International Surgery Journal
*Sukhadia M et al. Int Surg J. 2018 Mar;5(3):1067-1071*
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20180832

**Original Research Article**

# Lymphoedema: non-operative management

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**Received:** 08 January 2018
**Accepted:** 31 January 2018

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## ABSTRACT

**Background:** Lymphoedema is one of the most undesirable complication that is anticipated in patients of cancer breast post mastectomy. A comprehensive care of patient of lymphoedema is required which includes, prevention, early diagnosis and treatment. In the study conducted, efficacy of non-operative management of lymphoedema is observed.
**Methods:** A descriptive study was conducted on women who presented with lymphoedema post-mastectomy. Thirty-three patients were studied for non-operative management. Treatment of patients was carried out with physiotherapy, massage, compression bandages and stockings and Intermittent pneumatic compression by pneumatic compression pump.
**Results:** Patients were categorized according to the grades, duration of lymphoedema, type of treatment they received and effect of the treatment.
**Conclusions:** Lymphoedema being dreaded complication, much attention needs to be given on its prevention post mastectomy. But in country like India, compliance and regular follow up is not possible for every patient, especially for the patients of the rural background. The same pattern of dearth in compliance follows in management of lymphoedema. Non-operative management is an effective mode of treatment in cases of post-mastectomy lymphoedema.

**Keywords:** Lymphoedema, Non-operative management, Post-mastectomy

## INTRODUCTION

Lymphoedema is one of the most undesirable complication that is anticipated in patients of cancer breast post mastectomy. Carcinoma breast being common disease and a great deal of improvement in management of patients lead us to give more emphasis on quality of life and long-term post treatment sequalae.

There is expectation on the part of patient, their family, and care givers that the patient should lead a near normal life. Lymphoedema being chronic debilitating disease results in significant swelling of limb, disfiguring body image and may lead to functional disability. So postmastectomy upper limb lymphoedema may be said to be the paradigm for discussion of follow up care.

Clinically, lymphoedema results from abnormal accumulation of protein in the interstitial space causing interruption of normal lymphatic drainage channels. Initial swelling is due to excess fluid collections in subcutaneous tissue resulting in pitting oedema. This is the initial fluid phase of lymphoedema. Longstanding lymphoedema leads to chronic accumulation of inflammatory fluid with fibrocyte and adipocyte resulting in deposition of fats in subcutaneous tissue with resultant non-pitting oedema. This is known as solid phase of lymphoedema.[1,2] Axillary lymph node dissection may further alter the lymph node transfer capacity.

No curative treatments of lymphoedema are currently available. Therefore, the goal of treatment is to decrease the excess volume as much as possible and maintain the limb at its smallest size and best function.[3] Varying methods of controlling lymphoedema have been prescribed. The gold standard treatment is complex decongestive therapy also known as combined physical therapy.

Intermittent Pneumatic compression is another modality for controlling lymphoedema. In this method limb is inserted into the sleeve that is then inflated by a pump, this exerts pressure on the extremity which shifts edema into the root of limb and adjacent trunk quadrant.[4]

In view of gravity of disease, a comprehensive care of patient of lymphoedema is required which includes, prevention, early diagnosis and treatment.

In the study conducted, efficacy of non-operative management of lymphoedema is observed. Sundry of nonoperative management options were studied. Present study laid emphasis on complete decongestive therapy (CDT) which include manual lymph drainage, compression bandages, physiotherapy studied separately. This also includes primary skin care and education in lymphoedema self-management and elastic compression garments. The other modality used is intermittent pneumatic compression therapy for some patients as an adjunct to CDT.

## METHODS

A descriptive study was conducted on women who presented with lymphoedema post MRM. These patients were registered in breast clinic at Maharana Bhupal Government Hospital, Udaipur attached to Rabindra Nath Tagore Medical college, Udaipur, Rajasthan, India.

A total of 1047 patient were operated for mastectomy, out of which 63 patients developed lymphoedema. Out of 67 patients, 30 were lost in follow-up and 33 patients completed treatment for lymphoedema. All the 33 were given non-operative treatment for lymphoedema.

A detailed physical examination was done with special emphasis on both arms. Difference of circumferential measurements were taken at 4 points; the metacarpal phalangeal joints, the wrists, and 10 centimeters distal to the lateral epicondyles and 15 centimeters proximal to lateral epicondyles. Arm pain and shoulder mobility were graded according to symptoms.

Treatment of patients was carried out with physiotherapy (PT), massage (Msg), compression bandages and stockings (CB) and Intermittent pneumatic compression by pneumatic compression pump (IPC). These treatment options were given according to the grade of lymphoedema and symptoms of patients.

## RESULTS

In the study conducted, 33 patients of upper limb post-mastectomy lymphoedema were rendered treatment and observed for the same. They were categorized according to the grades, duration of lymphoedema, type of treatment they received and effect of the treatment.

Most of the patients were presented within 1-2 years after surgery. Duration of onset of lymphoedema after mastectomy (Table 1).

**Table 1: Distribution of lymphoedema according to onset after surgery.**

| Duration (years) | No. of patients | Percentage |
|---|---|---|
| 0-<1 | 5 | 15 |
| 1-<2 | 20 | 60 |
| 2-<3 | 3 | 9 |
| >3 | 5 | 15 |

**Table 2: Grading of lymphoedema according to duration after the surgery.**

| Duration (years) | Mild | Moderate | Severe |
|---|---|---|---|
| 0-<1 | 5 | - | - |
| 1-<2 | 9 | 10 | - |
| 2-<3 | - | 2 | 1 |
| >3 | - | - | 5 |

**Table 3: Distribution of patients according to the severity of lymphoedema.**

| Grade | No. of patients | Percentage |
|---|---|---|
| Mild | 17 | 51.5 |
| Moderate | 14 | 42.4 |
| Severe | 2 | 6.06 |

**Table 4: Distribution of patients according to the treatment they received.**

| Treatment given | No. of patients |
|---|---|
| PT+Msg | 33 |
| CB | 17 |
| IPC | 6 |

**Table 5: Mode of treatment according to the severity of lymphoedema.**

| Grade of lymphoedema | PT+Msg | PT+Msg +CB | PT+Msg+ CB+IPC |
|---|---|---|---|
| Mild | 17 | 2 | - |
| Moderate | - | 15 | 5 |
| Severe | 1 | - | 1 |

Most of the patients were presented with mild to moderate grade of lymphoedema. Grading of lymphoedema in relation to duration of onset of

lymphoedema after mastectomy (Table 2). Distribution of patients according to the severity of lymphoedema (Table 3).

Low grade lymphoedema responded to physiotherapy and massage; moderate grade lymphoedema needed compression bandage and/or pneumatic compression; severe grade lymphoedema needed all the four modalities. Distribution of patients according to the treatment they received (Table 4). Mode of treatment according to the severity of lymphoedema (Table 5).

Two thirds of the patients who received physiotherapy and massage only responded well with reduction in lymphoedema. Moderate grade lymphoedema responded well (76.4%) to physiotherapy and massage along with compression bandage. Moderate to severe grade lymphoedema also needed intermittent pneumatic compression and responded well to these modalities (83.3%). Most of the patients with various grades of lymphoedema responded well to non-conservative treatment with reduction in their lymphoedema. Efficacy of non-operative treatment in patients of lymphoedema (Table 6).

**Table 6: Efficacy of treatment in patients of lymphoedema.**

| Treatment given | No. of patients | Reduction | Static | Progression |
|---|---|---|---|---|
| PT+Msg | 33 | 22(66.6%) | 7(21.1%) | 4(12.1%) |
| PT+ Msg+ CB | 17 | 13(76.4%) | 3(17.6%) | 1(5.8%) |
| PT+ Msg+ CB + IPC | 6 | 5(83.3%) | 1(16.6%) | 0 |

## DISCUSSION

Lymphoedema being dreaded complication, much attention needs to be given on its prevention post mastectomy. But in country like India, compliance and regular follow up is not possible for every patient, especially for the patients of the rural background. The same pattern of dearth in compliance follows in management of lymphoedema.

In the study done, patients were subjected to non-operative management which includes; physiotherapy and massage, compression bandages and intermittent pneumatic compressions.

These treatment methods were studied based on their synergistic effectiveness on lymphoedema.

Kuno et al, (US) made an investigation of lymphoedema and function of the arm in 1,115 patients after mastectomy. Slight edema was present in 26.7%, moderate lymphoedema was observed in 3.9% and severe in 0.9%.[5]

Lymphoedema was dependent on extensiveness of surgical operation. Three stages of lymphoedema have been described in CMAJ 2001. Stage 1 presents with pitting and is considered as reversible; stage II presents brawny, fibrotic, non-pitting and is irreversible; stage III presents as advanced lymphoedema in which cartilaginous hardening occurs with papillomatous outgrowths and hyperkeratosis of skin.[6,7]

In present study 31 patients (prevalence=2.96%) were of grade I lymphoedema, 14 patients (prevalence=2.87%) belongs to category of grade II lymphoedema, 2 patients had grade III lymphoedema.

Dennis (US) reported only 9 patients but observed a large variability in the time between surgery and onset of lymphoedema i.e. between 2 months and 3 years.[8]

In present series maximum number of patients i.e. 30 patients (47.62%) developed lymphoedema between 1 to 2 years after surgery followed by 15 patients (23.81%) who developed lymphoedema between 2-3 years.

In present study patients were categorized according to grades of lymphoedema. Out of 33 patients who were treated for lymphoedema, 17 patients had mild lymphoedema. Moderate lymphoedema was present in 14 patients and severe lymphoedema was seen in 2 patients.

Johansson et al (US) examined the effects of low stretch compression bandaging (CB) or in combination with manual lymph drainage (MLD) in 38 female patients with arm lymphoedema after treatment for breast cancer. After CB therapy for 2 weeks, the patients were allocated to either CB or CB +MLD for 1 week. Arm volume and subjective assessment of pain, heaviness, and tension were measured. The mean volume of reduction for total group during part I was 26% and during part II in CB+MLD group was 11% and in CB group it was 4% which was significantly different(p=0.04).[9]

In present series MLD was offered to 17 the patients of mild lymphoedema along with regular physiotherapy. There was considerable reduction in arm swelling along with relief in pain and heaviness in 9 patients. There was mild reduction or swelling remained static in 4 patients. Progression of disease was seen in 2 patients who were inconsistent with treatment. Two patients with mild lymphoedema were lost to follow up.

There were 9 patients of moderate lymphoedema who were offered compression bandages and stockings along with massage and physiotherapy. There was reduction in

limb swelling of 0.25cm to 3cm in 5 patients who were regularly worn the compression bandages. There were mild changes in 3 patients. Patients were also satisfied with treatment with decrease in pain and heaviness. Only 1 patient had consistent pain along with progression of swelling. Low stretch compression bandaging is an effective treatment giving volume reduction of slight or moderate lymphoedema in women treated for breast cancer. Manual lymphatic drainage adds a positive effect.

Szuba A suggested that intermittent pneumatic compression with single or multiple chamber pumps effectively removed access fluid from extremity. He reported that they were conducting two studies on the application of pneumatic compression in combination with decongestive lymphatic therapy (DLT) in patients with arm lymphoedema secondary to breast cancer therapy. Preliminary results of the first study involving 22 women showed an average arm volume reduction of 51% in the group using compression pump with DLT vs. 35% volume reduction in the group treated with DLT alone. The second group of 23 patients which assessed the usefulness of daily sequential compression for maintenance of arm volume by patients with post mastectomy arm edema also found beneficial effects.[10]

Achula R and Rockson SG, reported on safety and efficacy of intermittent pneumatic compression. Twenty-three patients were randomized into two groups: the first which received DLT which included manual lymphatic drainage, bandaging and exercise daily and IP; and the second which received IPC 30 minutes daily at 40-50 mm. In group 1, 11 patients received a 25% acute arm volume reduction; in group 2, 12 patients received a mean volume of 45.3% mean volume reduction.[11]

In present series 6 patients with moderate lymphoedema were offered intermittent pneumatic compression along with compression bandage, massage and physiotherapy. The IPC was given in each patient for 2 weeks daily for 30 minutes to 1 hour. There was an average reduction of 0.5cm to 0.8cm in arm swelling at different levels in 4 patients with containment of swelling in 1 patient but there was decrease in heaviness and hardness of tissue in that patient.

Haghighat S, Lotfi-Tokaldany M et al, conducted a study to compare two treatment methods for post mastectomy lymphoedema; complex decongestive therapy and intermittent pneumatic compression. A total 112 patients were studied who were randomly allocated in two equal groups who were receiving daily CDT alone or in combination of IPC. During the intensive phase of CDT alone yielded a higher mean volume reduction than the combination modality (431% vs. 37.5%; p=0.036). limb volume measured 3 months following treatment showed 16.9% volume reduction by CDT alone 7.5% reduction by combining it with IPC. This study shows that the use of CDT alone or in combination with IPC significantly reduced limb volume in patients.[3]

Szolnoky F et al, studied the efficacy of CDT and CDT+IPC in patients of post mastectomy lymphoedema receiving manual lymphatic drainage (CDT) for 60 mins in 13 patients and MLD+IPC, receiving it for 30 minutes individually in 14 patients followed by standardized components of CDT including compression bandages, physical exercises and skin care 10 times in a 2- week period. With a significant decrease found in the subjective symptoms survey for both the groups compared to base line, no significant difference between the groups was found at any point of time. The application of IPC with MLD provides a synergistic enhancement of the effect of CDT in arm volume reduction.[12]

Not all patients were subjected to the treatment as it was difficult to approach them as many patients were of last decade, some of them were lost in follow-up, while some of them expired. Some patients who were approached were not compliant with the treatment process as patient had to stay in the city (Udaipur) for up to 10 days as many of the patients were of rural background, financially weak and were contented with their situation.

The goal of treatment is to improve the patient's health. The quality of life of the patient was an important consideration, along with cure or remission of disease. The objective of in flux medicine is not only to cure the patient or increase the life expectancy, but also lessening the consequences of disease and improving the quality of life. So, the subjective state of health is an important parameter to be considered. Majority of young, educated and urban women who developed lymphoedema were not easy with it and unhappy due to disfigurement caused by lymphoedema. Elderly and rural women were not much concerned about the limb swelling except for any functional restrictions. Majority of patients who developed moderate lymphoedema were partially able to resume normal day to day work and most with mild lymphoedema were having little or no problem at all.

## CONCLUSION

Non-operative management is an effective mode of treatment in cases of post-mastectomy lymphoedema.

## ACKNOWLEDGEMENTS

Authors would like to thanks Dr. Garima Mehta, for his valuable support during study.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: Not required*

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**Cite this article as:** Sukhadia M, Sethi D, Sethi A. Lymphoedema: non-operative management. Int Surg J 2018;5:1067-71.