



## Efficacy of Manual Lymphatic Drainage on Lymphedema in Post Operative Breast Cancer Patients

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**ABSTRACT**

A major complication of breast cancer is lymphedema, a swelling that occurs as a result of an accumulation of the fluid (American Cancer Society, 2002). Manual Lymphatic Drainage uses various light massage techniques to encourage the removal of excess interstitial fluid, increase lymphatic transport and soften fibrotic induration (Mosoley et al, 2007). Upper limb exercises may decrease lymphedema risk by improving the lymphatic return (Gautam et al, 2011). The purpose of the present study was to find the efficacy of manual lymphatic drainage along with exercise program on lymphedema in post mastectomy patients. A total of 40 female patients having unilateral secondary lymphedema, were assigned for the study. The subjects were divided equally in 2 groups (n=20) and were given manual lymphatic drainage along with resistance training in group B whereas group A receives only resistance training for 8 weeks. There was significant improvement in the circumference of upper limb lymphedema at the end of the 8 weeks treatment sessions in group A.

**KEYWORDS**

Lymphedema, Manual Lymphatic Drainage, Elastic sleeves, upper limb strengthening Exercises.

**Background:**

Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells (American Cancer Society, 2015). Cancer is a leading cause of death worldwide, with 8.2 million deaths in 2012. More than half of all cancer deaths each year are due to lung, stomach, liver, colorectal and female breast cancers (Ferlay et al, 2012). Breast cancer was by far the most common cancer diagnosed in women (25.2% of all new cases in women) (WHO, 2012).

In India, the International Agency for Research on Cancer estimated indirectly that about 635,000 people died from cancer in 2008, representing about 8% of all estimated global cancer deaths and about 6% of all deaths in India (Ferlay, 2008). A major complication of breast cancer is lymphedema, a swelling that occurs as a result of an accumulation of the fluid (American Cancer Society, 2002). Disruption of lymphatic pathways in the upper limb, especially deep lymph collectors, which causes this swelling in breast cancer patients, may be the result of tumor blockage, axillary dissection, and/or radiation therapy (Jungi, 1981).

Patients with arm edema secondary to breast cancer therapy can experience a substantial degree of functional impairment and psychological morbidity and diminished quality of life. Functional impairment can result from decreased range of motion in the affected upper extremity joints and decreased healing capacity of the affected tissue, with resultant increased risk of infection as well as from pain, anxiety, depression, and emotional distress are more common in patients with lymphedema than in those without psychological distress and pain in these patients adversely affect their quality of life (Virginia et al, 2001).

Manual Lymph Drainage is a specialized, gentle massage technique that stimulates lymphatic flow. The technique attempts to access collateral lymphatics to draw fluid from impaired re-

gions to areas of normal lymphatic functioning (Foldi 1994). The massage movements of manual lymph drainage are considered to mechanically stretch underlying epifascial lymph collectors (Mislin, 1983), giving a higher frequency of angion contractions (Olszewski & Engeset, 1980) and increased pressure in the lymph collectors (Hutzschenreuter & Bruemmer, 1988), thus resulting in increased lymph transport capacity (Foldi, 1983).

Patients with lymphedema avoid using the affected limb, leading to weakness and hence predisposing the limb to injury even from small household tasks. Upper-limb exercises may decrease lymphedema risk by improving the lymphatic return. On the other hand, avoiding activity of the affected limb may lead to poor lymphatic clearance these can also be prevented by upper-limb exercises (Gautam et al, 2011). Compression bandaging in combination with exercise may improve venous and lymphatic return and minimize fluid from leaking into the interstitial space (Bicego et al, 2006). In spite of advancement and recent updates in the management of lymphedema, manual lymphatic drainage is still the preferred choice of therapist in terms of cost effectiveness and practical applicability. But still there is paucity of published literature proving the efficacy of manual lymphatic drainage in these patients, especially in countries like India.

**Material and Methodology**

A total of 40 female patients, after mastectomy, having age between 30-60 years, with unilateral secondary lymphedema and completed chemotherapy and radiation therapy for Stage I and II breast cancer and having lymphedema with a difference of 2 cm or more at any one measurement point in the upper limb (Gautam et al, 2011) were included in the study whereas the females having primary lymphedema, paralysis or previous vascular disorder in the affected arm, contraindication for Manual Lymphatic Drainage i.e. cellulitis, deep venous thrombosis, heart failure, uncontrolled hypertension, renal

impairment and radiodermatitis and females undergoing any massage or medical treatment for lymphedema were excluded from the study (Dayes et al,2006)

Procedure

The patients were assessed for lymphedema on both the upper limbs at 4 levels i.e. the metacarpophalangeal joints, wrist joint, 15 cm distal to the lateral epicondyle and 10 cm proximal to the lateral epicondyle. All the patients were then conveniently divided into two groups, Group A and Group B (n=20). Group A received manual lymphatic drainage, resistance training along with elastic sleeve for upper limb whereas Group B received resistance training along with elastic sleeve only. Manual lymphatic drainage was given in which massage strokes was applied to the oedematous limb. A professionally fitted compression sleeve was used by each subject for all exercise sessions. Resistance training included specific exercises, beginning with a light weight and progressing as tolerated by each subject. The strength exercises prescribed were the seated row, bench press, Latissmus dorsi pull down, one arm bent-over rowing, triceps extension, and bicep curl. Two sets of 10 repetitions for each exercise were done for the first week, three sets of 10 were done thereafter. The training session consisted of 5-7 minutes period of aerobic warm-up such as cycling or walking, 5 minutes of stretching, the strength training program, a cool down period (Mckenzie et al, 2003). A resistance-training program was initiated immediately after the baseline test and continued three times per week for the duration of the experimental period.

The patients received a total intervention of 8 weeks with a frequency of 4 therapy sessions per week. Each patient was reassessed at completion of 4 weeks as well as 8 weeks of intervention.

Results

There was significant improvement in the circumference of up- per limb lymphedema at the end of the 8 weeks treatment sessions.

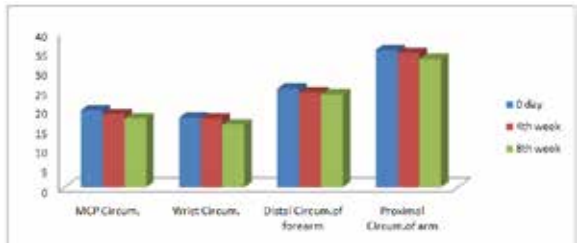


Fig.1 : Graphical representation of comparison of mean scores pre and post circumferential measurement of Group A

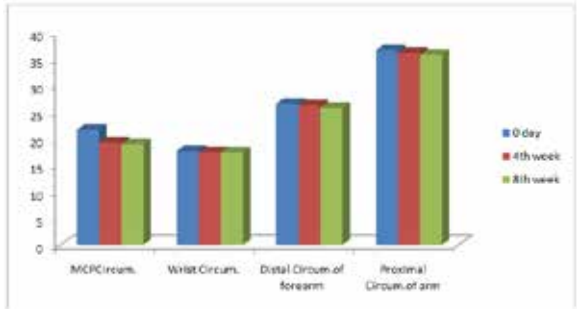


Fig.2 : Graphical representation of comparison of mean scores pre and post circumferential measurement of Group B

Parameters	Pre (mean)	Middle (mean)	Post (mean)	F-value	Pre (mean)	Middle (mean)	Post (mean)	F-value
MCP Circum.	19.9	18.9	17.8	2.9(NS)	21.6	19.3	18.9	3.0 (NS)
Wrist Circum.	17.9	17	16	5.2 (NS)	17.6	17.4	17.4	0.1 (NS)
Distal Circum. of forearm	25.4	24.4	23.9	1.4 (S)	26.5	26.2	25.8	0.4 (NS)
Proximal Circum. of arm	35.3	34.5	33	3.9 (S)	36.5	36.1	35.7	0.4 (NS)

S = Significant      NS=Non Significant      p =<0.005

Discussion

Manual Lymphatic Drainage (MLD) can be used as treatment of choice for reducing lymphedema. It is well recognized fact that MLD is generally believed to be an important part of DLT, though inadequate as the sole treatment (Foldi ,1988 and Leduc 1988).

Manual Lymphatic Drainage method involves gentle massage to improve the lymph circulation, especially subcutaneous circulation, to stimulate the initial lymphatics, and to stretch the lymph vessels, consequently improving the removal of interstitial fluid. Manual lymph drainage encourages and improves resorption without increasing filtration. It has been shown to be effective in the treatment of lymphoedema because it improves the removal of fluid from interstitial space. The findings of the present study indicated that both manual lymphatic drainage as well as resistance training along with elastic bandage is effective in reducing the lymphedema.

It is well recognized fact that MLD encourages the removal of excess interstitial fluid, increases lymphatic transport and softens fibrotic induration (Moseley et al, 2007) The basic teaching of Manual Lymphatic Drainage is that it stimulates the re-sorption of lymph by the lymph capillaries, increasing lymph transport from the hand to axilla by existing lymph collateral pathways between the arm and trunk and between both ax-illa. In conclusion, the present study documented that both, manual lymphatic drainage as well as resistance training, were effective in reducing lymphedema, disability of upper limb as well as improving quality of life in post-surgical breast cancer patients.(Ferrandez et al,1996; Leduc et al, 1979)

Conclusion

On the basis of above findings it is recommended to use Man-ual Lymphatic Drainage as additional treatment for effective management of lymphedema in post mastectomy patients.

Group A	Group B
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## REFERENCES

American cancer society: cancer facts and figures, 2002, American cancer society. Atlanta, GA | | American Cancer Society, 2015, Cancer Facts & Figures, Atlanta, pp.1. | | Bicego D, Brown K, Ruddick M 2006, 'Exercise for women with or at risk for breast cancer related lymphedema', *Phys Ther*, vol.86, pp.1398-1405. | | Ewertz, M, Bonde Jensen, A 2011, 'Late effects of breast cancer treatment and potentials for rehabilitation' *Acta Oncologica*, vol. 50, pp.187-193. | | Ferlay, J, Shin, H. R, Bray, F, Forman, D, Mathers, C, & Parkin, D. M 2010, 'Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008', *Int J Cancer*, vol.127, no.12, pp. 2893-2917. | | Foldi, M, JR Casley-Smith (Eds), 1983, 'Lymphoedema', *Lymphangiology*. Stuttgart-New York, no. 66. | | Foldi E, Foldi M, Clodius L. 1989, 'The lymphedema chaos: a lancet', *Ann Plast Surg*, vol.22, pp.505-15. | | Foldi M 1994, 'Treatment of Lymphedema (editorial)', *Lymphology*, vol.27, no. 1, pp.1-5. | | Gautam AP, Maiya AG, Vidyasagar MS 2011, 'Effect of home based exercise program on lymphedema and quality of life in female post mastectomy patients: Pre-post intervention study', *J Rehabil Res Dev*, vol.48, no.10, pp.1261-68. | | Foldi, M, JR Casley-Smith (Eds), 1983, 'Lymphoedema', *Lymphangiology*. Stuttgart-New York, no. 66. | | Hutzschenreuter, P, H Bruemmer 1988, 'Influence of complex physical decongesting therapy on positive interstitial pressure and on lymphangiomotor activity', *Lymphology*, vol.11, pp.557. | | Ian Dayes, Tim Whelan, Jim Julian, Donna Reise, Lyn Kligman, and Kathy Pritchard 2006, 'A Randomized Trial of Decongestive Lymphatic Therapy for the Treatment of Lymphedema in Women with Breast Cancer' pp.13. | | Jungi WF 1981, 'The prevention and management of lymphedema after treatment for breast cancer', *Int Rehab Med*, vol.3, pp.129-34. | | | Maunsell E, Brisson Jand Deschenes L. ,1993, 'Arm problems and psychological distress aftersurgery for breast cancer', *Can J Surg*, Vol. 36, pp.315-20. | | Marek Wozniowski Ryszard Jasinski Urszula Pilch Grażyna Dabrowski 2001, 'Complex Physical Therapy for Lymphoedema of the Limbs', *Physiotherapy*, vol. 87, pp.250-253. | | Mislin, H Foldi, M, JR Casley-Smith (Eds) 1983, 'Lymphangion', *Lymphangiology*. Schattauer, Stuttgart-New York, pp.165. | | Moseley A.L, Carati C.J & Piller N.B 2007, 'A systematic review of common conservative therapies for arm lymphoedema secondary to breast cancer treatment'. *Annals of Oncology*, vol.18, pp. 639-646. | | Olszewski, WL, A Engeset 1980, 'Intrinsic contractility of prenodal lymph vessels and flow in human leg'. *Am. J. Physiol*, vol.239, pp. 775. | | Pyszora Anna, Graczyk Michal, Krajnik Malgorzata 2007, 'Implementation of modified manual lymphoedema treatment — complex physical therapy (MLT-CPT) in terminally ill patient', *Advances in Palliative Medicine*, vol. 6.no.2. | | Virginia S.Erickson, Marjorie L. Pearson, Patricia A Ganz, John Adams, Katherine L Kahn 2001, 'Arm Edema in Breast Cancer Patients', *J Natl Cancer Inst*, vol.93, pp.96-111. | | World health organization 2012, 'Cancer Fact sheet N°297', Retrieved March 21. | | Foldi E. The treatment of lymphedema. *Cancer* 1998; 83 (Suppl 12 American): 2833-4. | | Leduc O, Leduc A, Bourgeois P, Belgrado JP. The physical treatment of upper limb edema. *Cancer* 1998; 83 (Suppl 12 American): 2835-9.. |