INTRODUCTION: We developed two new tactics to increase the efficacy of vascularized lymph node transfer (LNT) for lower-extremity lymphedema (LEL): the multiple lymph node flaps (LNFs) and the prefabricated lympho-venous shunt. In this study, the efficacy of each method was compared to that of conventional single LNT.

METHODS: The results of LNT for LEL were compared between the conventional single LNT group (control group; n = 21 limbs), the multiple LNFs group (n = 13), and the prefabricated lympho-venous shunt group (n = 13) in terms of volume improvement (the LEL index), lymphoscintigraphy findings, and the rate of functional survival and lymph node sizes (evaluated using ultrasonography) at 6 months after surgery.

RESULTS: LEL index was significantly improved in the prefabricated lympho-venous shunt group compared to that in the control group (P = 0.02). In the prefabricated lympho-venous shunt group, functional survival of transferred lymph nodes was confirmed in all cases and the average size of transferred lymph nodes at 6 months after transfer was significantly larger than in the control group. Although multiple LNFs did not increase the morbidity at the donor site, no advantage over the control group was found with respect to the efficacy.

CONCLUSION: Although further investigation is necessary, a prefabricated lympho-venous shunt may increase the efficacy of LNT and prevent sclerosis of transferred lymph nodes in the long term. Ultrasonographic analysis may be useful in evaluating the results following LNT.
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**INTRODUCTION:** Diabetic foot ulceration is known to be the result of multiple factors, including neuropathy, plantar pressure, shoe fit, and pedal soft tissue thickness. Excessive pressure is recognized to play a role by inducing ischemic change. There is no standardized normal value for pedal soft tissue thickness. In this study, we aimed to investigate the degree of pedal soft tissue atrophy due to diabetes and aging.

**METHODS:** This retrospective study enrolled patients who underwent magnetic resonance imaging (MRI) of the foot at Dongsan Hospital in Keimyung University between 2009 and 2016. The participants were divided into two groups: Group I, patients who had diabetes for more than 10 years, and Group II, patients who did not have diabetes. Sex, age, and body mass index (BMI) were compared between groups. The thickness of pedal soft tissues was measured below the metatarsal head using MRI and compared between groups.

**RESULTS:** Group I included 52 patients (33 males, 19 females) and Group II included 47 patients (24 males, 23 females). There was no significant difference in sex, age, and BMI between the two groups. The thickness of pedal soft tissue below the first to fourth metatarsal heads was significantly lower in Group I than in Group II (first metatarsal head, 6.4 mm vs. 8.69 mm [p=0.002]; second metatarsal head, 8.85 mm vs. 10.64 mm [p=0.006]; third metatarsal head, 8.15 mm vs. 9.21 mm [p=0.021]; fourth metatarsal head, 7.38 mm vs. 8.54 mm [p=0.016]; fifth metatarsal head, not significant [p=0.068]). Changes in soft tissue thickness did not significantly correlate with age.

**CONCLUSION:** These results demonstrate a procedure for the measurement of pedal soft tissue atrophy in patients with diabetes. This method can be applied to determine normal reference ranges and to evaluate the extent of atrophy and its effect on ulceration.

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**INTRODUCTION:** Pedal fat pad atrophy impacts function, pain, and appearance. We previously published clinical trial data demonstrating that pedal fat grafting improves pain and quality of life, despite loss of grafted fat. Benefits of fat grafting may be attributed to resultant changes in fat pad or dermal thicknesses. We hypothesize that these changes may account for the prolonged improvement in pain and quality of life in patients with pedal atrophy following fat grafting.

**METHODS:** Patients with pedal atrophy were enrolled in a randomized cross-over clinical trial. Group 1 underwent fat grafting upon enrollment with 2-year follow-up. Group 2 was managed conservatively for 1 year then crossed-over into the fat grafting group with 1-year follow-up. Fat was harvested and injected into each forefoot. Patients followed-up with ultrasounds at 1, 2, 6, and 12 months post-injection, with Group 1 continuing to 18- and 24-month follow-up. Additionally, the Manchester Foot Pain and Disability Index, a validated survey assessing foot pain and function, was administered to patients.

**RESULTS:** 3 men and 20 women were enrolled with an average age of 63±6 years. The average BMI was 26.0±4.6 kg/m2. 26 and 17 feet were injected in Groups 1 and 2 respectively. There was no variance in BMI or age between groups. In Group 1, fat pad thickness returned to baseline by 12 months post-injection (p<0.05). In Group 2, fat pad thickness returned to baseline by 2 months post-injection, though fat pad thickness decreased prior to injection (p<0.05). In Group 1, dermal thickness increased by 6 months post-injection (p<0.05). This increase persisted through 24 months. In Group 2, dermal thickness decreased prior to injection, but increased to baseline after injection through 12-month follow-up (p<0.05). Group 1 had improved pain and function by 1 month post-injection that was maintained through 24 months (p<0.05). Group 2 had improvement in these measures by 2 months post-injection that was maintained through 12 months (p<0.05).