



## A Study of Recent Treatment of Plantar Fasciitis

Authors

**Dr Rahmat Ali (Ms (ortho), MCh(ortho))<sup>1</sup>, Dr Rajendra Chaudhry (MD Medicine)<sup>2\*</sup>**

<sup>1</sup>Professor and H.O.D (Ortho Department), Maharishi Vashishtha Autonomous State Medical College, Basti, UP

<sup>2</sup>Professor and H.O.D (Medicine Department), Maharishi Vashishtha Autonomous State Medical College, Basti, UP

\*Corresponding Author

**Dr Rajendra Chaudhry (MD Medicine)**

Professor and H.O.D (Medicine Department), Maharishi Vashishtha Autonomous State Medical College, Basti, UP

### Abstract

*Plantar fasciitis (PF) is characterized by plantar medial heel pain, usually present in the morning at the first few steps. Obese individuals, who stand for prolonged periods and who walk on hard surfaces, typically suffer from PF. The diagnosis can be achieved through patient clinical history and clinical findings. Stretching exercises, activity modification, and use of several analgesics resolve symptoms in over 75% of patients. Surgical management of PF consists of plantar fascia release. In recent years, biological treatments have been getting popularity in many orthopaedic conditions.*

**Keywords:** *Biological treatment, Bone marrow aspirate concentrate, plantar heel pain, PF, PRP.*

### Introduction

Plantar fasciitis (PF) is usually treated with conservative treatment, but some cases are challenging to manage. New biological therapies are gradually gaining the interest of scientific world in this condition as well.

### Platelet -Rich Plasma

Platelet-rich plasma (PRP) is a device used for several chronic degenerative soft-tissue conditions, including PF. To prepare PRP, patient's own blood is centrifuged to obtain an increased platelet concentration. Platelet-rich plasma is postulated to promote native tissue regeneration. Platelet-rich plasma injection efficacy in the management of chronic PF has been evaluated in several controlled trials. Platelet-rich plasma is not associated with the complications of corticosteroid injections, such as, plantar fascia rupture or fat pad atrophy. Platelet-

rich plasma injections were compared to corticosteroid injections and they conclude that PRP injections were a valid alternative to corticosteroid injections.

We recruited patients suffering from chronic PF and divided them into two treatment groups (PRP group vs physiotherapy group). Ultrasonography was performed before and 6 weeks after treatment, fascial echogenicity was significantly changed in most of the patients after PRP injection, and fascial thickness was statistically decreased in the PRP group compared to the physiotherapy group. Most the studies analysed mentioned a significantly larger improvement in symptoms between the first visit and the last follow-up evaluation. Platelet-rich plasma injections are an effective option to decrease pain and enhance function in chronic PF and may be safer and more efficient than corticosteroid injections.

### Corticosteroid vs. Platelet-rich Plasma

Different studies analysed the use of corticosteroids injections vs PRP in patients with PF using functional evaluation and pain scales. We recruited 20 individuals with chronic unilateral PF who had failed traditional conservative treatment. They were randomized into two groups: Group I was managed with only ultrasound-guided injection of 40 mg Depo Medrol (methylprednisolone), and group II with one ultrasound-guided injection of autologous PRP. In patients with severe chronic PF who have not obtained the good result to traditional conservative management, PRP is able to provide successful benefits in the long-term, being more efficacious than corticosteroid injections, and appearing safer than surgical alternatives.

**The PRP efficiency was comparable to that of steroids injections, without complications associated with steroid use:**

1. PRP reduces inflammation,
2. Promotes the regeneration of damaged tissue (especially soft tissues),
3. Particular muscles and tendons,
4. PRP has regenerative proprieties.

### Prolotherapy

Prolotherapy is an injection-based treatment used in chronic musculoskeletal conditions, such as, PF. In this procedure, a natural irritant (such as, hyperosmolar dextrose) is injected into the soft tissues of the plantar fascia to cause the osmotic rupture of local cells and trigger a healing response. Prolotherapy injections can be effective in patients with chronic PF. The efficacy of a prolotherapy injection is superior to that of corticosteroids, as it allows tissue healing similar to PRP.

The result of prolotherapy and PRP was seen during the follow-up period, while the corticosteroid injection lost its effectiveness.

### Bone Marrow Aspirate Concentrate

One promising new non-surgical treatment is bone marrow concentrate (BMC) or bone marrow aspirate concentrate (BMAC) therapy. Bone

marrow aspirate concentrate is obtained by centrifugation of autologous bone marrow aspiration.

**Bone marrow aspirate concentrate is composed of**

1. Concentration of mesenchymal stem cells (MSCs),  
White blood cells,
2. Hematopoietic stem cells (HSCs),
3. Growth factors,
4. Platelets.

Anti-inflammatory effects, can be found in BMAC. Inflammatory process, mechanical stress, degenerative changes, and disorganized healing are all mechanisms of tendon injury. Bone marrow aspirate concentrate promotes tenocyte proliferation to enhance the recovery and healing of injured tendons.

### Conclusion

Conservative treatment is successful in most patients with PF. We need to bear in mind that early diagnosis and management usually lead to a shorter treatment as well as increased chance of success with conservative measures.

Strengthening and stretching programs play a key role in the management of PF, and must be recommended in addition to biological treatments. The current widespread use of corticosteroids must be discouraged because of the adverse reactions and the limitation of their prolonged use. Biological treatments are becoming a viable management option because of their low risks for the patient, and their sustainability. Surgical release of the plantar fascia is an available option when biological measures are not effective, but it is destined to a small proportion of patients. Usually, PF is a self-limiting condition.

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