

Movement versus Myofascial Release Therapy on Pain and Grip Strength in Patients with Lateral Epicondylitis

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ABSTRACT

Background and objectives: Lateral epicondylitis (LE) or tennis elbow is one of the most common lesions of the arm. Current physical therapy management for lateral epicondylitis is aiming to reduce pain and improve grip strength.

Aims and objectives: The purpose of the study was to find out effectiveness of Mulligan ability in subjects with lateral epicondylitis

Methods: 20 subjects of lateral epicondylitis were selected for the study and randomly divided into two groups of 10 subjects each. Group A received mulligan mobilization with movement and Group B received myofascial release therapy. Both the groups were followed by ultrasound therapy. Pain was measured by visual analogue scale and grip strength was measured by simple hand dynamometer. The present study concludes that the patients those who received mulligan mobilization with movement and myofascial release therapy, their pain was reduced and grip strength was improved and was measured by visual analogue scale and simple hand dynamometer.

Keywords – Pain, MFR, Lateral Epicondylitis, hand grip, ultrasound, Visual Analogue Scale

INTRODUCTION

Lateral epicondylitis commonly referred to as lateral elbow Tendinopathy or Tennis elbow is one of the most common lesions of the arm. Lateral epicondylitis is a form of repetitive strain injury resulting in pain at the lateral aspect of the elbow, especially in gripping activities and when resistance is applied to the extensor muscles of the forearm. ⁽¹⁾

Lateral epicondylitis is a degenerative or failed healing tendon response characterised by the increased presence of fibroblasts, vascular hyperplasia, and disorganised collagen in the origin of the extensor carpi radialis brevis (ECRB), the most commonly affected structure. ⁽²⁾

It is very common in individuals whose jobs necessitate frequent rotatory motion of the forearm (e.g –tennis elbow, carpenters). It is commonly due to more quick, monotonous, cyclic eccentric contractions and wrist gripping activities. The average period of an episode of lateral epicondylitis ranges between 6 months and 2 years. The peak incidence is between 40 and 50 years age. ⁽³⁾ Men and women are equally affected.

Repeated movement creates microtrauma which may occur due to overuse or abnormal joint biomechanics, leading to overload of the repairing tissues, this mechanically distort scar tissue and thus stimulate free nerve endings to evoke mechanical nociceptive pain. ⁽⁴⁾

The grip strength is affected due to voluntary decline of effort to avoid pain and due to wasting of affecting muscles seen in long standing conditions. The symptoms exacerbate with stressful activities in overuse syndromes but pain may persist even at rest as the condition progress.

Mobilization with Movement (MWM) is a modern technique developed by Mulligan for treating lateral epicondylitis. MWM is a form of manual therapy that includes sustained lateral glide

to the elbow joint with concurrent physiological movement. This mobilization technique is often used to correct the faulty position of the elbow joint is being widely used in management of musculoskeletal disorders. MWM treatment technique are proposed to restore normal tracking of the radius on the capitulum so that strengthening of forearm muscles can be done without painful symptoms which leads to pain free grip strength. (5)

Myofascial release therapy is one of the most common techniques which are used by physical therapist in managing the symptoms in lateral epicondylitis. (6)

MFR is applied with low load, long duration stretch on the fascial complex, which intended to restore optimal length, decreases pain and improve function. MFR includes focused release of common extensor tendons and gross release of common extensor tendons. (7)

So the purpose of this study was to compare the effectiveness of Mulligan mobilization with movement versus Myofascial release therapy on pain and grip strength in patients with lateral epicondylitis.

MATERIAL AND METHODOLOGY

The study was conducted in Physiotherapy department of MVPS college Participants were included considering the inclusion and exclusion criteria.

Inclusion Criteria

- Both the genders are included.
- Pain with resisted wrist extension.
- Tenderness on palpation over the lateral epicondyle.
- Positive Cozen's test.
- Positive Mill's test.

Exclusion criteria

- Previous surgery to the elbow region.
- Peripheral nerve entrapment.
- Cervical radiculopathy.
- Neurological or neuromuscular impairments.
- Aversion to manual contact.

Procedure was explained to the participants and participants were then asked to sign the consent form. Assessment of all the included participants was done as per the assessment form. Participants were randomly divided into two groups Group A and Group B. Pre and post 7th interventional day and post 14th interventional day VAS and grip strength was measured. Outcome measures was assessed by using

- Visual analogue scale
- Dynamometer

Group A has received

Group A- Mulligan mobilization with movement:

Mobilization belt was placed around the patient's proximal forearm and across the therapist shoulder while the distal humerus is stabilized with one hand. Lateral glide was applied to the forearm through belt and sustained for about 5-10s. While the patient performs repeated wrist extension against manual resistance applied by the therapist's hand. The lateral glide was released after the subject achieves pain free wrist extension. Six repetitions were performed with a 15s rest interval between repetitions and was performed for consecutive days in a week for 2 weeks. (8)

Group B has received -Myofascial release therapy

- Patient position-was supine. The shoulder was internally rotated, the elbow pronated and flexed to around 15degree. The palm is placed flat on the table. Therapist position was standing to side of table at the level of patients shoulder and facing the ipsilateral hand. Treatment duration is was 10 min. The technique is performed for consecutive days in a week for 2 weeks.
- Technique1- Treating from common extensor tendon to the extensor retinaculum of the wrist, the therapist began on the humerus, just proximal to the lateral epicondyle. The therapist used the fingertips to engage the periosteum and carried this contact inferior to the common extensor tendon

and then down the extensor retinaculum of the wrist.

- Technique 2-Treating through the periosteum of the ulna, the therapist uses the knuckles of the hand to work over the periosteum of the ulna. Patients were trained to do alternating ulnar and radial deviation of the wrist, while periosteum of ulna was engaged.
- Technique 3: spreading the radius from the ulna, the therapist, the therapist contacted the head of the ulna with the finger pads of one hand and the dorsal tubercle of radius with the pads of other. The therapist engaged through to the periosteum and put a line of tension in a lateral and distal direction. (9)

Ultrasound Therapy

Both the treatments are followed by pulsed ultrasound for 7 minutes around lateral humeral epicondyle. At a frequency of 1Mhz and a 20% duty cycle will be given with a intensity of 2 W/cm². (9)

RESULT

- As the P value for group A pre and post 7th day treatment VAS was <0.0001 which is statistically significant in relieving pain.
- As the P value for group A pre and post 14th day treatment VAS was <0.0001, group A proved extremely statistically significant in relieving pain.
- As the P value for group A regarding pre and post 7th day treatment dynamometer was not <0.0001, group A proved statistically not significant in improving grip strength.
- As the P value for group A regarding pre and post 14th day treatment dynamometer was <0.0001, group A proved statistically significant in improving grip strength.
- As the P value for group B regarding pre and post 7th day treatment VAS was <0.0001, group A proved statistically significant in relieving pain.

- As the P value for group B regarding pre and post 14th day treatment VAS was <0.0001, group A proved extremely statistically significant in relieving pain.
- As the P value for group B regarding pre and post 7th day treatment dynamometer was not <0.0001, group B proved statistically not significant in improving grip strength.
- As the P value for group B regarding pre and post 14th day treatment dynamometer was <0.0001, group B proved statistically significant in improving grip strength

Table 1.shows study of various age groups in the study of 20 subjects

	AGE GROUP	NO OF PATIENTS
GROUP A AND GROUP B	19-35	3
	36-50	3
	51-65	4
	19-35	5
	36-50	5
	51-65	0

Table No. 02 Comparison of VAS score pre & post 7th interventional day

VAS	Group A	Group B
Pre-interventional Score	6.05	6.2
Post- 7 th day interventional Score	5.25	5.25
SD	0.9789	1.275
t value	3.361	3.767
p value	0.005	0.004
Results	Significant	Significant

Table No. 03 Comparison of VAS score pre & post-14th interventional day

VAS	Group A	Group B
Pre-interventional Score	6.05	6.2
Post- 14 th day interventional Score	3.45	3.45
SD	1.499	1.423
t value	6.390	8.636
p value	0.000	0.000
Results	Extremely significant	Extremely Significant

Table No. 04 Comparison of dynamometer score pre & post 7th interventional day

DYNAMOMETER	Group A	Group B
Pre-interventional Score	9.9	12.1
Post- 7 th day interventional Score	10.6	12.7
SD	5.582	7.514
t value	-2.333	-2.714
p value	0.045	0.024
Results	Not significant	Not significant

Table No. 05 Comparison of Dynamometer score pre & post 14th interventional day

DYNAMOMETER	Group A	Group B
Pre-interventional Score	9.9	12.1
Post- 14 th day interventional Score	12.5	14.2
SD	6.133	7.857
t value	-4.801	-5.547
p value	0.000	0.000
Results	significant	Significant

Table No. 06 Comparison of VAS score pre & post-interventional 7th& post interventional 14thday Between Group A and Group B

VAS	Pre-interventional Score	Post- 7 th day interventional Score	Post- 14 th day interventional Score
Group A	6.05	5.25	3.45
Group B	6.2	5.25	3.45
SD	0.9487	1.275	1.423
t value	-0.352	0.000	0.000
p value	0.729	1.000	1.000
Results	Not significant	Not significant	Not significant

Table No. 07 Comparison of Dynamometer score pre & post-interventional 7th & 14th day between Group a and Group B

DYNAMOMETER	Pre-interventional Score (MEAN)	Post- interventional Score(7 th Day) (MEAN)	Post- interventional Score(14 th DAY) (MEAN)
Group A	9.9	10.6	12.5
Group B	12.1	12.7	14.2
SD	7.078	7.514	7.857
p value	0.558	0.487	0.596
Results	Not significant	Not significant	Not significant

DISCUSSION

The purpose of the study was to compare the effects of mulligan mobilization with movement and myofascial release therapy on reducing pain and improving grip strength in patients with lateral epicondylitis.

A comparative study of 20 subjects was carried out. Outcome measures were assessed using visual analogue scale for pain and dynamometer for grip strength. group A received mulligan mobilization with movement followed ultrasound and group B received myofascial release therapy followed ultrasound.

Outcome measures were assessed on day one (pre treatment) and on 7th and 14th day post treatment. Data obtained was analyzed.

In within group comparison it shows statistically significant results. There was reduction in pain and improvement in grip strength. However when between group comparison was done it shows statistically insignificant results. Both Mulligan mobilization with movement and Myofascial release therapy were equally effective in reducing pain and improving

grip strength in patients with lateral epicondylitis.

Mulligan mobilization with movement is a modern technique developed by mulligan for treating lateral epicondylitis. Mulligan mobilization is a form of manual therapy that includes a sustained lateral glide to the elbow joint with concurrent physiological movement. (9)

Miller (2000) described in his case report the use of mulligan mobilization with movement for lateral epicondylitis resulting in reducing pain, improvement of pain free grip strength, and increased ability to tolerate resisted isometric wrist extension. (10)

Paungmali (2004) showed that MWM produces sensory input sufficient to recruit and activate descending pain inhibitory systems that result in some or all of the pain relieving effects. It produces hypoalgesic effects during and following its application, as well as sympatho excitatory effect. (4)

Myofascial release therapy is the application of a low load, long duration stretch to the myofascial complex, intended to restore optimal length, decrease pain and improve function. It has been hypothesized

that fascial restrictions in one part of the body cause undue tension in other parts of the body due to fascial continuity. This may result in stress on any structures that are enveloped, divided or supported by fascia. (7)

Myofascial practioners believe that by restoring the length and health of restricted connective tissue, pressure can be relieved on pain sensitive structures such as nerves and blood vessels.

The analgesic effect of MFR can also be attributable to the stimulation of afferent pathways and the excitation of afferent A fibers, which can cause segmental pain modulation as well as modulation through the activation of descending pain inhibitory systems. (11)

Plastic, viscoelastic and piezo electric properties of the connective tissues are regained through application of MFR in lateral epicondylitis.

According to this study, mulligan mobilization with movement and myofascial release therapy are equally effective in reducing pain and improving grip strength in patients with lateral epicondylitis.

Yang C (2000) Mulligan mobilization with movement technique are proposed to restore normal tracking of the radius on the capitulum so that strengthening of forearm muscles can be done without painful symptoms which leads to pain free grip strength.

In this study, when the mean scores of VAS and dynamometer was analysed within groups, it was found extremely significant in both the groups and has showed reduce in pain and increase in grip strength and improvement in functional activities.

Both the groups were followed by pulsed ultrasound for 7 minutes around humeral lateral epicondyle at a frequency of 1Mhz and 20% duty cycle.

Most commonly used modality in physiotherapy practice is therapeutic ultrasound to treat musculoskeletal conditions related to sports injuries and overuse syndromes, for example

tendinopathy like medial epicondylitis and other injuries. Tendon healing is promoted by ultrasound because it stimulates collagen synthesis the tendon cells by stimulating cell migration and proliferation that may benefit tendon healing. (12)

According to Tamilvanam M, Bill Vincenzino, under normative conditions, fascia and connective tissues tend to move with minimal restrictions. However injuries resulting from physical trauma, repetitive strain injury and inflammation are thought to decrease fascial tissue length and elasticity, resulting in fascial restriction. Pain reduction is due to m returning the fascial tissue to its normative length by collagen reorganization. (6,13,14)

CONCLUSION

The results of the study concluded that both Mulligan mobilization with movement and Myofascial release therapy are equally effective on reducing pain and improving grip strength in patients with lateral epicondylitis.

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