



## RESEARCH ARTICLE

# EVALUATION OF THE EFFICACY OF AUTOLOGOUS PLATELET RICH PLASMA INJECTION IN PLANTAR FASCIITIS

Sirazul Haque Malik, \*Anil Kumar Juyal and Gita Negi

Department of Orthopaedics, Swami Rama Himalayan University Dehradun

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### ABSTRACT

This is an Experimental study with a total of 40 patients. All patients diagnosed as plantar fasciitis on clinical evaluation. All the Patients were assessed using VAS before intervention (7.65) in the form of local PRP injection. Sequentially during the follow up at different interval the VAS was found reduced significantly (1.57) at the end of 6 months. Study has shown that PRP injection is an effective treatment modality for chronic plantar fasciitis in short term without any significant complication.

## INTRODUCTION

Heel pain is a most common presenting complaint in the foot and ankle practice by orthopaedician, and Plantar fasciitis is one of the most common cause of chronic pain beneath the heel in adults (Liden, 2009). It is mainly a clinical diagnosis characterised by medial heel pain, which is often worse with the first few steps in the morning. It is commoner in the obese, in those standing for prolonged periods at work. The etiology of plantar fasciitis is poorly understood (Riddle, 2003). It is estimated that 1 in 10 people will develop heel pain in their life time (Melvin, 2015). Peak incidence occurs between 40 and 60 years of age. Many conservative methods available, In over 90% of cases, symptoms can be resolved with simple non-operative measures of stretching exercises to the plantar fascia and Achilles tendon, cushioned insoles or orthotics to correct the biomechanical factors, night splints, activity modification and use of simple analgesics are effective in acute cases but not in chronic cases of planter fasciitis (Pepper Toomey, 2009). PRP therapy is widely experimented in different fields of medicine to test its potential to enhance tissue regeneration. Platelet rich plasma (PRP) therapy is a simple, cost effective and minimally invasive procedure that provides a natural concentrate of autologous

blood growth factors (GFs) that can be used to enhance tissue regeneration (Filardo *et al.*, 2011). Recently, promising results were reported with the use of PRP injection in cases of chronic planter fasciitis (Alsousou *et al.*, 2009).

## MATERIALS AND METHODS

The study was conducted in SRHU after getting patient consent and clearance from ethical committee over a period of 12 months. This is an Experimental study and a total of 40 patients were studied. All patients of plantar fasciitis were evaluated before intervention.

### Inclusion criteria

- All patients >20 years of age with plantar heel pain for at least 3 months.
- Pain provoked by taking the first few steps in the morning, prolonged standing.
- Patients who have failed to improve after 3 months of conservative management.

### Exclusion criteria

- Pain in the heel other than plantar aspect.
- Pain associated with any injury around ankle or foot.
- Pain associated with any metabolic disorder or infection.

\*Corresponding author: Anil Kumar Juyal,

Department of Orthopaedics, Swami Rama Himalayan University Dehradun.

- Subjects having any other neuromuscular problem.
- Previously treated cases of plantar heel pain with local steroid injection.
- Pregnant females.
- Subjects with any congenital anomaly of foot and ankle.
- Subjects with any skin lesion on plantar aspect of heel.
- Peripheral Vascular Disease, Peripheral neuropathy.
- Platelet count <1.5 lakh/cu mm.

## DISCUSSION

On the group of 40 patients between 22 years to 68 years with mean age of  $41.95 \pm 9.76$  maximum number of cases i.e 17 (42.50%) in the age group of 31- 40 years with female preponderance 57.50% . These findings were in accordance with the study by Tae Im Yi, *et al.* The mean age of cases was 43.8 years in their study groups and predominantly included females (Yi, 2011).

**Table 1. Evaluation of VAS at four different intervals by Friedman Test (n=40)**

	mean	Sd	Median	Chi square	P value
Pre VAS vs 1 month	7.65	1.57	7.00	39.00	0.000
	4.42	2.542	4.00		
Pre VAS vs 3 months	7.65	1.57	7.00	39.00	0.000
	2.90	2.51	2.00		
Pre VAS vs 6 months	7.65	1.57	7.00	40.00	0.000
	1.57	2.39	.5000		

Friedman test

**Table 2. Comparison of VAS in our study to various others studies**

	Our study	Kumar <i>et al.</i>	Martin <i>et al.</i>	Lee and ahmad	Ragab <i>et al.</i>
VAS Pre intervention	7.57	7.7	7	7.3	9.1
VAS Post intervention	1.57	4.2	4	3.6	1.6
Duration of follow-up (months)	6	6	6	6	10

### Platelet rich plasma Injection Technique

Under aseptic conditions 2-3 ml PRP with 22 gauge needle was injected directly into the area of maximal tenderness, via peppering technique. Post injection the use of non-steroidal medication was advised for 3 days and then SOS. Patient was regularly reassessed for pain improvement with the Visual Analogue Scale for pain, after 1, 3 and 6 months.

### Platelet Rich Plasma preparation

12 ml of venous blood sample taken in vacutainer



Plasma separated by standing method



After ½ hrs vacutainer span @ 1600 rpm for 16 min  
Followed by span at 800 rpm for 8 min



PRP seen in top layers

- Followed by yellow WBCs layers
- Followed by RBCs at bottom



2ml of PRP taken out from top layers

## RESULTS

In the group of 40 patients. There were 17 male patients and 23 female patients with mean age of  $41.95 \pm 9.76$  Maximum number of cases i.e, 17 (42.5 %) were found to be in the age group of 31-40 yrs. Majority of the cases (47.5%) were Housewives. Duration of pain was more then six months in 70% patients. At the end of 6 months follow up the VAS was reduced to 7.65 to 1.57 with significant P value 0.00. Complication associated with the procedure was post injection pain in 2 patients which was relieved with symptomatic treatment.

Riddle *et al* conducted a matched control study of 50 patients, in which 33 (66%) were female which also had a female preponderance (Riddle, 2003). In our study, mean duration of pain was 6.55 months. These findings were in accordance with the study conducted by Lee and Ahmad on group of patients with chronic plantar fasciitis symptomatic for a mean duration of 7.8 months (Lee, 2007). Maximum number of patients in the present study was housewives (47.50%). This is in accordance with the study conducted by Moustafa *et al* over 25 patients, out of which 21 females (84 %) were housewives (Moustafa, 2015).

## Conclusion

In the light of these results, we can conclude that:

- PRP injection is an effective treatment modality for chronic plantar fasciitis without any significant complication.
- Although the duration of follow up was very short, still there was no recurrence of symptoms till the last follow up.
- It is an cost effective and day care procedure.

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