

Evidence Summary: Single modality treatment of lymphoedema: Manual lymphatic drainage

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QUESTION

What is the best available evidence on the effectiveness of manual lymphatic drainage (MLD) in managing lymphoedema?

SUMMARY

Manual lymphatic drainage is used to treat lymphoedema. The specialised rhythmic 'massage' technique is thought to increase lymphatic drainage. There is evidence from a meta-analysis of randomised controlled trials (RCTs) that suggests that treatment with MLD produces inferior results compared to compression treatment for reducing limb volume¹ (Level 1.a evidence). However, there is some evidence that MLD reduces pain and promotes physical function^{2,3} (Level 1.c evidence) and⁴ (Level 4.c evidence).

(Note: This evidence summary should be read in conjunction with *Managing lymphoedema: Complete decongestive therapy*.)

BACKGROUND

Lymphoedema is a form of chronic, progressive oedema in which there is significant, persistent swelling of a limb or other body region due to excess and abnormal accumulation of protein-rich fluid in body tissues. This fluid contains a range of inflammatory mediators and adipogenic factors⁵⁻⁹. The lymphatic system is unable to manage the volume of accumulated fluid⁸.

Lymphoedema occurs due to primary, secondary or mixed causes. Primary causes are described as congenital (e.g. an inherited disorder such as Milroy's disease), praecox (onset at puberty, e.g. Meigs' disease) or tarda (sudden onset no apparent cause)¹⁰⁻¹². Secondary causes arise from direct damage or trauma to the lymphatic system such as injury surgery or radiotherapy (usually related to treatment of breast cancer), or parasitic invasion¹¹⁻¹³. Lymphatic filariasis (also called elephantitis) is a cause of secondary lymphoedema in endemic areas primarily in Africa and Asia. Lymphatic filariasis is a parasitic (roundworm) infection that is spread by mosquitoes and causes damage to the lymphatic system that may result in lymphoedema. Infection generally occurs in childhood. Management focuses on large-scale treatment programs to reduce disease spread^{9,14}. Mixed lymphoedema describes lymphoedema arising from decompensation or failure of the lymphatic system associated with other disease or conditions, including but not limited to obesity, immobility, venous disease or lipoedema^{11,12,15}.

Without management, lymphoedema may lead to:^{8,16}

- progressive swelling;
- superficial tissue changes — increasing adiposity and fibrosis;
- physical and functional limitations;
- chronic infection;

- lymphorrhoea (leaking of lymph fluid);
- pain and discomfort; and
- reduced ability to undertake activities of daily living (ADLs).

Manual lymphatic drainage is an intervention that seeks to reduce lymphoedema using a specialised, rhythmic, light 'massage' technique to promote contraction of the superficial lymphatic system, thereby increasing lymph drainage¹. The earliest and most commonly reported method for performing MLD is the Vodder method, which involves a specialised technique that includes circular pumping strokes of pressure applied to the skin and tissues (approximately 30 mmHg) in combination with periods of rest^{1,17,18}. The therapy is used in management of trunk, head and neck, genital and lower limb oedema¹⁸; however, the vast majority of research reports on its use for upper limb oedema associated with breast cancer treatment.

CLINICAL BOTTOM LINE

Effectiveness in reducing oedema

- One meta-analysis included 6 randomised controlled trials (RCTs) that investigated effectiveness of MLD (primarily the Vodder method) for reducing arm volume in patients with breast cancer-related lymphoedema. Manual lymphatic drainage was primarily compared to bandaging or sleeve compression, although two of the trials used simple lymphatic drainage as the comparison treatment. The meta-analysis found no significant difference in effect between MLD (n=117 patients) and comparison treatments (n=120 patients; weighted mean difference 75.12; 95% confidence interval [CI] -9.34 to 159.58, p=0.08). Significant heterogeneity (p<0.00001) was established between the trials and methodological inconsistencies in the trials (that were mostly low quality) were also noted¹ (Level 1.a evidence).
- In one RCT, MLD in conjunction with compression bandaging (n=15 women post cancer surgery) was effective in significantly reducing mean arm volume after six weeks of treatment (3,533 ml versus 3,004 ml, 12.2% decrease, p<0.001). There was no significant difference in effect when compared to a group (n=15) performing self-lymphatic drainage in conjunction with pneumatic compression. In this study the MLD was performed second daily by a physiotherapist. Short stretch compression bandages were applied following MLD² (Level 1.c evidence).

Effectiveness in improving physical and psychological function

- Manual lymphatic drainage administered over six weeks (n=15 women post cancer surgery) was associated with significant improvements in self-rated (4 point

Likert scale) measures of physical function (p=0.001); cognitive function (p=0.02); global quality of life (p=0.01) emotional function (p=0.01) and fatigue (p=0.002). No significant improvements were noted in self-rated fatigue or appetite² (Level 1.c evidence).

- In one non-blinded cross-over RCT (n=31 women with breast cancer-related lymphoedema), Vodder method MLD (15 sessions over 3 weeks) was associated with significant reduction in limb volume (reported in a meta-analysis¹ above), as well as improvements in self-reported outcome measures including emotional function (p=0.006), dyspnoea (p=0.04) and sleep disturbance (p=0.03), heaviness (p=0.003), fullness (p<0.001) and hardness (p<0.001)³ (Level 1.c evidence).
- In one non-blinded RCT (n=42 women with unilateral breast cancer-related lymphoedema) patients receiving MLD (8 sessions over 2 weeks) in conjunction with a compression sleeve experienced significant improvements (p value not reported) in heaviness, function, tightness and mobility at 4 weeks follow-up, but there were no significant differences compared with a group receiving a compression sleeve alone¹⁹ (Level 1.c evidence).
- A retrospective case series of patients receiving palliative care for advanced cancer reported on effectiveness of MLD in decreasing dyspnoea. At admission, 23 patients experienced dyspnoea with a mean severity rating of 6 on a 10-point scale. Severity decreased to a mean of 3 points (p=0.001) following a MLD session⁴ (Level 4.c evidence).

Effectiveness in reducing pain

- Manual lymphatic drainage administered over six weeks in women following cancer surgery (n=15) was effective in significantly reducing pain (p=0.001) scored on a 4 point Likert scale² (Level 1.c evidence).
- In one non-blinded cross-over RCT (n=31 women with breast cancer-related lymphoedema), Vodder method MLD (15 sessions over 3 weeks) was associated with significant reduction pain (p=0.01) and discomfort (p=0.002)³ (Level 1.c evidence).
- In one non-blinded RCT (n=42 women with unilateral breast cancer-related lymphoedema) patients receiving MLD in conjunction with a compression sleeve experienced significant improvements (p value not reported) in achiness, pain and discomfort, but there were no significant differences compared with a group receiving a compression sleeve alone¹⁹ (Level 1.c evidence).
- A retrospective case series of patients receiving palliative care for advanced cancer (n=90) reported on effectiveness of Vodder method MLD performed by a physiotherapist. Patients received a mean 7.0 ± 5.8 sessions lasting 41.4 ± 19.4 minutes each. There was a clinically significant mean reduction of 2 points in pain intensity measured on a 10-point scale compared to pain scores taken after analgesia administration but before physiotherapy commenced (p<0.0001)⁴ (Level 4.c evidence).

Contraindications and adverse events associated with manual lymphatic drainage

- One expert reported MLD as contraindicated for patients with acute infection or inflammation, major cardiac problems, venous obstruction or thrombosis, haemorrhage, acute enuresis or malignant tumour²⁰ (Level 4.d evidence).

CHARACTERISTICS OF THE EVIDENCE

This evidence summary is based on a structured database search combining search terms describing lymphoedema and manual lymphatic drainage. The evidence comes from:

- Meta-analysis of RCTs¹ (Level 1.a evidence).
- A systematic review of studies of various design⁶ (Level 1.b evidence).
- Randomised controlled trials^{2,3,19} (Level 1.c evidence).
- Observational studies with no control group^{13,21} (Level 3.e evidence).
- Case series report¹⁵ (Level 4.c evidence).
- Case study report²⁰ (Level 4.d evidence).
- Expert consensus^{9,11} (Level 5.b evidence).
- Expert opinion^{5,7,8,10,12,14,16-18} (Level 5.c evidence).

BEST PRACTICE RECOMMENDATIONS

- There is good evidence that manual lymphatic drainage alone is insufficient in reducing limb volume associated with lymphoedema. (Grade A)
- There is some evidence that manual lymphatic drainage reduces pain and discomfort associated with lymphoedema. (Grade B)
- There is some evidence that manual lymphatic drainage promotes physical and psychological functioning in patients with lymphoedema. (Grade B)

RELATED EVIDENCE SUMMARIES

JBI 11559 Lymphedema: classification

JBI 11564 Lymphedema: objective assessment using bioimpedance spectroscopy

JBI 11562 Lymphedema: objective assessment using perometry

JBI 11870 Lymphedema: objective assessment using tonometry

JBI 11871 Lymphedema: objective assessment using volumetry

JBI 12020 Lymphedema: objective assessment using circumference measurement

JBI 11560 Lymphedema: subjective assessment

JBI 12096 Managing lymphoedema: pneumatic compression therapy

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