

Utilizing Pilates Exercises in the Physical Therapy Management of a Patient with Breast Cancer-Related Shoulder Impairments

Jose Sagastume, SPT; Arie J. van Duijn, EdD, PT, OCS; Ahmed Elokda, PhD, PT, FAACVPR
Florida Gulf Coast University, Department of Rehabilitation Sciences, Fort Myers, FL, USA

Introduction

- In the year 2019, breast cancer will be the most prevalent types of cancer with an estimated 271,270 new cases.¹ Cancer treatment methods can lead to a plethora of complications that can involve multiple body systems and includes fatigue, fibrosis, muscle weakness, joint pain, lymphedema, and fibrosis.²
- According to the clinical practice guidelines for breast cancer rehabilitation, it is recommended that patients perform ROM, stretching, and strengthening exercises to optimize upper extremity rehabilitation.³
- Studies have observed the effects of Pilates on patients with breast cancer related deficits and have reported improvements in aerobic capacity, quality of life, shoulder range of motion, and shoulder strength.⁴⁻⁷



Patient History/Systems Review

- 76-year-old female with chief complaints of left upper extremity pain, decreased mobility, and chest wall pain, tightness, and edema.
- Patient diagnosed with stage III breast cancer, received chemotherapy, underwent a bilateral mastectomy, and was planning on having 24 sessions of radiation therapy while receiving therapy services.
- The patient had a left chemotherapy upper quarter port in place that was causing complications and an increased risk of infection.

Examination

- QuickDash score: 52/100.
- Bilateral shoulder active range of motion deficits
- Pain noted during functional mobility of bilateral shoulders. Patient reports 4/10 pain in right chest/shoulder and 7/10 pain in left chest/shoulder.
- Edema of bilateral chest wall
- Chest wall adhesions with bilateral pectoralis muscle tightness

Clinical Impression

- Based the initial evaluation, the patient was appropriate for physical therapy services with the addition of using mat Pilates exercise as part of their plan of care.
- The patient would potentially benefit from mat based Pilates exercises, which have been shown to increase flexibility and AROM.⁷
- Despite the opinion of many patients, there are positive effects from exercise training during ongoing cancer treatment and the patient would greatly benefit from physical therapy services.⁸
- Due to the amount of edema present in the chest wall in conjunction with past medical history of chemotherapy, radiation therapy, and bilateral mastectomy, the patient was at high risk of further developing upper extremity lymphedema.

Intervention

- Physical therapy treatment plan included: The Physiological Oncology Rehabilitation Institute (PORI) specific manual lymph drainage (MLD) techniques, manual therapy techniques to improve shoulder impairments, modalities for pain relief and promotion of tissue healing, therapeutic exercises, and instruction on a home exercise program (HEP).
- MLD techniques were performed to reduce the patient's chest wall edema and prevent upper extremity lymphedema.
- Manual therapy techniques included grade I-III joint mobilizations to the scapulothoracic and glenohumeral joints, scar mobilization techniques, and soft tissue mobilization techniques to the pectoralis major and minor muscles.
- The prescribed HEP and the therapeutic exercises performed during the sessions consisted of mat based Pilates exercises.
- The mat based Pilates exercises were created specifically for the patient through collaboration by the treating physical therapist and a Pilates certified instructor. The exercises were selected with a focus on improving shoulder girdle flexibility, range of motion, and overall strength.



Outcomes

- At fourth visit, patient reported left shoulder pain and discomfort when performing her home exercise program.
- At fifth visit, overhead reaching in combination with external rotation provided the most significant pain and prone shoulder flexion exercises would elicit a pulling sensation.
- Left shoulder AROM was noted to have reduction in AROM when compared to the right shoulder.
- Clinician concluded that scar tissue buildup was contributing to left shoulder deficits.
- At 10th visit, increased right chest wall radiation burns and new presence of edema on lateral portion of chest wall
- No noted lymphedema in the upper extremities or patient report of signs and symptoms consistent with secondary lymphedema.
- Despite patient reports of discomfort during a few of the Pilates exercises, there was overall improvements in her shoulder AROM, NPR scale, and self reported physical functioning.

Comparison of Outcomes

Measurement	Initial Evaluation	Recertification 10 th visit
Quick DASH	52/100	36/100
Shoulder AROM Flexion Abduction Internal Rotation	Right: 153 Left:123 Right: 147 Left: 107 Right: L1 vertebrae Left: L5 vertebrae	Right: 156 Left:127 Right: 147 Left: 111 Right: L1 vertebrae Left: L4 vertebrae
Numeric Pain Rating (NPR) Chest/Shoulder	Right: 4/10 Left: 7/10	Right: 2/10 Left:4/10

Clinical Implications

- Current research studies concerning Pilates exercises do not include patients undergoing active cancer treatment.⁵⁻⁷
- Physical therapy management is further complicated by active cancer treatment as patients decrease their physical activity and alter their exercise regime due to fear, depression, anxiety, and a multitude of treatment side effects.⁸
- This report offers a unique case as it utilized a non-traditional exercise method in the therapy management of a patient undergoing active cancer treatment.
- Mat based Pilates exercises may be a safe and effective method for use in the physical therapy management of breast cancer related shoulder impairments.