

# AN EVALUATION OF THE USE AND RESPONSE TO TREATMENT USING LOW LEVEL LASER THERAPY

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## INTRODUCTION/BACKGROUND

Laser has been used in the management of lymphoedema and other problems for many years. Reported therapeutic effects are softening of tissues, reducing pain and heaviness and improving the immune system (Carati et al 2003, Tadakuma 1993). Thelander and Piller (2000) report improvements in scar tissue and softening as main changes in their initial trials. The UK has been slow to adopt this technology but since gaining its CE registration WLS has commenced this treatment.

## AIM OF THE STUDY

The primary aim of this study was to determine immediate, post and general feedback for laser treatment to enable future treatment planning. As this is a new treatment within WLS, this initial study was to determine all effects of laser through physical examination, patient evaluation and anecdotal evidence.

## METHODS

Patients were selected with lymphoedema secondary to cancer or its treatment whose disease was non active. Selection was based on oedema failing to respond to routine treatment or stubborn thickening of the tissues. Tissue thickening was measured by palpation of the sub cutaneous tissues on a 3 point scale (mild/moderate/severe). 12 patients were selected for laser treatment with or without MLD. Patients were treated 3 times for the first 2 weeks, reducing to weekly for 4 weeks, fortnightly for 2 sessions, monthly for 2 sessions and ongoing as necessary. A RianCorp class 1 laser was used on the 'hi' frequency setting for 40-60 seconds at each position. Unmarked positions were treated 2 cm apart for between 7-25 minutes, all within the treatment area. Scar areas were treated first followed proximally to distally on the oedematous area. If combining laser with MLD, laser was used initially followed by MLD to clear the collecting vessels. Ethical approval was not required as this was an evaluation of laser treatment.

Cause of Oedema	Site		
	Arm	Breast MLD & Laser	Head & Neck: Laser Only
Secondary to Breast Cancer	3 Laser only, 1 MLD & Laser	4	n/a
Hodgkins Lymphoedema	1 Laser Only	n/a	n/a
Head & Neck Cancer	n/a	n/a	3

## OVERALL RESULTS SHOWED

- 100% of patients reported significant improvement to softening of tissues
- 83% of patients reported improved movement
- 42% reported an improvement in scar tissue/appearance
- 28% showed reduction in limb volume (patients with arm oedema only).
- Some patients developed increased tissue thickening with reducing treatments

## Conclusion

The results of this initial study have proved both successful and interesting. However, long term resource implications need to be considered as to the impact of carrying out ongoing treatment. Some patients will require monthly ongoing treatment. Nevertheless Prof. Piller suggests that this will not be required for all patients. It is worth remembering that if the effects of laser can be maintained long term with top up sessions of less than 30 minutes, patients' quality of life and oedema can be improved. Although not particularly scientific, this small study has certainly ensured that the laser has a place in our therapeutic range and with the use of other specialist treatments such as MLD, LymphAssist and Kinesiotaping, the future of lymphoedema management is very exciting.

Treatment Outcomes	Laser only (7 patients)	Laser + MLD (5 patients)
Improved Range of Movement	5	5
Reduced Limb Volume	2*	0
Softening of Tissues	7	5
Improved Scar Appearance	3	4
Improved Response to MLD	n/a	2
Oedema Completely Resolved	1	0

\* Latest Results

## LASER THE FACTS

- Gained CE registration in the UK in 2008
- Laser affects cytochrome C Oxidase in the mitochondria of every cell to regenerate deoxygenized cells increasing cellular energy, improving blood supply and reducing oxidative stress (Tafur 2008, Chen et al 2009, Lavi et al 2009)
- Improves wound healing and changes cell structure to promote the healthy regeneration of cells.
- Has an effect on macrophages and fibroblasts (Bolton et al. 1995)
- Softens tissue, reduces pain and heaviness and improves the immune system (Carati et al. 2003, Tadakuma 1993)
- Improves scar tissue (Thelander and Piller 2000)

**WLS** Wolverhampton Lymphoedema Service

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