

REVIEW ARTICLE

Platelet-rich Plasma in Plantar Fasciitis: A Review

¹Bhavita Panjwani, ²Gautam Das, ³Leno N Jacob, ⁴Abhisesh Shrestha

ABSTRACT

Aim: The aim of this review is to help decide outcome of patients in whom platelet-rich plasma (PRP) has been used and whether it can be used as an effective treatment in plantar fasciitis.

Introduction: Plantar fasciitis is a very common complaint for which patients see a pain physician. Plantar fasciitis is self-limiting and up to 90% patients recover by conservative treatment. Previously all treatments focused on decreasing inflammation, e.g., use of non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroid injections. Newer modalities of treatment target decreasing degeneration caused by the disease process. These treatments initiate an inflammatory reaction which restarts the healing process.² These include PRP injections, extra corporeal shock wave therapy (ESWT), etc.

Review results: We screened 18 full text studies based on our searches. Out of these 1 was a meta-analysis of randomised control trials (RCTs), 3 were RCTs and remaining were level 3 cohort studies. These included studies done from 2011 till date. Our review inferred that PRP therapy decreases pain and helps in improving quality of life in patients with recalcitrant plantar fasciitis.⁷

Conclusion: Use of PRP in Chronic Plantar fasciitis is effective. It improves long term outcomes, decreasing chances of recurrences.

Keywords: Plantar fasciitis, PRP, Chronic

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INTRODUCTION

Plantar fasciitis is a long-standing degeneration of plantar aponeurosis of the foot, at the point of its insertion in the medial tubercle of the calcaneum. Constant micro-trauma leads to wear and tear and initiates the body's repair mechanisms.¹ Plantar fasciitis is a very common complaint for which patients see a pain physician. Plantar fasciitis is self-limiting, and up to 90% patients recover by conservative treatment. Different patients have different grades of disease, different causes, and

activity levels. Due to this conservative treatments work for most patients but not everyone. Previously all treatments focused on decreasing inflammation, e.g., use of NSAIDs and corticosteroid injections. Newer modalities of treatment target decreasing degeneration caused by the disease process. These treatments initiate an inflammatory reaction which restarts the healing process.² These include PRP injections, ESWT, etc.²

This review aims to help decide the outcome of patients in whom PRP has been used and whether it can be used as an effective treatment for plantar fasciitis.

The review was attempted according to preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines as far as it was possible.

Eligibility Criteria

Eligible studies in our PICO criteria:

- Patients with plantar fasciitis;
- Intervention done-PRP Injection
- Comparison arm-Any other conservative or interventional treatment like corticosteroid injection, ESWT, etc., outcomes improvement in VAS scores.

Search Criteria

We searched MEDLINE, Embase, PsycINFO, CINAHL and the Cochrane Library from starting point to 11th July 2018.³ We looked for studies in all possible languages. All possible references were thoroughly searched. No restriction of sample size was done to include all possible studies. The following MeSH terms were searched in the title and abstract: "platelet-rich plasma," "plantar fasciitis, chronic." We could not include any unpublished trials.⁴

Inclusion Criteria

- The study compared PRP with a control (such as a corticosteroid, steroid, or glucocorticoid treatment) in patients who were diagnosed with PF.
- Level I, II or III studies.
- Studies that clearly mentioned the results of the intervention regarding pain relief, improvement in clinical parameters.

Exclusion Criteria

- Duplicate articles
- Outcomes were reported using some different scoring system

^{1,3,4}Fellow, ²Director

¹⁻⁴Daradia Pain Clinic, Kolkata, West Bengal, India

Corresponding Author: Bhavita Panjwani, Fellow, Daradia Pain Clinic, Kolkata, West Bengal, India, e-mail: bhatiabhavita@gmail.com

- Subjects who did not have plantar fasciitis as the cause of pain⁴ Research articles like letters to the editor or animal-based studies.

The demographic characteristics (first author, publication year, location, sample size, intervention, and study design) were extracted.⁴

REVIEW RESULTS

We screened 18 full-text studies based on our searches, out of these, one was a meta-analysis of RCTs, three were RCTs, and the remaining were Level 3 cohort studies. These included studies done from 2011 to date.

In a cohort study (Level 3) by Ahmed et al. in Dec 2016, forty-four patients who had persistent symptoms, were given USG guided PRP injections and were reviewed after four months. They found that patients who received PRP had lesser pain, a decrease in width of the plantar fascia and a better quality of life.⁵

An RCT was done by Aziza Syed Omar et al. in Dec 2011 to compare the efficacy of PRP vs corticosteroids. Thirty patients with plantar fasciitis or lateral epicondylitis were given either PRP or corticosteroid injection, randomly. The study found that PRP injections help in both plantar fasciitis and lateral epicondylitis. PRP is better than steroids for treatment of chronic cases.⁶

A clinical study (Level 3) was conducted by Nagwa et al. in Oct 2015 to study 50 patients with chronic plantar fasciitis, by giving them either PRP or Corticosteroid injection. After 6 weeks, patients in the PRP group showed more improvement than the corticosteroid group concerning VAS and decrease in Plantar fascia thickness. At twelve weeks there was no statistically significant change between the two groups. No significant complications were reported in either group.⁷

A Level 3 study conducted by Vijay Shetty et al. compared use of PRP and Corticosteroids in Recalcitrant Plantar Fasciitis. They found PRP to be effective.⁸

Another RCT (Level 2) was conducted by Kim E et al. in 2014 to compare PRP with dextrose prolotherapy. Twenty-one patients were randomly distributed in both the groups. Injections were repeated twice with two milliliters of either drug. On analysis of outcomes, both groups improved with PRP group performing better than dextrose group.⁹

A cohort study (Level 3) conducted by Jimenez et al. in 2018 to study the clinical effects of PRP and corticosteroids. Total 40 patients were studied, half of them received PRP while the other half received steroids. They found that though patients in both groups improved, patients who received steroids had more chances of recurrences. They concluded both treatments had a good safety profile and efficacy.¹⁰

In 2018 SK Jain et al. conducted a prospective study (Level 2) to compare PRP and corticosteroids. They studied eighty patients allocating them in the two groups randomly and followed them at 4, 6, and 12 weeks. They found that PRP and steroids are equally efficacious.¹¹

In 2015, a study was done by Othman et al. Fifty patients were included. Twenty-three were treated endoscopically, and remaining were given PRP. They concluded that both these treatments are equally effective for chronic plantar fasciitis.¹²

An RCT (Level 2) was conducted by Gogna et al. in 2016. Forty patients who failed to respond to conservative treatment were given either PRP or low dose radiation. Both treatments were equally effective.¹³

A review published by John Orchard in BMJ in 2012 was nonconclusive as to which treatment is best for patients with plantar fasciitis.¹⁴

A cohort study (Level 3) was done by Tiwari et al. in 2013-Sixty patients were treated either with PRP or steroids. They found that PRP showed better results than Corticosteroids at 4, 12, and 24 weeks follow-up.¹⁵

A study (Level 3) was done by Jain K et al. in 2015-Sixty patients received either PRP or steroids. These patients were followed at three, six and twelve months. They concluded PRP is better than steroids in long-term follow-up.¹⁶

A study by Tribhuvan NS Gaur et al. in 2017-44 patients with PF were given PRP which was found to be effective.¹⁷

A meta-analysis of RCT done by Wei Yi Yang et al. proved that PRP seems to be better than steroids in patients with chronic plantar fasciitis, mainly on long-term follow-up. But due to the limited sample size and lack of a large number of RCTs, it is difficult to validate this result.⁴

DISCUSSION

Plantar fasciitis is a common complaint in pain OPD. It is mainly diagnosed clinically. Patients typically complain of pain in heels after some time of inactivity, for instance, while getting up from bed in the morning. It usually presents with moderate to severe pain.¹⁸ Initially, conservative treatments are the treatment of choice, e.g., pharmacological measures like NSAIDs, physiotherapy, ice application, splints.⁵ When conservative treatments fail, physicians usually use steroid injections locally.⁶ But the disadvantage of these is that there is a very high chance of recurrence as steroids can cause certain structural changes in the plantar fascia and thereby weakening it. Patients are usually tempted to increase activity after pain relief which can also contribute to recurrence. Repeated injections of steroids can damage the

plantar fascia to the extent that it may require a surgical repair.⁶

Platelet-rich plasma (PRP) can now be considered in patients where conservative treatments are not working. It is effective, and it preserves the physiological function of the foot. PRP is prepared by collecting a sample of whole blood. This is centrifuged (at 3400 rpm for 3 min—at author's center though this may vary from place to place). This is treated with an agent which can activate platelets, at the time of collection and injected into the degenerated area. PRP works mainly by regenerating the connective tissue.¹⁹ It initiates and helps in three stages of wound healing (a) inflammatory (b) proliferative and (c) remodeling phases. PRP therapy decreases pain and helps in improving the quality of life in patients with recalcitrant plantar fasciitis.⁷

Our review concludes that PRP is effective in the treatment of plantar fasciitis. Meta-analysis shows that it is more effective than corticosteroid injections. But the limitation is that most of the studies have a very small sample size, so it is difficult to infer the results and extrapolate them to the entire population. PRP therapy may increase pain due to various other factors, e.g., the anticoagulant used for making PRP. No study used the same method or commercially available kit. So we could not assess bias in experimental or outcome analysis stage. We need more standardized studies to conclude our findings reliably.

CONCLUSION

Use of PRP in chronic plantar fasciitis is effective. It improves long-term outcomes, decreasing chances of recurrences.

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