

## Efficacy of Complete Decongestive Therapy Versus Pneumatic Compression Against Faradism Underpressure in Patients with Lymphedema Secondary to Breast Cancer

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### Abstract

**Introduction:** Lymphedema is the most common secondary complication that people with breast cancer face. Characterized by the appearance of new growth. The new growth usually takes the shape of a lump which is frequently referred to as a neoplasm. Lymphedema in women who have had a mastectomy has the potential to become a chronic and progressive disorder. It is necessary to determine the impact of each strategy. The goal of this research was to investigate and evaluate the best treatment for lymphedema secondary to breast cancer.

**Method:** This study included 30 women with lymphedema caused by breast cancer. They were assigned to one of three groups. Group A (n=10) received complete decongestive therapy. Group B (n=10) received pneumatic compression, while Group C (n=10) received faradism under pressure. Subjects from all three groups were asked to come to the department three times per week for two months. Patients girth and pain intensity were measured pre and post treatment.

**Conclusion:** As a result, the researchers concluded that in patients with mild lymphedema, comprehensive decongestive therapy was more effective.

**Keywords:** Lymphedema; Complete decongestive therapy; Faradism under pressure; Pneumatic compression.

### Introduction

Cancer is a disease that strikes all living creatures. There is no organ in the body that is immune to cancer.<sup>1</sup> CA-breast is the most commonly diagnosed cancer in women with 15% prevalence.<sup>1,2</sup>The

development of new growth is the most evident aspect of many cancers.<sup>1,2</sup> The formation of newly created cells from normal body cells or their preceding development cells of origin is referred to as new growth or neoplasm. The new development typically

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forms a lump or tumour, which is commonly used interchangeably with the term neoplasm. Untreated malignant neoplasm or cancer that threatens the host's life. Chemotherapy, radiation therapy, medical care, surgical management, and other treatments are available for cancer. Mastectomy is one of the breast cancer surgeries.<sup>1,3,5,6,7,8</sup> Following breast cancer surgery, problems such as wound infection, seroma, pneumothorax, tissue necrosis, bleeding, harm to the axilla's neurovascular anatomy, and lymphedema may develop. One of the most common complications of Ca breast is lymphedema.<sup>3,4,7</sup> The accumulation of protein-rich fluid in soft tissue as a result of a disruption in lymphatic flow is known as lymph edema.<sup>3,9,10</sup> Lymphedema is a chronic, progressive, and frequently incapacitating condition.<sup>7</sup> Lymphedema in post-mastectomy patients has the potential to become a persistent and progressive condition.<sup>7</sup>

Lymphedema occurs when the lymphatic system's volume exceeds its transport capacity due to a functional overload.<sup>6</sup> As the illness worsens, it becomes resistant to treatment. Lymphedema can cause tissue fibrosis.<sup>1,2,3</sup> Deposition of protein-rich fluid in interstitial tissues causes it. This protein-rich liquid serves as a breeding ground for bacteria and fungi.<sup>3,9,10</sup> This could result in the affected limb being infected again. The status of lymphedema may deteriorate with each infection.<sup>3,6,8</sup>

Edema builds up over time if the lymphatic system is clogged or damaged, which can result in tissue thickening.<sup>3,6,8</sup> Limb enlargement, heaviness, mild discomfort, soreness, joint immobility, skin changes, persistent inflammation, and other complications of lymphedema can occur.<sup>2,3</sup>

The severity of lymphedema is usually graded. Soft pitting edema that improves with elevation and is free of clinical fibrosis describe Grade I. Nonpitting edema that does not improve with elevation and reveals the presence of fibrosis characterises Grade II. Hardening and hypertrophy of the subcutaneous tissues, as well as thickness and alterations in the skin, characterise Grade III. The duration of symptoms is linked to the severity of untreated arm lymphedema.<sup>11</sup> Massage, vigorous exercises, and faradism under pressure are among physiotherapy treatment options for lymph edema.<sup>2</sup>

As lymph node injury is the primary cause of lymph edema, a better treatment method that focuses on lymph edema complications will be more successful than low frequency current and workouts alone. Faradism under pressure has been shown to be useful in treating Ca-breast lymph edema, however there is little evidence that biofeedback exercises combined with Faradism under pressure have a substantial impact on lymph edema. As a result, the effect of Faradism under pressure with biofeedback exercises in Ca-breast lymph edema was investigated.

The most widely established strategy for addressing Lymphedema symptoms is conservative therapy. Complete decongestive physiotherapy (CDP), Manual lymphatic drainage (MLD) alone, or sequential pneumatic compression are all options for conservative treatment. Manual lymphatic drainage, compression, skin care, and remedial exercises are all included in complete decongestive physiotherapy.<sup>12</sup>

Because the elastic fibres of the skin have often been injured, compression (bandaging the affected limb) is typically done following manual lymphatic drainage to prevent fluid reaccumulating. Lymphedema patients are taught how to support their skin's acidity through skin care regimens. Because Lymphedema is a protein-rich swelling, Lymphedema patients are at risk for fungal infections. Skin care regimes are an essential part of Complete decongestive physiotherapy. Remedial exercises are activities that the patient can do at home to help support the joint and muscle pump.

Manual lymphatic drainage is a sort of specialist massage that can be used in conjunction with or instead of Complete decongestive physiotherapy. Manual lymphatic drainage is used to move lymphatic fluid from areas of stagnation caused by damaged lymphatic vessels back into healthy lymphatic pathways.<sup>13</sup>

Practitioners that are skilled in the architecture and function of the lymphatic system, as well as massage techniques for moving lymphatic fluid, do manual lymphatic drainage. Manual lymphatic draining should be done slowly and lightly to avoid lymphangiospasm and to target the superficial tissues where the majority of Lymphedema occurs.

Manual lymphatic drainage or complete decongestive physiotherapy is usually done in two stages. The first phase's goals are to move the protein-rich fluid that has accumulated and to begin the decrease of fibrosclerotic tissue. Manual lymphatic drainage is normally done once or twice a day for around four weeks in this initial phase, which is commonly referred to as the therapeutic phase and is typically the phase studied in clinical trials.

Manual lymphatic drainage treatment can last anywhere from one to six weeks, depending on the severity of the condition. Patients are taught in the other components of the therapy if Manual lymphatic drainage is conducted as part of Complete decongestive physiotherapy (exercise, compressive therapy, skin care) during this preliminary phase.

Manual lymphatic drainage is only performed as needed during the second phase, often known as the maintenance phase. Patients are instructed to continue the other parts of Complete decongestive physiotherapy (compressive treatment, skin care, and remedial exercises) on their own during the maintenance phase if Manual lymphatic drainage is conducted as part of Complete decongestive physiotherapy.

As a result, while the Manual lymphatic drainage component of Complete decongestive physiotherapy is heavily utilised during the therapeutic or initial phase of therapy, making Complete decongestive physiotherapy more expensive in the beginning, Complete decongestive physiotherapy is ultimately designed for patients to become more self-sufficient over time, with Manual lymphatic drainage used only as needed.

The effectiveness of Complete decongestive physiotherapy has been reported in a number of case studies with varying reports on arm volume reduction from study to study.<sup>14,15</sup>

Megens went through the research literature to see how beneficial physical therapy is for Lymphedema management. This includes a review of the evidence supporting manual lymphatic draining. Overall, the findings appear to be positive; however, no comprehensive review of clinical trials using Complete decongestive physiotherapy or

Manual lymphatic draining for Lymphedema related to breast cancer treatment has been done.<sup>16</sup>

## Method

In this study of assessment of Girth measurement, Pain intensity and Range of motion of shoulder in patients with Lymphedema secondary to breast cancer. This study was conducted in Krishna Institute of Medical Sciences 'Deemed to be' University, Karad. An ethical clearance certificate was obtained by Institutional Ethical Committee of Krishna Institute of Medical Sciences 'Deemed to-be' University, Karad. Subjects who had Lymphedema secondary to breast cancer were selected. Subjects were chosen according to the inclusion criteria and exclusion criteria.

### Inclusion Criteria

- Females.
- Age group 30 – 55 years
- Individuals with Lymphedema
- Individuals done with radiation and chemotherapy
- Individuals willing to participate.

### Exclusion Criteria

- Individuals undergoing Radiation therapy
- Individuals undergoing Chemotherapy

An informed written consent was obtained from the subjects. An Assessment was performed using, VAS, ROM and Girth of affected limb measurement. Examination of pain is performed by VAS whereas examination ROM is taken by Goniometer. Similarly, for examination of Girth measurement patient is asked to sit and then the area of measurement is asked to expose and measure is taken from distal to proximal with difference of 3 or 4 inch in every measurement.

The treatment was given in three groups. Group A was given Complete decongestive therapy (Manual lymphatic drainage, Bandaging, Exercise). Group B was given Pneumatic compression. Group C was given Faradism under pressure.

## Results

### Demographic variables

Age wise variation

**Table 1: Complete decongestive therapy**

30-35	3	20%
36-40	2	30%
41-45	0	0%
46-50	3	20%
51-55	2	30%

**Interpretation:** There were three patients between the ages of 30 and 35. Two patients between the ages of 36 and 40 took part in the study. There were three patients between the ages of 46 and 50. Two patients between the ages of 51 and 55 took part.

**Table 2: Pneumatic compression therapy**

30-35	3	30%
36-40	2	20%
41-45	0	0%
46-50	3	30%
51-55	2	20%

**Interpretation:** There were 3 patients of age group 30 - 35 yrs. 2 patients of age group 36-40 yrs participated. There were three patients of age group 46-50 yrs. 2 patients of age group 51-55 yrs participated.

**Table 3: Faradism under pressure therapy**

30-35	0	0%
36-40	2	20%
41-45	2	20%
46-50	1	10%
51-55	5	50%

**Interpretation:** Patients aged 36-40 years and 41-45 years participate at a rate of 20%. In the age group 46-50 years, the figure is 10%. In the 51-55yrs old age group, 50% of patients participate.

## Discussion

CA-breast is the most commonly diagnosed cancer in women with 15% prevalence.<sup>1,2</sup>

The new development typically forms a lump or tumour, which is commonly used interchangeably

with the term neoplasm. Untreated malignant neoplasm or cancer that threatens the host's life.

Following breast cancer surgery, problems such as wound infection, seroma, pneumothorax, tissue necrosis, bleeding, harm to the axilla's neurovascular anatomy, and lymphedema may develop. One of the most common complications of Ca breast is lymphedema.<sup>3,4,7</sup>

The severity of lymphedema is usually graded. Soft pitting edema that improves with elevation and is free of clinical fibrosis describe Grade I. Nonpitting edema that does not improve with elevation and reveals the presence of fibrosis characterizes Grade II. Hardening and hypertrophy of the subcutaneous tissues, as well as thickness and alterations in the skin, characterize Grade III. The duration of symptoms is linked to the severity of untreated arm lymphedema.<sup>11</sup>

This study 'Efficacy of complete decongestive therapy versus pneumatic compression against faradism under pressure in patients with lymphedema secondary to breast cancer.' was conducted to find out effectiveness of various treatment protocol on patient's lymphedema. Previous literatures shows that there is positive effect of pneumatic compression when interchanged with manual lymphatic drainage.

In previous study 30 individuals were taken and they were distributed in group of two. One group was given complete decongestive therapy treatment while the second group was given pneumatic compression other than manual lymphatic drainage. There was more effectiveness observed in group that underwent pneumatic compression interchanged with manual lymphatic drainage in complete decongestive therapy. In previous study 30 individuals were taken and they were divided in two groups those were given faradism under pressure and one was given faradism under pressure along with exercise.

In this study three groups were made one group was given complete decongestive therapy and the second group was given pneumatic compression therapy and third group underwent faradism under pressure and all the group were asked to do mobility exercise to increase range of motion and to reduce lymphedema. Women ranging in age group

of 30 to 55 were participating and the one who had lymphedema secondary to breast cancer.

Women who had undergone chemotherapy and radiation therapy were asked to participate in this study. At the end patients were more benefited with complete decongestive therapy in comparison to pneumatic compression and faradism under pressure. Range of motion was mildly affected in patients with mild reduction in lymphedema there was a noticeable change in range of motion in some patients.

According to age distribution there is maximum distribution of women ranging from age 51 to 55 yrs who had complication of lymphedema secondary to breast cancer.

In the present study the pre- intervention Mean and Standard deviation of girth in Complete decongestive therapy was 9.319 (3.475969) where as post intervention value of girth in Complete decongestive therapy was 9.197 (3.492458). It concluded that interference was considered very significant with P value <0.0001.

In the present study the pre-intervention Mean and Standard deviation of girth in Pneumatic compression was 9.41(3.61) where as post intervention value of girth in Pneumatic compression was 9.22(3.65). It concluded that interference was considered very significant with P value <0.0001

In the present study the pre- intervention Mean and Standard deviation of girth in Faradism under pressure was 9.39(3.47) where as post intervention value of girth in Faradism under pressure was 9.19(3.49). It concluded that interference was considered very significant with P value <0.0001.

In the present study the pre-intervention Mean and Standard deviation of VAS in Complete decongestive therapy was 6.7(1.53) where as post intervention value of girth in Complete decongestive therapy was 2(0.77).It concluded that interference was considered very significant with P value 0.0012.

In the present study the pre-intervention Mean and Standard deviation of VAS in Pneumatic compression was 3.9(0.94) where as post intervention value of girth in Pneumatic compression was 2(0.44).

It concluded that interference was considered significant with P value 0.0186.

In the present study the pre- intervention Mean and Standard deviation of VAS in Faradism under pressure was 4.6(1.49) where as post intervention value of girth in Faradism under pressure was 2.3(0.78)).It concluded that interference was considered significant with P value 0.0329.

## Conclusion

There was a significant change in lymphedema in patients who underwent complete congestive therapy, followed by the patients who had pneumatic compression therapy and then were the patients who were treated with faradism under pressure. Therefore, the study conclude that the complete decongestive therapy was more beneficial in patients with mild lymphedema secondary to lymphedema.

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