

## A Study to Assess the Effectiveness of Corticosteroid Injection in the Treatment of Tennis Elbow at Teaching Hospital

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**Abstract:** Tennis elbow or lateral epicondylitis is a painful condition of the elbow. It is commonly seen in carpenters, musicians, gardeners and computer programmers. Steroid injections in periarticular or soft tissue structure relieve pain, inflammation and improve mobility. Aim of study is to evaluate the usefulness of intra-lesional steroid injections in tennis elbow. **Materials and Methods:** This was a prospective study of 42 patients conducted at teaching hospital from January 2023 to December 2023. Results were assessed with visual analog scale [VAS] and Patient Rated Tennis Elbow Evaluation (PRTEE) questionnaire. Patients were injected with local injection of 1ml (40mg) of methylprednisolone acetate (corticosteroid) combined with 1 ml of 2% lignocaine at the maximal point tenderness at lateral epicondyle. Patients were followed-up at 2, 6, 12 weeks. **Results:** 26 were males and 16 were females. All belong to the age group of 26-50 years, with the average age of 38.5 years. We observed significant decrease in pain level at 2 weeks, 6 weeks and 12 weeks follow up as compared to baseline with help of VAS and PRTEE scores. **Conclusion:** corticosteroid injection in tennis elbow patients showed significant pain reduction and functional improvement.

**Keywords:** Corticosteroid, Tennis Elbow, Lateral Epicondylitis, VAS, PRTEE score

**Introduction:** Tennis elbow or lateral epicondylitis is a painful condition of the elbow which is commonly seen in outpatient department and pain clinic. Tennis elbow is an inflammatory condition that arises at the origin of the common extensor tendon of the forearm at or below the lateral epicondyle. Symptoms occur within 1% to 3% of the general population. It is usually not associated with actually playing tennis. It is common in people whose profession requires frequent rotatory movements of the forearm as a carpenter, musician, gardener and computer programmer. Acute onset of symptoms occurs more often in young athletes; chronic symptoms typically occur in older patients.<sup>1, 2, 3</sup>

It is attributed to an overuse tendinopathy of the lateral wrist extensor muscles where they insert at the elbow. The risk factors include a repetitive use of the elbow, tobacco use, and other hand issues such as carpal tunnel syndrome and deQuervain's tenosynovitis. However, the etiology is not clearly understood, but micro vascular trauma, cutaneous nerve injury, and friction wear of the extensor carpi radialis brevis (ECRB) have been proposed. Nirschl<sup>4</sup> found that the fundamental pathology responsible was in the origin of the extensor carpi radialis brevis (ECRB) tendon. However, sometimes the anteromedial edge of the extensor digitorum communis (EDC) and the inner surface of the extensor carpi radialis longus (ECRL) can also be involved.

Treatment options for lateral epicondylitis include rest, activity modification, non-steroidal anti-inflammatory drugs, corticosteroids injection, platelet rich plasma injection, counterforce braces, physiotherapy, laser treatment, extracorporeal shockwave treatment, acupuncture, ultrasound treatment, botulinum toxin type A injection and surgery.<sup>5,6</sup> The use of intra-lesional steroid injections by both pain specialists and orthopedic surgeons is very common. Steroid injections in periarticular or soft tissue structure relieve pain, inflammation and improve mobility. It yields a decrease in pain which is superior to nonsteroidal anti-inflammatory drug therapy and physical therapy.<sup>7</sup> Aim of study is to evaluate the usefulness of intra-lesional steroid injections in tennis elbow.

## **Materials and methods**

This was a prospective study of 42 patients of either sex who were diagnosed with tennis elbow for the period from January 2023 to December 2023 in the Department of Orthopaedics and pain clinic at District hospital, Chitradurga. Diagnosis was made on the basis of history and clinical examination. This included history and clinical examination comprising testing for tenderness over the lateral epicondyle or just distal to it, a positive Cozen's test and Mill's manoeuvre.

## **Inclusion criteria**

1. Age between 18 and 65 years,
2. Clinically Diagnosed tennis elbow patients
3. Duration of symptoms equal to or less than 4 weeks.
4. Failure of conservative management.
5. Patients who gave consent to treatment

## **Exclusion criteria**

1. Patients on steroid medications for any medical or surgical condition.

2. Neuro-vascular disease.
3. Direct or indirect trauma to the painful site
4. Symptoms of radio-ulnar joint osteoarthritis
5. Symptoms of cervical radiculopathy
6. Chronic inflammatory diseases like rheumatoid arthritis
7. Uncontrolled diabetes
8. Patients on anticoagulation therapy
9. Patients who received steroid injections within the last three months
10. Patients not willing to treatment

**Methodology:** The patients were informed about the study purpose and consent was taken. Demographic and occupational data was collected. All patients were subjected to routine blood investigation including the markers for inflammatory arthropathy and radiographic examinations of cervical spine, and the elbow. The severity of the lateral epicondylitis was assessed with the help of visual analog scale [VAS] and Patient Rated Tennis Elbow Evaluation (PRTEE) questionnaire. The scores were recorded at the beginning of treatment and follow-up on the outcome of the condition was done at 2, 6, and 12 weeks.

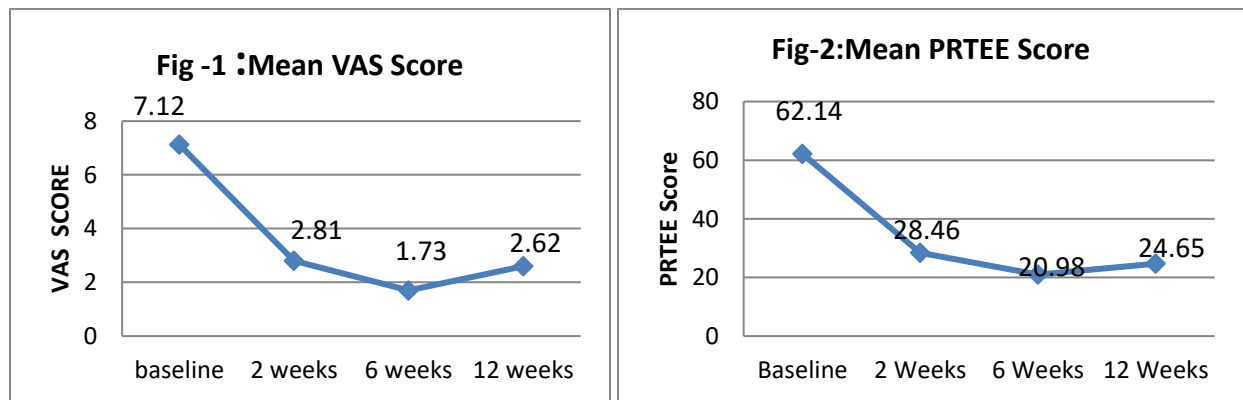
Patient in supine position with elbow flexed to 90 degrees and forearm in neutral position, patients were injected with local injection of 1ml (40mg) of methylprednisolone acetate (corticosteroid) combined with 1 ml of 2% lignocaine (local anaesthetic) at the maximal point tenderness at lateral epicondyle. Solution was injected into tendon origin in different directions. Patients may have discomfort at the injection site for up to 3 days; they were advised to have ice application over the injection site, activity modification, and oral analgesics for pain relief. Patients were followed-up at 2, 6, 12 weeks.

**Results:** Total of 42 patients were included in this study, out of which 26 were males and 16 were females. All belong to the age group of 26-50 years, with the average age of 38.5 years. The mean duration of symptoms was 3.2 months. Majority of the females were housewives and rests were teachers and office workers. Among males majority were office workers. All of them were non-sports person.

The baseline pain according to mean VAS score on pre injection was 7.12(Fig-1). The mean VAS score observed at 2 week, 6 week and 12 weeks follow up came out to be 2.81, 1.73 and 2.62 respectively. Results showed that a significant decrease in pain level at 2 weeks, 6 weeks and 12 weeks follow up as compared to baseline. The baseline pain and disability according to mean PRTEE score on pre injection was 62.14 (Fig-2). The mean PRTEE score observed at 2 week, 6 week and 12 weeks follow up came out to be

28.46, 20.98 and 24.65 respectively. Our results showed that significant decrease in pain levels at 2 week, 6 week and 12 weeks follow up as compared to baseline.

Patients reported mild to severe local pain in the immediate post-injection period. The pain subsided within a few days, with some patients requiring mild analgesics for the same. Hypo pigmentation at the injection site was found in 6 patients. No infection was there in any of the patients.



**Discussion;** Tennis elbow is the most common cause of lateral elbow pain in adults. Although it is typically a self-limiting process, there are many nonsurgical and surgical treatment options available. Tennis elbow most commonly occurs in the 35-50 year age group and is more common in men than women. The disease although named as tennis elbow, is not limited to tennis players, but also seen in common population being mostly associated with work-related activities. This condition adversely decreases the functional ability of the person and sometimes leading to complete cessation of work activities.<sup>8</sup> Intra-lesional steroids are commonly used for providing pain relief and are also assumed to decrease local inflammation through their anti-inflammatory properties.<sup>7</sup>

The Patient-rated Tennis Elbow Evaluation (PRTEE) has been shown to be a reliable, valid and a responsive tool for assessing pain and functional disability in patients with Tennis elbow. It reliably detects improvement or worsening in most subjects of tennis elbow. Hence it appears to be one of the most commonly reported measure of health status in patients of chronic tennis elbow and may become the standard primary outcome measure in research of tennis elbow.<sup>9</sup> In our study, we found significant decrease in mean VAS score and mean PRTEE score during follow-up as compared to baseline. It demonstrates that superior effectiveness for combination of steroid and local anaesthetic agent for reduction of pain and functional disability.

Dogramaci *et al*<sup>10</sup> reported that significantly lower pain (VAS) at 3 week and 6 month follow-ups comparing to the pre-treatment condition. Hay *et al*<sup>11</sup> showed good results with local corticosteroid injection group, when compared with oral naproxen. Bisset *et al*<sup>12</sup> and Smidt *et al*<sup>13</sup> also showed early success with corticosteroid treatment in reduction of pain and improved grip.

Park *et al*<sup>14</sup> in their study concluded that 1.3%–4% people develop hypopigmentation which develops over the initial 1–4 months after the injection and resolves spontaneously over 6–30 months. It can be prevented if intradermal and subcutaneous injections are avoided. In our study, Hypo pigmentation at the injection site was found in 6 patients. We conclude that combination of corticosteroid and local anaesthetic agent in tennis elbow patients showed significant pain reduction and functional improvement. Long-term follow-up with more patients are needed to evaluate these benefits in this method of treatment in tennis elbow patients.

**Conflict of interest: None**

**Source of income: None.**

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