

Multilayer bandaging followed by compression hosiery was more effective than hosiery alone in reducing lymphoedema of the limb

Badger CM, Peacock JL, Mortimer PS. A randomized, controlled, parallel-group clinical trial comparing multilayer bandaging followed by hosiery versus hosiery alone in the treatment of patients with lymphoedema of the limb. *Cancer* 2000 Jun 15;88:2832-7.

QUESTION: Is a course of multilayer bandaging (MLB) followed by compression hosiery more effective than hosiery alone for reducing limb volume in patients with unilateral lymphoedema of the limb?

Design

Randomised (allocation concealed)*, controlled, blinded (outcome assessors and data analysts)* trial with final follow up at 24 weeks.

Setting

A lymphoedema clinic with hospital sites in London and Surrey, UK.

Patients

90 consecutive patients who had unilateral upper or lower limb lymphoedema, with swelling $\geq 20\%$ excess volume over the normal limb. For patients with cancer, at least 12 months had to have elapsed since cancer treatment with no sign of active disease. Exclusion criteria were paralysis, history of compromised arterial flow in the affected limb, or limbs too big for hosiery. 83 patients (mean age 57 y, 92% women) were included in the analysis; 54 had upper limb lymphoedema and 29 had lower limb lymphoedema.

Intervention

38 patients were allocated to 18 days of MLB: a first layer of a tubular stockinette, with the digits bandaged using a retention bandage, and foam and padding to protect joint flexures and smooth the contours of the limb; the final layers were short stretch extensible bandages. On lower limbs, ≥ 2 layers of bandages were applied, the first in a spiral and the second in a figure 8; more layers were used if swelling was severe. On upper limbs, bandages were applied in a spiral, with the first bandages covering the hand and forearm and the second beginning at the wrist. Bandages remained in place for 24 hours each day and were replaced daily. After 18 days, patients wore hosiery from morning until bedtime for the remainder of the trial. Style, compression class, and number of layers of hosiery were based on patient needs. Patients were admitted to the rehabilitation ward or attended the outpatient clinic. 52 patients were allocated to hosiery alone, beginning on day 1 of the trial. Patients in both groups were given advice on positioning of the swollen limb, exercises to promote lymph drainage, and daily skin care; were taught self massage; and were asked to perform exercises, skin care, and massage each day.

Main outcome measure

Percent reduction in excess limb volume ($[\text{volume of swollen limb} - \text{volume of normal limb}] / \text{volume of normal limb}$) based on an average of individual patient

observation periods. Limb volumes were assessed using an electronic volumeter or by manual surface measurements ($\text{circumference}^2 / \pi$).

Main results

At 24 weeks, patients who received MLB followed by hosiery had greater reductions in limb volume than patients who received hosiery alone (mean percent reduction 30.0 v 15.2; mean difference 14.8, 95% CI 6.0 to 23.6, $p=0.001$). Results of analyses of patients with complete data to week 12 ($n=77$) and those with complete data to week 24 ($n=78$) showed similar reductions.

Conclusion

Among patients with unilateral lymphoedema of an upper or lower limb, a course of multilayer bandaging followed by compression hosiery led to greater per cent reductions in excess limb volume than hosiery alone.

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COMMENTARY

Although various treatments of lymphoedema are promoted, little high quality research exists to direct practice. Since the late 1980s, the Foldi 2 phase approach of intensive skin care, exercise, massage, and compression bandaging followed by maintenance therapy has become widely regarded in the UK as the gold standard treatment; however, the effectiveness of this approach has not been rigorously evaluated.¹ Weaknesses of existing studies of lymphoedema management include lack of randomisation, small sample size, minimal follow up, and lack of standardised methods of outcome measurement. The study by Badger *et al* compared the relative effectiveness of MLB plus compression hosiery and hosiery alone for lymphoedema of the limb in a randomised trial and as such begins to build a good evidence base for practice. Badger *et al* used a primary outcome of the per cent reduction in excess limb volume at 24 weeks. However, studies have reported that lymphoedema affects a range of psychological and physical aspects of patient quality of life, and this study gives no sense of the effect of limb volume reduction on the patients involved.^{2,3} Further work should focus on the development of objective measures of the physical and psychological effects of lymphoedema, as well as other clinical measures such as skin condition and range of movement. Future research should evaluate different treatment regimens using comprehensive, patient focused outcome measurement to establish the optimum treatment package. Research should also try to determine the best care setting for treatment provision.

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- 2 Clark R, Wasilewska T, Carter J. Lymphoedema: a study of Otago women treated for breast cancer. *Nurs Pract NZ* 1997;12:4-15.
- 3 Sitzia J, Sobrido L. Measurement of health-related quality of life of patients receiving conservative treatment for limb lymphoedema using the Nottingham Health Profile. *Qual Life Res* 1997;6:373-84.