

A Novel Two-Stage Surgical Approach to Treat Chronic Lymphedema

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▲ To our knowledge, we present the first description of a two-stage approach to treat chronic lymphedema. Both patients presented suffered for many years from chronic, solid predominant, non-pitting lymphedema of the arm secondary to treatment for breast cancer. The treatment had included axillary lymph node dissection and radiation therapy in both cases. Suction assisted protein lipectomy (SAPL) was used in the first stage to remove the chronically accumulated proteinaceous and fatty tissues. Both patients achieved reductions of essentially all of the volume excesses in the affected arms. However, as expected after SAPL, both patients required continuous use of compression garments to prevent reaccumulation of lymphatic fluid. After undergoing subsequent vascularized lymph node transfer (VLNT), both patients experienced a significant reduction in the need for compression garment use for much of the daytime.

We perform SAPL by aspirating the pathologic protein and fat-rich tissue from the affected limb using power-assisted liposuction cannulas in a method similar to that described by Brorson (2). Previously we reported the success of SAPL, with one-year reductions in volume excess of 929cc (111% average reduction) in arms and 3731cc (86% average reduction) in legs (3). Furthermore, the incidence of dangerous cellulitis was reduced by over 75%. The safety and efficacy of the surgery has been well established in prospective long-term studies, and found not to further damage the already impaired lymphatic flow in the affected patients studied (4-6).

A chief limitation of SAPL has been the requirement for ongoing use of compression garments after surgery to prevent reaccumulation of lymphatic fluid (7). Integral lymphedema therapist involvement both before and after surgery is mandatory for the success of the technique. The therapist measures each patient preoperatively for a set of custom fit, flat knit compression garments. One set of garments is donned immediately at the time of surgery, and additional, custom-fit layers are placed as needed by the lymphedema therapist during the postoperative hospital stay. The average hospital stay is two days, and

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patients are seen in the office the week following discharge. As the swelling decreases over time, the compression garments are either taken in or replaced with new, smaller custom-fit garments. While patients may eventually leave the garment off for a few

hours to attend a special event, prompt replacement afterward is necessary to prevent fluid reaccumulation. The technique and patient care required for SAPL is different than cosmetic liposuction, and should only be performed by surgeons experienced in the care of lymphedema patients and specifically trained in the technique (8).

VLNT as a second-stage procedure was performed to restore lymphatic drainage and to reduce the need for compression garment use. VLNT involves the transfer of lymph nodes from one lymph node basin to another on a microvascular pedicle, anastomosing at least one donor artery and vein to vessels at the recipient site. The lymphatics and small peripheral vessels in the flap are allowed to heal primarily with the lymphatics and small vessels present in the recipient soft tissue bed (9).

We perform SAPL and VLNT procedures in a staged fashion. This allows the postoperative swelling, which occurs after the SAPL procedure, to subside and the limb to heal completely. The gradual reduction in swelling after SAPL typically takes about 6 to 12 months to reach a steady state, and after this time VLNT can be performed. To conclude, SAPL and VLNT are validated surgical approaches to treat chronic lymphedema in carefully selected patients. We have combined these procedures as part of a complete system of lymphedema treatment which includes significant amounts of intensive lymphedema therapy by an experienced lymphedema therapist. When properly applied, SAPL and VLNT can provide excellent outcomes for patients with chronic, solid predominant lymphedema.

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