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Original Article

The clinical efficacy of PRP injection in Tennis elbow: Is it worth the hype?

Dr. Girish M[1], Dr. Rajashekar Danda[2], Dr. Tilakraj K[3], Dr. A N Prabhu[4]

[1] Associate professor, Dept of Orthopedics, SMMCHRI, Chennai
[2] Associate professor, Dept of Orthopedics, TRR institute of medical sciences, Hyderabad
[3] Associate professor, Dept of Orthopedics, SMMCHRI, Chennai
[4] Associate professor, Dept of Orthopedics, Sri Muthukumaran medical College hospital and Research institute (SMMCHRI), Chennai

Corresponding Author:

Dr. A N Prabhu
Associate professor, Dept of Orthopedics, Sri Muthukumaran medical College hospital and Research institute (SMMCHRI), Chennai

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ABSTRACT

Introduction : Lateral epicondylitis is a degenerative condition of extensor tendon origin at lateral humeral epicondyle, with peak prevalence during 5th decade. Treatment is usually non operative like rest, NSAIDs, physiotherapy, splints and surgery in case of intractable tennis elbow patients.
Materials and methods: A total of 108 patients who came to our opd, diagnosed as tennis elbow clinically and treated with intra-lesional PRP, were included in our study from 2022 to 2024.The diagnosis of tennis elbow was done by clinical examination in most cases and by MRI in few cases, where there was a doubt in clinical diagnosis. VAS score(0 to 10, with 0 as no pain and 10 as extreme pain) and SANE (single assessment numeric evaluation) score (where lower scores indicate worse pain and functional disability, while high scores close to 100 indicate better function) is documented at the time of diagnosis, 3, 6, and 12 months after PRP injection.
Results: A total of 108 patients were studied over 2 year period from 2022 to 2024, with patient's age ranging from 28 to 53 years, with an average of 39 years. The average baseline VAS score was 7.8, which ranged from 6 to 9. The average SANE score pre-PRP injection was 83, with ranges from 68 to 93. The scores were again assessed at the end of 3, 6 and 12 months post injection, which were 2.1, 1.5 and 1.4 on average for VAS score and 18, 13 and 11 for SANE scores respectively, which is significant improvement.
Conclusion : PRP (platelet rich plasma) injection is an effective treatment method for tennis elbow patients not responding to conservative measures with no known significant complications.

Keywords*: Tennis elbow, Cozen's test, SANE score.*

INTRODUCTION

Lateral epicondylitis aka 'Tennis elbow' is a degenerative condition of extensor tendon origin at lateral humeral epicondyle. It's prevalence is about 1 to 3%, with peak prevalence during 5th decade[1].It is usually seen in individuals involved with manual labour and vibrating tools[2] It's pathogenesis is repetitive microtrauma and overload injury[3] Following a initial inflammatory response, there occurs degeneration with disorganized collagen, which can lead to structural failure/ extensor tendon tear[4].

Treatment is usually non operative, like rest, NSAIDs, physiotherapy, splints. Some patients who do not respond to conservative measures, may require surgery[4] Among injectables, most commonly used drug is corticosteroid. But recently PRP, autologous whole blood are being injected locally.

Corticosteroids are good for short term pain relief. In long term, they tend to cause tendon degeneration. Gautam et al in their study showed increased tendon degeneration and cortical erosion at lateral epicondyle in USG evaluation at the end of 6 months after corticosteroid injection. PRP injections have been shown to improve symptoms over long term in multiple studies[5,6]

Gautam et al in their study showed improved vascularity, increased thickness of tendon and improved tendon morphology in USG following PRP injection[8]

Few studies have claimed there were no added benefits of PRP injections over corticosteroid. But some studies claim there is improved pain relief and better function with L-PRP (leucocyte rich PRP) than pure PRP(leucocyte eliminated)[11]

MATERIALS AND METHODS

The main aim of our study was to assess the clinical efficacy of intra-lesional PRP (platelet rich plasma) injection in relieving the symptoms and level of regaining the functional ability of the affected upperlimb.

A total of 108 patients who came to our opd, diagnosed as tennis elbow and treated with intra-lesional PRP, were included in our study from 2022 to 2024. The diagnosis of tennis elbow was done by clinical examination in most cases(tenderness over lateral humeral epicondyle and positive Cozen's test) and by MRI in few cases, where there was a doubt in clinical diagnosis. MRI grading of the tennis elbow was done, with grade 1-minor tendon edema/thickening, grade 2- intermediate thickening/focal signal increase, grade 3- partial or full thickness tears. Only Grade 2 and 3 lesions were included in our study, who underwent PRP injections.

The technique of PRP is as follows: about 15 ml of blood is collected from the patient in a 20ml syringe and injected into a vacutainer with prefilled anticoagulant. Then the vacutainer is put in a centrifuge machine and centrifuged at 2000rpm for 15 minutes(as per manufacturer recommendations). About 3 to 4 ml of platelet rich plasma was obtained, which is then injected into patient with 22G needle at the area of maximum tenderness.

VAS(visual analogue scale) score(0 to 10, with 0 as no pain and 10 as extreme pain) and SANE (single assessment numeric evaluation) score (where lower scores indicate worse pain and functional disability, while high scores close to 100 indicate better function) is documented at the time of diagnosis, 3, 6, and 12 months after PRP injection. Paired t-test was used to assess the statistical significance of the difference in mean scores at different time intervals after the PRP injection and before the injection.

RESULTS

A total of 108 patients were studied over 2 year period from 2022 to 2024, with patient's age ranging from 28 to 53 years, with an average of 39 years. 16 patients who were lost for follow-up were excluded from the study. Total number of males were 38 and 54 were females. 53 patients had right side affected and 39 were affected on left side. The patient demographics are shown in table1.The average baseline VAS score was 7.8, which ranged from 6 to 9. The average SANE score pre-PRP injection was 83, with ranges from 68 to 93. The scores were again assessed at the end of 3, 6 and 12 months post injection, which were 2.1, 1.5 and 1.4 on average for VAS score and 18, 13 and 11 for SANE scores respectively, which is significant improvement(Table 2 and 3). A total of 5 patients who didn't had improvement of symptoms at 3 months post-injection, underwent surgery (open debridement of unhealthy granulation tissue and ECRB repair). The reasons for the patients who didn't had symptom improvement after PRP injection, could possibly due to lack of PDGFB gene[10], inadequate quantity of PRP, inappropriate placement of syringe needle in the lesion.

Paired t-test was used to find the statistical significance between the mean scores pre and post injection with p value at 0.05. The t-value for each pair (0 and 3, 0 and 6, 0 and 12 months) was greater than the critical t-value for both VAS and SANE scores, which translates to the difference in scores being statistically significant.

Table1:Demographics

AGE	20-30 years 31-40 years 41-50 years 51-60 years	14 43 26 9
SEX	Male Female	38 54
SIDE	Right Left	53 39

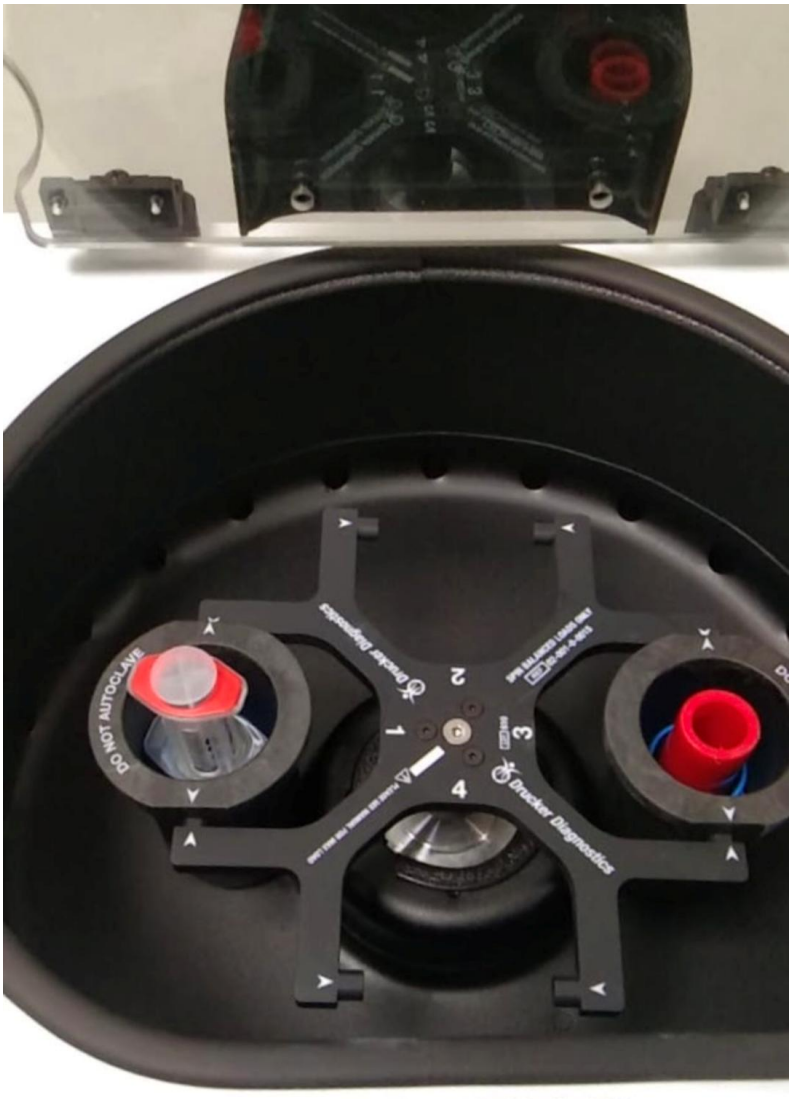
Table 2: VAS scores

Time (months)	Average score(max 10)
0	7.8
3	2.1
6	1.5
12	1.4

Table 3: SANE scores

Time (months)	Average scores(max 100)
0	83
3	18
6	13
12	11

FIGURES



DISCUSSION

Tennis elbow is one of the most common disorder in upper limb with significant health burden[1] Apart from steroids and PRP, botulinum toxin A have also been used in treatment of tennis elbow, which is thought to act by blocking Ach receptors and causing temporary palsy, there by reducing microtrauma and allowing the tendon to heal.

Our results were similar to many other studies which reported good clinical outcomes in tennis elbow patients following PRP injection. These symptom improvement following PRP injection is attributed to release of multiple growth factors like PDGF (platelet derived growth factor), VEGF (vascular endothelial growth factor), TGF (transforming growth factor), FGF(fibroblast growth factor) etc from alpha granules of platelets. Study by Gautam et al showed not only improvement in symptoms, but also increase in tendon thickness and vascularity which could be due to release of these growth factors[8,9]. Almost all patients had good to excellent functional outcomes. About a decade ago, common treatment methods for tennis elbow were NSAIDs, physiotherapy, splints and surgery as final option. There were complications and financial constraints associated with surgery. So we would recommend PRP injection as an effective solution for tennis elbow, whose symptoms weren't improved following adequate conservative measures, before suggesting surgical methods.

CONCLUSION

PRP (platelet rich plasma) injection is an effective treatment method for tennis elbow patients not responding to conservative measures with no known significant complications. This procedure has reduced the need for surgery in tennis elbow patients. However, we would recommend further studies with large sample size and randomised control trials to ascertain long term results and possible complications.

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CONFLICTS OF INTEREST: None.

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