Complete Reduction of Arm Lymphedema Following Breast Cancer – a Prospective Twenty-One Years' Study

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BACKGROUND: Patients with chronic non-pitting lymphedema do not respond to conservative treatment because diminished lymph flow and inflammation result in the formation of excess subcutaneous adipose tissue.[1] Previous surgical treatments utilizing either total excision with skin grafting or reduction plasty seldom achieved acceptable cosmetic and functional results. Microsurgical reconstructions, although attractive as a physiological concept, cannot provide complete reduction in chronic non-pitting lymphedema because they do not eliminate the newly formed subcutaneous adipose tissue collections. To remove the excess adipose seems thus to be a logical treatment strategy.[2] This prospective study describes the long-term outcome of liposuction of lymphedema.

METHODS: 146 women with non-pitting edema, a mean age of 63 (range, 39-89) years and a mean duration of arm swelling of 9 (range, 1-38) years underwent liposuction. Mean age at breast cancer operation, mean interval between breast cancer operation and lymphedema start, and duration of lymphedema were 52 years (range, 31-86), 3 years (range, 0-32), and 9 years (range, 1-38) respectively. Aspirate and arm volumes were recorded.

RESULTS: Preoperative mean excess volume was 1568 ml (range, 545-4235). Aspirate mean volume was 1807 ml (range, 650-3850) with an adipose tissue concentration of 95 % (range, 58-100). Postoperative mean reduction was 103 % (range, 50-194) at 3 months and more than 100% during 21 years' follow-up, i.e. the lymphedematous arm was somewhat smaller than the healthy arm. The preoperative mean ratio between the volumes of the edematous and healthy arms was 1.5, rapidly declining to 1.0 at 3 months, and less than 1.0 after one year.

CONCLUSION: Liposuction is an effective method for treatment of chronic, non-pitting arm lymphedema in patients who have failed conservative treatment. Because of adipose tissue hypertrophy, it is the only known method that completely reduces excess volume at all stages of arm lymphedema. Removing the hypertrophied adipose tissue is a prerequisite to achieve complete reduction (Figure 1 and 2). The newly reduced volume is maintained through constant use of compression garments.

REFERENCES:

1. Brorson H, Ohlin K, Olsson G, Karlsson MK. Breast cancer-related chronic arm lymphedema is associated with excess adipose and muscle tissue. Lymphat Res Biol. 2009;7:3-10

2. Brorson H, Svensson H. Liposuction combined with controlled compression therapy reduces arm lymphedema more effectively than controlled compression therapy alone. Plast Reconstr Surg. 1998;102:1058-1067

FIGURE LEGENDS:

Figure 1. A 57-years-old woman with a non-pitting secondary lymphedema of 4 235 ml since 5 years following breast cancer treatment.

Figure 2. Complete reduction 6 months after liposuction.