The Addition of Manual Lymph Drainage to Compression Therapy for Breast Cancer-Related Lymphedema

Study, Design	Purpose	Participants	Intervention	Results	Conclusions	Comments
Andersen et al (2000) Treatment of breast-cancer-related lymphedema with or without manual lymphatic drainage--a randomized study. Prospective randomized study	Does manual lymphatic drainage (MLD) added to standard treatment improve limb volume reduction?	42 women (22 standard therapy; 20 standard + MLD)	Standard therapy: compression garments (provided 32-40 mmHg); exercise instruction; education in skin care and precautions; standard therapy plus MLD group: MLD 8 times in 2 wks and instruction in daily self massage.	No significant difference in the reduction in LE over time between the 2 groups; both groups obtained a significant reduction in edema compared to baseline which was attributed to the use of compression sleeves	The authors conclude that for this patient population, MLD is not a necessary component of treatment for lymphedema	The authors fail to report any limitations of this study; non-blinded study; small sample size
Koul et al (2007) Efficacy of complete decongestive therapy and manual lymphatic drainage on treatment-related lymphedema in breast cancer Retrospective non-randomized clinical trial	Is complete decongestive thearapy (CDT) better than manual lymphatic drainage (MLD) in the treatment of breast cancer-related lymphedema?	138 women	55% of patients were treated using all 4 CDT components: (MLD; compression therapy (CT); remedial exercises for the arm and shoulder; and deep breathing) 32% received MLD alone, and 13%, with "mild" lymphedema, received instructions and counseling for the home program.	A significant reduction in mean and median arm volumes at 1 year after the beginning of treatment was associated with some or all components of combined decongestive therapy. The volume improvement after CDT, MLD, and home program was 55.7%, 41.2%, and 24% absolute reduction in lymphedema volume, respectively.	The authors conclude that CDT and MLD combined with exercises are associated with a significant reduction of lymphedema volume.	Lack of control confounds the possibility that the reductions would have occurred otherwise; patients were not randomized therefore the contribution of each component of CDT could not be established.
McNeely et al (2004) The addition of manual lymph drainage to compression therapy for breast cancer related lymphedema: A randomized controlled trial. Prospective RCT	Is compression bandaging (CB) plus manual lymphatic drainage (MLD) better than CB alone to reduce arm lymphedema?	50 women (25 CB MLD; 25 CB)	CDT: 45 min MLD 5 times/wk for 4 weeks +CB; or CB only	A significant reduction in lymphedema volume was found over the 4 week period for both groups, regardless of the treatment provided; those with mild lymphedema in MLD group experienced the largest percentage reduction.	CB with or without MLD is an effective method of reducing breast cancer-related lymphedema volume in the short term.	10% dropout rate; no long term follow up; bandaging technique may account for the change in lymphatic fluid in this study; effects of treatment on pain, function, body image, and QOL were not assessed
Devoogdt et al (2011) Effect of manual lymph drainage in addition to guidelines and exercise therapy on arm lymphoedema related to breast cancer: Randomised controlled trial. Randomized single blinded controlled study	Does manual lymphatic drainage (MLD) added to prevention guidelines and exercise therapy reduce the incidence of arm lymphedema in the short term?	160 participants; 158 women, 2 men; (77 treatment group; 81 control group)	Intervention consisted of several modalities (joint mobilization of the shoulder; stretching of the breast muscle and scar tissue; and 10 different exercise schemes designed to improve flexibility, endurance and strength of the shoulder) Patients in the treatment group also received standardized lymph drainage	At 12 months post surgery, the cumulative incidence rate for arm lymphedema was comparable between the intervention group (24%) and control group (19%) The time to develop arm lymphedema was comparable between the two group during the first year after surgery. In both groups, there was a similar increase of arm volume when compared with the level before surgery.	From the results the authors concluded that MLD in addition to guidelines about the prevention of lymphedema and exercise therapy has no medium to large effect on the prevention of arm lymphedema related to breast cancer in the short term.	Repeated measures performed; half of the therapist performing the intervention had limited experience performing MLD; patients did not receive the planned 40 MLD session because of reported illness related to chemotherapy; 85% received 30 sessions or more
Williams et al (2002) A randomized controlled crossover study of manual lymphatic drainage therapy in women with breast cancer-related lymphoedema. RCT with crossover	Is MLD or simple lymphatic drainage (SLD) more effective in improving QoL, edema level, and associated symptoms of lymphedema?	31 women (15 patients in group A; 16 patients in group B)	**Group A:** 45 min MLD, 5 times/wk for 3 wks then a 6-wk nontreatment period, then SLD daily for 3 wk; **Group B:** SLD daily for 3 wk, then 6-wk nontreatment period, then 45 min MLD 5/wk for 3 wks; **Both groups:** Compression garments, advice on skin care, and information about lymphedema	MLD resulted in a significant decrease of excess limb volume and reduced dermal thickness; improved QoL in terms of emotional function, dyspnea, and sleep disturbance; and a number of altered sensations, such as pain and heaviness, were also significantly improved by MLD; SLD did not result in significant changes in any outcome measurements.	The authors state that MLD provides a statistically significant reduction in limb volume and improvement in various QoL measurements and symptoms associated with breast cancer-related lymphedema.	Non blinded; small sample

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Leduc et al (1998) The physical treatment of upper limb edema. Non randomized clinical trial	Is the combination of MLD, compression bandaging, and intermittent pneumatic compression an effective treatment for UE lymphedema	220 women s/p cancer related breast surgery with unilateral UE lymphedem	All study participants recieved MLD, intermittent pneumatic compression (max 40mmHg), and daily multilayered compression bandages for 2 weeks.	The most important reduction was obtained in the first week. The decrease was equivalent to 50% of the average of the difference between both upper limbs. The results at the end of the second week were significant but not equally as dramatic as seen in the first week.	The authors conclude that their proposed physical treatment is an effective method to control UE lymphedema	Date of the study; study was limited to the first 2 weeks of treatment; * little to no statistics or actual real numbers are included in the report
Vignes et al (2007) Long-term management of breast cancer-related lymphedema after intensive decongestive physiotherapy. Prospective cohort	Is a multi-modal approach of CDT involving MLD, low stretch bandaging, and elastic sleeves an effective treatment for breast cancer-related lymphedema during the 1-year maintenance phase therapy.	537 patients	CDT: 30min MLD 5 times/wk; low stretch bandages 3 times/wk; compression garments (24h daily)	Volume of lymphedema was found to decrease significantly with a mean absolute volume reduction of 407 mL; Non-compliance to low stretch bandage and elastic sleeve were risk factors for an increased lymphedema after 1-year of maintenance treatment	The authors conclude that bandages and elastic sleeve are the cornerstone of maintenance therapy, and proper use of the elastic sleeve and bandage are associated with better maintenance results and ultimate control of lymphedema in the long term.	Large sample; however, 34% of patients were lost to follow-up at 12 months; only one outcome taken into account for the analysis
Lasinski et al (2012) systematic review of the evidence for complete decongestive therapy in the treatment of lymphedema from 2004 to 2011. Systematic review	Review of literature on the evidence for complete decongestive therapy in the treatment of lymphedema	99 articles reviewed (26 met inclusion criteria); In addition, 14 review articles and 2 consensus articles were reviewed.	N/A	Several treatment options exist for lymphedema management. CDT improves overall QOL and is effective for various degrees of lymphedema, including: mild, moderate, or severe; early or late onset; recent or chronic; in patients with active cancer; and in palliative care situations; CDT is associated with the greatest reduction in volumes after the first 5 days of treatment, with reductions continuing at a slower rate in the next weeks until progress plateaus; continued use of compression is usually needed to maintain these treatment results; MLD enhances the effects of compression and has been shown to improve QOL and symptoms.	In general the authors conclude that CDT is effective in reducing lymphedema; the role of each component is unclear	Authors comment that higher quality studies are needed; longer-term follow-up studies are needed to determine optimal treatment protocols