



A Study on Effectiveness of Paraffin Wax Therapy with Maitland Mobilization to Improve Shoulder Abduction and External Rotation for Patients with Periarthritis of Shoulder

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ABSTRACT

Periarthritis Shoulder or frozen shoulder is a disabling and severely painful condition that is commonly managed in the primary care setting [1]. This inflammatory condition that causes fibrosis of the glenohumeral joint capsule is accompanied by gradually progressive stiffness and significant restriction of range of motion (Abduction And External Rotation)[2]. The traditional principles of treatment of adhesive capsulitis are to relate pain, maintain range of motion and ultimately to restore function. The international Maitland Teachers Association (IMTA) defines the Maitland concept as a process of examination, assessment, and treatment of neuromusculoskeletal disorder by manipulative physiotherapy. Grades I and II of Maitland mobilization techniques are primarily used for treating joints limited by pain [4]. Periarthritis shoulder is a common condition which causes pain and disability which can be treated by the paraffin wax bath and joint mobilization techniques.[6]. The movements like external rotation and abduction of shoulder are mostly restricted followed by internal rotation and flexion whereas extension is relatively free. Wax therapy is a form of deep heat therapy which help to break adhesion [7]. It is one of the most effective way of applying heat to improve mobility by warming the connective tissues. It is basically used in combination with the common mobilizing techniques and customized exercise programs to archive better results. In this article we would like to find out the effects of paraffin wax therapy with maitland mobilization to improve shoulder abduction and external rotation for patient with periarthritis of shoulder.

Keywords: Periarthritis shoulder, Paraffin wax therapy, Maitland mobilization, Numerical Pain Scale, Goniometer

1. INTRODUCTION

The shoulder is a complex joint that plays a crucial role in many activities of daily living. Adhesive capsulitis or periarthritis shoulder is defined as a painful and disabling condition in which the capsule and the connective tissue surrounding the glenohumeral joint becomes inflamed leading to restriction of range of motion. The functional limitations or disability to reach overhead, behind head, out to the side and behind back thus having difficulty in dressing according to its severity usually affects elderly. In an idiopathic capsulitis there is an apparent cause. The shoulder gradually becomes painful and stiff. The secondary causes of traumatic capsulitis or if some other medical condition is present alongside. Most common causes of frozen shoulder is the immobility that may results during recovery from a shoulder injury, broken arm, stroke. The traditional principles of treatment of adhesive capsulitis are to relate pain, to maintain the range of motion and ultimately to restore function. The movements like external rotation and abduction of shoulder are mostly restricted followed by internal rotation and flexion whereas extension is relatively free. Paraffin wax therapy especially helps to reduce pain and loosen up the joints before exercise. Along with the wax therapy maitland mobilization technique are used for treating joints limited by pain. The purpose is to evaluate the effectiveness of paraffin wax therapy with maitland mobilization to improve shoulder abduction and external rotation for patients with periarthritis of shoulder.

1.1 AIM OF THE STUDY

A study on effectiveness of paraffin wax therapy with maitland mobilization to improve shoulder abduction and external rotation for patient with periarthritis of shoulder

1.2 OBJECTIVE OF THE STUDY

To find the efficacy of paraffin wax therapy to improve shoulder abduction and external rotation for patients with periarthritis of shoulder. To find the efficacy of maitland mobilization to improve shoulder abduction and external rotation for patient with periarthritis of shoulder. To study the effectiveness of paraffin wax therapy with maitland mobilization to improve shoulder abduction and external rotation for patient with periarthritis of shoulder

1.3 MATERIALS AND METHODOLOGY

MATERIALS

- Treatment couch
- Pillow
- Paraffin wax bath
- Pad
- Goniometer
- Assessment chart
- Exercise chart

METHODOLOGY

Study design: This study is an experimental design with pre and post test evaluation.

Sample collection: five women with periarthritis based on the history were selected by convenient sample .

1.4 Inclusion Criteria

- Women ages between **45-60**
- Women who have diabetes
- Women with chronic periarthritis shoulder

1.5 Exclusion Criteria

- Malignancy in area of treatment
- Infection Arthritis
- Metabolic bone disease
- Neoplastic disease
- Osteomyelitis
- Fracture or ligament Rupture
- Arthroplasty

STUDY PERIOD

Three months

SETTING OF STUDY

The study was conducted in Shri Indra Ganesan institute of medical science, College of Physiotherapy ,Trichy.

STUDY METHOD

Five patients treated with paraffin wax therapy and Maitland mobilization for patient with Periarthritis of shoulder

1.6 OUTCOME MEASURES

Numerical pain scale and Goniometer

1.7 STATISTICAL ANALYSIS

The statistical tool used in the study were paired “t” test. The paired “t” test as used to find out the statistical significance between pre and posttest value.

1.8 HYPOTHESIS OF THE STUDY

NULL HYPOTHESIS

The null hypothesis states that there is no significant improvement on shoulder abduction and external rotation for patient with periarthritis of shoulder by using paraffin wax therapy with maitland mobilization

ALTERNATIVE HYPOTHESIS

The alternative hypothesis states that there is significant improvement on shoulder abduction and external rotation for patient with periarthritis of shoulder by using paraffin wax therapy with maitland mobilization

2. PROCEDURE

A total number of 5 subjects who are diagnosed as “periarthritis shoulder “ with suitable inclusive criteria was recruited by. Prior to the treatment pretest was conducted with Numerical pain rating scale and Goniometer ,the results were recorded. After a brief demonstration of paraffin wax therapy and maitland mobilization techniques for a period of 12 weeks. The post test was conducted and the results were recorded and analyzed to compare the pretest and post test results.

2.1 PARAMETERS

Numerical pain rating scale

Goniometer

NUMERICAL PAIN RATING SCALE

The 11-point numeric scale ranges from '0' representing one pain extreme (e.g. “no pain”) to '10' representing the other pain extreme (e.g. “pain as bad as you can imagine” or “worst pain imaginable”)

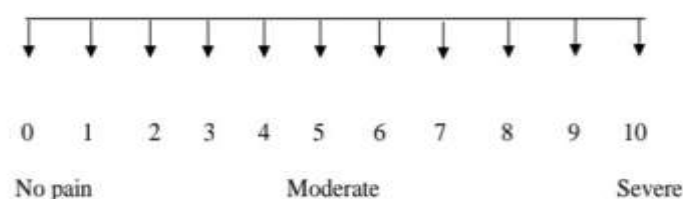


Figure: 2, This Figure represents the Numerical Pain rating Scale.

GONIOMETER

A goniometer is a device that measures an angle or permits the rotation of an object to a definite position. In orthopaedic, the former description applies more. The art and science of measuring the joint ranges in each plane of the joint are called goniometry. A goniometer can evaluate both active as well as passive movements

VARIABLES

Independent variables

- Maitland mobilization
- Paraffin wax therapy

Maitland mobilization is also known as the maitland technique, the maitland concept uses passive and accessory mobilization the spine to treat mechanical pain and stiffness. There are 4 grades of mobilisation in the maitland concept:

GRADES OF MOBILIZATION

Grade I – small amplitude movement at the beginning of the available range of movement

Grade II – large amplitude movement at within the available range of movement

Grade III – large amplitude movement that moves into stiffness or muscle spasm

Grade IV – small amplitude movement stretching into stiffness or muscle spasm.

Lower grades (I + II) are used to reduce pain and irritability (use VAS + SIN scores). Higher grades(III + IV) are used to stretch the joint capsule and passive tissues which support and stabilise the joint so increase range of movement.

2.2 TECHNIQUES USED

PRINCIPLES OF TECHNIQUE

- **The Direction** - of the mobilisation needs to be clinically reasoned by the therapist and needs to be appropriate for the diagnosis made. Not all directions will be effective for any dysfunction.
- **The Desired Effect** - what effect of the mobilisation is the therapist wanting. Relieve pain or stretch stiffness.
- **The Starting Position** - of the patient and the therapist to make the treatment effective and comfortable. This also involves thinking about how the forces from the therapists hands will be placed to have a localised effect.
- **The Method of Application** - The position, range, amplitude, rhythm and duration of the technique.
- **The Expected Response** - Should the patient be pain-free, have an increased range or have reduced soreness

WAX THERAPY

- Wax therapy is a form of deep heat therapy. One of the most effective way of applying heat to improve mobility by warming the connective tissues.
- Wax therapy, involves the application of molten paraffin wax, to the connecting tissues causing muscle relaxation and improves joint mobility.
- It is basically used in combination with the common mobilizing techniques and customized exercise programs to archive better results.

CHARACTERISTICS OF PARAFFIN WAX

- Paraffin has a slow thermal conductivity ,slow heat diffusion (6 times lower than water)
- Paraffin wax has a low melting point (**55 degrees**)
- When the mineral oil is added ,the Paraffin will remain at a temperature of **40 to 44 degrees**
- **Self insulator** – it gives moist heat .there is a layer between the skin and the wax producing heat and sweating which does not evaporate.

EFFECTS OF WAX THERAPY

- It is an ideal therapy that helps in
- Relieving pain
- Decreasing joint stiffness
- Helps in increasing the blood flow
- Decreases muscle spasm
- Decreases inflammation.

TECHNIQUES OF APPLICATION

Various techniques used for the application of paraffin wax are as follow

- **DIRECT POURING METHOD** : The molten wax is directly poured by a mug or utensil on the part to be treated and then wrapped around by a towel. The wax is allowed to solidify for about 10-12 minutes. Several (4-6) layers can be made over the body tissues.
- **BRUSHING METHOD** : A brush of various sizes (4” to 6”) is used for the application of molten wax over the body tissues and wax is allowed to solidify and wrapped over by a towel.
- **DIRECT IMMERSION OR DIPPING METHOD** : In this method, the body part to be treated is directly immersed into the container of paraffin wax and taken out .Once the wax solidifies ,the part is again immersed to make another layer of paraffin wax and wrapped around by a towel.
- **TOWELING OR BANDAGING METHOD**: A towel or a roll of bandage is immersed in molten paraffin wax and then wrapped around the body part. Several layers can be made over the body part .This method is preferably used for treating proximal part of the body.

Dependent Variables

Shoulder joint pain and Function.

TABLE 1

Table 1 represent the mean value, mean difference, SD and paired 't' value between pre value post value of numerical pain rating scale (NPRS).

S. No	NRPS Group A	Mean	Mean Difference	Standard Deviation	T value
1	Pre test	8.2	2.8	0.83	7.52
2	Post test	5.4			

It explains the paired 't' test value of pre test Vs post test is 7.52. The pre test mean is 8.2, the post test mean is 5.4 to the mean difference is 2.8, which shows that there is recovery of selected samples is response to intervention. The study is rejecting the null hypothesis and accepting the alternating hypothesis.

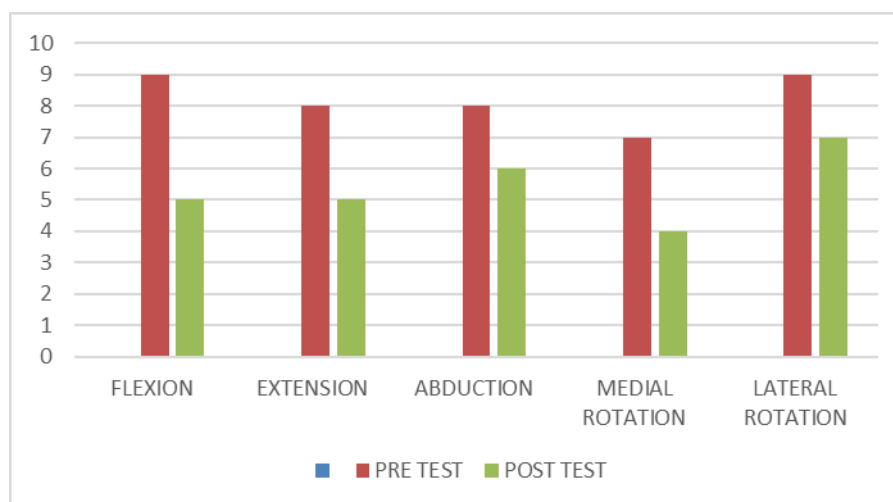


Figure: 2 It represents the graphical view of the pre and the post test values.

2.3 DISCUSSION

Periarthritis of shoulder is one of the major public health issues for older peoples. In attempt to prevent the pain and most importantly to prevent transition towards the chronic stage, various physiotherapeutic approaches have been emerged. Indeed is one of the most common reasons for medical consultation and second most common reason for absenteeism. Due to the high economic impact by the disease on the society, cost efficient treatment approach is one of the most essential wanting. Exercise plays an important in the management of periarthritis of shoulder. Periarthritis of shoulder or frozen shoulder is a problem tackled by most of the old age peoples especially women. The aim of the study was to find the effectiveness of paraffin wax therapy with Maitland mobilization to improve shoulder abduction and external rotation for patients with periarthritis of shoulder. A total number of 5 patients who had periarthritis of shoulder was treated with wax therapy with mobilization techniques along with exercises. After 12 weeks a post test was conducted by numerical pain rating scale and result was recorded and further statistical analysis.

2.4 LIMITATIONS

This study duration was short only 12 weeks and the result apply to commonly and short term only, which might differ in longer run.

Sample sizes take for the study is small and bigger example might have lead to some difference in the results.

Limited parameter of outcome measures was used which might bias the result.

There are some limitations with respect to data source and availability, which should be taken into consideration when interpreting the results.

2.5 RECOMMENDATIONS

A similar study can be conducted with Interferential therapy for patients with Periarthritis of shoulder

A similar study can be done with any manual therapy for Periarthritis of shoulder

A similar study can be conducted with muscle energy techniques in patient with Periarthritis of shoulder.

A similar study can be conducted with Ultrasound therapy in patients with Periarthritis of shoulder

CONCLUSION

The study demonstrated that paraffin wax therapy and maitland mobilization shows significant improvement in relieving pain and improving functional ability in patient with periartthritis of shoulder. Hence in the treatment of Periartthritis of shoulder with paraffin wax therapy and maitland mobilization techniques been proved to be more effective in providing a faster and a better prognosis.

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