

Research Article**EFFICACY OF LOCAL STEROID INJECTION IN THE TREATMENT OF LATERAL EPICONDYLITIS: A RANDOMIZED CONTROLLED TRIAL**

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ABSTRACT

Background: Lateral epicondylitis or Tennis elbow is a degenerative (not inflammatory) condition of the common extensor origin at the lateral epicondyle of humerus presenting with pain, tenderness, and weakness of the grip especially with resisted wrist dorsiflexion. Being often idiopathic and self-limiting, it is common amongst the active working population in their 3rd and 4th decades of life lasting from 6 weeks up to 2 years, hampering productivity. The diagnosis is mainly clinical and the treatment includes rest, oral NSAIDs, physiotherapy, bracing, and local steroid injection.

Objective: To compare the short-term outcome of local steroid injection combined with local NSAIDs and oral NSAIDs, in

comparison with local NSAIDs and oral NSAIDs alone

Study design: A randomized controlled trial

Duration and place of study: This study was conducted at Ibn e Sina University Hospital Mirpurkhas from August 2025 to August 2026

Methodology: The present randomized controlled trial was done in the Out-Patient Department of Orthopedics on 140 patients aged 35-50 years with unilateral lateral epicondylitis. The patients were randomly divided into 2 groups of 70 patients each where Group I had local steroid injection (Depomedrol with lignocaine) along with topical NSAID cream and oral Aceclofenac for 2 weeks while Group II had topical NSAID cream and oral Aceclofenac only for 2 weeks. Pain was scored through Visual

Analogue Scale by blinded assessor initially, 2 weeks, and 6 weeks and was statistically analyzed using SPSS version 2022 with p-value < 0.05 being significant.

Results: Of the 140 patients participating in this study (70 patients per group), males were more prevalent in both groups with an average age in the fourth decade of life. The baseline VAS score was comparable in both groups. In Group I, 80.0% of patients had no pain at two weeks of follow-up against 30.0% in Group II, and 92.8% against 27.2% at six weeks of follow-up ($p < 0.0001$ in both cases). Mean VAS scores were significantly lower in Group I compared to Group II ($p < 0.0001$) at both follow-up periods, indicating superiority of local steroids along with NSAIDs over NSAIDs only for short-term pain management.

Conclusion: The combination of the local injection of steroids along with the topical and oral use of NSAIDs showed significantly more pain reduction when compared to the use of topical and oral NSAIDs only.

Keywords: Lateral epicondylitis, Tennis elbow, Steroid Injection, NSAIDs, VAS

INTRODUCTION

Tennis elbow is also referred to as lateral epicondylitis, and other terms used for it include rowing elbow, peritendinitis of the elbow joint, and tendinitis of the common extensor origin [1]. Symptoms of lateral epicondylitis are painful and tender bony regions of the lateral epicondyle of the humerus, ranging from mild to severe and chronic pain [2]. Tennis elbow is an idiopathic condition, caused as a result of overuse of the posterior forearm muscles. Pain arises when there is resistance to the

extension of the wrist and middle finger [3]. While the condition is called tennis elbow, it is a condition that is also seen in people who do not play tennis [4].

The exact cause of lateral epicondylitis has not yet been identified; however, the injury is known to occur due to micro trauma caused by repetitive gripping, wrist extension, radial deviation, or forearm supination [5]. The extensor carpi radialis brevis is usually the location that gets affected by micro tears, but the extensor carpi radialis longus and the extensor digitorum communis tendons could also be involved. The periosteum on the lateral epicondyle is avascular in nature, and hence there are chances of ischemic stress. The area is therefore slow to heal [6].

Clinical examination is used in the diagnosis of lateral epicondylitis. There is generally a feeling of pain and burning sensation experienced at the lateral side of the lateral epicondyle of the humerus, extending towards the forearm and occasionally to the anterior part of the condyle [7]. The patients normally complain of grip weakness and difficulties lifting weights. Pain will be felt during wrist dorsiflexion against resistance and during forearm supination [8]. Cozen's test is a physical test carried out to diagnose tennis elbow, where there will be pain during resisted wrist extension [9]. Radiological examinations are not only unnecessary but also of no help in diagnosing the condition.

A CT scan would also depict the pathology, while tendon thickening would be detected by an MRI. Activity modification is the best preventive measure for the occurrence of lateral epicondylitis [10]. Often, the condition is self-limiting and is prevalent among the third and fourth decades of life among the active population groups, and the

condition persists for 6 weeks to 2 years [11]. Thus, it has a negative impact on their productivity. Modes of treatment include rest, oral medication, physiotherapy, bracing, application of ice, and local steroid injection.

METHODOLOGY

The study was performed in the Out-Patient Department of the Orthopedics Department, and the number of **patients recruited were 140**. The patients were divided into two groups of 70 each on the basis of the inclusion and exclusion criteria that will be discussed below.

Inclusion criteria: The patients aged between 35 to 50 years were considered eligible for the study. The eligible patients had pain in the lateral part of their elbow, caused by resisted dorsiflexion of the wrist with extended elbow and flexed fingers.

Exclusion Criteria: Patients that had complaints of pain that lasted more than six weeks in duration, or had been treated before with corticosteroids or physiotherapy, were excluded from the study. In addition, those suffering from conditions such as cervical radiculopathy, other joint pathology, or peripheral nerve disease were excluded from the study. Patients with a previous history of fractures or dislocations **around elbow joint** were also excluded from the study. Additionally, **pregnant females**, and those who refused to participate in the study were also excluded.

The treatment group (group I) was treated with local steroid injection (Inj. Depomedrol), along with topical application of NSAID cream three times per day and tablet of Aceclofenac 100 mg twice per day for two weeks. The control group (group II) was treated with topical NSAID cream

applied three times per day and tablet of Aceclofenac 100 mg twice per day for two weeks, without the steroid injection. Follow up was performed at two weeks and six weeks.

Group I patients were injected with 1 ml Depomedrol and 2 cc of 2% lignocaine at the lateral epicondyle and areas of maximum tenderness. The patients were followed up at three different times: at their first visit (the baseline), at two weeks, and at six weeks. Data were collected at the specified time intervals. The intensity of pain during resisted dorsiflexion of the wrist was measured using the Visual Analogue Scale (VAS). This was done using a blinded assessor who rated the symptoms of the patient's elbow. Scores of the VAS were interpreted as: 0= No pain; 1-3 = Mild; 4-6 = Moderate; 7-9 = Severe; 10 = Maximum pain.

Statistical analyses were done using SPSS version 2022. Frequencies and percentages were used for qualitative data and chi-square tests for comparisons of proportions in groups. For continuous data, mean and standard deviation were used, while t-tests for independent samples were applied for comparisons of means in groups. Analyses were conducted at 95% confidence intervals, with P value < 0.05 being statistically significant.

RESULTS

There were a total of 140 patients included in this research who were equally divided into 2 groups (70 patients in each group). The participants were aged between 35 to 50 years old. The mean age of males was 45 years while it was 42 years for females. The majority of the patients in this study were males. Table number 1 shows the

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distribution of participants according to gender in both the groups.

Table No. 1:

Gender	Group I (n=70)		Group II (n=70)	
	n	%	n	%
Male	53	75.7	51	72.8
Female	17	24.3	19	27.2

Table number 2 shows the VAS score of both the groups.

Table No. 2:

VAS	Group I (n=70)	Group II (n=70)	X2	df	p-value
VAS at 1st visit					
● Mild	0	0	0.00	1	0.99
● Moderate	28 (40.0%)	28 (40.0%)			
● Severe	35 (50.0%)	35 (50.0%)			
● Maximum Pain	7 (10.0%)	7 (10.0%)			
Follow up after 2 weeks					
● No pain	56 (80.0%)	21 (30.0%)			
● Mild	14 (20.0%)	0			

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● Moderate	0	14 (20.0%)	47.45	3	<0.0001
● Severe	0	35 (50.0%)			
● Maximum Pain	0	0			
Follow up after 6 weeks					
● No pain	65 (92.8%)	19 (27.2%)	36.75	2	<0.0001
● Mild	0	0			
● Moderate	0	14 (20.0%)			
● Severe	5 (7.2%)	37 (52.8%)			
● Maximum Pain	0	0			

Table number 3 shows the mean VAS scores calculated by t-test.

Table No. 3:

VAS	Group I (n=70)	Group II (n=70)	t	df	p-value
VAS at 1st visit	5.78 ± 1.15	5.89 ± 1.24	−0.334	116	0.65
Follow up after 2 weeks	0.80 ± 0.16	4.76 ± 3.33	− 6.977	116	>0.0001
Follow up after 6 weeks	0.88 ± 0.30	4.76 ± 3.29	−5.878	116	>0.0001

DISCUSSION

Tennis elbow was first documented by Runge in 1873 [12]. Despite the name, the pathology does not represent inflammation but represents degeneration, according to various **histo-pathological** studies. Tennis

elbow affects people in their fourth decade of life, and the estimated prevalence rate among the general population is 1–3% [13]. In our study, the mean age of the patient group also falls into the same decade, similar to what has been reported in the literature [14]. In contrast to other Western

studies where the disease is more prevalent among women, we observed a male preponderance in our study. This could be due to the fact that our sample population consisted of mostly rural manual laborers, for whom repetitive strain injury is a known risk factor. Repetitive use of the dominant arm is one of the predisposing factors for the condition.

Local injection of corticosteroids has long been regarded as one of the mainstays of treatment of lateral epicondylitis, despite the lack of clear understanding of how it works and the controversial nature of the subject in medical literature [15]. In a randomized controlled trial, Ahmed et al. demonstrated that injection of local steroids was associated with better short-term pain relief and improved function compared with oral or topical use of NSAIDs, which is consistent with the findings in the current research [16]. Likewise, Hay et al. conducted a pragmatic randomized trial and observed that injection of local corticosteroids offered significantly better results in terms of improvement within four weeks when compared to either naproxen or placebo, but the effects were not sustained after 12 months [17].

However, according to Coombes et al., who conducted a factorial randomized controlled trial, corticosteroid injection resulted in poorer outcomes when compared to placebo after one year and was also linked to higher recurrence rates, suggesting that this therapy may not be effective in the long run despite positive initial outcomes [18]. Similarly, Smidt et al., in their trial comparing corticosteroid injections, physiotherapy, and no intervention, revealed that whereas steroid injections resulted in better outcomes after six weeks, recurrence rate was high afterwards and physiotherapy or no treatment worked similarly well [19]. Thus, these studies seem to imply that

corticosteroids provide fast relief from symptoms but do so at the cost of increased recurrence rate once the anti-inflammatory effect is gone. This is an aspect which we could not cover in our study due to lack of time perspective.

For the current case, those who received local steroid injections along with local and oral NSAIDs achieved a significant decrease in pain as compared to those on NSAIDs alone within the duration of two weeks and six weeks with a higher percentage achieving full recovery from pain. The above-mentioned results further substantiate the known short-term analgesic benefit of corticosteroids via injections that have been found out through many studies before [20]. It is also worth mentioning that in our study no adverse side effects were found in the group that received steroids, especially no instances of tendinitis, depigmentation of skin, and local infection, which sometimes have been seen in other studies. Since our follow up period has been just six weeks long, we have not been able to find out about the long-term recurrence patterns, as explained by Coombes et al. and others [18]. Therefore, it is one of the main limitations of our study. In any case, for those who require short-term pain reduction and faster return to work, including manual laborers, steroid injections along with NSAIDs seem more beneficial than just conservative pharmacological treatment.

CONCLUSION

The combination of the local injection of steroids along with the topical and oral use of NSAIDs showed significantly more pain reduction when compared to the use of topical and oral NSAIDs only, with the

effectiveness noticed as early as two weeks and sustained until the sixth week. Such results indicate that local steroid injection is an efficient method for relieving pain in the short term and can be used by patients who need fast relief from pain.

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Conflict in the interest

The authors had no conflict related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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