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Evaluation of Venous Complication in Vascularized Lymph Node Flaps for the Management of Upper and Lower Lymphedema and Assessment of Their Long-term Outcome

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Backgrounds: Advancement in radiological imaging, surgical techniques and devices have eminently contributed to the popularization of physiological treatment for lymphedema. Vascularized lymph node transfer (VLNT) has become widespread treatment for lymphedema with promising outcome. However, the success of VLNT does not come without the risk of complications. We reviewed our patients who underwent VLNT, identified those who had venous complication and evaluated their outcome.

Methods: Prospectively collected data at Chung Gung Memorial Hospital was retrospectively evaluated. All patients underwent pre-operative evaluation including history and examination, lymphoscintigraphy, Indocyanine green examination and Computed tomography (CT) scan, ultrasound doppler, MRI, and post-operative follow-up included CT scan and/or doppler. Only flaps that were transferred to distant recipient site were included. Bilateral lymphedema patients and omentum flaps were excluded from this study.

Results: Between May 2013 and September 2018, 135 VLNTs for upper and lower extremity lymphedema were performed (118 vascularized submental lymph node flaps, 7 vascularized groin flaps). Of those, 12 flaps (8.9%) had venous complication requiring return to theatre. All flaps were successfully salvaged. Mean follow-up was 38.8 months. The mean reduction of limb circumference difference measured at the patients' latest follow-up were, venous congestion group, above knee (AK) or above elbow (AE): 4.3cm and below knee (BK) or below elbow (BE): 3.6cm, compared to the control group, AK/AE: 4.5cm and BK/BE: 5.9cm. Mean post-operative lymph node count within flaps for venous congestion group: 4.9 lymph nodes and control group: 3.9. Other complications include partial flap loss requiring skin graft 5.2%, hematoma 3.7% and arterial complication 1.5%.

Conclusions: Despite the venous complication associated with VLNT, outcome of those patient showed significant improvement of their circumferential measurements and consistent number of lymph nodes present post-operatively. Nevertheless, re-exploration is a psychological burden to the patient and every effort should be made to minimize the risk.