

# EFFECTIVENESS OF MAITLAND MOBILIZATION WITH AND WITHOUT THERAPEUTIC ULTRASOUND ON PAIN AND HYPOMOBILITY

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Date of Received: 09/07/2019

Date of Acceptance: 23/07/2019

## ABSTRACT

**Background:** The one of the common musculoskeletal problems that gradually affects adhesive capsulitis that is first described by the Codman in 1934 by observing the capsule that adhere to the underlying bone. Adhesive capsulitis is a painful condition with global restriction of ranges in a capsular pattern the medical professionals are working in their respective domain to treat to treat the adhesive capsulitis the patients and medical practitioners prefer the conservative treatment to alleviate the symptoms of adhesive capsulitis in this regards mobilization with therapeutic ultrasound is best possible approach to treat the adhesive capsulitis. **Objective:** The aim and objective of this study are the effectiveness of Maitland mobilization with and without therapeutic ultrasound on pain and hypomobility in patients with adhesive capsulitis. **Design of study:** A prospective study was conducted. **Setting:** OPD of IPRS, LUMHS. **Duration:** Six (06) months from December 2018 to May 2019 **Data base:** APTA, PubMed, Google scholar. **Results:** The results show the effectiveness of Maitland mobilization with therapeutic ultrasound as VAS and Ranges of shoulder joint represents that Maitland mobilization with therapeutic ultrasound has better effects than Maitland mobilization alone. **Conclusion:** This study concluded that Maitland mobilization alone is not much as much effective as Maitland mobilization with therapeutic ultrasound to improve shoulder joint ranges and to decline the pain, but still there is a room for new researchers that the effect of Maitland mobilization with therapeutic ultrasound and Maitland mobilization alone is same if the treatment if followed for a long time duration.

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**Key words:** Adhesive Capsulitis, Therapeutic ultrasound, Maitland mobilization

**Article Citation:** Safdar F, Waseem H M, Valeecha J. Effectiveness of maitland mobilization with and without therapeutic ultrasound on pain and hypomobility. *IJAHS*, Jul-Sep 2019;03(152-156):01-05.

## INTRODUCTION

The shoulder joint is an extraordinary joint according to its anatomical structure that exhibits great range and also a vital joint to fulfill the daily tasks of an individual.<sup>1,2</sup> The joint being mobile also, poses great resistance, any disturbance in the shoulder joint due to any pathological or musculoskeletal reason can result in difficulty to perform tasks of daily routine.<sup>3,4</sup>

The one of the most common musculoskeletal problem that is mostly seen regarding the shoulder joint is Adhesive Capsulitis.<sup>4</sup> Adhesive Capsulitis is also known as the frozen shoulder.<sup>5</sup>

the term frozen shoulder is first described by the Codman in 1934 as he observed that capsule of shoulder joint locked and adhere to the underlying bone.<sup>6</sup> The Adhesive Capsulitis gradually affects about 3% to 5% of the population annually and it is a progressive condition with pain and global restriction of ranges in a capsular pattern.<sup>7,8</sup>

Adhesive capsulitis clinically presents in three stages according to the severity of symptoms as a first stage diagnosed by its pain that worsening at night within the time duration of 10-36 week<sup>9</sup> than the second stage that is in between 4-12 months results pain and stiffness at end of ranges of

shoulder joint and in the last or third stage the pain is gradually reduced and limited ranges are improved in lasting 30 months.<sup>9</sup> But adhesive capsulitis without treatment results restriction of the ranges of shoulder joint even at after the 30 months. Therefore, its necessary to treat adhesive capsulitis by a clinical evidence protocol.

The medical professionals are working in their respective domain to treat the Adhesive Capsulitis like, corticosteroids or NSAIDs to reduce the inflammatory response.<sup>10</sup> the other one most commonly used quicker and somehow, easier method that is performed by vs the medical practitioner is Manipulation under Anesthesia (MUA) this method widely improve the ranges in a very short time duration.<sup>11</sup> But the method has limitations or it can be said that the use of MUA is still controversial until present. A number of its complication or risks that may be followed with adverse effects therefore, dislocation, subluxation, fractures and tearing of the rotator cuff limit the use MUA.<sup>12</sup>

Aside of the Manipulation under Anesthesia (MUA) another safe and effective treatment approach is Mobilization that is considered to be the most effective treatment<sup>13</sup> As the international Maitland teachers association states that “The Maitland concepts included the process of examination, assessment and treatment of neuromuscular disorder by manipulative physiotherapy.<sup>6</sup>

To increase the effectiveness of manual work or mobilization for the treatment of adhesive capsulitis the Electrotherapy is widely used to subside the pain.<sup>14</sup>The one of the most used Electrotherapy modality that is therapeutic ultrasound can be used to break the adhesions of the shoulder joint that is diagnosed as Adhesive capsulitis.<sup>15</sup>

The study which was conducted on two groups first group as Maitland mobilization alone and the second group as Maitland mobilization with

ultrasound therapy. So this study was considered to see the effectiveness of two different treatment protocols on pain and hypo mobility in patient with adhesive capsulitis.

### **METHODS AND MATERIALS**

This randomized clinical trial was conducted at the Institute of Physiotherapy and Rehabilitations (IPRS), Liaquat University of medical and health Sciences (LUMHS) and data were taken by convenient sampling within duration of six months that is from December 2018 to May 2019. The 32 Patients were equally divided into two groups as 16 patients in each group. Group A were treated with Maitland mobilization technique alone. And group B is treated with Maitland mobilization with Ultrasound therapy, and the pain intensity and Range of motion was measured before and after the treatment by VAS and goniometry respectively.

In this trial the diagnosed case of adhesive capsulitis of both male and female of adult age were included, in case of bilateral adhesive capsulitis the more symptomatic shoulder were treated.

### **RESULTS**

The result shows that the both groups of adhesive capsulitis patients improve their ranges of shoulder and reduce the pain intensity after the treatment intervention. But by the analysis of the Mean value indicates that pain intensity is somewhat reduced in group B then the group A. And the hypo mobility is moderately improved in group B patientsi.e as the table indicates.

### **Descriptive Statistics**

<b>Table 1. Showing Mean value of Ranges before and after treatment of Group A.</b>		
	N	Mean
Ranges of Abduction Before Treatment	16	119.5000
Ranges of Abduction After Treatment	16	128.0625
Ranges of Lateral Rotation Before Treatment	16	65.1250
Ranges of Lateral Rotation After Treatment	16	68.8125
Valid N (listwise)	16	

**Table 2. Showing Mean value of Pain Intensities before and after treatment of Group A**

	N	Mean
Pain Intensity Before Treatment	16	5.1250
Pain Intensity After Treatment	16	4.1250
Valid N (listwise)	16	

**Table 3. Showing Mean value of Ranges before and after treatment of Group B**

	N	Mean
Ranges Of Abduction Before Treatment	16	120.5000
Ranges Of Abduction After Treatment	16	131.5625
Ranges Of Lateral Rotation Before Treatment	16	63.9375
Ranges Of Lateral Rotation After Treatment	16	72.2500
Valid N (listwise)	16	

**Table 4. Showing Mean value of Pain Intensities before and after treatment of Group B**

	N	Mean
Pain Intensity Before Treatment	16	4.9375
Pain Intensity After Treatment	16	3.5625
Valid N (listwise)	16	

In group A patient with Maitland technique alone shows ROM of abduction before treatment is 116.5 whereas, after treatment abduction ROM is 128.0. The difference between both ROM is of abduction is 12. Then we compare lateral rotation before treatment, it was 65 and after treatment it became 68 difference between both is values is 3. Afterwards we have compared pain intensity it shows pain before treatment is 5 and after treatment it became.<sup>4</sup>

In group B patients with Maitland technique along with therapeutic ultrasound results shows that the before treatment abduction ROM is 120.5 and after treatment it became 131.5. The difference between both ROM is 11. Lateral rotation shows before treatment shows 63.9 and after treatment is 72.2. Difference between both is 9 then we compare pain intensity which shows before treatment intensity of pain is 4 and after treatment it became 3. In short the patients of group B represent more beneficial results than the patients of group A.

## DISCUSSION

The one of the most common condition of the

shoulder joint to restrict the daily activities (ADLs) is adhesive capsulitis and that's the reason why this study was conducted. As the adhesive capsulitis is characterized as the capsule of shoulder joint locked and adheres to the underlying bone.

The main objective of this study is to give the best possible treatment approach with immediate beneficial outcomes to the patients with adhesive capsulitis. As this study elaborated the effectiveness of Maitland mobilization with the two different treatment protocols i.e the Maitland mobilization alone and the second one is Maitland mobilization with therapeutic ultrasound for the treatment of pain and hypo mobility of the shoulder joint in patients with adhesive capsulitis.

The study based on 32 patients 16 patients on each group and after the data analysis the results shows that the both treatment protocols were effective to reduce the pain intensity and improve the ranges of shoulder joint. But when we compare the effectiveness of both groups than the treatment protocol of group B shows somewhat more beneficial effects on patients.

A Randomized multiple treatment trial was conducted on the topic of 'Mobilization technique in subjects with frozen shoulder syndrome in 2007 by Jing-Lan yang et al. in this study, the researchers compare three techniques of mobilization to treat the adhesive capsulitis and in results the represents that End range mobilization and mobilization with movements is more effective than the mid range mobilization. In summarizing this study state that all three techniques of mobilization are helpful to improve the ranges of shoulder in patients with adhesive capsulitis.<sup>16</sup>

Another study that was conducted in 2014 by J-NITZ on the topic of 'Physical therapy management of the shoulder' in this study it state that therapeutic ultrasound is helpful to treat the

inflammatory disorders by producing heat in depth of 3cm to 5cm and in last this study states that the therapeutic ultrasound is reported to be more effective to treat the joint capsule and intra-articular structure.<sup>17</sup>

According to the study and analysis, it is proved that for the treatment of adhesive capsulitis the Maitland mobilization with therapeutic ultrasound has its own beneficial effects to improve the functional status and reduce the pain intensity, the reason behind the effectiveness of therapeutic ultrasound in physiological term is vibratory or oscillatory movement that is helpful to break down the adhesions in between the muscles and sheath and improve the circulation<sup>18</sup> therapeutic ultrasound is useful to increase the connective tissue or joint capsule extensibility because tissue extensibility can be seen by applying a selective joint capsule heating by thermal therapeutic ultrasound.

## CONCLUSION

This study provides preliminary evidence that use of therapeutic ultrasound with Maitland mobilization has its own beneficial effects to reduce the pain intensity and improve the ranges of the shoulder joint. But there is still a room for new researchers that are the both treatment protocols either Maitland mobilization alone or Maitland mobilization with therapeutic ultrasound will be shown the same results if the study will be conducted for long term duration.



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### AUTHORSHIP AND CONTRIBUTION DECLARATION

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