

## Original Research Article

# Functional outcome of platelet rich plasma on lateral epicondylitis of elbow

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## ABSTRACT

**Background:** The study was conducted with the aim to explore the efficacy of platelet rich plasma in sixty patients who presented to us with lateral epicondylitis of elbow where conservative management has failed.

**Methods:** Between 2013 and 2015, 60 patients (M: F- 20: 40) with lateral epicondylitis of elbow were included. All patients presented to us with lateral epicondylitis of elbow where conservative management has failed. All patients are treated with platelet rich plasma injection. Serial follow-up were done at 1, 6 and 12 month.

**Results:** All sixty patients had significant improvement before and after platelet rich plasma injection. The mean VAS score and the Mayo score suggests significant improvement in pain and elbow function following platelet rich plasma treatment.

**Conclusions:** Platelet rich plasma improves pain and elbow function in patients suffering from lateral epicondylitis where conservative management has failed. Platelet rich plasma treatment may decrease the overall time for healing, and thereby decreasing the overall need for surgical intervention.

**Keywords:** Lateral epicondylitis, Platelet rich plasma, Tennis elbow

## INTRODUCTION

Lateral epicondylitis or tennis elbow is a disease that affects individuals who make repetitive movements with their wrist and fingers.<sup>1</sup> About 1-3% of general population are affected and are commonly seen in the fourth and fifth decade of life.<sup>2-4</sup> Various modalities of treatment for lateral epicondylitis includes rest, stretching, bracing, physiotherapy, anti-inflammatory medication, activity modification and cortisone injection. Surgery is needed in 10% of cases in whom conservative management are ineffective. Although various treatments are available for lateral epicondylitis, the best management strategies remain controversial.<sup>5</sup>

With the development of molecular biology and regenerative medicine, the use of endogenous growth

factors has shown good results in vitro and in vivo in lateral epicondylitis treatment.<sup>6</sup> Therefore platelet rich plasma owing to its high content of various growth factors may be more effective as a healing agent. Hence this study was conducted with the aim to explore the efficacy of platelet rich plasma in patients with lateral epicondylitis of elbow.

## METHODS

The study was done in our hospital from 2013 to 2015, sixty patients of tennis elbow who received platelet rich plasma injection therapy were included in this study. All sixty patients had failed conservative management like analgesics, bracing, physiotherapy and activity modification. Patients with coexisting pathology around

the elbow and patients who had received steroid injection within 3 months were all excluded from study.

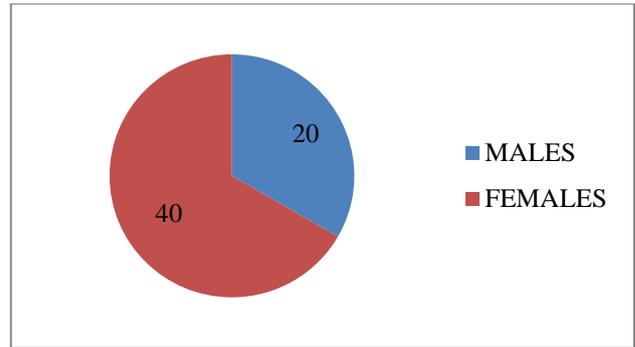
Sixty patients, 20 males (33.33%) and 40 females (66.67%) were taken up for platelet rich plasma injection. Right side was involved in majority (n=51) of cases which was the dominant hand in 85% of cases. Mean age group was 42.54 (range: 20-60 years) and average duration of symptoms were 4 months to 1.5 years.

Platelet rich plasma was prepared under aseptic condition as per the procedure standardized in the departmental laboratory. A 9001-2000 ISO certified R-23 centrifuge was used for the purpose of platelet concentration. Using a 22 G needle the author gained access to the common extensor tendon on the lateral epicondyle region. The platelets were injected into the epicondyle and the limb was then placed in polysling for 48 hours after which patients were advised to do eccentric elbow exercises. Icing at the injection site is recommended if necessary. The use of NSAID was prohibited for the first 4 weeks after injection.

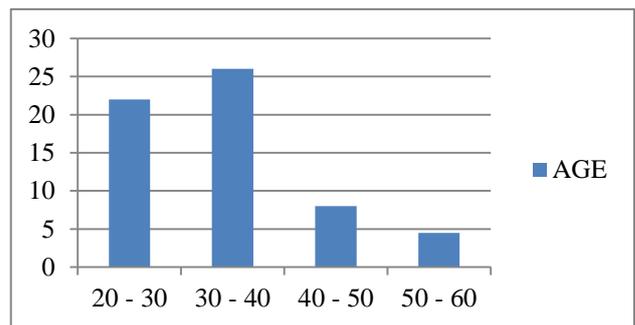
Patients were evaluated using a visual analog scale (VAS) to assess pain and mayo score to assess elbow function and patient satisfaction. The VAS score quantifies the amount of pain reported by the patient and score range from no pain 0, mild pain 1-30, moderate pain 40-60, severe pain 70-90 and intolerable pain 100. The Mayo score could reflect elbow function of the patient with 100 include pain, movement, stability and activity of daily living. The VAS and Mayo score were recorded prior to first procedure and at 1, 6 and 12 months follow up. Complication and patient satisfaction were also recorded. Results were calculated based on descriptive statistics with SPSS version 19.

**RESULTS**

Sixty patients (20 males and 40 females) with the age range from 20 to 60 years were evaluated after procedure as shown in Figure 1 and 2. The average follow-up was 12 months.



**Figure 1: Total number of patients (n=60).**



**Figure 2: Age distribution.**

The average VAS pain score at pretreatment were 71.2±3.8 for all patients, while mean VAS pain score at one month follow up were 20.2±5.8 and the score has reduced to 11.2±2.4 at 6 months and 8.4±2.6 at 12 months follow up (Table 1). The average VAS score decreased by nearly forty points at one month follow up from pretreatment and there was a significant difference before and after platelet rich plasma treatment.

The mean Mayo score had increased from 62.2±2.8 to 88.6±4.2 at the end of one month follow up suggesting a good elbow function improvement. Furthermore the mean Mayo scores were 93.2±2.8 and 98.1±1.6 at 6 month and 12 months respectively (Table 1).

**Table 1: Scoring after treatment with platelet rich plasma.**

Score	Pre treatment	1 month	6 months	12 months
<b>VAS score</b>	71.2 ± 3.8	20.2 ± 5.8	11.2 ± 2.4	8.4 ± 2.6
<b>Mayo score</b>	62.2 ± 2.8	88.6 ± 4.2	93.2 ± 2.8	98.1 ± 1.6

No complications were reported during the follow-up and all patients had superior elbow function and good patient satisfaction.

**DISCUSSION**

Tennis elbow is more common and is a frequent cause of disability. There are various treatment option available like physiotherapy, immobilization, steroid injection<sup>7</sup> but

no single procedure is effective. Steroid injection leads to permanent changes within the structure of the tendon thereby having a high frequency of relapse and recurrence. Edward and Calandruccio reported 78% of good results using whole blood in treating tennis elbow.<sup>8</sup>

Our study shows that a single injection of platelet rich plasma can improve pain and functional outcomes of patients who suffer from lateral epicondylitis where

conservative management has failed. Several mechanism of action for platelet rich plasma has been described in the literature. In principle several different growth factors and other cytokines that stimulates healing of bone and soft tissues.<sup>9,10</sup>

In a study conducted by Mishra et al, in a group of 15 patients treated with platelet rich plasma injection there was a significant improvement in pain (VAS score) and function (Mayo elbow score).<sup>1</sup> More recently Mishra et al conducted a multicentric randomized control trail of 230 patients which demonstrated clinically meaningful improvements in pain for patients treated with platelet rich plasma injection for chronic lateral epicondylitis.<sup>11</sup>

In our study, the mean visual analogue scale score decreased during the follow-up and there was a significant difference before and after platelet rich plasma treatment. Similarly the mean mayo score suggest good elbow function during follow-up. Thus platelet rich plasma injection provides relief of pain and good functional outcome in treating lateral epicondylitis.

## CONCLUSION

Our result shows that a single injection of platelet rich plasma improves pain and elbow function in patients suffering from lateral epicondylitis where conservative management has failed. Platelet rich plasma treatment may decrease the overall time for healing, and thereby decreasing the overall need for surgical intervention.

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