

Platysma-Sparing Vascularized Submental Lymph Node Flap Transfer for Extremity Lymphedema

IGOR POCCIA, MD,¹ CHIA-YU LIN, MSc,¹ AND MING-HUEI CHENG, MD, MBA^{1,2*}

¹Division of Reconstructive Microsurgery, Department of Plastic and Reconstructive Surgery, Chang Gung Memorial Hospital, College of Medicine, Chang Gung University, Taoyuan, Taiwan

²Center for Tissue Engineering, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Background and Objectives: Due to its consistent vascular and lymphatic anatomy, the vascularized submental lymph node flap is a reliable option for lymphedema treatment. Despite these advantages, flap harvest requires resection of platysma, which may cause a marginal mandibular nerve pseudo-paralysis. The aim of this study was to investigate the donor site morbidity of an innovative platysma-sparing vascularized submental lymph node flap transfer for treating extremity lymphedema.

Methods: Ten patients undergoing platysma sparing submental lymph-node flap harvest were prospectively enrolled in the study and compared with a control group of 10 patients who underwent standard submental lymph-node flap harvest. Photogrammetry analysis was used to assess donor site morbidity with regards to marginal mandibular nerve pseudo-paralysis.

Results: All flaps survived. No necrosis of the skin paddle was observed in both groups. There were no marginal mandibular nerve palsies in both group. There were no cases of marginal mandibular nerve pseudo-paralysis in the platysma sparing group.

Conclusions: The platysma sparing submental flap, while offering comparable functional improvement for extremity lymphedema, has the advantages of maximizing nerve and muscular preservation, significantly reducing donor site morbidity.

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KEY WORDS: platysma sparing submental lymph-node flap; vascularized lymph-node transfer; donor site morbidity

INTRODUCTION

Lymphedema is a chronic and progressive condition that can severely affect a patient's quality of life, which is a multidimensional formula that comprises emotional, functional, social/family, and physical domains [1].

Recent microsurgical advances in the treatment of lymphedema promise encouraging results, and vascularized lymph-node transfer is becoming quite popular in improving the defective limb drainage [2–6]. To date, many international groups are studying lymphedema, but standard treatment guidelines remain debatable. Patient selection criteria, timing and type of surgery, donor and recipient sites, and post-operative care are only small parts of the puzzle to be elucidated [7].

A recent meta-analysis investigated the efficacy of vascularized lymph-node flap and lympho-venous anastomosis for the treatment of lymphedema [8]. It assessed primary outcomes in terms of circumference reduction and secondary outcomes in terms of the need for compression garments in the post-operative period. Even though the authors found comparable primary outcomes in both groups, when considering secondary outcomes the patients in the vascularized lymph node-flap group appeared to fare much better, with a greater likelihood of discontinuing compressive garments in the distal recipient site transfers [8].

Among different options, the vascularized submental lymph-node (VSLN) flap was reported by the senior author for the treatment of lower extremity lymphedema, and proved to be a reliable and effective lymph node flap [2]. When compared to more traditional approaches such as groin or axillary flaps which may induce iatrogenic lymphedema of the donor limb [9–10], the VSLN flap has the benefit of being a safer option. Despite the submental scar is inconspicuous, the anatomy is consistent and the flap is less bulky when compared to traditional groin lymph node flaps, flap harvest has the potential for injury of the marginal mandibular nerve. Furthermore, flap harvest requires platysma

elevation to include perforating branches from the submental artery and level I lymph nodes. As reported by previous authors, platysma resection may affect lower lip position during mouth motion [11,12]. This condition, known as “marginal mandibular nerve pseudo-paralysis,” is caused by a lack of platysma depressive action on elevator muscles, giving an asymmetric smile and an elevation of the lower lip [13,14].

The aim of this study was to describe and investigate the efficacy of an innovative platysma-sparing vascularized submental lymph-node flap in preventing the marginal mandibular nerve pseudo-paralysis.

PATIENTS AND METHODS

After institutional board approval, 10 consecutive patients undergoing platysma sparing submental lymph-node flap harvest for extremity lymphedema were prospectively enrolled in the study (Group

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*Correspondence to: Ming-Huei Cheng, MD, MBA, FACS, Division of Reconstructive Microsurgery, Department of Plastic and Reconstructive Surgery, Chang Gung Memorial Hospital, College of Medicine, Chang Gung University, 5, Fu-Hsing Street, Kweishan, Taoyuan 333, Taiwan. Fax: +886-3-3972681. E-mail: minghueicheng@gmail.com; minghuei@cgmh.org.tw

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