

**Comparative Study of Platelet-Rich Plasma Vs Corticosteroid Injection for Plantar Fasciitis, Bihar, India**Pooja Priyam<sup>1</sup>, Shikha<sup>2</sup>, Vikas Kumar<sup>3</sup><sup>1</sup>Senior Resident, Department of Physical Medicine and Rehabilitation, Patna Medical College & Hospital, Patna, Bihar, India<sup>2</sup>Senior Resident, Department of Physical Medicine and Rehabilitation, Patna Medical College & Hospital, Patna, Bihar, India<sup>3</sup>Professor and Unit Heading, Department of Physical Medicine and Rehabilitation, Patna Medical College & Hospital, Patna, Bihar, India

Received: 25-12-2023 / Revised: 23-01-2024 / Accepted: 28-02-2024

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Conflict of interest: Nil

**Abstract:****Background:** Plantar fasciitis is a prevalent source of heel pain, affecting individuals worldwide. Treatment options often include corticosteroid injections, known for their short-term pain relief, and Platelet-Rich Plasma (PRP) therapy, which aims for long-term benefits through tissue regeneration. The study aims to conduct a comparative study assessing the efficacy and safety of PRP injection therapy versus corticosteroid injection therapy for the management of plantar fasciitis in patients.**Methods:** The retrospective comparative study enrolled 230 individuals diagnosed with plantar fasciitis. They were randomly allotted to receive either PRP injection therapy or corticosteroid injection therapy. Pain intensity, functional disability, and patient satisfaction were assessed using validated scales. Statistical analysis was employed with significance set at  $p < 0.05$ .**Results:** Demographic analysis revealed no significant variations between the treatment groups. PRP therapy consistently resulted in lower pain scores on the Visual Analog Scale (VAS) at all follow-up intervals compared to corticosteroid therapy. Additionally, PRP-treated patients exhibited greater improvement in functional disability, as evidenced by higher Foot and Ankle Disability Index (FADI) scores. Patient satisfaction was notably higher in the PRP group throughout the study duration. Adverse events were comparable between the two groups.**Conclusion:** PRP injection therapy demonstrates superior efficacy in reducing pain intensity, improving functional disability, and enhancing patient satisfaction compared to corticosteroid injection therapy for plantar fasciitis. Furthermore, PRP therapy exhibits a comparable safety profile. These findings advocate for the consideration of PRP as a preferred treatment option in clinical practice.**Recommendations:** Clinicians should consider PRP injection therapy as an effective and safe choice to corticosteroid injections for managing of plantar fasciitis.**Keywords:** Plantar fasciitis, Platelet-Rich Plasma, Corticosteroid injections, Pain intensity, Functional disability.

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**Introduction**

Millions of individuals worldwide suffer from plantar fasciitis, a frequent source of heel pain that can be effectively treated with platelet-rich plasma (PRP) and corticosteroid injections. The thick band of tissue called the plantar fascia, which connects your heel bone to your toes and runs across the sole of your foot, becomes inflamed when you have plantar fasciitis. The illness can have a crippling effect on everyday activities and quality of life. The choice of treatment often depends on the chronicity of the condition, patient preference, and the presence of any contraindications.

Corticosteroid injections have been a mainstay in the treatment of plantar fasciitis due to their potent anti-inflammatory effects, providing significant short-term pain relief and reduction in inflammation [1]. However, concerns have been raised regarding the potential for plantar fascia rupture and other side effects associated with corticosteroids, especially with repeated use.

On the other hand, PRP injections, which involve the use of a patient's own blood components to stimulate healing, have emerged as a promising alternative. PRP is thought to boost tissue repair and regeneration by releasing growth factors and

cytokines that enhance the healing process [2]. Studies have shown that PRP injections can provide longer-term relief from pain and improvement in function compared to corticosteroids, with fewer side effects [3].

A randomized controlled trial demonstrated that patients receiving PRP injections showed significant improvement in pain and functional outcomes over those receiving corticosteroid injections at 12 months follow-up [4]. This suggests that PRP may offer more durable benefits, possibly due to its regenerative effects on the plantar fascia.

The study aims to conduct a comparative study evaluating the efficacy and safety of Platelet-Rich Plasma (PRP) injection therapy versus corticosteroid injection therapy for the treatment of plantar fasciitis in patients.

### Methodology

**Study Design:** A retrospective comparative study.

**Study Setting:** The study was carried out at Patna Medical College and Hospital, Patna, Bihar, India, spanning from November 2021 to December 2023.

**Participants:** A total of 230 patients diagnosed with plantar fasciitis were included in the study.

**Inclusion and Exclusion Criteria:** Inclusion criteria comprised patients aged 18 to 65 years with a diagnosis of plantar fasciitis confirmed by physical examination and imaging studies. Exclusion criteria included patients with a history of previous foot surgery, systemic diseases affecting foot function, coagulation disorders, recent corticosteroid injections, or PRP therapy within the last six months.

### Bias:

To minimize bias, patients were assigned to treatment groups randomly. Additionally, blinding

of assessors to the treatment received by patients was maintained throughout the study.

**Variables:** The main variables assessed were pain intensity, functional disability, and patient satisfaction. These were measured using validated scales such as Visual Analog Scale (VAS) for pain, Foot and Ankle Disability Index (FADI) for functional disability, and Likert scale for patient satisfaction.

**Data Collection:** Patient demographic data, clinical history, and baseline characteristics were collected at the initial visit. Follow-up assessments were conducted at specified intervals post-treatment (1, 3, and 6 months). Pain intensity, functional disability, and patient satisfaction were recorded during these follow-up visits. Any adverse events or complications were also documented.

**Statistical Analysis:** SPSS version 21.0 was utilised for conducting statistical analysis. PRP and corticosteroid injection groups were compared using inferential statistics, such as independent t-tests and chi-square testing. P-values less than 0.05 were regarded as statistically significant.

**Ethical Considerations:** The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

### Result

The study included 230 individuals with a diagnosis of plantar fasciitis, of whom 115 were allocated to each of the two treatment groups—corticosteroid injection therapy and platelet-rich plasma injection therapy. Table 1 demographic analysis showed that there were no significant differences between the two groups' baseline BMI, age, gender distribution, or length of symptoms ( $p > 0.05$ ).

**Table 1: Demographic and Baseline Characteristics**

Characteristic	PRP Group (n=115)	Corticosteroid Group (n=115)
Mean Age (years)	45.6 ± 7.2	44.8 ± 6.5
Gender		
Male	60	58
Female	55	57
Mean BMI	26.3 ± 3.1	26.7 ± 2.9
Duration of Symptoms	8.4 ± 3.6 months	8.1 ± 3.2 months

In terms of pain intensity, significant variations were stated between both groups at all follow-up intervals (Table 2). At the 1-month follow-up, patients receiving PRP injections reported significantly lower pain scores on the VAS

compared to those receiving corticosteroid injections ( $3.2 \pm 1.4$  vs.  $4.5 \pm 1.2$ ,  $p < 0.001$ ). This trend persisted at the 3- and 6-month follow-ups, with the PRP group consistently reporting lower pain scores than the corticosteroid group ( $p < 0.01$ ).

**Table 2: Pain Intensity and Functional Disability Scores**

Follow-up Interval	Pain Intensity (VAS)	Functional Disability (FADI)
1 Month		
PRP Group	3.2 ± 1.4	78.5 ± 10.2
Corticosteroid Group	4.5 ± 1.2	65.4 ± 8.9
3 Months		
PRP Group	2.7 ± 1.1	86.7 ± 7.8
Corticosteroid Group	3.8 ± 1.0	73.2 ± 9.5
6 Months		
PRP Group	1.9 ± 0.8	92.3 ± 6.4
Corticosteroid Group	2.5 ± 0.9	81.9 ± 8.2

Over time, both therapy groups showed a considerable improvement in terms of functional impairment. At every follow-up period, however, the PRP group showed a higher improvement in functional impairment than the corticosteroid group ( $p < 0.05$ ). In particular, the PRP group outperformed the corticosteroid group in terms of mean FADI scores at 1, 3, and 6 months.

At every follow-up time point, the PRP group consistently had greater patient satisfaction scores ( $p < 0.05$ ) on a Likert scale than the corticosteroid group. Just 65% of patients in the corticosteroid group expressed the same degree of satisfaction with the treatment outcome at the 6-month follow-up, compared to 85% of patients in the PRP group who said they were "very satisfied" with it.

There were no appreciable variations in the frequency of adverse events between the two treatment groups. Both groups experienced comparable rates of injection site discomfort, edoema, and infection ( $p > 0.05$ ).

### Discussion

The comparative study between PRP injection therapy and corticosteroid injection therapy for plantar fasciitis revealed significant advantages of PRP treatment over corticosteroids in terms of pain reduction, functional improvement, and patient satisfaction. Patients receiving PRP injections reported consistently lower pain scores on the VAS at all follow-up intervals, along with greater improvements in functional disability assessed by the FADI compared to the corticosteroid group.

Moreover, patient satisfaction levels were notably higher in the PRP group throughout the study duration. Importantly, both treatment modalities exhibited comparable safety profiles with no significant differences in adverse events. These findings suggest that PRP injection therapy is more effective than corticosteroid injection therapy in reducing pain intensity, improving functional disability, and enhancing patient satisfaction in individuals with plantar fasciitis. Furthermore, PRP therapy demonstrated sustained benefits over a 6-month follow-up period with a comparable safety profile to corticosteroid injections.

The comparative effectiveness of PRP and corticosteroid injections for treating plantar fasciitis has been extensively studied, yielding insightful results. A study highlighted PRP's ability to attract inflammatory mediators for collagen remodelling, suggesting its potential in treating plantar fasciitis not responsive to conservative treatments [5]. Another research concluded that PRP injections are more effective than corticosteroids in the long-term management of chronic plantar fasciitis, offering a safer and more durable solution [6].

A study reinforced these findings, showing PRP's superior efficacy and durability over steroid injections for chronic recalcitrant cases, with improvements continuing at follow-up [7]. Similarly, a comparative study demonstrated that PRP significantly reduces pain and improves functional outcomes better than corticosteroids, marking it as a preferable long-term management option [8].

A randomized controlled study found that while PRP's benefits are sustained, the efficacy of corticosteroid injections begins to wane after three months, further supporting PRP's long-term effectiveness in treating chronic refractory plantar fasciitis [9]. These studies collectively underscore PRP's advantages in providing long-lasting relief and functional improvement for plantar fasciitis patients.

### Conclusion

The study highlights the superior efficacy of PRP injection therapy over corticosteroid injection therapy for the treatment of plantar fasciitis. PRP therapy demonstrated consistently lower pain scores, greater improvement in functional disability, and higher patient satisfaction compared to corticosteroid therapy, with comparable safety profiles observed between the two treatments. These findings support the adoption of PRP therapy as a preferred treatment option for individuals with plantar fasciitis, emphasizing its potential to provide long-term relief and improve patient outcomes.

**Limitations:** The limitations of this study include a small sample population who were included in this

study. The findings of this study cannot be generalized for a larger sample population. Furthermore, the lack of comparison group also poses a limitation for this study's findings.

**Recommendation:** Clinicians should consider Platelet-Rich Plasma (PRP) injection therapy as an effective and safe alternative to corticosteroid injections for the management of plantar fasciitis. Further prospective studies with larger sample sizes and longer follow-up durations are warranted to validate these findings and assess the durability of treatment effects.

**Acknowledgement:** We are thankful to the patients; without them the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in patient care of the study group.

**List of abbreviations:**

PRP - Platelet-Rich Plasma

VAS - Visual Analog Scale

FADI - Foot and Ankle Disability Index

BMI - Body Mass Index

**Source of funding:** No funding received.

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