



## A Study on Treatment of Tennis Elbow by Platelet Rich Plasma

Authors

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### Abstract

**Background:** *In routine practice tennis elbow or lateral epicondylitis is commonly encountered enthesopathy, which disturbs the activity of daily life and it not only effects sports personnel but in our society major chunk of patients affected by it are house wife's and manual workers, so an effective low-cost treatment modality is need of the hour. Autologous platelet-rich plasma (PRP) hastens the healing of angiofibroblastic degeneration in lateral epicondylitis by providing humoral modulators and array of different growth factors favours its use to treat enthesopathies.*

**Keywords:** *Lateral epicondylitis, Elbow, Platelet rich plasma (PRP).*

### Introduction

Pain and tenderness around lateral epicondyle of the elbow\* is a common complaint among tennis players but even more common in non-players who perform similar activities involving forceful repetitive wrist extension. It is extensor carpi radialis brevis and longus tendons(which automatically extends the wrist when gripping) which become pathological in tennis elbow. It may result in small tears and fibrocartilaginous metaplasia. Tendon repair is usually slow due to low vascular supply. Platelet rich plasma has emerged as a latest modality of treatment in refractory tennis elbow. Various modalities have been used in treatment of refractory Tennis elbow like local steroid, Dry needling and surgical intervention is needed in the treatment of chronic tennis elbow. Platelets are integral component of the healing process, acting as a reservoir for growth factors

involved in the repair process. Following injury, the endogenous inflammatory response leads to platelets being activated and delivering an array of growth factors to the site of injury, including platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF- $\beta$ ), epidermal growth factor (EGF).

Platelet-rich plasma (PRP) has 2-to-5fold increase in platelet concentration and 1-to-15fold growth factor concentrations of that of blood. The proposed proliferative and angiogenic effect of PRP makes it feasible treatment the typical poor vascularity and extracellular matrix injury breakdown involved in common extensor tendon injury.

### Materials and Methods

This short-term longitudinal study includes management of lateral epicondylitis by autologous PRP infiltration. All the patients were consulted

and thoroughly examine at outpatient department and those fulfilling the inclusion and exclusion criteria were subjected to local infiltration of PRP and evaluated according to Verhaar et al score, at a teaching Hospital from East UP between April-2019 to July-2021.

#### **Inclusion Criteria**

1. Age 20-55 years.
2. Pain severity with minimum score of 5 (based on 10 scale) Visual Analogue Score (VAS)
3. Painful unilateral or bilateral involvement of lateral epicondyle.
4. Duration of symptom for more than 6 months.
5. Tennis elbow to conservative management. That is which did not responded to conservative treatment for at least 2 months.

#### **Exclusion Criteria**

1. Radial Funnel syndrome.
2. Pregnancy, bony or articular lesions at elbow.
3. Any local skin pathology at injection site.
4. A history of patient obtaining cortisone.
5. Patient already undergone surgical intervention.
6. Systemic disease like diabetes, rheumatoid arthritis in patients.
7. Use of NSAID's within a week before procedure.
8. Six patients were included in our study out of which 4 were females and 2 were males.

#### **Technique of PRP**

The procedure consists of 40ml venous blood sample drawn under aseptic conditions in a 50ml disposable syringe with 4ml CPD-AI or 4ml 3.2% sodium citrate as anticoagulant. The unit of PRP was divided into 2 small units for 1ml and 3ml. One ml was sent to the laboratory for analysis of platelet concentration and microbiological assessment. This could be considered as an advantage since it increases the safety of procedure, thus ensuring a controlled not contaminated intra articular delivery of product whereas remaining was stored at 10-20°C. After

getting quality analysis (platelet concentration in PRP should be 3-5 times to platelet count in the blood of patient) of PRP (preferably within 2 hours). Patients were laid supine with elbow semi-flexed lateral epicondyle palpated adjoining most tender area is pointed out then under aseptic condition. 3ml of PRP was injected in to under surface of the extensor carpi radialis brevis and adjoining area of lateral epicondyle. Single injection of PRP was given with no external platelet activator. After infiltration of PRP patients were advised supervised physiotherapy and advised cold compression and given Analgesic for pain relief. Patients were advised to abstain from regular activities for 3 weeks. The patients were evaluated according to Verhaar et.al scoring system.

#### **Verhaar et. al scoring system**

##### **Excellent**

1. Complete relief of pain on the lateral epicondyle.
2. Patient satisfied with the result of treatment.
3. No subjective loss of grip strength.
4. No pain provoked by resisted dorsiflexion of the wrist.

##### **Good**

1. Occasional slight pain on the lateral epicondyle after strenuous activities.
2. Patient satisfied with the result of treatment.
3. No or slight subjective loss of grip strength.
4. No pain provoked by resisted dorsiflexion of the wrist.

##### **Fair**

1. Discomfort on the lateral epicondyle after strenuous activities but at a more tolerable level than before treatment.
2. Patient satisfied on moderately satisfied with the result of treatment.
3. Slight or moderate subjective loss of grip strength.
4. Slight or moderate pain provoked by resisted dorsiflexion of the wrist.

#### **Results**

The data assimilated on (Pre-Infiltration) day one,

8<sup>th</sup> week and 12<sup>th</sup> week was analysed. Significant improvement was seen at 8 weeks and 12 weeks follow-up. There was excellent to good improvement in 60% of patients at 8 weeks while 40% of the patients showed significant improvement at 12 weeks of follow-up.

### Discussion

A lateral epicondylitis is a well-known problem disturbing day to day activity of professionally active individuals of all the ages. Varying therapeutic options include extracorporeal shock wave therapy, Local Steroidal injection, Autologous whole blood, Dry needling and surgical intervention suggesting that no single procedure is effective in all patients. Majority of the patients respond to non-surgical treatment, a small minority continues to persist with these symptoms and is labelled as resistant tennis elbow. Khaliq et al, in a study of corticosteroid versus PRP in lateral epicondylitis found PRP to be more effective than corticosteroid in reduction of pain and improvement of function. Our study also offers encouraging results of an alternative minimally invasive treatment that addresses the pathophysiology of lateral epicondylitis over other traditional non-surgical modalities. Patients showed functional outcome with excellent to good result as per Verhaar et al score.

### Conclusion

Our study showed preliminary results with Platelet Rich Plasma infiltration and it is safe and effective modality for treatment of these cases. It is also cost effective.

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