THE EFFICACY OF PHYSIOTHERAPY RECOVERY AFTER A MODIFIED RADICAL MASTECTOMY

Prasad Dhage¹, Devyani Purushe¹, Tamanna Nurai¹, Pratik Phansopkar², Neha Chitale³, Om C. Wadhokar³, Chaitanya A. Kulkarni³, Waqar M. Naqvi⁴,⁵*  
1. Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India  
2. MGM School of Physiotherapy, Aurangabad. Constituent college of MGM institute of Health Sciences, Navi Mumbai, India

ABSTRACT
Breast cancer is the most common disease in females and the major cause of mortality and morbidity. In reality, 1.67 million new cases of breast cancer are diagnosed around the world, with 458,000 deaths per year. Approximately 89 percent of breast cancer survivors live for a minimum of five years after treatment, but adverse effects can last for months or years after surgery. The most common side effects of the upper limb are pain and joint dysfunction, which is described as having a prevalence range of 12 percent to 51 percent for pain and 1.5 percent to 50 percent for joint dysfunction.¹ The mainstay in primary breast cancer care is surgery.² To assess the impact of an early recovery program on shoulder mobility, functional ability, postoperative complications such as seroma, hematoma, and wound infection in patients who had undergone a modified radical mastectomy (MRM) and to assess the impact of variables in clinical practice (e.g., age, education, BMI, previous shoulder problems, number of dissected axillary lymph nodes and metastatic lymph nodes, use of postoperative radiotherapy (RT) and chemotherapy on shoulder mobility, functional ability, and lymphedema development), and lymphedema.³ Any of these symptoms can result in permanent arm dysfunction. Shoulder exercises are widely prescribed to minimize the impact of mobility and strength as well as to prevent lymphedema. A variety in clinical services has been established which help mostly in improvement of shoulder range of motion while also reducing the risk of secondary lymphedema. This is the case of a 32-year-old female, resident of Dastur Nagar, Amravati. Housewife by occupation. She has swelling in her right breast so she visited a private hospital in Amravati. There she detected a lump in her right breast and the doctor recommended further treatment to visit AVBRH Hospital, Sawangi Meghe, and Wardha. She underwent a modified radical mastectomy. Patients that have had a mastectomy are always at the possibility of experiencing shoulder pain and adhesive capsulitis and require preventative measures.

KEYWORDS: Upper extremity, shoulder pain, Range of motion, breast cancer, Modified radical mastectomy, chest expansion, Adhesive capsulitis, Axillary web syndrome, Physiotherapy

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CORRESPONDENCE:  
Waqar M Naqvi*  
waqar.naqvi@dmimsu.edu.in  
Address - Professor, Department of Community Health Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra, India

INTRODUCTION
Lobular carcinoma is one of the most common cancers among Indian women, affecting approximately 80,000 women each year.⁴ Breast cancer risk is lowest before the age of 30, then rises with age until it hits a peak at the age of 80. It is the leading cause of death in women over 45 yrs. Breast cancer care has advanced over time to include conservation surgery. To ensure an effective therapeutic outcome in terms of survival and quality of life, clinical management necessitates a multidisciplinary approach involving the skills of various medical practitioners (oncologist, surgeon, cosmetic surgeon, physiatrist, nurse, physiotherapist, radiotherapist, and psycho-oncologist) (QOL).⁴ Breast cancer surgery, especially mastectomy, restricts arm/shoulder mobility, resulting in arm/shoulder pain and fibrosis. Females that have had a mastectomy have been shown to have a slightly higher rate of shoulder morbidity (17 percent). In post-mastectomy patients, connective tissue fibrosis of the shoulder joint is normal. As a result, the majority of patients who have had a mastectomy report discomfort and shoulder impairment. Shoulder discomfort and adhesive capsulitis are linked to incredible human suffering and financial costs in post-mastectomy patients.⁵ In post-mastectomy patients, shoulder pain, disability, and impaired movements are common complications.⁵ Disability and Shoulder pain in mastectomy patients can be decreased or even eliminated in the majority of cases, but due to a lack of knowledge, most cases go unreported, putting the patient's psychosocial life in danger. Knowledge of the prevention, early diagnosis, and timely treatment of shoulder problems in post-mastectomy patients is crucial to reducing human and financial distress.⁵ Though the causes of adhesive capsulitis are unclear in the majority of cases, some diseases and surgeries have been linked to the disease. Some disorders have been related to adhesive capsulitis, including shoulder injuries or surgical operations, asthma, and cerebrovascular incidents (CVA).⁵ Post-
mastectomy patients have been confirmed to have UL impairments and a lower quality of life. Loss of the breast causes soft tissue asymmetry and mass distribution through the chest wall, which affects movements of the upper limbs and results in symptoms of the trunk or shoulder. As a result, scapular and shoulder kinematics are often disrupted in post-mastectomy patients, causing these patients to struggle with everyday activities.(5)

PATIENT INFORMATION
A patient 32 years old female housewife who lives in Amravati. Hand dominance right hand. She was apparently alright 8 months back. She experienced swelling in her right breast. So she visited the private hospital. Son mammography of the right breast was done and she detected a lump in her right breast. The doctor recommended further treatment to AVBRH Hospital, Sawangi Meghe, and Wardha. Then she was admitted to Sawangi. Further investigations were done. She had a modified radical mastectomy with dissection of the axillary lymph nodes on dated 08/02/2021. The patient had a history of hysterectomy 10 years back. Postoperatively patient had a complaint of pain in anterior chest wall pain with decreased range of motion in her right shoulder.

Due to discomfort and fear of reopening the incision site, the patient maintained a guarded posture and did the limited movement of her right upper extremity for one month after surgery. As a result, the right shoulder's range of motion was reduced, and the anterior chest wall musculature fibrosis developed. The patient's ability to complete tasks of daily living (ADLs) such as reaching overhead, sleeping, performing household duties, washing her hair, cooking, and getting dressed was hampered by a lack of ROM. The patient stated that the pain and loss of motion steadily worsened over time, and she only sought medical help when the pain and loss of motion became too much to bear. Intensive rehabilitation is begun to improve physical activity following surgery. The surgery patient was later followed by a physiotherapy appointment.

CLINICAL FINDINGS
The patient in the supine position was examined with both shoulders at the same level. On physical examination, vital signs including temperature were normal, pulse rate 92 beats/min, RR-23 breaths/min, BP-130/90 mm/hg. The cardiovascular and respiratory system was seen to be normal during the general examination. During the integumentary examination, tissues around the right axilla, the right anterior chest wall was found to be hypermobile and fibrosed. The incision site was blue-purple colored, with no sign of infection. The pain was calculated using the Numerical Pain Rating Scale (NPRS) on which the patient marked 4/10 during rest and 7/10 during movement of the affected shoulder above 80 degrees. The patient had tenderness over the incision site, tenderness was grade 3 that is palpation is tender, patient winces and withdraws the limb.

Range of motion was assessed using goniometer, both active and passive range of motion was measured. There is a limitation in right shoulder ROM. There were normal ranges in all direction for left shoulder.

<table>
<thead>
<tr>
<th>Shoulder movement</th>
<th>Right upper limb</th>
<th>Left upper limb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>Active ROM 110</td>
<td>Passive ROM 119</td>
</tr>
<tr>
<td></td>
<td>Active ROM 170</td>
<td>Passive ROM 175</td>
</tr>
<tr>
<td>Abduction</td>
<td>75</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>172</td>
<td>178</td>
</tr>
<tr>
<td>Internal Rotation</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>82</td>
</tr>
<tr>
<td>External Rotation</td>
<td>44</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>74</td>
</tr>
</tbody>
</table>

Manual Muscle Testing (MMT) was done to measure muscles strength of right and left shoulder muscles. Reduced in strength of right upper limb muscles was seen.

<table>
<thead>
<tr>
<th>Shoulder MMT</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>3/5</td>
<td>5/5</td>
</tr>
<tr>
<td>Extension</td>
<td>3/5</td>
<td>5/5</td>
</tr>
<tr>
<td>Abduction</td>
<td>3/5</td>
<td>5/5</td>
</tr>
<tr>
<td>Internal Rotation</td>
<td>3/5</td>
<td>5/5</td>
</tr>
<tr>
<td>External Rotation</td>
<td>3/5</td>
<td>5/5</td>
</tr>
</tbody>
</table>

Girth measurement was done on both the upper limb to assess any swelling as lymph nodes of the right side was removed. No significant difference was noticed.

FIGURE 1: Modified Radical Mastectomy
The intervention was designed to increase shoulder mobility and strength, scar tissue mobilization, and an overall increase in functional use of the affected arm.

PHYSIOTHERAPY INTERVENTION
A professional physiotherapist delivered routine physiotherapy to the patient for 15 days. The short-term aim was to inform the patient about the condition's signs and symptoms, prevention steps, a home exercise regimen, shoulder ROM improvement, and pain relief. Long-term goals included maintaining shoulder ROM in all directions, allowing the patient to make functional use of the limb, mobilizing scar tissue, and enhancing body posture. Forearm exercises and Isometric hands were begun on the second postoperative day. The exercises involved active flexion, abduction, active assistive, and internal and external
rotation ROM exercises of the shoulder joint on the third and fourth days. Passive stretching activities were done over the next few days. After the drain was removed, the patients in the treatment community completed 15 physiotherapy sessions, including wall climbing, pendulum, and overhead lifting pulley, horizontal abduction, wall-wall, dorsal strengthening, position, and levator-scapula streaming exercises. In the following eight weeks, the patients did the exercises at home. Active exercises to increase tissue extensibility and normalize movement patterns. Myofascial release is used to enhance mobility and tissue extensibility. The rotator cuff, pectoralis muscles, rhomboids, trapezius, biceps, and serratus anterior are all muscles that should be targeted. Elastic bands can be used to begin exercises.

Arm mobilisations are carried out on the first or second postoperative day. Physical activity and exercise can help breast cancer patients and survivors improve their quality of life, cardiorespiratory fitness, and physical functioning. Each session began with a 10-15 minute warm-up, followed by 20-30 minutes of prescribed exercise and manual therapy, and then a 10-minute cool-down time. Scar tissue mobilisation was used in manual therapy to enhance tissue pliability. After 5-7 minutes of ultrasound, a deep friction massage was performed. The range of motion in the shoulders was increased as a result of this. The next step was gleno-humeral mobilisation, which started with grade 1-2 mobilisation and progressed to grade 3-4 mobilisation, which was effective in breaking adhesions.

Then, for 5-10 minutes, hydro-collater packs were applied to the shoulder region, followed by stretching of the shoulder girdle and pectoral muscles. Manual stretching was initially performed, in which the patient was taught self-stretching, with each stretch being kept for 20 seconds and repeated 5-7 times. Finally, strengthening exercises were performed, initially with assistance, and then in a gravity-free plan once strength was gained. Finally, against gravity with body weight was performed with limited assistance. Resistance training began after the maximum range of motion had been completed. Thera Band, weight cuffs, manual resistance, and dumbbells were used to provide resistance. (6)

To increase efficient use of the leg, a home exercise program was prescribed. Throughout the procedure, manual soft tissue techniques were used. A home program of gentle extension and self-mobilization was taught and revised during each therapy session. Treatment aimed to enhance and regain tissue mobility while also reducing restrictions in soft tissue glide. (7)

**FOLLOW UP AND OUTCOME**

<table>
<thead>
<tr>
<th>Pain (Affected limb)</th>
<th>ROM (Affected limb)</th>
<th>MMT (Affected limb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 weeks 4/10 on rest. 7/10 during movement.</td>
<td>Flexion-120 Abduction-110 Internal rotation-45 External</td>
<td>Flexion-3/5 Abduction-4/5 Internal rotation-3/5 External</td>
</tr>
</tbody>
</table>

**RESULTS**

At the initiation of physiotherapy after surgery and post 15 days with physiotherapy improvements in NPRS were seen no pain at rest and on activity 2/10. Improvements have observed in the initiation to active assisted to active movements and also in the independence of activities of daily living with minimal assistance or supervision.

**DISCUSSION**

The most common postoperative complications of MRM are shoulder joint ROM restriction, functional capacity reduction, and lymphedema. The amount of lymphoid fluid generated after surgery is thought to be increased by postoperative exercises that keep the arm moving. Excess lymphoid fluid development can lead to seroma formation, and insufficient seroma drainage can lead to infection, pain, and discomfort, as well as longer hospital, stays. After MMR, an early onset recovery program improves shoulder strength and functional capability without causing complications in the postoperative period. Clinicians should always remember to refer breast cancer patients to a physical medicine and rehabilitation specialist. Patients should be closely monitored during the postoperative phase to ensure that they respond and comply with the early onset exercise program. It’s important to eliminate and prevent the re-occurrence of cancer once the patient is diagnosed. The patient can fail to recognize the musculoskeletal complication that can occur after breast cancer surgery including potential upper limb dysfunction. In many studies, there is a significant decline in quality of life after breast cancer surgery. It is important to monitor patients with breast cancer surgery for signs and symptoms of upper limb dysfunction and prevent further disability. Once dysfunction is identified early intervention to reduce pain, improve strength, and range of motion should be carried out by strengthening, stretching, soft tissue mobilization, manipulation, and using different electrical modalities.

This article suggests the need for physiotherapy post breast cancer surgery to prevent any upper limb dysfunction and complication. It is also important to give psychological counseling to patients to decrease emotional and mental stress caused after surgery and cope with the new changes in the body. This physical and psychological intervention would help in improving the quality of life of the patient. There is a
requirement for a multidisciplinary approach to establish a positive outcome and improved quality of life.

CONCLUSION
The above studies suggest that the physiotherapy treatment is more effective in modified radical mastectomy to reduced pain, improving shoulder ROM. Physiotherapy reduces discomfort and improves shoulder function and quality of life following axillary dissection after breast cancer.

AUTHOR’S CONTRIBUTION
For the concept, assessment and evaluation, data collection and analysis and interpretation of the data, each author made the best contribution.

INFORMED CONSENT
Proper consent was taken from patient for writing case report.

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CONFLICT OF INTEREST
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REFERENCES