

COMMENTARY**ADIPOSE TISSUE IN LYMPHEDEMA: THE IGNORANCE OF
ADIPOSE TISSUE IN LYMPHEDEMA****H. Brorson**

Department of Plastic and Reconstructive Surgery, Malmö University Hospital, Malmö, Sweden

Comments such as: "Adipose tissue in lymphedema? I have never seen it. Is that something peculiar to Swedes?" followed my presentation of "High Content of Adipose Tissue in Chronic Arm Lymphedema Limits Treatment Outcome" (1) at the 2000 National Lymphedema Network Conference in Orlando, Florida. When I participated in my first ICL meeting in Madrid in 1997, I presented several papers (2-4) demonstrating the dramatic effect liposuction had on chronic non-pitting postmastectomy arm lymphedema. I emphasized the abundance of adipose tissue found in these lymphedemas. In 1998, I summarized this research in a dissertation (5), which was based on peer-reviewed papers (6-9). I also presented my research on lymphedema and adipose tissue at the 18th ICL-meeting in Chennai, India in 2001 (10, 11), and few accepted these conclusions. The late professor Charles L. Witte MD, the opponent on my public defense of my dissertation in 1998, encouraged me to continue my research. Over the next several years, I presented this objective information at several meetings.

Lymphedema was believed to produce only high-protein fluid, which progressed to fibrosis over time (12). Adipose tissue was never described. Later analysis with modern objective equipment like DEXA (Dual Emission X-Ray Absorptiometry), aspirate analysis, VR-CT (Volume Rendering Computer Tomography), and MRI have supported my initial findings of more than 90% adipose tissue in liposuction aspirate of patients with non-pitting lymphedema (13, 14).

In light of these events, I enjoyed reading a recent comment by Professor Terence Ryan in *Lymphology* (15). He wrote: "Moreover, the epidermis and adipose tissue are not simply passive players but are likely factories of growth factors and mediators of inflammation. These agents are probably responsible for the soft tissue overgrowth observed in lymphedema... Like the epidermis, fat cells have long been regarded as bystanders rather than active participants in lymphedema. It is clear, however, that fat cells also can generate cytokines and hormones and a catalogue of their activities increases on a monthly basis'. When I met Professor Ryan at the ICL-meeting in 2003, I was encouraged by his recommendation for a 'Lymphedema and Adipose Tissue' session at the next ICL-meeting. Professor Sumner Slavin at Harvard Lymphedema Clinic of the Beth Israel Deaconess

Medical Center has also noted the excess adipose tissue when performing liposuction on non-pitting lymphedema (16).

It is perplexing that this new technique, removing excess adipose tissue through liposuction, is so negatively viewed by Prof. Földi. In his new book (17), Prof. M. Földi writes these statements, without giving any references: “Liposuction promoted by Brorson is basically amputation of the suprafascial space... However, in the course of seven years he has only performed a total of 74 liposuctions. No conclusions can be drawn from this small number.” Such a statement is not true. In fact, conclusions can be drawn from even a single case as future Nobel prize winning physician Joseph Murray proved when he performed skin grafts on identical twins and paved the way for the first successful kidney transplant. Many remember that when insulin was tested for the first time, one patient was enough to prove its significance. Insulin radically changed the care of diabetes. Although the finding of adipose tissue in lymphedema does not reach the level of such a momentous discovery as insulin, its presence has been demonstrated by accurate scientific methods. It would be helpful to our patients if Prof. Földi, an expert on lymphedema, was stimulated by the finding of increased adipose tissue in these patients and shared his expertise regarding treatment options.

Prof. M. Földi is also well known for his article of 1989 in which he describes the many deficits in lymphedema science and treatment (18). Over the last decade, researchers from many different nations have begun conducting controlled clinical trials in order to learn more about lymphedema management. Prof. Földi should also present controlled studies to substantiate his theories. Hopefully, such trials would provide clear substantiation and will help to reduce the “lymphedema chaos”. Prof. Földi should also provide references to any published papers in order to support his negative comments regarding liposuction as I continue to provide references to its positive use. The purpose of such references and citations is to allow readers to evaluate and objectively form their own conclusion rather than blindly accept the opinion of the author. Progress always brings change and requires letting go of ‘some’ of the past. Collaborative thinking and research, along with open minds and constructive dialogue should reduce lymphedema chaos.

References

1. Brorson H, Ohlin K, Olsson G. High Content of Adipose Tissue in Chronic Arm Lymphedema Limits Treatment Outcome. Presented at the 2000 NLN meeting, Orlando, USA.
2. Brorson H, Åberg M, Svensson H. Complete reduction of lymphoedema of the arm by liposuction after breast cancer - 3 years results. *Lymphology* 1998; 31(Suppl): 570-575.
3. Brorson H, Åberg M, Svensson H. Liposuction versus controlled compression therapy of arm lymphoedema. *Lymphology* 1998; 31(Suppl): 580-581.
4. Brorson H, Åberg M, Svensson H. One patient with chronic arm lymphoedem treated with liposuction not needing compression garments - a case report. *Lymphology* 1998; 31(Suppl): 576-577.
5. Brorson H. Liposuction and controlled compression therapy of arm lymphedema following breast cancer. Lund University 1998. Thesis. (http://www.lub.lu.se/luft/diss/med263_transit.html)

6. Brorson H, Svensson H. Complete reduction of lymphoedema of the arm by liposuction after breast cancer. *Scand J Plast Reconstr Hand Surg* 1997;31:137-143.
7. Brorson H, Svensson H. Skin blood flow of the lymphedematous arm before and after liposuction. *Lymphology* 1997; 30:165-172.
8. Brorson H, Svensson H, Norrgren K, Thorsson O. Liposuction reduces arm lymphedema without significantly altering the already impaired lymph transport. *Lymphology* 1998;31:156-172.
9. Brorson H, Svensson H. Liposuction combined with controlled compression therapy reduces arm lymphedema more effectively than controlled compression therapy alone. *Plast Reconstr Surg* 1998;102:1058-67.
10. Brorson H, Åberg M, Svensson H. Complete reduction of arm lymphedema by liposuction following breast cancer - 5 year results. *Lymphology* 1999; 33(Suppl): 250-253.
11. Brorson H, Åberg M, Svensson H. *Lymphology* 1999; 33(Suppl): 52-54.
12. Földi M. Personal communication.
13. Brorson H, Åberg M, Svensson H. Chronic lymphedema and adipocyte proliferation: Clinical therapeutic implications. Proceedings of the NIH Think Tank Conference, Bethesda, Maryland, USA, May 11-13, 2000: 129-130
14. Brorson H, Åberg M, Svensson H. Chronic lymphedema and adipocyte proliferation — clinical therapeutic implications. *The Lymphatic Continuum*. National Institutes of Health, Bethesda, USA, 2002. *Lymphatic Research and Biology* 2003; 1: 88.
15. Ryan TJ. On treatment of peripheral lymphedema. *Lymphology*. 2003; 36:110.
16. Slavin SA. Personal communication.
17. Földi M. Lymphostatic diseases, Liposuction, In: Földi M, Földi E, Kubic S editors. *Textbook of Lymphology*. Urban & Fischer, 2003. p.296.
18. Földi E, Földi M, Clodius L. The lymphedema chaos: a lancet. *Ann Plast Surg* 1989; 22: 505-515.