Journal of Medical Case Reports and Reviews

Received 15 Oct 2023 | Revised 16 Oct 2023 | Accepted 10 Dec 2023 | Published Online 15 Dec 2023

DOI:https://doi.org/10.52845/ JMCRR/2023/6-12-1

JMCRR 06 (12), 1360-1363

ISSN (O) 2589-8655 | (P) 2589-8647 IF: 2.964

*Case Report*

# Instrument Assisted Soft Tissue Mobilization in Lateral Epicondylitis: A Case Report

Ömer Faruk ÖZÇELEP[†]

1.Kırşehir Ahi Evran University

**Abstract:-** Lateral elbow and proximal forearm pain is a musculoskeletal problem often referred to as tennis elbow, lateral epicondylagy or lateral epicondylitis (LE). LE affects the upper limb and is caused by overloading of the elbow tendons. This condition is typically caused by repetitive movements of the wrist and arm that strain the extensor tendons. The diagnosis of lateral epicondylitis usually requires clinical assessment and in most cases non-surgical interventions are used as a management strategy. Physiotherapy and rehabilitation are widely used in the management of this condition. Rehabilitation guidelines support a variety of therapeutic modalities and exercise-based physical therapy has shown superior success in symptom improvement over long periods of time. Instrument Assisted Soft Tissue Mobilization (IASTM) is an effective myofascial technique used to treat soft tissue disorders. IASTM is applied with instruments to eliminate scar tissue in soft tissues and activate fibroblasts in the natural healing process. After the rehabilitation program consisting of IASTM and eccentric muscle strengthening exercises applied to the forearm of a patient with rheumatoid arthritis and lateral epincolitis, the most significant improvement was seen in the patient's grip strength (+10 kg). Although the pre- and post-session reductions in pain were not permanent, it was seen to provide benefit in functional use. IASTM and eccentric study may be useful in patients with lateral epicondylitis.

**Keywords:** Lateral Epicondylitis, Soft Tissue Injuries, Tennis Elbow, Therapy, Soft Tissue



**Supplementary information** The online version of this article (https://doi.org/xx.xxx/xxx.xx) contains supplementary material,which is available to authorized users.

**Corresponding Author:** Ömer Faruk ÖZÇELEP†, Kırşehir Ahi Evran University

## Introductıon

Lateral epicondylitis (LE), commonly known as tennis elbow, is a prevalent musculoskeletal condition characterized by pain in the lateral elbow and proximal forearm. This discomfort arises from the overuse of elbow tendons, often due to repetitive wrist and arm movements that strain the extensor tendons (Papa, 2012; Elmeligie et al., 2023). Risk factors for LE include female gender, a history of smoking, manual labor involvement, and hypercholesterolemia. Notably, a supplementary literature review suggests a potential association between the use of statins for hypercholesterolemia and the development of LE (Chen et al., 2023).

The diagnosis of lateral epicondylitis (LE) typically relies on clinical evaluation, and non-operative interventions are commonly employed for management. First-line treatments include rest, activity modification, and non-steroidal anti-inflammatory medications. However, corticosteroid injections have not demonstrated significant therapeutic advantages compared to activity modifications or physical therapy in managing LE (Cohen, 2022).

Physiotherapy and rehabilitation are common modalities for managing LE. Exercise-based physical therapy has shown superior success in symptom improvement over extended periods (Coombes et al., 2015). Recent research highlights Instrument-Assisted Soft Tissue Mobilization (IASTM) as a highly effective myofascial technique for treating soft tissue ailments. IASTM employs surgical instruments to remove scar tissue and stimulate fibroblasts in the natural healing process, alleviating pain and enabling clinicians to target tissues more comprehensively. Additionally, IASTM may enhance functionality and alleviate discomfort in both acute and chronic soft tissue injuries (Javeria et al., 2023).

The objective of this case study is to investigate the immediate, two-session, and three-session effects of instrument-assisted soft tissue mobilization on pain, functionality, and grip strength in individuals experiencing tennis elbow.

## Case Descrıptıon

A 45-year-old, unemployed, rheumatoid arthritis patient in remission applied to Kırşehir Ahi Evran University Physical Therapy and Rehabilitation Hospital with complaints of pain in the lateral elbow and difficulty in repetitive movements. In the first evaluation, the Cozen test (also known as resisted wrist extension test) was found positive. The elbow is stabilized at 90° flexion. The therapist palpates the lateral epicondyle and the therapist's other hand brings the patient's hand into radial deviation and forearm pronation. The patient is then asked to resist wrist extension (Soares et al., 2023). The test is positive if the patient feels a sharp, sudden, severe pain over the lateral epicondyle. High sensitivity has been reported with positive findings suggestive of the presence of LE, but poor specificity to exclude other differential diagnoses (Karanasios et al., 2021). The presence of tender points on the lateral elbow was also detected by palpation. In additional evaluations, the Coffee Cup test, Visual Analog Scale (VAS), hand dynamometer and Patient-Rated Tenis Elbow Evaluation were applied. The Patient-Rated Tennis Elbow Evaluation form is an evaluation method specific to the tennis elbow problem in which pain, function and general activities are evaluated in 3 sub-headings for the previous week (Koh et al., 2022). The coffee cup test is performed while performing a specific activity, such as picking up a full cup of coffee or a milk bottle. The patient is asked to rate their pain on a scale of zero to ten. (Coonrad and Hooper, 1973) In our study, the patient was asked to rate their pain as above while lifting a cup of tea from the table and bringing it to their mouth.

A signed Voluntary Consent Form was obtained from our patient and treatment was initiated. The treatment program was designed based on the patient's expectations and prevention of loss of workforce. The patient received 3 sessions of instrument-assisted soft tissue mobilization, eccentric muscle strengthening exercise and cold application in 1 week. The program began with a typical 10-15 minute warm-up session. After the warm-up, IASTM was performed for 40-120 seconds at a 30-60 degree angle to increase flexibility and address soft tissue issues. Low-load eccentric exercises were performed 3 times with 7 repetitions targeting forearm muscle groups to increase endurance and muscle strength. The program concluded with cryotherapy, which involves 20 minutes of cold therapy to aid in muscle recovery and reduce inflammation. Kim et al., 2017).

Evaluations were performed after each treatment to see immediate and post-session effects. As shown in Table 1, following the first session, pain reduction was followed by improvement in grip strength. In the questionnaire assessing the week prior to the time of evaluation, the patient-based tennis elbow rating scale, the overall score decreased from 71 to 41 after 3 sessions. After the 2nd session, although there was a 2-point reduction in the pain felt when applying the Cozen Test, it was observed that the reduction seen after the 1st session on the same test did not continue until the 2nd session. However, an increase of 5.5 kg was observed in the hand dynamometer before the 2nd session compared to the 1st session, while a total increase of 10 kg was observed at the end of the 3rd session.

***Table 1:Results before and after each sessions***

| Assessment Parameters | 1st Session | | 2nd Session | | 3rd Session | |
|---|---|---|---|---|---|---|
| | Before | After | Before | After | Before | After |
| VAS in rest | 0 | 0 | 0 | 0 | 0 | |
| Cozen Test | 6 | 4 | 6 | 3 | 5 | 2 |
| Coffee Cup Test | | 2 | 0 | 0 | 0 | 0 |
| Hand Dynamometer | | 12,5 kg | 21,5 kg | 18kg | 21,5kg | 18kg 22,5kg |

| | | | | | | |
|---|---|---|---|---|---|---|
| a.Pain* 27 | - | - | - | - | 10 | |
| b.Specific Activities* | 25 | - | - | - | - | 16 |
| c.Usual Activities* | 19 | - | - | - | - | 15 |

* Patient-Rated Tenis Elbow Evaluation Sub-parameters

VAS: Visual Analod Scale

## Dıscussıon

This study examines the impact of instrument-assisted soft tissue mobilisation methods on lateral epicondylitis, a condition that has been afflicting a rheumatoid arthritis patient for six months and causes pain and work inefficiency. According to the literature, lateral epicondylitis often resolves without intervention within six to twelve months, and no conclusive evidence has demonstrated long-term advantages with any therapy. Glucocorticoids can provide short-term pain relief but have been associated with worse long-term outcomes (Wolf, 2023).

High-intensity laser therapy is an effective method for treating persistent symptoms of lateral epicondylitis. It reduces pain and enhances the quality of life of patients, as evidenced by the 36-item short-form health survey physical component. However, there were no significant differences observed in grip strength, hand function, or quality of life between the high-intensity laser therapy and other therapies employed (Elmeligie et al., 2023). In contrast to this study, in our case there was a significant increase in hand grip strength after a single session and the patient reported that she could perform movements more easily.

Peterson et al. (2014) conducted a randomised controlled trial comparing eccentric and concentric graded exercise in 120 patients with LE duration exceeding 3 months. Technical terms are defined when introduced, and sentences are clear, concise, and structured logically. The study showed that the eccentric group experienced a faster pain reduction, with a 10% absolute reduction in pain compared to the concentric group at all time intervals up to 12 months. Furthermore, the eccentric group demonstrated greater muscle strength increase than the concentric group throughout the follow-up period (Peterson et al., 2014). In the case, eccentric muscle strengthening exercise was applied in parallel with the literature. Although long-term follow-up of randomized studies with more participants is required to see the effects of the exercise, when looking at the instant effect, tool-assisted soft tissue mobilization shows similar properties to eccentric exercises in increasing grip strength. The important point here is the adjustment of the instrument-assisted soft tissue mobilization dosage and its integration into a rehabilitation program. Another important point for adjusting the dosage was that our patient had rheumatoid arthritis. Clinical guidelines and internet sources indicate that caution should be exercised when administering IASTM in patients with rheumatoid arthritis and that it should not be administered on the joints. IASTM therapy may be an effective alternative treatment for patients with lateral epicondylitis tendinopathy, both as a primary intervention and when other interventions are ineffective (Sevier and Stegink-Jansen, 2015).

## Conclusıon

Although soft tissue mobilizations applied with the help of an instrument showed significant improvement in muscle strength and pain after the application, it was observed that the pain returned to the same levels until the next session. The reason for this is thought to be the patient's active use of hands and arms in daily work. A 10 kg increase in grip strength was observed compared to the pre-treatment period. The fact that there was a significant difference especially in the pre- and post-session evaluations is thought to be due to the fact that instrument-assisted soft tissue mobilization instantly improves the patient's condition and improves performance.

Acknowledgments: We thank our patient F.K. for participating in the study.

Conflict of Interest: The authors declare that there is no conflict of interest.

Ethical Approval: A signed Voluntary Consent Form was obtained from our patient for our study.

Author contribution: Design, Data collection, Writing process, Critical reading: SFC, AT

## References

1 Blanchette, MA, Normand, MC. (2011). Augmented soft tissue mobilization vs natural history in the treatment of lateral epicondylitis: a pilot study. Journal of Manipulative and Physiological Therapeutics, 34(2), 123–130.

2 Burke, J, Buchberger, DJ, Carey-Loghmani, M T, Dougherty, PE, Greco, DS, Dishman, JD. (2007). A pilot study comparing two manual therapy interventions for carpal tunnel syndrome. Journal of Manipulative and Physiological Therapeutics, 30(1), 50–61.
3 Chen, Q, Shen, P, Zhang, B, Chen, Y, Zheng, C. (2023). A meta-analysis of the risk factors for lateral epicondylitis. Journal of Hand Therapy, S0894-1130(23)00075-3, 1–8.
4 Cohen, MS. (2022). Lateral Epicondylitis. In: Geissler W (Editor). Wrist and Elbow Arthroscopy with Selected Open Procedures: A Practical Surgical Guide to Techniques. 3rd Edition, Switzerland AG, Springer Nature,11(2), 719–724.
5 Coombes, BK, Bisset, L, Vicenzino, B. (2015). Management of lateral elbow tendinopathy: One size does not fit all. The Journal of Orthopaedic and Sports Physical Therapy, 45(11), 938–949.
6 Elmeligie, MM, Gbreel, MI, Yehia, RM, Hanafy, AF. (2023). Clinical efficacy of high-intensity laser therapy on lateral epicondylitis patients: a systematic review and meta-analysis. American Journal of Physical Medicine and Rehabilitation, 102(1), 64–70.
7 Javeria, H, Rasool, D, Mallick, DU. (2023). The effectiveness of ınstrument-assisted soft tissue mobilization technique on musculoskeletal soft tissue ınjuries: a systematic review and meta-analysis. Pakistan Journal of Rehabilitation, 12(1), 5–17.
8 Karanasios S, Korakakis V, Moutzouri M, Drakonaki E, Koci K, Pantazopoulou V, et al. (2022). Diagnostic accuracy of examination tests for lateral elbow tendinopathy (LET) - A systematic review. Journal of Hand Therapy. 35(4):541-551.
9 Kim J, Sung DJ, Lee J. (2017). Therapeutic effectiveness of instrument-assisted soft tissue mobilization for soft tissue injury: mechanisms and practical application. Journal of Exercise and Rehabilitation. 13(1):12-22.
10 Koh KH, Lee KW, Cho JH, Park D, Yeom JW, Lee HI. (2022). The patient-rated tennis elbow evaluation questionnaire was successfully translated to Korean. Journal of Hand Therapy. 35(4):641-644.
11 Papa, JA. (2012). Two cases of work-related lateral epicondylopathy treated with Graston Technique® and conservative rehabilitation. The Journal of the Canadian Chiropractic Association. 56(3), 192–200.
12 Peterson, M, Butler, S, Eriksson, M, Svärdsudd, K. (2014). A randomized controlled trial of eccentric vs. concentric graded exercise in chronic tennis elbow (lateral elbow tendinopathy). Clinical Rehabilitation. 28(9), 862–872.
13 Sevier, TL, Stegink-Jansen, CW. (2015). Astymtreatment vs. eccentric exercise for lateral elbow tendinopathy: A randomized controlled clinical trial. PeerJ. 2015(5), 1–26.
14 Soares MM, Souza PC, Ribeiro AP. (2023). Differences in clinical tests for assessing lateral epicondylitis elbow in adults concerning their physical activity level: test reliability, accuracy of ultrasound ımaging, and relationship with energy expenditure. International Journal of Environmental Research and Public Health. 20(3):1794.
15 Wolf, J M. (2023). Lateral epicondylitis. New England Journal of Medicine, 388(25), 2371–2377.