparse literature on the superficial groin lymph node anatomy as it relates to lymph

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