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**Evaluation of long-term effect of Clinical Physiotherapy treatment protocol for post Cancer Mastectomy induced lymphadenopathy and restricted joint range: A novel protocol Case Study**

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**Abstract**

There are many side effects known from post-mastectomy. Most disabling are pain and restricted range of motion of shoulder joint due to post Cancer Mastectomy induced lymphadenopathy. Limited arm or shoulder movement further affects an individual's functional and social well-being. With the aim to reduce the lymphedema either we lose range and strength or vice versa. Hence the aim of the present study was to evaluate the effectiveness of the novel physiotherapy protocol for the post-mastectomy and radiotherapy-induced lymphadenopathy and restricted range of motion. A 62 years old female was included in the study. Baseline data were recorded by visual analog scale, forearm girth measurements and Hospital Anxiety and Depression (HAD) scale. Results were then noted at 1st, 2nd, 3rd, 4th, 5th and 6th month of the study. Studies proved Matrix Rhythm Therapy to be beneficial in reducing lymphedema, pain incising functional and social well-being when combined with other conventional.

**Keywords:** post-mastectomy lymphadenopathy, Matrix Rhythm Therapy, Hospital Anxiety and Depression scale.

**Introduction**

Mastectomy is a treatment for breast cancer over breast-conserving surgeries. There are many side effects known post-mastectomy. Some of which are pain tenderness, swelling at the surgery site, lymphadenopathy, Buildup of blood in the wound (hematoma), Buildup of clear fluid in the wound (seroma), Limited arm or shoulder movement, Numbness in the chest or upper arm,

neuropathic pain<sup>1</sup>. Mastectomy also caused the psychological impact on half of the patients, which included fear of cancer, feeling of body incompleteness, inconvenience in working and social communication, less sexual act and low spirit<sup>2</sup>. Lymphedema in women treated for breast cancer is an accumulation of protein-rich fluid in the arm that occurs when axillary lymphatic drainage from the arm is interrupted because of axillary lymph node dissection or axillary radiation or both<sup>3</sup>. Lymphedema is still of great concern as no modern modalities have shown significant results in reducing lymphedema. This leads to dysfunction in the Shoulder joint and restriction in joint range. Three stages of lymphedema have been described in studies that are: Stage I presents with pitting and is considered reversible; some women with this stage have no increased arm girth or heaviness and no signs of pitting edema. As the edema progresses, it becomes brawny, fibrotic, nonpitting and irreversible in stage II. In advanced lymphedema i.e. in stage III, which rarely occurs following breast cancer treatments, cartilaginous hardening occurs, with papillomatous outgrowths and hyperkeratosis of the skin<sup>4,5,6</sup>. Chronic lymphedema gives rise to a chronic inflammatory state and consequent fibrosis that make the joint range more difficult to treat with pain<sup>7</sup>. This further leads to symptoms such as pain, disfigurement, and disability.

In the stage, one many clinicians miss how to go with the treatment protocol to reduce the lymphedema and to maintain the range. With the aim to reduce the lymphedema either we lose range and strength or vice versa. Recent physical therapies applied for the treatment of lymphedema rapidly reduce edema fluid<sup>4,5</sup>, even then, only about half the fluid is removed. An effective protocol for post-mastectomy and radiotherapy-induced lymphadenopathy restricted range of motion was needed. Hence the aim of the present case study was to evaluate the effectiveness of the novel physiotherapy protocol for the post-mastectomy and radiotherapy-induced lymphadenopathy restricted range of motion.

### **Case Report**

A patient aged 62 years female with right Postmastectomy radiotherapy consulted the clinic for pain and restriction in joint ranges. The patient consulted many clinicians for lymphedema but had found no satisfactory reduction in pain and lymphedema. The patient complained of the restricted range of motion which also affected her social and personal status. The patient was so assessed for the symptoms and explained the treatment protocol. The patient was explained in her vernacular language and then inform-consent was signed by the patient for the present study. Baseline data were recorded by visual analog scale, forearm girth measurements and Hospital Anxiety and Depression (HAD) scale. Results were then noted at 1st, 2nd, 3rd, 4th, 5th and 6th month of the study.

### **Results**

The present study showed positive improvement in the treatment of for post Cancer Mastectomy induced lymphadenopathy and restricted joint range. Pain reduced from 8.04 % to 3.8 % on pain visual analog scale in the 4th month of the study. Forearm girth measurements were taken on 1st,

2nd, 3rd, 4th, 5th and the 6th month from the baseline as shown in table 2 and Hospital Anxiety and Depression (HAD) scale in figure 2.

### **Discussion**

There are many physical therapies and modalities that have shown the beneficial effect of reducing lymphedema, swelling and increase joint range. The effects of these modalities have not shown any long-term significant results in on co related or post lymphadenectomy cases. The present case study was aimed to evaluate the effectiveness of a novel physiotherapy protocol to reduce the lymphedema along with swelling, pain and increase the range of motion.

In a study, twenty sessions of Matrix Rhythm Therapy (5 days/week) were applied to the affected leg, spine, and abdominal regions. At the end of treatment, the volumetric reduction was not significant; however, when compared with baseline, measurements at 1 and 3 months decreased by 3.59% and 8.36%, respectively. The study so Concluded Matrix Rhythm Therapy could not reduce lymphedema when used alone, but long-term treatment may show positive effects<sup>8</sup>. We hence used Matrix rhythm therapy as the main modality for lymphadenopathy reduction. Matrix rhythm therapy was applied in the lymphatic drainage direction keeping the limb in slight elevation. MRT is said to improve metabolism which activates and rebalances specific vibration in skeletal muscles and the nervous system. Oscillating rhythm maximizes lymphatic venous perfusion of the extracellular space in which the anti-edematous effects originate through a specific physiological pulse<sup>9,10</sup>. To keep the effect i.e. reduced lymphadenopathy, we immediately applied crepe bandage and pressure garments for the upper extremity. Studies have suggested that compression therapies for lymphedema are of essential in reducing edema<sup>11</sup>. This was continued throughout the exercise session and the rest of the day when the hand was in down position.

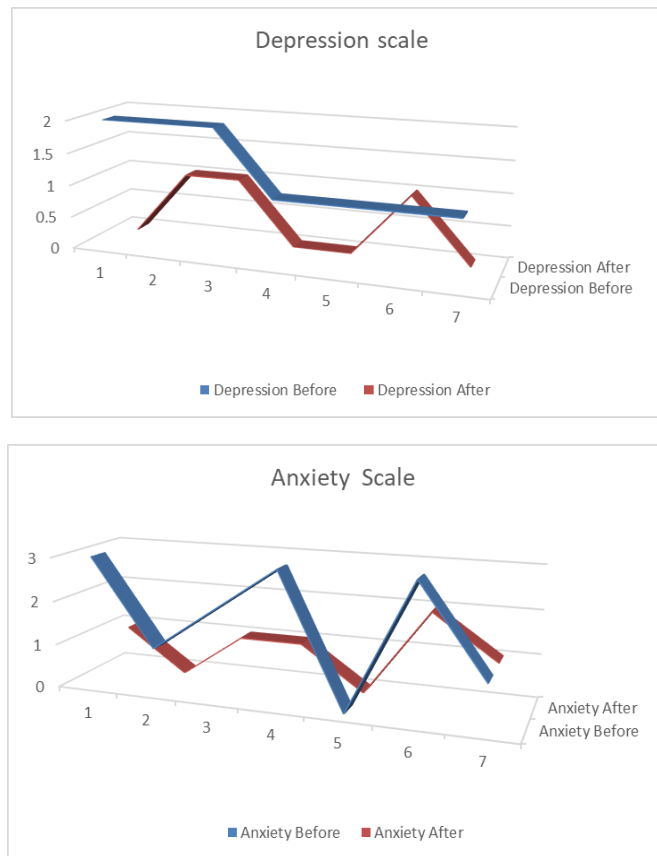
Mid-Range, End-range Mobilization and movement with mobilization techniques<sup>12,13</sup> were performed on the involved shoulder trice a week for 20 minutes. The osteo-kinematic motion of the joint was actively performed by manual force or mobilization to cause repositioning of bone positional faults. MWM also restores pain-free motion at joints that have a painful limitation of range of movement. Three sets of 10 repetitions were applied, with 1 minute between sets. Followed by mobilization subject was given rest for 2 to 3 minutes and Freehand exercise<sup>14</sup> (without weight 5 sessions and 5 sessions with minimum weight), overhead exercises and light stretching<sup>15</sup> was performed. The above exercises were specially designed as per individual patient's range and pain symptoms. Its intensity and repetitions were kept on increasing as the pain decreases. As pain decreased and the range was started increasing resisted exercise was added. This also strengthened the shoulder strength.

The present study showed significant results in improving and maintaining the effect of matrix rhythm therapy along with the conventional therapy the lymphadenopathy. Matrix rhythm therapy showed the significant effect in reducing the lymphedema post mastectomy and radiotherapy that can be maintained by compression therapy and basic static, stretching and strengthening exercises.

**Figure 1: Application of matrix rhythm therapy along with Physiotherapy conventional therapy.**



**Figure 2: baseline and final data comparison of depression and anxiety by Anxiety and Depression (HAD) scale.**



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**Footnotes**

Consent of Publication: Not applicable

The authors declare that they have no competing interests

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**Table 1: Novel physiotherapy Protocol for post Cancer Mastectomy induced lymphadenopathy and restricted joint range.**

<b>Exercise</b>	<b>Intensity</b>
<b>Matrix Rhythm Therapy</b>	<b>Limb elevation, low intensity in lymphatic-drainage direction followed by effleurage for 40 continues sessions</b>
<b>Crepe bandage and pressure garments compression therapy</b>	<b>Applied after MRT for rest of the day</b>
<b>Joint mobilization with movement</b>	<b>Grade 2,3 for pain relief and increase join range</b>
<b>Free hand exercise (without weight 5 sessions and 5 sessions with minimum weight), overhead exercise and light stretching</b>	<b>For first 10 sessions 2wise daily</b>
<b>Resisted exercise with theraband and flexibar</b>	<b>As pain decrease, for rest of the sessions</b>
<b>Home Exercise</b>	<b>3sets of free hand exercise, overhead exercise and stretching 3<sup>rise</sup> a day.</b>

**Table 2: Baseline up to 6th week session data record**

	<b>baseline</b>	<b>1<sup>st</sup> week</b>	<b>2<sup>st</sup> week</b>	<b>3<sup>st</sup> week</b>	<b>4<sup>st</sup> week</b>	<b>5<sup>st</sup> week</b>	<b>6<sup>st</sup> week</b>
<b>visual analog scale on 10 point scale</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Upper forearm girth measurements (cm)</b>	<b>15.8</b>	<b>15.5</b>	<b>14.9</b>	<b>14.5</b>	<b>14.2</b>	<b>14.0</b>	<b>14.0</b>
<b>Lower forearm girth measurements (cm)</b>	<b>14.4</b>	<b>14.3</b>	<b>14.2</b>	<b>14.0</b>	<b>14.0</b>	<b>13.8</b>	<b>13.8</b>
<b>Wrist girth measurements (cm)</b>	<b>9.8</b>	<b>9.8</b>	<b>9.7</b>	<b>9.6</b>	<b>9.5</b>	<b>9.5</b>	<b>9.5</b>