

Role of Platelet Rich Plasma in Treatment of Tennis Elbow

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Abstract: ***Aim:** To report 30 patients who underwent PRP injections for the treatment of tennis elbow. **Materials and methods:** Records of 30 patients 18 male and 12 females diagnosed with tennis elbow were treated with PRP injections. The patients were followed up regularly for a period of 6 months and final outcome was graded as excellent, good, fair and poor according to the Visual Analog Scores. **Results:** Of the total number of cases, 83.33% of cases had excellent results, 6.67% had good results, 6.67% had fair and 3.33% had poor results. **Conclusion:** In our study, PRP turned out to be an excellent modality for treatment of tennis elbow reducing the need of surgical intervention.*

Keywords: Platelet rich plasma, tennis elbow

Abbreviations:

PRP : Platelet rich Plasma
VAS : Visual Analog Scale

1. Introduction

Tendon disorders (tendinopathies) are noteworthy in sports and occupational settings due to repetitive trauma and overuse; besides they are prevalent among individuals of all ages, and also part of the ageing process. The term 'tendinopathy' describes painful conditions affecting tendons associated with repetitive strain, overuse, ageing, degeneration, or poor biomechanics¹. Tendinopathies worsen quality of life by causing pain and impairing mobility, decreasing the ability to perform daily activities, and compromising an active lifestyle.

Tennis elbow is due to cumulative microtrauma from repetitive wrist extension and alternating pronosupination of forearm with angiofibroblastic degeneration of the common extensor origin². Ultrasound therapy, extracorporeal shock wave therapy, laser therapy, autologous blood injection, and platelet-rich plasma (PRP) have been in use for tennis elbow treatment. Tennis elbow treatment is still unsolved; the use of PRP is a proactive therapeutic option which jumpstarts the healing process, which contains several different growth factors and other cytokines that stimulate healing of bone and soft tissue³. In the current study, we report long-term follow-up of tennis elbow treated with PRP and analyze the efficacy.

Platelet-rich plasma (PRP) is blood plasma with an increased concentration of autologous platelets, which is now being used as a part of wound treatment, bone healing, alloplastic surgery, and muscle tendon damage⁴.

PRP can potentially enhance tendon healing and tissue regeneration by delivering various growth factors and cytokines, thereby affecting cell proliferation, chemotaxis, cell differentiation, and angiogenesis. Among these growth factors are platelet-derived, transforming, vascular endothelial, epidermal, and fibroblast. The theory is that application of PRP intratendinously will stimulate the repair mechanisms and promote tendon healing⁵.

2. Methods

The study was conducted at Department of Orthopaedics, Government Medical College, Patiala. Patients between 20 and 60 years of age who had positive clinical tests (Thomson's and Cozen's test) were included in the study. Patients with arthritis of elbow, cervical spine pathology, infection, myositis, previous elbow trauma, previous steroid injection, or surgical intervention were excluded from this study. About 30 ml of the patient's blood was collected⁶. The blood sample was placed in a centrifuge to separate the PRP from the other components of whole blood. PRP was injected into the site of the maximum tenderness. Patients were asked to rate their pain according to visual analog scale (VAS). All cases were protected with brace initially and given antiinflammatory agents for 1 week with cold fomentation, and then restoration of normal daily activities were allowed from the 3rd week with stretching and physiotherapy⁷. The primary analysis included VAS⁸ for measuring pain in patients, local tenderness, pain on extension of the wrist, grip strength, elbow swelling were clinically assessed at different interval of follow-up, clinical and functional outcome were evaluated at final follow-up with statistical analysis. Patients were assessed after 1 week, 3 weeks, 2 months, 4 months, 6 months, and 12 months. Results were calculated based on descriptive statistics with SPSS version 19.

3. Results

This study consisted of 30 patients of whom 18 were males and 12 were females with age range from 20 to 60 years (Tables 1 and 2). The average follow-up was 6 months. Results were excellent in 25, good in 2, fair in 2 and poor in 1. There was 1 case of superficial infection which subsided with oral antibiotics and didn't require further intervention; in one case pain worsened and landed up in surgical intervention and subsequent pain relief. The mean VAS

decreased continuously and significantly up to 6 months (Table 4)

Table 1: Sex distribution

Sr. No.	Sex	No. of cases	Percentage
1	Male	18	60
2	Female	12	40

Table 2: Age Distribution

S.No	Age Group	Number of cases	Percentage
1	20-30	8	26.67
2	31-40	14	46.67
3	41-50	6	20
4	51-60	2	6.67

Table 3: Final Results

S.No	Results	Number of cases	Percentage
1	Excellent	25	83.33
2	Good	2	6.67
3	Fair	2	6.67
4	Poor	1	3.33

Table 4: Mean VAS Score at 4 weeks, 8 weeks, 3 months and 6 months

	VAS Baseline Mean ± sd	VAS 4 w Mean ± sd	VAS 8 w Mean ± sd	VAS 3 m Mean ± sd	VAS 6 m Mean ± sd
PRP	7.8 ± 1.2	4.85 ± 1.8	3.5 ± 1.6	2.6 ± 2.2	2.5 ± 1.5

4. Discussion

LE is one of the most common causes of musculoskeletal pain involving the common extensor origin of the forearm. This disorder arises as a result of repetitive manual work involving overexertion of the wrist and finger extensors and leads to significant disability in terms of the quality of daily life activities. Clinically, it involves both direct and indirect tenderness at the lateral epicondyle⁹.

Autologous PRP was first used by Ferrari et al¹⁰, following an open heart surgery, to avoid excessive transfusion of homologous blood products. Since then, autologous PRP has been used safely and documented in many fields including orthopedics, sports medicine, dentistry, ENT, neurosurgery, ophthalmology, urology, and wound healing, as well as cosmetic, cardiothoracic, and maxillofacial surgery.

PRP is increasingly being used in the treatment of chronic nonhealing tendon injuries including the elbow, patella, and the Achilles. Studies suggest that PRP can affect inflammation and soft tissue healing¹¹ as platelets contain an abundance of growth factors and cytokines that are essential for soft tissue healing and bone mineralization¹².

This prospective study included 30 patients; their age ranged from 21 to 58 years, with mean±SD (36.8±4.9). The study by Shiri et al¹³ found that LE is prevalent in patients aged 45–54 years old. The study by Otoshi et al¹⁴ showed that LE is prevalent in individuals between 40 and 59 years of age. However, Gautam et al¹⁵ reported that LE is prevalent in patients aged 18–60 years old. This variation in age may be because of the predisposing factors such as mechanical overloading and overuse.

Various conservative and non-invasive treatments have been tried without consistent and satisfactory results. Recent studies on chronic lateral epicondylitis have not found any significant evidence of inflammatory process; hence the term lateral epicondylosis has been suggested. Nirschl et al., found mainly fibro-elastic tissue and vascular invasion describing this condition as “angiofibroblastic tendinosis”¹⁶. Therefore, local injection of steroid possibly offers short term symptomatic relief only and other treatment options need to be explored for long term relief and cure of the disease process per se. In this context PRP may be regarded as a better treatment option.

5. Conclusion

Treatment with PRP holds promising results with minimal risk for the treatment of Tennis elbow. More scientific evidence studies need to be done before we can determine whether PRP therapy is effective in other conditions. PRP therapy as a viable procedure that may decrease the progression of more injuries may decrease the overall time for healing, and therefore may setback the overall need for surgical intervention

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