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A study to compare the efficacy of corticosteroid therapy with platelet-rich plasma therapy in recalcitrant plantar fasciitis: A preliminary report

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ABSTRACT

Background: Plantar fasciitis is one of the commonest, and most frustrating, foot ailments seen in a regular orthopaedic clinic. There are a number of modalities available to treat this condition, of which corticosteroid injection is, perhaps, the most popular. However, recent years have seen an increased interest in the use of platelet-rich plasma (PRP) injections in various clinical situations such as plantar fasciitis.
Methods: We undertook a prospective non-randomized study to compare the efficacy of traditional corticosteroid injection (Steroid group) to PRP injection (PRP group), in a cohort of patients.
Results: We studied both groups of patients before and after the injections using Visual Analogue Score (VAS), the Foot & Ankle Disability Index (FADI) and American Foot and Ankle Score (AFAS). Our study confirms that there is significant clinical improvement in PRP group at three months after the injection.
Conclusion: The use of PRP injection can be an attractive alternative in the treatment of disabling, *recalcitrant* plantar fasciitis.
Study design: Cohort study.
Level of clinical evidence: Level 3.

1. Introduction

Plantar fasciitis (PF), both acute and chronic, is one of the commonest foot ailments [1]. More than two million individuals are treated for chronic PF on an annual basis, in the United Sates alone, accounting for 11 to 15% of visits related to foot ailments [2].

PF is considered a self-limiting condition. However, it may require a resolution time ranging from 6 to18 months and sometimes even longer which can lead to frustration on both, the physician and the patient [3,4]. There are many treatment modalities available for PF, both medical and surgical, with variable success rates.

The primary treatment for PF is rest and avoidance of aggravating activity; this provides significant pain relief. According to Wolgin et al. [5], rest was the treatment that worked best for 25% of PF patients whereas a pair of proper shoes or change of footwear was considered by 14% of PF patients as the treatment that worked best [6]. Strapping, taping or accommodative heel cups and orthotics may be effective components of a PF treatment plan [7]. Other treatment options include stretching and strengthening exercises, night splinting and walking cast [5,8,9].

Traditionally, if conservative treatment for chronic plantar fasciitis failed, corticosteroids were administered which provided temporary pain relief [9,10]. However, recurrences after steroid injections are well known. This has led to the use of other, safe, injection forms such as PRP. The logic is that PRP enhances local healing thereby improved clinical outcome [11]. This is a preliminary report of a study to compare the efficacy of corticosteroid injection to PRP injection in PF. To our knowledge, this is the first study comparing the efficacy of two forms of injections in the treatment of difficult clinical scenario of PF.

2. Patients and methods

This study was commenced after obtaining approval from the Institutional Ethics Committee. Plantar fasciitis (PF) was defined as

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pain over the medial part of the foot at the origin of plantar fascia and over its course; with pain on direct palpation and on forced dorsiflexion. All individuals with *recalcitrant* PF visiting our institution from July 2010 were evaluated. Patients were divided into two groups; those receiving corticosteroid (steroid group) and those receiving PRP (PRP group). It was pre-decided to include 60 patients with 30 patients in either group.

Patients with PF of minimum 3 months duration with previous unsuccessful conservative therapy were considered eligible for the study. Individuals with previous surgery for PF, diagnosis of vascular insufficiency or neuropathy related to heel pain and previous exposure to corticosteroid therapy were excluded from the study. All the eligible participants were explained about both procedures in detail including pros and cons. This was followed by their informed consent. By August 2011, we could include 60 patients who met the inclusion criteria and agreed to participate in the study.

The patients were assessed, before and after the injection, using Visual Analogue Score (VAS) [12], the Foot & Ankle Disability Index (FADI) [13] and American Foot and Ankle Score (AFAS) [14]. The intervention was later on administered in the form of injections of either PRP or Steroid according to the group. The patients were again evaluated during the follow up visits three months after the injections.

2.1. Corticosteroid injection procedure

Under aseptic precautions, a mixture of 40 mg of triamcinolone acetonide (Kenacort, Nicholas Piramal, India) and 3 ml of 2% lignocaine (Xylocaine, Aestus Enterprises, India) was injected into the tender spot and then dressed with an occlusive dressing. The patient was then mobilised.

2.2. Platelet-rich plasma injection procedure

Under aseptic precautions venipuncture was performed, at the antecubital vein, using an IV cannula which was then secured to skin. 54 ml of blood was drawn into a syringe containing 6 ml of

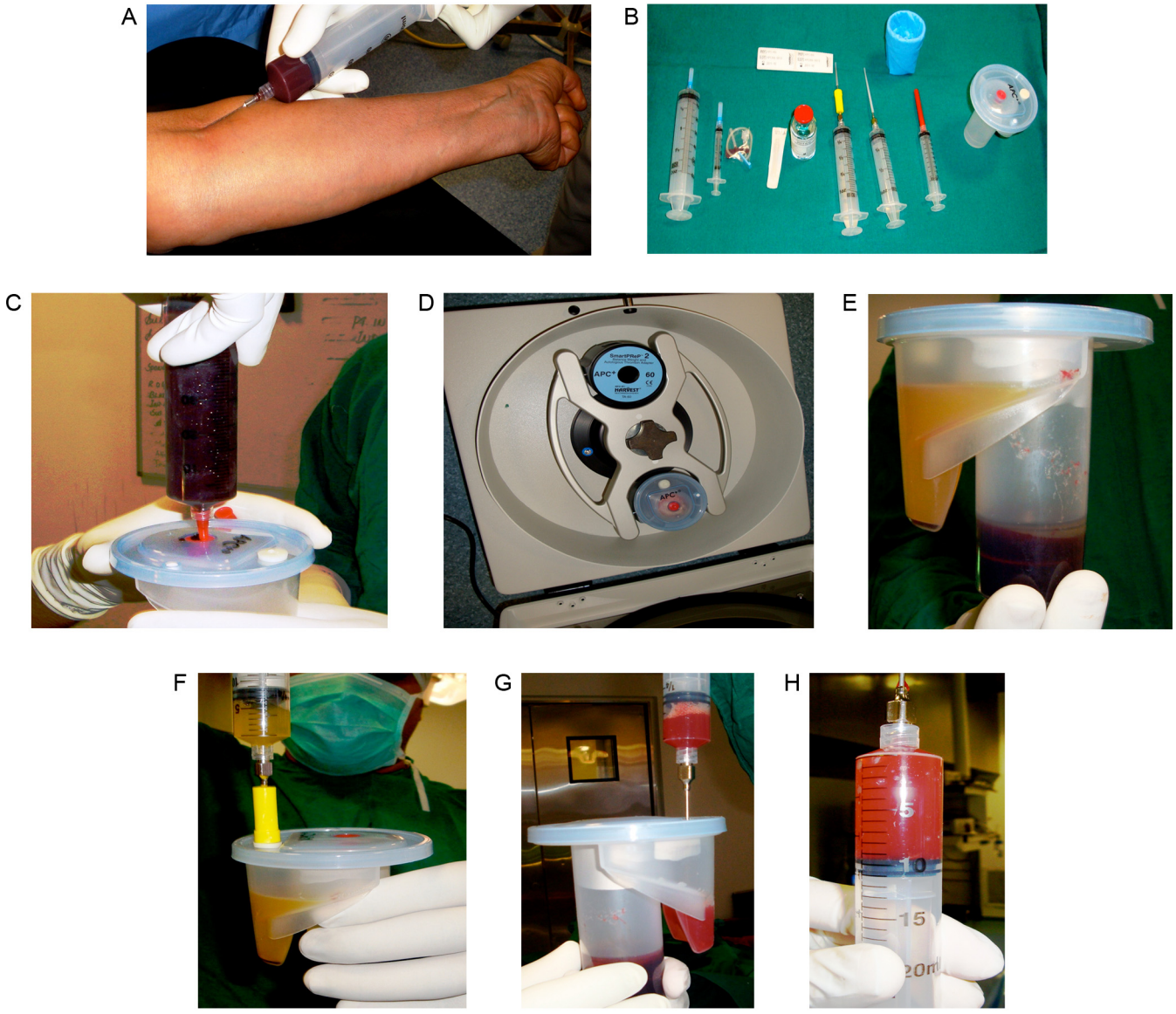

Fig. 1. (A) Drawing blood from the patient. (B) Platelet rich plasma kit. (C) Transferring blood into processing disposable (PD) via red access site. (D) PD placed into centrifuge system with appropriate balance weight. (E) PD after centrifuge showing PRP with supernatant PPP. (F) Removing PPP via yellow access site using a syringe with spacer. (G) Re-suspension of remaining PRP. (H) PRP ready for injection. (For interpretation of the references to color in the artwork, the reader is referred to the web version of the article.)