



## “A COMPARATIVE STUDY OF TREATMENT OF PLANTER FASCITIS BY PRP AND STEROID INJECTION”

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**ABSTRACT** **BACKGROUND:** Plantar fasciitis is defined as localized inflammation due to chronic repeated microinjury to the substance of plantar aponeuroses and the patients present to the clinic for pain in heel. In this study, autologous platelet-rich plasma (PRP), a concentrated bioactive blood component rich in growth factors, was compared to traditional steroid injection usually methylprednisolone in the treatment of plantar fasciitis resistant to traditional nonoperative management.

**MATERIAL AND METHODS:** This study was carried out dept. of orthopaedics at darbhanga medical college and hospital Laheriasarai Bihar. Eighty patients with plantar fasciitis were included in the study and randomly categorised into group A (steroid inj) and Group B (prp inj). 3 cc PRP or 40 mg DepoMedrol injected into plantar aponeurosis at maximum point of tenderness, in both groups separately. Results of both groups compared and Score of both the groups tallied by using vas score.

**RESULTS:** The instillation of PRP found to be more effective than Steroids injection in terms of pain and functional results in the treatment of plantar fasciitis. Clinical evaluation was performed before treatment and at the 6<sup>th</sup> week, 12<sup>th</sup> week and 24<sup>th</sup> weeks from instillation of PRP/steroid in follow up visits. Visual analog scale were used in the clinical evaluation.

**CONCLUSION ;** The PRP local injection is a new, readily available and well tolerated, with prolonged effect and safe choice of therapy for chronic pf and is not inferior to steroid injection in a short term up.

**KEYWORDS :** PRP, Corticosteroid, Plantar & Fasciitis.

### INTRODUCTION:

Chronic heel pain is amongst the commonest problems of the foot, of which planter fasciitis is the commonest cause. Plantar fasciitis (PF) is an overuse injury that seriously affects the patient's daily activities and quality of life. Primarily it is a clinical diagnosis and a self-limited condition in majority of patients. It takes months and years to resolve; 1

plasma (PRP) therapy is a revolutionary novel modality that relieves pain by stimulating long lasting healing of musculoskeletal conditions to evaluate and compare the effectiveness of single injection of autologous platelet rich plasma (PRP) and steroid injections. This study was carried out to evaluate the effect of local PRP in the treatment of planter fasciitis. Plantar fasciitis affects both sedentary and physically active individuals like athletic and military personnel's and are believed to arise from chronic overload, alignment or weakness issues either from lifestyle or exercise. The etiology is poorly understood and is unknown in nearly 85% of cases. 1 Conservative therapies are usually the first line of treatment includes ice physical therapies, orthotics, arch supports, taping and splinting.<sup>3</sup> Other modalities include use of NSAIDs, ultrasonic Shockwave therapy, and, in the recalcitrant cases, surgery. Corticosteroid injection is a mainstay of early treatment. However, conflicting evidence exists to support the use of steroid injection.<sup>4</sup> Platelet rich

### MATERIAL AND METHOD:

The study was designed as a single centre prospective controlled randomized research. The current study recruited untreated patients of heel pain reporting to the Department of Orthopaedics, at Darbhanga medical college and hospital Laheriasarai Bihar. A medical and demographic history was taken, and patients were examined.

**INCLUSION CRITERIA**-all participants aged 40-70 years of either sex had to

- Have heel pain for more than 4 month and/or have been diagnosed as having Chronic Planter Fasciitis (CPF)
- Ability to walk,
- Subject must understand the risk and benefit of the protocol and be able to give informed consent,
- Availability for the duration of entire study period.

**EXCLUSION CRITERIA**-It includes following parameter

- Traumatic heel pain,
- Heel pain less than 4 month,
- Inflammatory disorder like gout, RA, Ankylosing spondylosis etc,
- Abnormal LFT and RFT,

- Hematological disorders or any history of coagulopathies,
- Diabetes,
- Cancer,
- Medically unfit patient,
- Hypersensitivity to NSAIDs,
- Compressive neuropathies,
- Skin disorders,
- Severe infection,
- Pregnant, breast feeding or planning to become pregnant.

### Preparation of PRP

**VENEPUNCTURE** - Collection of around 20 ml blood of whole blood in anti-coagulated vacutainer tubes

↓  
FIRST SPIN- transfer of the upper layer with buffy coat to empty sterile tube

↓  
SECOND SPIN- collection of platelet concentrates at bottom of the tube

↓  
Homogenize platelet concentrates by thoroughly mixing into lower 1/3<sup>rd</sup> of plasma, discarding upper 2/3<sup>rd</sup>.

↓  
Homogenized PRP is prepared

### PROCEDURE

The procedure was done on out-patients basis under complete aseptic condition

- 1- Position: The patient lay supine with lower limb externally rotated
- 2- Disinfection: Skin disinfection with betadine and spirit
- 3- Aneesthesia: Homogenize platelet mix with 2% of lignocaine
- 4- Technique: Homogenize platelet and lignocaine mixer injected at site of maximum point of tenderness

**Table 1: Comparison of Steroid & PRP Group**

	Steroid Group (n=30)		PRP Group (n=30)		P-Value
	N	Mean ± SD	n	Mean ± SD	
Age (year)		41.36± 8.82		41.26 ± 8.82	> 0.05
Male/Female	9/21		5/25		>0.05
Affected Heel (Right/Left)	11/19		14/16		>0.05
VAS		6.93 ± 1.04		6.96 ± 1.2	>0.05
AHFS		71.86 ± 8.95		71.80 ± 8.97	>0.05

**Table 2:** Comparison of Steroid & PRP Group

	<b>Steroid Group (n=30)</b>	<b>PRP Group (n=30)</b>	<b>P Value</b>
	<b>Mean ± SD</b>	<b>Mean ±SD</b>	
<b>VAS</b>			
<b>Baseline</b>	6.93±1.04	6.96 ± 1.12	>0.05
<b>6<sup>th</sup> Week</b>	1.26 ± 1.31	3.83 ±0.79	<0.05
<b>12<sup>th</sup> Week</b>	0.90 ± 1.53	0.76 ± 0.85	>0.05
<b>24<sup>th</sup> week</b>	1.03 ± 1.77	0.33± 0.71	<0.05
<b>AHFS</b>			
<b>Baseline</b>	71.86 ± 8.95	71.80 ±8.97	>0.05
<b>6<sup>th</sup> Week</b>	96.06 ± 6.64	89.73 ±5.54	<0.05
<b>12<sup>th</sup> week</b>	96.00 ± 6.74	98.56 ± 3.74	>0.05
<b>24<sup>th</sup> Week</b>	95.63 ± 7.60	99.23 ± 2.94	< 0.05

**VAS: Visual Analogue Scale AHFS: Ankle Hind Foot Scale Visual Analog Scale**

<b>Visual Analog Scale:</b>											
No Pain											Worst Pain Imaginable
<b>Numerical Rating Scale:</b>											
0	1	2	3	4	5	6	7	8	9	10	
No Pain											Worst Pain Imaginable
<b>Verbal Descriptor Scales:</b>											
None			Mild			Moderate			Severe		
No Pain	Mild	Discomforting	Distressing	Horrible	Excruciating						

Visual Analogue scale is a measurement of pain intensity and generally completed by patients in terms of current intensity in last 24 hours providing a range of score from 0-10 greater score means greater pain intensity. Vas score takes less than 1 minute to complete. The test reliability has been shown to be good but higher among literate patient than illiterate patients.

**Ankle Hind Foot Scale**

<b>Pain (40 points)</b>
• None – 40
• Mild, occasional. – 30
• Moderate, daily – 20
• Severe, almost always present – 00
<b>Function (50 points)</b>
Activity limitations, support requirement
• No limitations, no support – 10
• No limitation of daily activities, limitation of recreational activities, no support – 07
• Limited daily and recreational activities, cane – 04
• Severe limitation of daily and recreational activities, walker, crutches, wheelchair, brace – 00
<b>Maximum walking distance, blocks</b>
• Greater than 6 – 05
• 4-6 – 04
• 1-3 – 02
• Less than 1 – 00
<b>Walking surfaces</b>
• No difficulty on any surface. – 05
• Some difficulty on uneven terrain, stairs, inclines, ladders – 03
• Severe difficulty on uneven terrain, stairs, inclines, ladders – 00
<b>Gait abnormality</b>
• None, slight. – 08
• Obvious – 04
• Marked – 00
<b>Sagittal motion (flexion plus extension)</b>
• Normal or mild restriction (30° or more). – 08
• Moderate restriction (150-29°) – 04
• Severe restriction (less than 150) – 00
<b>Hindfoot motion (inversion plus eversion)</b>
• Normal or mild restriction (75-100% normal). – 06
• Moderate restriction (25-74% normal) – 03
• Marked restriction (less than 25% normal) – 00
<b>Ankle-hindfoot stability (anteroposterior, varus-valgus)</b>
• Stable – 08
• Definitely unstable – 00

<b>Alignment (10 points)</b>
• Good, plantigrade foot, midfoot well aligned – 15
• Fair, plantigrade foot, some degree of midfoot malalignment observed, no symptoms – 08
• Poor, nonplantigrade foot, severe malalignment, symptoms – 00

**DISCUSSION**

Our study shows that PRP was effective for reducing pain and improving the outcome in patients with chronic planter fasciitis who failed the conservative management. but can resist for several months and result in significantly disability. Platelet rich plasma injection has emerged as a treatment alternative for many musculoskeletal conditions.

The method of PRP preparation is based on studies conducted by Crawford F et al who concluded that platelet high spin method results in higher number of growth factors and platelets in the sample, so we adopted this method. The technique of PRP injection (peppering) was based on the studies by et Aziza Sayed Omar al found this method to be very effective.

PRP is an efficient way to treat chronic plantar fasciitis when conservative management fails. It is good treatment option compared to other invasive surgical modalities such as fasciotomy as this procedure helps in preserving the anatomy of the foot. PRP is more effective and durable than corticosteroid injection for the treatment of chronic cases of plantar fasciitis.<sup>11</sup>

The study, patients were more frequently females (67%), and their mean age was 51 years. The occurrence of plantar fasciitis is related to activities that require the support of body weight.

Most patients in the present study (63%) had standing duties, thus indicating the importance of mechanical factors in this disease. Morning pain, important evaluation criteria, was reported by 85% of the patients, gait pain by 72% and orthostatic pain by 78%.

**CONCLUSION**

The PRP local injection is a new, readily available and well tolerated, with prolonged effect and safe choice of therapy for chronic pf and is not inferior to steroid injection in a short term up. Comparing the long-term efficacy, both clinically and sonographically is necessary to confirm their sustained effect. We can conclude that the use of PRP is an effective treatment method for patients with plantar fasciitis which do not respond to conservative treatment.

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