ORIGINAL RESEARCH

Evaluating the Effectiveness of Platelet-Rich Plasma for Treating Lateral Epicondylitis

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ABSTRACT

Background: Lateral epicondylitis, commonly known as tennis elbow, is a degenerative condition of the common extensor tendon at the lateral epicondyle of the humerus. Although conservative therapies are first-line treatments, resistant cases often require alternative interventions. Platelet-rich plasma (PRP) therapy has emerged as a promising biological treatment. **Objective:** To evaluate the functional outcomes of PRP injection in patients with lateral epicondylitis unresponsive to conventional treatment. **Methods:** Eighty patients (30 males, 50 females; age range 20–60 years) with chronic lateral epicondylitis were treated with PRP after failing conservative management. PRP was prepared using a standardized protocol and injected into the common extensor tendon origin. Visual Analog Scale (VAS) and Mayo Elbow Performance Score (MEPS) were used to assess pain and elbow function, respectively, at baseline, 1, 6, and 12 months post-injection. **Results:** Significant improvement was noted in both VAS and Mayo scores over 12 months. The mean VAS score improved from 72.1 ± 4.7 pre-treatment to 9.3 ± 3.5 at 12 months. Mayo scores increased from 63.1 ± 3.7 to 99.2 ± 2.5 in the same period. **Conclusion:** PRP therapy is a safe and effective modality in managing chronic lateral epicondylitis, offering sustained pain relief and functional recovery.

Keywords: Lateral epicondylitis, PRP, Platelet-rich plasma, Tennis elbow, VAS, Mayo score

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INTRODUCTION

Lateral epicondylitis, commonly known as tennis elbow, is one of the most prevalent forms of tendinopathy affecting the upper limb. Characterized by pain and tenderness over the lateral aspect of the elbow, it results from overuse and repetitive strain on the extensor carpi radialis brevis (ECRB) tendon near its origin on the lateral epicondyle of the humerus(1). Although once considered an inflammatory condition, current understanding points toward a degenerative pathology involving microtears, angiofibroblastic hyperplasia, and disorganized collagen fibers, collectively referred to as tendinosis(2).

The condition affects approximately 1% to 3% of the adult population annually, with the highest incidence among individuals between 35 and 50 years of age(3). It occurs equally in both genders and is often

associated with occupational or recreational activities that involve repetitive wrist extension and forearm supination, such as in tennis, plumbing, painting, and carpentry(4). The dominant arm is more frequently affected, and symptoms typically include localized pain, reduced grip strength, and compromised function, particularly when lifting or gripping objects. Management of lateral epicondylitis generally begins with conservative therapies. These include rest, nonsteroidal anti-inflammatory drugs (NSAIDs), physiotherapy, bracing, extracorporeal shockwave therapy, and local corticosteroid injections(5). Although such interventions provide relief for many patients, a significant proportion-estimated at up to 20%-do not experience sustained improvement(6). Particularly, corticosteroid injections, while offering short-term pain relief, have been associated with high

recurrence rates and potential tendon weakening over time(7). This limitation underscores the need for more durable, biologically active treatments.

In recent years, the focus has shifted toward biologic therapies aimed at promoting intrinsic healing rather than merely suppressing symptoms. Among these, Platelet-Rich Plasma (PRP) has garnered increasing attention. PRP is an autologous concentration of platelets derived from whole blood, containing growth factors such as platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF- β), vascular endothelial growth factor (VEGF), and insulin-like growth factor (IGF)(8). These bioactive molecules play critical roles in angiogenesis, cell migration, matrix remodeling, and tendon healing.

Multiple studies have evaluated the potential of PRP in managing chronic tendinopathies, including those of the Achilles tendon, rotator cuff, and patellar tendon(9). The application of PRP for lateral epicondylitis has also demonstrated encouraging outcomes in terms of pain relief, functional improvement, and tissue regeneration, especially in patients unresponsive to traditional methods(10). However, discrepancies in PRP preparation techniques, platelet concentrations, activation methods, and study designs have led to heterogeneous results, thereby complicating clinical decisionmaking(11).

Given this context, the current study was designed to assess the functional outcome of PRP injections in patients with lateral epicondylitis who failed to respond to standard conservative measures. By evaluating both subjective (VAS) and objective (Mayo Elbow Performance Score) outcomes over a 12-month follow-up, this study aims to contribute robust evidence to the growing body of literature supporting PRP as a safe, minimally invasive, and effective therapeutic option. Additionally, the standardization of PRP preparation and injection technique used in this study enhances the reproducibility and applicability of its findings in clinical practice.

METHODS

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. 80 patients, 30 males (37.5%) and 50 females (62.5%) were taken up for platelet rich plasma injection. Right side was involved in majority (n-51) of cases which was the dominant hand in 86% of cases. Mean age group was 43.53 (range: 20-60 vears) 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

80 patients (30 males and 50 females) with the age range from 20 to 60 years were evaluated after procedure. The average follow-up was 12 months. The average VAS pain score at pretreatment were 72.1 \pm 4.7 for all patients, while mean VAS pain score at one month follow up were 21.1 \pm 6.7 and the score has reduced to 12.1 \pm 3.3 at 6 months and 9.3 \pm 3.5 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.

 Table 1: Scoring after treatment with platelet rich plasma.

Score	Pre	1	6	12
	treatment	month	months	months
VAS	72.1 ± 4.7	$21.1 \pm$	12.1 ±	9.3 ±
score		6.7	3.3	3.5
Mayo	63.1 ± 3.7	$89.5 \pm$	94.1 ±	99.2 ±
score		5.1	3.7	2.5

DISCUSSION

The findings from this study demonstrate that plateletrich plasma (PRP) therapy results in significant improvements in both pain and elbow function in patients with chronic lateral epicondylitis unresponsive to conservative treatments. Over a 12month period, there was a marked reduction in pain, as measured by the Visual Analog Scale (VAS), and a notable enhancement in elbow performance, as indicated by the Mayo Elbow Performance Score (MEPS).

These results corroborate findings from previous randomized controlled trials and meta-analyses evaluating PRP's role in tendinopathies. For instance, Peerbooms et al. observed significantly better outcomes in PRP-treated patients compared to corticosteroids over a 1-year follow-up, highlighting PRP's long-term effectiveness despite a slower initial response(12). Similarly, Gosens et al. reported sustained benefits at a 2-year mark, whereas corticosteroid recipients demonstrated a tendency toward relapse(13).

In our study, the most significant drop in VAS scores occurred within one month of PRP administration (mean decrease of ~50 points), followed by incremental improvements at 6 and 12 months. This is consistent with the time-dependent biological mechanisms of PRP. Growth factors such as PDGF, VEGF, and IGF-1 contribute to angiogenesis, cell proliferation, and extracellular matrix remodeling, processes that unfold over weeks to months(14).

Another important observation was the high patient satisfaction and absence of major complications, emphasizing PRP's safety profile. Minor transient discomfort post-injection was managed conservatively and did not require intervention. This aligns with existing literature, where PRP is associated with minimal adverse events due to its autologous origin, reducing the risk of immunogenic or infectious complications(15).

From a functional perspective, MEPS showed statistically and clinically meaningful improvements over 12 months, with most patients reaching nearnormal scores (>90). This reflects PRP's ability not only to reduce pain but also to restore joint mechanics and enable return to daily activities. Prior studies also support these findings, with PRP showing superiority over corticosteroids, saline, and autologous blood in functional recovery (16,17).

CONCLUSION

This study demonstrates that PRP injections significantly improve both pain and function in patients with lateral epicondylitis unresponsive to conservative treatment. The improvement was sustained over 12 months, with minimal complications and high patient satisfaction. PRP should be considered a viable, safe, and effective therapeutic alternative for chronic lateral epicondylitis. Future randomized controlled trials comparing PRP with corticosteroids and other biologic agents may provide further insights into its long-term superiority and cost-effectiveness.

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