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CLINICAL EVALUATION OF PLANTAR FASCITIS TREATED WITH PRP VS CORTICOSTEROID INJECTION

**Gagan Khanna¹, Rajan Sharma¹,
Abhishek Rathore², Aditya Bhardwaj²**

¹- Associate professor, Department of Orthopaedics, Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Amritsar

²- Junior Resident, Department of Orthopaedics, Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Amritsar

Corresponding Author:

Dr. Gagan Khanna

Associate professor,

Department of Orthopaedics,

Sri Guru Ram Das Institute of Medical Sciences and Research,

Vallah , Amritsar

Email: drgk75@gmail.com

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Abstract:

Plantar fasciitis is one of the most common cause of heel pain. It is thought to result from chronic overload and is characterized by pain at the calcaneal origin of the plantar fascia, exacerbated by weight bearing after prolonged periods of rest.. Earlier treatments, including orthoses, non steroidal anti-inflammatory drugs, and steroid injections are paucity of supportive clinical evidence but carry the potential for serious complication and permanent disability. Platelet-rich plasma (PRP) demonstrated to be helpful in managing chronic severe plantar fasciitis when other techniques have failed. The purpose of this study was to assess and compare the clinical results for treating chronic plantar fasciitis with PRP and steroidinjection. A total of 120 patients were diagnosed as plantar fasciitis by clinical and radiological evaluation and were divided into group-A (PRP injection) and group-B (Corticosteroid injection. Group-A (60 patients) were given PRP injection and Group-B (60 patients) were given Corticosteroid injection. 6 cases lost in follow up were excluded from the study. Patients were assessed functionally using VAS score. The results were obtained on mean VAS in both groups. The cortisone group had a pretreatment mean VAS score of 7.5, which initially improved to 1.2 at 12 weeks post treatment b to 3.9 at 26 weeks, and then continuous increased to near baseline levels of 7.4 at 52 weeks. In contrast, the PRP group started with an average pretreatment

7.6 score decreased to 3.6 at 12 weeks, remained declining to 1.1 at 26 weeks and 0.4 at 52 weeks. Our study has shown that local Corticosteroid injection is effective for immediate pain relief only which may last upto 3 months and PRP injection therapy is effective in long term treatment for chronic heel pain with no side effects and complications.

Key-words: *Plantar Fasciitis, PRP, Corticosteroid*

Introduction:

Plantar fasciitis is one of the commonest causes of heel pain, affecting approximately 10% of the general population. Repetitive tensile overload of the soft tissue attachments to the plantar aspect of the heel causes pathological changes comparable to those of tendinitis (inflammation) and tendinosis (degeneration). In addition, a relative heel cord contracture, which often worsens during the night because the heel is held in plantar flexion during sleep, accentuates these symptoms because the heel cord attaches to the heel pad.¹⁻² Diagnosis of plantar fasciitis warrants a thorough clinical history and physical examination. It usually presents with a sharp morning heel pain and first-step pain that improves with normal use during day and worsens with heavy use. Physical examination is marked by localized tenderness at the medial tubercle of the calcaneus, loss of ankle dorsiflexion due to gastrocnemius muscle or Achilles tendon tightness, and in more severe cases, increased heel discomfort with passive toe dorsiflexion.

Critical reviews of Cortisone injection therapy have yielded equivocal short-term results and disappointing long-term results. Potentially disabling complications have also been reported, such as rupture of the plantar fascia. Recently, promising results were reported with the use of platelet-rich plasma (PRP) injections for treating muscle and tendon injuries and degeneration.³ The rationale for using PRP is to increase tendon regenerative abilities with a high content of cytokines and cells in hyper physiologic doses, which should promote cellular chemotaxis, matrix synthesis, and proliferation. It has been demonstrated that the

healing fascia is responsive to the local application of growth factors and the fact that platelets secrete growth factors and active metabolites means that their applied use can have a positive influence on damaged tissues with a low healing potential. Early success in using the PRP to treat chronic refractory tendinopathy has led to consideration for its use in the management of recalcitrant cases of plantar fasciitis. PRP, the plasma fraction of the autologous blood having a platelet concentration above baseline, contains various growth factors that have been found to be involved in a host of biosynthetic pathways.⁴ By injecting a aliquot of concentrated platelet enriched plasma into a localized area, the various growth factors are thought to jumpstart the regenerative process in degenerative conditions.

Earlier results of using the PRP to treat plantar fasciitis have been favorable but there is no study, which shows its comparable effectiveness to other agents. In this study we have tried to compare the efficacy of the patients treated with PRP and hydrocortisone injection.

Material And Methods:

Study was done in Sri Guru Ram Das Institute of Medical Science and Research Amritsar, between June 2014 – June 2015. This is a prospective study and a total of 120 patients were studied. They were divided into group-A (PRP injection) and group-B (Corticosteroid injection). All patients were diagnosed as plantar fasciitis by clinical and radiological evaluation. Group-A(60 patients) were given PRP injection – (40 females, 20 males). Platelet count in blood and PRP was estimated randomly for some samples (undergoing PRP injection).

Group-B(60 patients) were given Corticosteroid injection – (35 females, 25 males).

Technique:

Platelet Rich Plasma Preparation:

A low spin technique for platelet rich plasma preparation was adopted.

PRP Injection Technique:

- Patient in supine position, involved foot is identified. The site of maximal tenderness i.e medial aspect of the foot at the origin of plantar fascia usually is marked using a marker. 3ml of sensocaine is infiltrated into the skin and subcutaneous tissue. Later 3ml of PRP is injected using 22G wide bore needle in a fan shaped fashion, a technique called peppering. Post injection, patients are rested for 15min and then allowed to walk. This technique(peppering) of PRP injection was based on the studies by Mark W. Scioli MD, Joost C Peerbooms et al. patients are advised to avoid strenuous activities and rest for 2 weeks. They are reviewed after four weeks second injection of PRP and the same procedure is followed. 0.5ml of the PRP solution is sent for platelet count estimation in the sample.

Corticosteroid Injection Technique:

- Patient is similarly positioned and prepared like above. 3ml of sensocaine is injected and anesthetised, followed by injection of 40mg Depo-medrol solution. Only single injection of Corticosteroid is given at initial visit. Patients who had received

local steroid injection are given a second dose after 4 weeks after follow-up evaluation using VAS scores

Follow up- All patients had been followed up at 4, 8, 12, 26 and 52 weeks with complete VAS scores.

Results:

The results were obtained on mean VAS in both groups. The cortisone group had a pretreatment mean VAS score of 7.5, which initially improved to 1.2 at 12 weeks post treatment but decreased to 3.9 at 26 weeks, and then continuous increased to near baseline levels of 7.4 at 52 weeks. In contrast, the PRP group started with an average pretreatment 7.6 score decreased to 3.6 at 12 weeks, remained declining to 1.1 at 26 weeks and 0.4 at 52 weeks.

Discussion:

Plantar fasciitis (PF) is a common clinical problem with many available treatment modalities. Traditional treatment for PF includes rest, analgesics and stretching exercises. Injections, particularly corticosteroids, are given in very acute situations and for cases unresponsive to conservative methods.

Corticosteroids offer a quick fix for pain relief in the acute phase but have limited effect in chronic cases with a significant fraction of patients suffering from relapse and recurrence.⁵⁻¹⁰ In chronic cases, surgery is the last resort with very unpredictable results. Recent years have seen an increase in the use of PRP in various clinical situations, though there is no clear and hard evidence in the literature to support the use of PRP for PF in clinical practice.

Surgical treatments for chronic severe plantar fasciitis, including plantar fasciotomy with and without

neurolysis of the calcaneal branch of the tibial nerve, have demonstrated conflicting late clinical results with pain and disability persisting in many patients¹¹⁻¹³. The most common secondary level treatment for plantar fasciitis is the use of corticosteroid injections. Critical reviews of cortisone injection therapy have yielded equivocal short findings and disappointing long term results.¹⁴ Reported benefits of this include provision of temporary pain relief, dilution of potentially harmful corticosteroid crystals and confirmation of accurate solution deposit.¹⁵

Hence, Crawford, et al.¹⁶ concluded that steroid injections can provide short term relief. However, a number of complications were noted including plantar fascial rupture, plantar fat pad atrophy, lateral plantar nerve injury secondary to injection, and calcaneal osteomyelitis and in iontophoresis, burning of the underlying skin.¹⁷⁻¹⁹ Long-term sequelae of plantar fascia rupture were found in approximately one half of the patients with plantar fascia rupture, with longitudinal arch strain accounting for more than one half of the chronic complications in steroid injection¹⁹. Results of a Cochrane review show corticosteroid injection therapy has short benefit compared to control, and the effectiveness of treatment is not beyond six months.

Ragab and Othman²⁰ examined a larger group of 25 patients who were injected with PRP and were then followed up for an average of 10.3 months after treatment. VAS scores improved from 9.1 pretreatment to 1.6 post treatment. Before treatment, 72% of patients noted severe activity limitations, whereas 28% were moderately limited. After PRP treatment, 60% had no functional

limitations, 32% had mild limitations, and 8% noted moderate limitations. Ultrasonography was completed before and after PRP treatment and demonstrated decreased plantar fascial thickening. Combining eccentric exercise and cyclic plantar fascia-specific stretching with PRP injection, enhanced and accelerated healing with excellent long-term results can be achieved in refractory cases.²¹⁻²² Initially PRP induces slightly more inflammation, part of the healing process, but then the action takes place, fibrinocytes move in and start laying down new collagen to heal and reinforce the plantar fascia. Other healing components of the blood, such as stem cells migrate into the area, rebuilding and strengthen the tissues.

PRP has none of the side effects as seen in repeated steroid injections, especially no breakdown of tissue and recurrence of plantar fasciitis as seen, in our study. Platelet rich plasma therapy results in tissue regeneration. As with all injection procedures, there can be damage to neurovascular structures, infection and pain but in our study no such side effects were seen.

Conclusion:

We believe that PRP injection is safe and can be an excellent alternative to corticosteroid injection in plantar fasciitis, not responsive to conservative means. The findings of this preliminary study can be very relevant in clinical practice. Our study has shown that local Corticosteroid injection is effective for immediate pain relief which may last up to 3 months. Our study has established that PRP injection compared to corticosteroid injection is effective in long term treatment for chronic heel pain with no side effects.

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