Is the Deep Inferior Epigastric Lymph Node Flap an Appropriate Alternative to the Right Gastroepiploic Lymph Node Flap for Treatment of Upper Extremity Lymphedema?

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INTRODUCTION: Upper extremity lymphedema is a debilitating complication of mastectomy that significantly affects quality of life in 6-30 percent of breast cancer patients.[1] In refractory cases, vascularized lymph node transfer (VLNT) from various sites can be used, however threat of donor site iatrogenic lymphedema has led to search for other harvest areas. In recent years, the right gastroepiploic lymph node flap (RGELNF) has gained popularity because it lacks risk of donor site lymphedema.[2] The deep inferior epigastric (DIE) system has been shown to have adequate lymphatic tissue and nodes, making it an appropriate donor site for treatment of lymphedema.[3] The purpose of our study was to compare post-operative outcomes of RGE and DIE sites for upper extremity lymphedema treatment.

METHODS: A retrospective review of patients who underwent VLNT for post-mastectomy lymphedema was conducted. Measurements were taken preoperatively and postoperatively at 10cm above and below the elbow, and 5cm above the wrist. Circumferential difference (circumference of lesion minus healthy limbs divided by healthy limb circumference) and circumferential reduction rate (preoperative difference between circumferences of lesion and healthy limbs minus postoperative difference, divided by preoperative difference) were calculated from measurements obtained at one and three months post-operatively. Statistical analyses were performed on SPSS 23.

RESULTS: 14 patients underwent VLNT between 2014-2015. Group 1 underwent RGELNF (n=11), and Group 2 underwent DIELNF (n=3). There were no significant patient demographic differences. Average follow-up was 134.87days. Average circumferential difference was not significantly different between Groups 1 and 2 at 1 month (8.72% and 4.79% respectively, p=0.583), at 3 months (4.27% vs. 2.82% respectively, p=0.801). Circumferential reduction rate was not significantly different at 1 month (26.72% vs 43.06% respectively, p=0.406), at 3 months (36.99% vs. 52.94% respectively, p=0.543). Abdominal wound infection rates in Group 2 were statistically significant (9% vs 66%, p=0.031). There was no flap loss in either group.

CONCLUSION: DIELNF offers an alternative treatment approach for post-mastectomy extremity lymphedema. It seems to be just as effective in reducing lymphedema without risk of causing donor site iatrogenic lymphedema. We consider it to be an excellent alternative for patients in which intra-abdominal lymph node harvest is prohibitive due to multiple previous surgeries. Further studies, with larger sample sizes, are needed to determine true long term outcomes with use of this flap.

1. Cheng MH, Huang JJ, Wu CW et al. The mechanism of vascularized lymph node transfer for lymphedema: natural lymphaticovenous drainage. *Plast Reconstr Surg*. 2014; 133(2): 192e–8e.

2. Ciudad P, Maruccia M, Socas J, et al. The laparoscopic right gastroepiploic lymph node flap transfer for upper and lower limb lymphedema: technique and outcomes. *Microsurgery.* 2015.doi: 10.1002/micr.22450

3. Socas J, Ciudad P, Chen HC, Tholpady S. Deep Inferior Epigastric Lymph Node flap: potential new donor site for the treatment of extremity lymphedema. Paper presented at the American Association of Micro Surgeons - American Association of Lymphedema Surgeons; 2016; Scottsdale, Arizona.