Proposed pathway and mechanism of vascularized lymph node flaps

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HIGHLIGHTS

• Vascularized submental lymph node flap is effective for limb lymphedema.
• Flaps containing lymph nodes absorbed more fluid than those that did not.
• A mechanism and pathway is proposed based on the results of this study.

1. Introduction

Lymphedema is a complex proliferative process that results from disruptions of the lymphatic circulation, affecting as many as five million Americans, and 200 million worldwide [1–2]. Disease onset may be insidious, with progressive swelling followed by inflammation, fat hypertrophy and fibrosis. Lymphedema may be primary or idiopathic, but more commonly results from lymphadenectomy and radiation. According to studies, patients who had gynecological surgery and lymphadenectomy, as well as those who received pelvic radiation therapy have 10–49% chance of developing lower limb lymphedema. Upper limb lymphedema is also quite common for those who underwent mastectomy, accounting for an estimated 4–62.5% among patients who have received underarm lymphadenectomy and radiotherapy [3]. Preventative strategies are generally more effective than strategies with curative intent. Non-operative management may be mechanical or medical. The most effective surgical strategies are bypass procedures like lymphovenous anastomosis (LVA) or lymphatic tissue autotransplantation (vascularized lymph node transfer, VLN) [1,4–10]. The mechanism of VLN flaps transferred distally to the affected limb was previously proposed: vascularized lymph nodes act as the motor of a...