



## **Evaluation of the Efficacy of Platelet Rich Plasma Injection in Chronic Lateral Epicondylitis**

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### **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

### **Article Information**

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### **ABSTRACT**

**Background:** Platelet-rich plasma helps in repair because of its growth factor. Platelet-rich plasma has been used in humans for its healing properties. Increased concentration of growth factors and secretory proteins may increase the process of healing on a cellular level.

**Aim:** This study was done to check the effectiveness of PRP injections in patients with chronic lateral epicondylitis.

**Methodology:** This was accomplished in patients visiting the orthopaedic OPD at the Sree Balaji Medical College and Hospital, Chennai, Tamilnadu. There were 40 physicians in this study, among whom 37 were homosexual and 87 were female. The mean age of the patients was 48.1 years (17-82 years). The study period was 3 months. The analytical method used is a visual analog score.

**Results:** Effective therapy was performed with a decline of more than 20% (24 out of 40 patients) in visual analog score after a dual-month period. After 3 months in boys, the mean VAS score dropped from 6.88 to 9.41.

**Conclusion:** Medication of PRP patients with chronic epicondylitis or PRP tennis elbow reduces pain and increases the flexibility of the affected knee joint.

**Keywords:** Lateral epicondylitis; platelet rich plasma.

## 1. INTRODUCTION

Joint pain is a painful disease that affects the tendinous cartilage of the muscular adaptor of the chest at the biggest medial epicondyle of the femur, which causes the deterioration of the infected shoulder joint. There is a higher risk of epicondylitis due to strenuous workouts. Medial epicondylitis is caused by crippling and anti-intense autoimmune changes, congenital tendinopathy with collagen loss. Termed angiofibroblast tendinosis of the antenna carpi radialis iliopsoas labrum.

Platelet-rich plasma (PRP), a body subordinate with a lower concentration of hemoglobin than the whole blood, leaks the aggregation of biologically dynamic factors that directly cause the kinase terminals of its target cells, the progression of cell enrolment, development, morphogenesis [1-3]. The gelation was controlled by the representation of clotting and stimulation. that persisted connected to the valves after adjusting it sideways.

Peptide-released growth factors include the platelet implied growth factor, the mucosal production factor, the oestrogen-like growth factor, the  $\beta$ -I development factor increase, the stromal peptide variable, the hepatocyte production factor, and the critical factor for the growth of epithelial cells that promote cell reconstruction by binding to specific cells.

Quizzical epicondylitis is associated with an incendiary process that occurs with various ligament changes. As a result, PRP can be progressively successful as a recovery professional due to its high quality of different production elements. In any case, the therapy of crooked grin epicondylitis with PRP has produced results [4-6].

Continuing analysis of the desired essential cognitive factors PRP may be helpful for cruciate and elastin mending *in vivo*. PRP infusion is only one of many fresher clinical preferences used in a wide range of medical fields, such as dermatology. It is a simple, quick and negligibly intrusive to get a grouping of numerous development factors.

## 2. METHODOLOGY

This inquiry was directed at people coming to abdominal hernia OPD (Outpatient Department) at Sree Balaji Medical College and Hospital, Chrompet, Chennai. A total of 40 patients

recalled for this test. Religious with concurrent Epicondylite / Tennis Knee was admitted to hospital with PRP transfusion using a peppering methodology [7,8].

### 2.1 Study Period

The investigation time frame in this was 3 months.

### 2.2 Inclusion Criteria

Patients of constant vertical epicondylitis / Lower back pain. Age among 15 years and 90 years. Failure of conservative management (for example NSAIDS and exercise) Unilateral/ Bilateral.

### 2.3 Exclusion Criteria

Patients experiencing elbow torment because of different Causes such as osteoarthritis joint pain, osteochondritis dissecans, and gem arthropathies such as gout, common passage disease, vaginal sores, and arm disorders. Patients never diagnosed with drugs infusion. Patients who have just experienced careful mediation. Any neighborhood skin pathology at infusion site.

### 2.4 Pre-infusion Information

Name of The Patient, Age, Sex, Side, Site, VAS Score.<sup>14</sup>

Visual Analogue Scale (VAS):



Outcome assessment with help of VAS scores.

### 2.5 Injection Technique: Peppering Technique

At first a venous cut is done and explicit volume of autologous blood is gathered from the patient (10 ml of venous blood test) into a cylinder containing an anticoagulant (sterile sodium citrated tubes) for 30 minutes at 14000 x g for 15 mins centrifugation happens isolating plasma from pressed red platelets. The top layer comprises of plasma and base layer comprises of red platelet. The plasma is moved to a sterile cylinder following which the stuffed cell layer is disposed of. The subsequent centrifugation

happens at 3500 rpm for 10 min which yields concentrated platelet layer after extraction of platelet poor plasma [9-14].

## 2.6 Infusion Procedure

Understanding in prostrate position and palpate most delicacy point and checked utilizing skin marker. The zone was arranged and hung for infusion. Initially, a neighborhood square of lignocaine is invaded subcutaneously. Under appropriate aseptic safeguard a 21-g needle is utilized to infuse, 1 ml platelet rich plasma is infused over the most extreme delicacy while the rest of the platelet rich plasma is infused into the encompassing tissue. (Fig. 1)



**Fig. 1. Injecting platelet rich plasma in lateral epicondylitis patient**

## 2.7 Post-injection Care

Patients were monitored for a total of 3 months (for the second week, and for 3 months thereafter). The VAS rating was used to control pain severity.

## 3. RESULTS

A total of 40 clinicians have been reported for this study. The mean age of the patient was 48.1 years (range 17-82 years). The research comprised 38 men and 4 women. There are 25 clinicians with the right wrist and 42 left ankles. / constant quizzical epicondylitis. There are 3 physicians including bilateral elbow / incessant intermittent epicondylitis. This is measured by a

visit to the semi-injection center and generally 14 days, a dual-month period and a non-month period of last development. The mean semi-infusion VAS value was 6.91, the third week It was 6.52, the first month was 7.76, and the following three months was 9.91. In boys VAS tri-infusion score was 6.98, the fifth week was 6.12, the two-month period was 6.84, and that the next two-month period was 4. For females, VAS score for pre-infusion was 6.66 for the double week was 6.19, while anti-month score was 5.86 and after three months were 5.22. Of the 40 patients, 27 had a 20% significant decrease in the VAS score after the prp intravenous drip in which 28were heterosexual and 22 were male. Between age-gathering 19-45 years there were 8 guys and also no females the mean pre-infusion vas quality was 7.73, which diminished to 6.83 after a 3-month obey-up, indicating a 20% significant reduction in vas score. 6 males in demographic groups between the ages of 27 and Forty years indicating a reduction of 24.10 per million in males and females 7 and 6.91. This decreased to 4.6 and 7.15 after 3 months, showing a decrease of 91.70 per cent and a decrease of 1.6 per cent in vas scores in both males and females. At more than 60 years of age, there were only 13 guys with a mean vas score of 6.55 for pre-infusion and 4.53 after 3 months of follow-up, indicating a decrease of 17.20 per cent in vas score [15-19].

## 4. DISCUSSION

Mishra and Pavelko [9] treated 140 patients with interminable sidelong epicondylitis by infusion of platelet rich plasma and at last development (mean 25.6 months; run 12 - 38 months) they detailed 93% decrease in torment contrasted and before treatment.18 thought about the consequences of two gatherings of patients experiencing parallel epicondylitis [19]. The outcomes demonstrated 66% achievement rate in the PRP bunch contrasted with 72% achievement rate in the autologous blood infusion bunch following a half year development.

The platelet measure mixed in this investigation was between 6 lakes–10 lakes, 3–6 lakes higher than the pattern value, a number similar to that used in numerous examinations, and was also within the prescribed range. There were some impediments to this inquiry. The non-appearance of the comparison group and the relatively reduced number of patients with limited follow-up time were the fundamental re-emergence.

Table 1. Demographic data

	Mean age	Total	Pre injection	2 <sup>nd</sup> week	After 1 month	After 3 month				
Male	46.1	32	6.91	6.12	5.84	4.74				
Female	41.7	8	6.66	6.19	5.86	5.22				
Total	48.1	40	6.91	6.12	5.76	4.91				
Age group	Sex		Pre injection		2 <sup>nd</sup> week		After 1 month		After 3 month	
	M	F	M	F	M	F	M	F	M	F
18-25	7	0	7.83		7.08		6.58		5.83	
25-40	6	2	6.91	6.75	5.91	6	5.58	5.75	4.50	5
41-60	7	6	7.07	6.91	6.14	6.2	5.78	5.85	4.92	5.25
Above 60	12	0	6.95		6.20		5.83		4.83	

A recent study comparing the different types of PRP activating agents found that PRP activated with CaCl<sub>2</sub>, thrombin, or CaCl<sub>2</sub>/thrombin combinations had significantly higher growth factor release compared to non-activated PRP and platelet-poor plasma. This suggests that the underlying therapeutic efficacy of many current studies may be limited by their lack of activation usage. Additionally, different activating agents release different concentrations of growth factors over time. The limitation of the quantitative analysis was it does not tell us whether PRP improves functional outcomes because VAS only measures pain severity [20,21].

## 5. CONCLUSION

Platelet-rich plasma has risen as a successful but unproven therapeutic option for joint, tendon, tendon and tendon wounds. In vitro computational modeling explores and in vivo creatures think about describing a portion of the impacts that PRP has on the cellular level to improve tissue repair. Lipid-rich plasma is autologous, regulated in a straightforward way, and once again will have a high safety profile. This requires a minimum sterile workplace, such as a blood donor center, for its preparation and planning in facilities fitted with such offices. PRP is a smart, non-careful treatment for furtive epicondylitis or tennis elbows, but with limited shortcomings. Excellently organized forthcoming graded preliminary.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

Ethical approval was obtained from the panel committee of Sree Balaji Medical College and Hospital, Chennai.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

## REFERENCES

1. Silverstein B, Welp E, Nelson N, Kalat J. Claims incidence of work-related disorders of the upper extremities: Washington State, 1987 through 1995. *Am J Public Health*. 1998;88(12):1827-1833.
2. Walker-Bone K, Palmer KT, Reading I, Cooper C. Soft-tissue rheumatic disorders of the neck and upper limb: Prevalence and risk factors. *Semin Arthritis Rheum*. 2003;33(3):185-203.
3. Henry M, Stutz C. A unified approach to radial tunnel syndrome and lateral tendinosis. *Tech Hand Up Extrem Surg*. 2006;10(4):200-205.
4. Anitua E, Sañchez M, Orive G. Potential of endogenous regenerative technology for *in situ* regenerative medicine. *Adv Drug Deliv Rev*. 2010;15;62(7&8):741-752.
5. Everts PA, Brown Mahoney C, Hoffmann JJ. Platelet-rich plasma preparation using three devices: Implications for platelet activation and platelet growth factor release. *Growth Factors*. 2006;24(3):165-71.
6. Mejia HA, Bradley JP. The effects of platelet-rich plasma on muscle. *Basic Science and Clinical Application*. 2011;19:149-53.
7. Pietrzak WS, Eppley BL. Platelet rich plasma: Biology and new technology. *Journal of Craniofacial Surgery*. 2005;16(6):1043-1054.
8. Marx RE. Platelet-rich plasma (PRP): What is PRP and what is not PRP? *Implant Dent*. 2001;10:225-228.
9. Mishra A, Pavelko T. Treatment of chronic elbow tendinosis with buffered platelet-rich

- plasma. *Am J Sports Med.* 2006;34(11): 1774-1778.
10. Mishra A, Collado H, Fredericson M. Platelet-rich plasma compared with corticosteroid injection for chronic lateral elbow tendinosis. *PMR.* 2009;1(4):366-370.
  11. Raeissadat SA, Rayegani SM, Hassanabadi H, Rahimi R, Sedighipour L, Rostami K. Is platelet rich plasma superior to whole blood in the management of chronic tennis elbow: One year randomized clinical trial. *BMC Sports Sci Med Rehabil.* 2014;18(6):12.
  12. Malloy T, Wang Y, Murrell G. The roles of growth factors in tendon and ligament healing. *Sports Med.* 2003;33:381-394.
  13. Filardo G, Kon E, Buda R, Timoncini A, Di Martino A, Cenacchi A, et al. Platelet-rich plasma: Intra-articular knee injections produced favorable results on degenerative cartilage lesions. *Knee Surg Sports Traumatol Arthrosc.* 2011;19:528-35.
  14. Gould D, et al. Visual Analogue Scale (VAS). *J Clin Nursing.* 2001;10:697-706.
  15. Altay T, Günal I, Oztürk H. Local injection treatment for lateral epicondylitis. *Clin Orthop Relat Res.* 2002;398:127-130.
  16. Pruce AM, Miller JA Jr, Berger IR. Anatomic landmarks in joint paracentesis. *Clin Symp.* 1958;10(1):3-14.
  17. Marx RE. Platelet rich plasma: What is PRP; and what is not PRP? *Implant Dent.* 2001;10:225-228.
  18. Carofino B, Chowaniec DM, McCarthy MB, Bradley JP, Delaronde S, Beitzel K, et al. Corticosteroids and local anesthetics decrease positive effects of platelet-rich plasma: An *in vitro* study on human tendon cells. 2012;28(5):711-719.
  19. Creaney L, Wallace A, Curtis M, Conell D. Growth factor-based therapies provide additional benefit beyond physical therapy in resistant elbow tendinopathy: A prospective, single blind randomized trial of autologous blood injections versus platelet-rich plasma injections. *British J Sports Med.* 2011;45:966-971.
  20. Arirachakaran A, Sukthuyat A, Sisayanarane T, Laoratanavoraphong S, Kanchanatawan W, Kongtharvonskul J. Platelet-rich plasma versus autologous blood versus steroid injection in lateral epicondylitis: Systematic review and network meta-analysis. *J Orthop Traumatol.* 2016;17(2):101-112.
  21. Behera P, Dhillon M, Aggarwal S, Marwaha N, Prakash M. Leukocyte-poor platelet-rich plasma versus bupivacaine for recalcitrant lateral epicondylar tendinopathy. *J Orthop Surg (Hong Kong).* 2015;23(1):6-10.

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