

ORIGINAL ARTICLE

EFFECTIVENESS OF HOME BASED DECONGESTIVE LYMPHATIC THERAPY FOLLOWING AXILLARY LYMPH NODE DISSECTION AMONG BREAST CANCER SURGERY PATIENTS

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ABSTRACT

Background: Lymphedema is abnormal accumulation of interstitial fluid in skin due to malfunction of lymphatic system. After axillary lymph node dissection breast surgery lymphedema of involved arm is one of the complications. So the aim of current study is to evaluate the effectiveness of home based decongestive lymphatic therapy on lymphedema and range of motion.

Methods: A quasi experimental study was conducted on 100 female patients who have undergone axillary lymph node dissection in Shukat Khanum Memorial hospital Lahore. Study period was from March 2017 to September 2017. Sampling technique utilized was non probability convenience sampling. Written informed consent was taken from each patient. Patients were trained to do self massage and self lymphatic drainage technique once a day. Exercises were instructed to the patients keeping diaphragmatic exercises in between. Girth measurement was assessed pre and post operatively using calibrated tape. Range of motion was measured pre and post operatively through goniometer. Measurement was taken at baseline, and on 1st day, 10th day and 4th week of treatment. Effectiveness of home based decongestive lymphatic therapy was assessed through repeated measure ANOVA.

Results: Home based decongestive lymphatic therapy showed statistically significant changes in arm and forearm circumference (p value < 0.05). Significant increase in degree of shoulder flexion, shoulder abduction, shoulder external rotation and shoulder internal rotation was observed after home based treatment (p value < 0.001)

Conclusion: Home based lymphatic decongestive therapy proved to be effective in improving shoulder range of motion and reducing lymphoedema post breast cancer surgery.

KEYWORDS: Arm circumference Home based decongestive lymphatic therapy, lymphedema,

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INTRODUCTION

Lymphedema is abnormal accumulation of interstitial fluid in skin due to malfunction of lymphatic system. After axillary lymph node dissection breast surgery lymphedema of involved arm is one of the significant complications¹. It is considered as fairly common, potentially severe and discomforting. It also has strong association with activity limitation, esthetic component and emotional problems.

Therefore, affects the overall quality of life of women with breast cancer².

Persistent tissue swelling caused by the absence or block of lymph drainage system is considered as Lymphedema. Lymphedema is a huge problem for patients who have undergone axillary lymph-node dissection for the management of breast cancer. After breast surgery, the incidence of lymphedema at 12 months ranges from 12% to 26 %¹. Common

problems that may result due to lymphedema can be physical discomfort, cosmetic deformity, dysfunction, and psychological distress². Thus, there is an intense need to design a treatment protocol for this common complication.

Current statistics of United States showed that almost 400,000 patients are affected with lymphedema of upper limb³. The incidence of secondary lymphedema is about 23-38% after axillary lymph node dissection based on the criteria of more than 2 cm increase in upper arm circumference when measurements taken at two adjacent points and comparing it with the circumferences in the other arm⁴. Within a year of surgery for breast cancer approximately 71 percent of women develop secondary lymphedema⁵. Lymphedema may develop immediately following surgery, a week later after surgery as a result of post surgery trauma or a month later or even after numerous months⁶.

Complex Decongestive therapy is one of the most accepted treatment strategy for women with lymphedema². It includes decongestive exercises, skin care, manual lymphatic drainage techniques, compression bandages and manual massage⁷. Manual lymphatic drainage is a massage method that is performed from distal to proximal, and the time limit of the massage is almost 45 minute⁸. These commonly performed methods may aid in the mobilization of accumulated fluid and can effectively manage a greater proportion of lymphedema patients⁹. In addition, it may prevent tissue fibrosis, thus rendering the tensed tissue flaccid¹⁰. The main purpose of the current study is to evaluate the home based effectiveness of decongestive lymphatic therapy for patients undergoing axillary lymph node dissection. It will enable practitioners prevent the most common sequel of breast cancer management as well as to halt reduction of shoulder range of motion. Self lymphatic drainage techniques will provide added benefit thus improving the health related quality of life of women undergoing this surgery.

METHODS

A quasi experimental study was conducted in Shuakt Khanum Memorial hospital and Research centre Lahore. The study period was from March 2017 to September 2017. Calculation of sample size was done through WHO sample size calculator keeping the desired power of study as 90%. 100 female patients undergoing Axillary lymph node dissection were enrolled in the study. Sampling

technique utilized was non probability convenience sampling. Written informed consent has been taken from each patient. Only those breast cancer female patients aged between 25 to 65 years who underwent axillary lymph node dissection and immediately developed lymphedema were included in the study. Breast surgeries other than axillary lymph node dissection and lymphedema due to other diseases like renal diseases, infection of lymph nodes, Milroy's disease, Meige's disease and lymphedema tarda were excluded. Patients and their family members were trained by the therapist to do self massage and self lymphatic drainage technique once a day. Exercises were instructed to the patients keeping diaphragmatic exercises in between. Home program also involved skin care along with lymphatic drainage and exercises. Participants were provided with booklets for home exercises. Each participant was advised to keep a log book record for home plan. Girth measurement was assessed post operatively before lymphatic therapy using calibrated tape from styloid process up to shoulder joint with circumference measurement starting from metacarpophalangeal joint, wrist joint, forearm joint and then arm circumference. Range of motion was measured before and after decongestive lymphatic therapy through goniometer. The measurement was taken at 1st day before lymphatic therapy and then after 10th day and 4th week of home based decongestive lymphatic treatment. Patient was instructed to perform self decongestive therapy for 45 minutes each day and keep record. The initial single session was provided by the therapist himself to ensure practical demonstration for the patient. Thus the patient and her family could properly follow the treatment protocol at home. Exercises include wrist bending, hand, thumb and shoulder exercises repeated 10 times, 3 to 4 times daily. Deep breathing exercises were also instructed. Patient was asked to follow up after 10 days and 4th week of continuous home based therapy. Data was analyzed through SPSS version 21. Demographic data was reported and effectiveness of decongestive lymphatic therapy was assessed within subjects through repeated measure ANOVA.

RESULTS

Demographic features of the participants like marital status, level of education and affected arm were reported. Most of the patients were married and well educated. Lymphedema was almost equally present in both upper limbs whether dominant or non dominant.

Table 1: Demographic Characteristics of Participants

Demographic variables	Frequency (Mean±S.D)
Age	47.51 ± 9.05
Marital Status (Single/Married)	4/96
Affected arm(Right/Left)	49/51
Education Level(Primary/Secondary/Higher)	5/13/82

Repeated measure ANOVA showed that there was no statistically significant change in MCP circumference and wrist circumference over the 3-4 weeks

after the operation (p-value = 0.166 and p-value = 0.299).

Table 2: Comparison of Girth Measurements at different times

	Post Op Day 1 Mean ± S.D	After 10 days Mean ± S.D	After 3-4 weeks Mean ± S.D	p-value
Metacarpophalangeal circumference (cm)	18.08 ± 1.63	18.27 ± 1.74	18.26 ± 1.74	0.166
Wrist circumference (cm)	16.41 ± 1.87	16.39 ± 1.98	16.40 ± 2.03	0.229
Forearm circumference (cm)	23.10 ± 2.67	22.97 ± 2.72	22.96 ± 2.73	0.002
Arm circumference (cm)	26.75 ± 2.90	26.56 ± 2.97	26.57 ± 2.96	< 0.001

Repeated measure ANOVA showed that there were statistically significant increase in degree of shoulder flexion, shoulder abduction, shoulder

external rotation and shoulder internal rotation over the 3-4 weeks after the operation (p-value < 0.001)

Table 3: Comparison of Shoulder Range of Motion at different time level

	Post Op Day 1 Mean ± S.D	After 10 days Mean ± S.D	After 3-4 weeks Mean ± S.D	p-value
Shoulder Flexion (0-180)	93.00 ± 8.82	130.25 ± 15.80	174.00 ± 6.49	< 0.001
Shoulder Abduction (0-180)	80.60 ± 8.50	113.45 ± 14.65	171.65 ± 7.69	< 0.001
Shoulder External Rotation (0-90)	68.40 ± 6.62	82.70 ± 8.15	89.60 ± 2.43	< 0.001
Shoulder Internal Rotation (0-70)	59.30 ± 3.26	69.20 ± 2.72	70.00 ± 00.00	< 0.001

DISCUSSION

The findings of present study suggested that home based decongestive lymphatic therapy following axillary lymph node dissection had significant effects on range of motion of shoulder joint including shoulder flexion, abduction, external rotation and internal rotation among patients of breast cancer surgery. The results of the present study are consistent with a previous study which concluded that significant improvements were observed among patients receiving home exercise plan. Decongestive therapy showed significant reduction in terms of pain and lymphedema¹¹.

Previous literatures have identified that the provision of radiotherapy significantly increases the risk of edema. Multiple authors have reported the adverse effect of breast edema as well as secondary lymphedema, fibrosis and dermatitis¹². The literature also supported prevention of lymphedema through particular techniques to decrease deterioration of axillary system¹³. No evidence is present which focuses on the home based management of lymphedema. Manual lymphatic drainage has been proved to be effective but the self management at home has not been targeted yet.

Box et al determined the treatment strategies to reduce post operative lymphedema after removal of nodes resulting from breast cancer and highlighted that rehabilitation plan focusing exercises and counseling methods may decrease the complication of lymphedema almost 2 years post surgery¹⁴. In the current study girth measurement was not significantly improved after home based decongestive lymphatic therapy. However previous study has shown that complete decongestive therapy plan along with home program had significant effects on arm circumference. The results showed that circumference of upper half of arm after intervention had reduced significantly as compared to pre decongestive lymphatic therapy¹⁵. Therefore, the current study highlights an important aspect that home therapy alone had failed to produce significant effects on arm volume.

In the current study the patient's cooperation, adherence and compliance to rehabilitation plan were high. This may be due to high literacy level of participants. Hence this study targeting the home based remedial exercises and lymphatic drainage program highlights the importance of self techniques.

The study also focuses the reduction in volume of arm and forearm after home based intervention. However, there were no reduction in circumference at metacarpophalangeal and wrist circumference. The results are in support with the previous literature showing improved quality of life in relation to reduction in arm volume after decongestive therapy¹⁶ The

early weeks and months after surgery are of intense importance for females who must be provided with optimal medical and physical therapy care⁷. This will reduce the occurrence of complications like secondary lymphedema and decrease in range of motion of shoulder and arm¹⁷.

Despite profuse amount of literature, effectiveness of lymphatic drainage is still under debate and further evaluations are needed¹⁸. Future studies are also recommended to evaluate the long term effects of home based decongestive therapy.

CONCLUSION

Home based lymphatic decongestive therapy proved to be effective in improving shoulder range of motion and reducing lymphedema post breast cancer surgery.

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