

# Steroid Injection as an Effective Treatment for Lateral Epicondylitis

Saad Riaz, Imtiaz Ahmed Shakir, Nadeem Kashmiri, Shehzad Anjum, Nayyar Qayyum  
Department of Orthopaedics, DHQ Teaching Hospital and Rawalpindi Medical College, Rawalpindi

## Abstract

**Background:** To determine efficacy of local steroid infiltration in patients with lateral epicondylitis.

**Methods:** In this case control study 70 patients with lateral epicondylitis with no previous history of trauma, surgery around elbow joint or previous history of steroid injection were included. Patients were given local steroid injection after preparing the area with an antiseptic solution. The most tender point was localized and 40 mg methyl-prednisolone solution mixed with one ml of 2% xylocaine solution was infiltrated. Patients were followed up at six weeks for the evaluation of global improvement in symptoms using Likert-type scale.

**Results:** The mean age of the sample was 43 years. 42 patients were in the age group of 41-50 years. Majority (81.4%) patients were females. Most of the patients (81.4%) scored 1 and 2 on Linkert type scale, showing global improvement. Nine patients improved with the second dose of steroid injection making cumulative efficacy to 94%.

**Conclusion:** Local steroid infiltration is an effective method of relieving pain and improving function in patients with tennis elbow.

**Key Words:** Tennis elbow, Lateral Epicondylitis, Steroid Injection, Likert type scale

## Introduction

Tennis elbow or lateral epicondylitis is a common condition characterized by pain around the lateral aspect of the elbow joint. It is associated with a combination of forceful and repetitive activities of the upper extremity and extreme non-neutral postures of the hands and arms. Nonsurgical treatment is the mainstay of management. First described as a clinical entity by Runge in 1873, lateral elbow pain or Tennis elbow is also known by many other names like lateral epicondylalgia and lateral elbow tendinosis.<sup>1</sup> This is an idiopathic or a work related condition. It is a common condition characterized by pain around the lateral aspect of the elbow joint. Most of the time the pain is provoked by resisted use of either the extensor

or flexor muscles of the wrist but in most cases pain persists at rest. The prevalence of the condition is 1.3% with equal incidence between males and females.<sup>2</sup> For women, the incidence increases to 10% between the ages of 42 - 46. Individuals between the ages 45-54 are most commonly affected.<sup>3</sup> Some studies suggested that there is no difference in incidence between men and women or association between the lateral epicondylitis and the dominant arm. Contradictory to this, Goguin JP showed that it seems more common in women. Still, more evidences exist which show that dominant arm is affected in most cases and the condition is bilateral in a few.<sup>4</sup>

Contradictory findings have been reported on the associations between individual and work-related physical factors and epicondylitis. There is evidence of an association of epicondylitis with forceful work tasks, a combination of forceful and repetitive activities of the upper extremity, and extreme non-neutral postures of the hands and arms.<sup>5</sup> There is still insufficient evidence to support a relation between this disorder and exposure to repetitive work alone.<sup>6</sup> Smoking, obesity, repetitive movements, and forceful activities independently of each other showed significant associations with lateral epicondylitis.<sup>7</sup>

None of the treatment options has been universally accepted as a treatment of choice as yet. Nonsurgical treatment includes a myriad of options including rest or "wait and see", systemic and topical non-steroidal anti-inflammatory drugs, physical therapy, cortisone, blood and botulinum toxin injections, supportive forearm bracing and local modalities like extracorporeal shock wave therapy (ESWT), iontophoresis, phonophoresis and hyaluronic acid injections.<sup>7</sup> Amongst these treatment options the three most commonly employed treatments are local steroid injections, physiotherapy, and the combination of both above methods. Remaining treatment options are supported by only a few published studies and there is still no consensus on their use in patients and also the cost of most of these treatments is high. Surgery is mainly reserved for the resistant cases and surgical options include open, percutaneous and arthroscopic

procedures. Multiple procedures are described which include Boyd Mcleod procedure, Nirschl procedure, knife and fork day case surgery, open release of common extensor origin, fractional lengthening of forearm extensors, open and percutaneous tenotomy and excision, release and repair of common extensor origin and extensor carpi radialis brevis debridement.

### Patients and Methods

Study was conducted from January 2015 to February 2017 at District Headquarter Hospital Rawalpindi. All patients aged 20 to 60 years of either gender presenting with lateral epicondylitis with no previous history of trauma, surgery around elbow joint or previous history of steroid injection were included in the study. Patients with lateral elbow pain having tenderness and painful resisted extension of wrist were diagnosed as having lateral epicondylitis. All patients fulfilling the criteria were selected from outpatients clinics. Detailed history and informed consent was taken from all patients. A Likert-type scale was used to assess global improvement in each subject in the study. The Likert-type scale used in the study consists of six point scale in which point 1 represents completely recovered, point 2 represents much improved, point 3 represents slight improvement, point 4 represents no improvement, point 5 represents slightly worse and point 6 represents much worse. Point 1 which is completely recovered and point 2 which is much improved were considered success. Patients were given local steroid injection after preparing the area with an antiseptic solution. The most tender point was localized and 40 mg methylprednisolone solution mixed with one ml of 2% xylocaine solution was infiltrated. Patients were followed up at six weeks for the evaluation of global improvement in symptoms using Likert-type scale.

### Results

The sample study consisted of 70 patients. The mean age was 43 years, with the youngest patient being 35 years of age and oldest 56 years. Patients were divided into different age groups after calculating mean (Table 1). Majority (81.4%) patients were female (Table 2). Sixty two (88.5%) patients had right sided tennis elbow and 8 (11.42%) patients had left sided tennis elbow. After six weeks 57 patients 81.4% scored 1 and 2 on likert type scale and reported the steroid injection treatment to be effective. 13 patients (18.6%) did not respond to the steroid injection and out of them 11 patients scored 4 and 2 patients scored 5, with slight

worsening of symptoms, on likert type scale (Table 3). 13 patients who did not respond to the treatment were offered another session of steroid injection. Females responded better (Table 4). Nine patients who had repeat dose of steroid injection improved with the second dose. Four patients who refused second dose were given medical treatment and physiotherapy. Skin depigmentation was noticed in 8 patients for which observation was advised. Six patients complained of initial increase in symptoms after steroid infiltration which was followed by complete relief of symptoms in 1-2 days.

**Table 1: Age Distribution of Patients (n=70)**

Age group	No (%)
31-40	14(20)
41-50	42(60)
51-60	14(20)

**Table 2: Sex Distribution of Patients**

Gender	No(%)
Female	57(81.4)
Male	13(18.6)

**Table 3: Frequency and Percentage of Efficacy**

Efficacy	No(%)
Yes	57(81.4)
No	13(18.6)

**Table 4: Comparison of Efficacy in Male and Female Gender**

Efficacy	Gender		Total
	Female	Male	
Yes	48	9	57
No	9	4	13
Total	57	13	70

### Discussion

The natural history of tennis elbow is that of a benign self-limiting condition which improves with or without treatment within 12 months, this statement being true in between 70% and 80% of patient.<sup>17,18</sup> Whilst there is wide consensus on these two facts, a year is a long time for a patient to wait not only in terms of pain and disability, but also loss of economic productivity. What patients often require is a safe minimally invasive procedure that will enable them to return to their daily activities as soon as possible. Most of the patients in our study were in their fifth decade of life. This supports the theory of degenerative nature of the tear in ECRB. Females are found to be more commonly affected than males and this may be attributed to their social lifestyles which may include repetitive forceful activities of upper

limbs especially while washing clothes and in cooking. On the other hand males are found to be more resistant to the treatment. This is probably due to the fact that corticosteroid injection produces rapid pain relief and this is followed by immediate resumption of heavy activities leading to recurrence of symptoms. It was noticed that dominant hand is affected more than the non-dominant hand because most of the forceful activities are performed with the dominant hand. The overall efficacy was 81.4% with single injection of steroids. This is close to the results already published in other studies but we have noticed improvement in results after repeating the same dose of steroid injection in patients who did not respond to the initial session. This is probably due to improper localization of the tender point and improper infiltration of the drug at first instance. After careful re-injection, all nine patients improved and this increased the cumulative efficacy from 81.4% to 94%.

Many treatments have been proposed leading to a number of trials, but reviews including several recent meta-analyses have led to no conclusions as to which is the best. This is due to low statistical strength, low internal validity and insufficient study data reporting. Schmidt *et al* 2003 reviewed literature on physical therapy prior to 1999 and found no evidence of effect, with the exception of ultrasound, where a minor effect was shown.<sup>19</sup> Bisset *et al* 2006 published a meta-analysis of 28 randomized studies published before 2003 of different physical therapies for lateral epicondylitis.<sup>15</sup> Most studies had a small number of subjects, and only eight had long term follow-up of effect of therapy. Extra corporeal shock wave therapy was found to have no effect, and manipulation and exercise were found to have only a short-term effect. A meta-analysis by Smidt *et al* 2002 on the effect of corticosteroid injections found evidence of short-term pain relief, but no effect beyond the initial 6 weeks.<sup>20</sup> There was however some uncertainty due to few and small studies. The Cochrane Library has several reviews of treatment for lateral epicondylitis: acupuncture, deep transverse friction massage, NSAIDs, orthosis, extra corporeal shock wave therapy and surgery. These reviews all conclude that there is insufficient evidence to draw firm conclusions as to which methods of treatment are effective. However, there are indications that topical NSAIDs and manipulation and exercise have a short term effect. As to NSAIDs taken orally, there is probably a short term effect, although it is impossible to either recommend use or not. There has been contradicting evidence as to the efficacy of ESWT. Some studies noted that patients

who received ESWT had improved symptoms.<sup>21-22</sup> Other studies, however, have demonstrated a lack of effectiveness with ESWT.<sup>23-24</sup> For extracorporeal shockwave therapy, there is evidence to conclude that this treatment has no effect. Ultrasound has a possible short-term effect based on one meta-analysis<sup>19</sup>. Brace treatment is favored by some studies but brace alone does not relieve the symptoms of tennis elbow as effectively as steroid injection and also the course of treatment and duration of symptoms is more protracted. Tens requires training of specialized equipment required for this purpose and is also associated with certain side effects. In fact, there is scant support for any long-term treatment in the literature.

Two studies compared corticosteroid injection with naproxen orally and placebo medication. Both concluded that corticosteroid injection is safe and effective for pain relief during the first 6 weeks, and the effect of this treatment is better than physiotherapy, wait-and-see and naproxen orally within the same time-frame.<sup>25,26</sup> A more recent study comparing physiotherapy and corticosteroid injection concluded that the significant short term benefits can be obtained with corticosteroid injections.<sup>15</sup> Our results also support these studies showing relief of symptoms in patients receiving corticosteroid injections.

Several studies have acknowledged the perceived benefits of iontophoresis as a potential method of delivering steroid to the patients; however, its efficacy over that of placebo has been called into question. In view of this, and due to comparative ease of availability and delivery, traditional approach of local targeted delivery of corticosteroid by means of injection therapy is preferable in our setting.

## Conclusion

1. There is an efficacy of local steroids injections in patients with lateral epicondylitis in first six weeks.
2. Steroid injections should be carefully injected after proper localization of the tender area and should be followed by advice regarding graduated resumption of usual activities to avoid recurrence of symptoms.

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