

# Literature

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## Abstract

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### BACKGROUND AND RATIONALE

Many women with breast cancer develop secondary lymphedema of the arm, chest wall, and breast following treatment. The available epidemiological data is insufficient but our clinical experience suggests that the incidence of breast lymphedema is likely to increase as more women undergo breast-sparing surgery. Unlike lymphedema of benign origin involving the limbs, breast lymphedema can be very painful.

The purpose of the study presented here was twofold: to investigate the symptoms and functional impairment in women with secondary lymphedema of the breast on the one hand and to assess the therapeutic benefit of DEEP OSCILLATION® supplementing manual lymphatic drainage on the other hand.

### MATERIAL AND METHODS

Inclusion criteria: age 18-80 years, breast lymphedema, at least 6 weeks since last irradiation.

Assessment: subjective pain evaluation using a visual analogue scale (VAS), photo-graphic documentation, assessment of the range of motion of the shoulder and cervical spine (neutral-0 method, Zebris motion analysis system, muscle function test according to Janda) and analysis of body surface in the breast area using a 3D measuring system.

Treatment group (n=11): 4-week course of 12 sessions of manual lymphatic drainage supplemented by DEEP OSCILLATION® (HIVAMAT® 200, PHYSIOMED ELEKTROMEDIZIN AG, Germany) and control group (n=10) treated by manual lymphatic drainage alone.

### RESULTS

DEEP OSCILLATION® resulted in significant, clinically relevant, pain reduction. This effect was not observed in the control group. Swelling was subjectively assigned a score of 5.9 on the VAS by the patients at the initial examination. Patients in both groups reported significant reduction of swelling. The reduction of swelling was objectively confirmed by 3D measurement in the both groups.

### CONCLUSION:

The results of our pilot study suggest that additional DEEP OSCILLATION® supplementary to manual lymphatic drainage can significantly improve outcome in terms of pain alleviation and volume reduction in patients with secondary breast lymphedema compared to manual lymphatic drainage alone. DEEP OSCILLATION® is a beneficial supplementary approach in treating breast lymphedema.

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