A Prospective Assessment of Anatomic Variability of the Submental Vascularized Lymph Node Flap

Introduction

The vascularized submental lymph node (VSLN) flap is an excellent option when deciding to pursue surgical treatment of lymphedema. A detailed understanding of the anatomic variations related to the VSLN flap will allow for a safe and predictable flap harvest.

Methods

Vascular anatomy was prospectively collected for a consecutive 42 VSLN flap transfers. A classification system is described based on the frequency and occurrence of arterial and venous variations. Arterial variation is described as related to the vessel coursing superior (A1), through (A2), or inferior (A3) to the submandibular gland. Vein classification is based on a similar relationship (V1-V3) with the addition of a dual venous system (V4).

Results

Two arterial (A1 & A2) variations existed, while 4 venous (V1-V4) variations existed in all patients. Overall, the A1 arterial course (74%) was found in a greater frequency as compared to the A2 course (26%). The most common arteriovenous (AV) configuration occurred in 31% of patients (A1V1), followed by a divergent AV configuration (A1V3) in 21.4% of patients. Flap harvest time was significantly longer when the A2 arterial course was found ($p<0.01$).

Conclusions

Consistent vascular variability exists as related to the submandibular gland. The most common AV configuration is seen with the main vessels being present superior to the submandibular gland just below the mandibular border. Overall, most AV configurations are found with divergent vessels being present in relationship to the submandibular gland. In addition, the presented classification system can aid in categorizing flap characteristics to standardize outcome measure reporting.