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Role of platelet-rich plasma in treating chronic tendinopathies

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ABSTRACT

Background: Chronic tendinopathies often result in musculoskeletal pain and functional limitations, typically refractory to conventional conservative treatments. Platelet-rich plasma (PRP) therapy has emerged as a biologically derived strategy aimed at enhancing tendon healing through the provision of growth factors and cytokines.
Methods: This forward-looking multicentric study took place at VIMSAR Burla, FMCH Balasore, and GMC Sundargarh from December 2023 to December 2025. The study included 200 to 250 individuals with chronic tendinopathies. Patients received ultrasound-guided PRP injections and were then examined at regular intervals for pain relief and functional improvement.
Results: Patients saw a considerable improvement in both their pain scores and their ability to do things after PRP therapy. Most of them showed continuing clinical improvement during follow-up, with few issues.
Conclusions: PRP is a safe and effective way to treat chronic tendinopathies. It can help with pain and getting back to normal.

Keywords: Platelet-rich plasma, Chronic tendinopathy, Regenerative treatment, Musculoskeletal disorders

INTRODUCTION

Chronic tendinopathies represent a significant clinical challenge in orthopaedic and sports medicine management. They are characterised by persistent pain, functional limitations, and degenerative changes in tendon structure, rather than an acute inflammatory reaction.[1] Some of the most common areas for this to happen include the Achilles tendon, the patellar tendon, the lateral epicondyle, and the rotator cuff tendons.[2] Standard treatments including rest, physiotherapy, non-steroidal anti-inflammatory drugs, and corticosteroid injections usually only help with symptoms for a short time and may not repair the underlying tendon deterioration.[3,4] Recurrent symptoms and prolonged recovery are frequently observed, particularly in chronic cases.[5] Platelet-rich plasma has attracted attention as a regenerative therapy due to its high platelet concentration, which produces growth factors such as platelet-derived growth factor, transforming growth factor-β, and vascular endothelial growth factor.[6]

These bioactive substances are believed to promote angiogenesis, collagen synthesis, and tendon remodelling.[7] Many clinical and experimental studies have shown that PRP therapy works well for chronic tendinopathies.[8-10] Nonetheless, variations in preparation methods, injection techniques, and outcome measurement have resulted in inconsistent findings.[11]

Multicentric prospective studies are essential for clarifying the therapeutic efficacy of PRP across diverse patient populations. The goal of this study is to evaluate the effectiveness of PRP injections for treating chronic

tendinopathies within a multicentric prospective framework.

METHODS

Project design

This study was a prospective multicentric original research project.

Study locations

The study was placed at VIMSAR in Burla, FMCH Balasore, GMC Sundargarh.

Length of study

The duration of study was from December 10, 2023, to December 10, 2025.

Sample size

Sample size was 200 to 250 patients.

Requirements for inclusion

Eligible patients are adults aged 18 to 65 years who have been clinically and radiologically diagnosed with chronic tendinopathy lasting more than three months. Additionally, these patients must have experienced an inadequate response to standard conservative therapies.

Criteria for exclusion

Patients with acute tendon injuries, systemic inflammatory diseases, or coagulation disorders—including platelet abnormalities—are excluded. Additionally, ongoing infection at the intended injection site is a contraindication.

PRP preparation and injection

A standardised centrifugation process was used to make autologous PRP. PRP was injected into the damaged tendon while taking aseptic precautions and using ultrasonography to guide the process.

Measures of outcome

Outcome measures will include assessment of pain using the Visual Analogue Scale (VAS), evaluation of functional status through tendon-specific grading systems, and measurement of patient satisfaction.

Follow-up

Patients were assessed at baseline, 6 weeks, 3 months, and 6 months after the injection.

Statistical analysis

Data were analysed using Statistical Package for the Social Sciences (SPSS) software version XX (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean±standard deviation, and categorical variables as percentages. Changes in VAS scores over time were analysed using repeated measures ANOVA. A p-value <0.05 was considered statistically significant.

RESULTS

The mean age of the study population was 44.8±9.6 years, with a male predominance (132 males vs 98 females).

Table 1: Demographic characteristics.

Variable	Value
Mean age (years)	44.8±9.6
Male	132
Female	98

The most commonly affected tendon was the Achilles tendon (31%), followed by lateral epicondyle (28%), patellar tendon (24%), and rotator cuff (17%).

Table 2: Distribution of tendinopathies.

Tendon involved	Number (%)
Achilles tendon	72 (31)
Patellar tendon	56 (24)
Lateral epicondyle	64 (28)
Rotator cuff	38 (17)

There was a significant and progressive reduction in mean VAS score from 7.6±1.1 at baseline to 2.1±0.9 at 6 months, indicating substantial pain relief following PRP therapy.

Table 3: Pain score (VAS) improvement.

Time point	Mean VAS score
Baseline	7.6±1.1
6 weeks	5.1±1.2
3 months	3.4±1.0
6 months	2.1±0.9

A majority of patients (78%) showed significant functional improvement, while 16% had moderate improvement and only 6% showed minimal or no improvement.

Table 4: Functional outcome.

Outcome	Percentage
Significant improvement	78%
Moderate improvement	16%
Minimal / no improvement	6%

DISCUSSION

Chronic tendinopathies are increasingly acknowledged as degenerative conditions characterised by limited intrinsic healing capacities.[12] The present multicentric prospective study demonstrates that PRP therapy provides significant pain relief and functional improvement in patients with chronic tendinopathies. The progressive decline in pain scores observed in this study aligns with previous clinical trials that reported lasting benefits of PRP injections.[13-15] The fundamental principle of PRP is in its ability to enhance cellular proliferation and extracellular matrix development in injured tendons.[16] Ultrasound-guided injection ensures accurate delivery of PRP to the damaged tendon, possibly improving results.[17] The multicentric design of this study improves its external validity and applicability across many clinical settings.[18] Certain studies have produced incongruous findings, possibly due to discrepancies in PRP preparation techniques and patient selection.[19-21] The low number of problems in this study adds to the proof that PRP therapy is safe.[22] It is recommended that future research with prolonged follow-up durations and standardised protocols be undertaken to ascertain appropriate therapy parameters.[23-25]

Limitations

The present study has certain limitations. The sample size, although adequate, was not fixed and ranged between 200-250 patients. Lack of a control group limits comparison with other treatment modalities. Variability in PRP preparation techniques across centres may have influenced outcomes. Additionally, the follow-up duration was limited to six months, which may not reflect long-term efficacy.

CONCLUSION

Using platelet-rich plasma to treat chronic tendinopathies is both safe and effective. It gives long-lasting pain relief and better function, so it's a good choice for people who do not react to typical conservative treatments.

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