

Optimal Sites for Supermicrosurgical Lymphaticovenular Anastomosis: An Analysis of 1259 Anastomoses

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BACKGROUND: With establishment of supermicrosurgery (microvascular anastomosis of 0.5 mm vessel), supermicrosurgical lymphaticovenular anastomosis (LVA) is becoming a choice of treatment for compression-refractory lymphedema.^{1,2} It is important to anastomose a lymphatic vessel with abundant lymph flow for effective bypass.^{2,3} However, optimal site for LVA is yet to be clarified.

METHODS: LVA was performed on 264 limbs of 134 lower extremity lymphedema (LEL) patients. Intraoperative lymphatic vessel's findings were assessed according to characteristics of limbs, and preoperative indocyanine green (ICG) lymphography findings.^{4,5} Univariate and multivariate analyses were performed to clarify factors associated with lymphatic vessel's diameter and lymphosclerosis.

RESULTS: LVA resulted in 1259 anastomoses using 949 lymphatic vessels at 794 surgical sites. The number of anastomoses per limb ranged from 1 to 16 (median 5). Multivariate analyses revealed that factors associated with larger lymphatic vessel (0.5 mm or larger) were age [65 or older; odds ratio (OR) 1.403], radiation history (OR 1.622), incision in thigh/leg (compared with groin; OR 1.607/1.628), and ICG lymphography of Stardust/Diffuse pattern (compared with Linear pattern; OR 0.529/0.047), and that factors associated with severe lymphosclerosis were body mass index (25 or larger; OR 1.775), radiation history (OR 0.465), incision in thigh/foot (OR 2.378/4.444), and ICG lymphography of Stardust/Diffuse pattern (OR 82.048/1406.174).

CONCLUSIONS: Factors associated with lymphatic vessel's diameter and sclerosis were clarified. It is important to put an incision for LVA in regions with higher probability to find a large lymphatic vessel with less lymphosclerosis. ICG lymphography finding is the most important preoperative indicator to predict lymphatic vessel's condition, and LVA should not be performed in regions with Diffuse pattern.

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