Lymph Node Flap Transfer and Modified Charles Procedure for Advanced Lower Limb Lymphedema

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INTRODUCTION: Lymph node flap transfer (LNFT) is becoming a popular physiologic approach for treating lower limb lymphedema. However, in chronic and severe cases, the Charles' procedure allows radical reduction of the lymphatic load of the limb and should only be considered when other procedures are not feasible due to its potential complications as infection and poor cosmesis. The aim of this study is to present our experience combining tissue transfer procedures (LNFT) and excisional operations (the modified Charles procedure) for the surgical treatment of advanced lower limb lymphedema.

MATERIALS AND METHODS: From July 2010 to May 2015, 45 patients who were diagnosed and treated for advanced lower limb lymphedema with LNFT and a modified Charles procedure were analyzed. In addition, demographics, circumferential limb measurements, lymphoscintigraphy, skin tonicity and postoperative complications were recorded. The reduction rate was describe by the percentage of improvement on skin tonicity and limb circumference. Postoperative follow-up was performed every 3 months during the first year and subsequently every 6 months.

RESULTS: After a 4-year follow-up, a total of 45 patients were analyzed. Twelve were male and thirty-three were female. During the follow-up period, all patients exhibited dramatic improvement in lower limb skin tonicity 35.0 % (range 12.5 to 78.0%) ($p<0.05$). In addition, the average reduction of limb circumference was 60.0% (range 40.0 to 90.0 %) ($p<0.05$). Moreover, the incidence of cellulitis exhibited a significant reduction in the postoperative period. Only five patients experienced superficial site infection after the operation, which was treated with antibiotics. No major complications were reported postoperatively. However, there were 6 patients with partial skin graft loss requiring re-grafting at the dorsum of the foot. Ten patients required revision and regrafting to improve the cosmesis. Postoperative lymphoscintigraphy displayed improved drainage of the affected limb. In addition, all patients were satisfied with their functional outcomes.

CONCLUSION: In cases of severe lower limb lymphedema, the combination of LNFT with the modified Charles procedure can be a good surgical option. This procedure may prevent some potential complications such as recurrence, infection, and aggravation of the disease due to the physiological properties of the transferred lymph nodes. However, further long-term studies are needed in order to rule out recurrence and long-term complications.