

## Original Article

# The Relation between Conservative Treatment and Heel Pain Duration in Plantar Fasciitis

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## ABSTRACT

**Objective:** To establish the efficacy of conservative treatment and period of heel pain duration in plantar fasciitis

**Design:** Prospective therapeutic trial

**Setting:** Outpatient clinics at King Hussein Medical center and Prince Rashed Military Hospital, Jordan

**Subjects:** Seventy five patients with 84 heel pains were seen by a rheumatologist at the rheumatology clinic.

**Intervention:** Three arm trial therapies (only one steroid injection, heel pad, stretches and strengthening exercise).

**Main Outcome Measures:** Reduction of heel pain after

one, three and six month intervals using a 10 cm visual analogue scale (VAS).

**Results:** A marked reduction of pain score was noticed at one month in both groups. But after interviewing the patients during the clinical visits at three and six months there was a more significant improvement in pain score in the first group less than eight weeks duration in comparison with the second group

**Conclusion:** The present study demonstrates that early diagnosis and treatment could prevent long standing heel pain in plantar fasciitis.

KEY WORDS: calcaneal spur, heel pad, heel pain, plantar fasciitis, steroid, tendonosis

## INTRODUCTION

Painful heel is commonly seen in rheumatology and podiatry clinic. It has been estimated to affect 10% of runners and is present in the general population at the same rate<sup>[1-4]</sup>. It is an overuse injury resulting from repetitive micro tears of the plantar fascia at its origin on the calcaneus<sup>[2, 5]</sup>. The underlying causes may be either inflammatory or biomechanical. Some patients experience point tenderness along the medial fascia, inability to run and painful first step in the morning<sup>[3,6,7]</sup>. Recent study demonstrates absence of inflammatory cell in the injured tissue suggesting more of a degenerative process advocating the use of the terms tendonosis or fasciosis<sup>[2]</sup>.

Biomechanical factors such as pes planus, pes cavus with rigid high arch and poor foot wear, high body mass index (BMI), occupation, life style, duration of heel pain and female gender are involved in the etiology and may affect the outcome<sup>[4,8-12]</sup>.

The most commonly described therapies are steroid injections, non-steroidal anti-inflammatory drugs (NSAID), exercises, heel pad, and night splint and in intractable cases surgical procedures.

This study was planned to identify the relation between conservative treatment (steroid injection, exercise, heel pad) and duration of pain in plantar fasciitis.

## PATIENTS AND METHODS

During a 12-month period (from July 2004 to June 2005) 75 patients with heel pain syndrome entered the trial. The majority of patients (n = 43) were recruited from the outpatient clinic of King Hussein Medical Center. An additional 32 patients were recruited from the Prince Rashed Military Hospital.

Diagnosis was made from patient's history and physical examination. The following demographic characteristics were recorded at base line (age, sex, BMI, duration of heel pain and occupation).

The study was designed as a therapeutic trial (a prospective cohort study). Patients with foot deformity and pregnancy were excluded from study. The patients were classified into one of two groups: Group 1- patients with less than eight weeks heel pain duration and Group 2 – patients with more than eight weeks heel pain duration. They were not treated previously with same technique but had received analgesics. All patients received the following at their first visit:

- Silicon heel pad for the affected foot to be used while walking and for six months (the duration of the study).

- Methylprednisolone 20 mg/0.5 ml with one ml lignocaine HCL 20% given in the medial aspect of the heel pad and the needle was directed toward

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**Table 1:** Group wise distribution of patient characteristics and symptoms.

Patient group	Heel pain duration	No. of involved heel	Mean age (years)	Mean pain duration	Mean initial pain score	p-value
I	< 8 weeks	32	46	5 weeks	6.3	< 0.001
II	> 8 weeks	45	50	90weeks	6.2	< 0.001

**Table 2:** Group wise distribution of baseline and follow-up pain scores at one, three and six months.

Patient Group	Heel pain duration	No. of involved heel	baseline	p-value	1 month	p-value	3 month	p-value	6 month	p-value
I	< 8 weeks	32	6.3	< 0.001	3.5	< 0.001	2.5	< 0.001	1.2	< 0.001
II	> 8 weeks	45	6.2	< 0.001	4.6	< 0.001	3.8	< 0.001	2.9	< 0.001

the most painful area.

The patients were instructed:

- To avoid bare-foot walking on hard surfaces.
- Non-weight bearing stretching exercise to plantar fascia.
- Strengthening exercises of the intrinsic muscles of the foot (using towel curls, marbles pickups, and toe taps) maintained for 10 minutes, three times daily, for 12 weeks.

Patients were asked by the doctor to score their pain according to the visual analogue scale (VAS) of heel pain as baseline; also immediate pain after injection was scored.

The patients were followed up for outcome measurements over three clinic visits at one, three and six months by the same doctor. At the end of this trial patients were interviewed and asked if they still complained of pain or were cured by the trial treatment. Statistical analysis was done using the SPSS program. Student's t-test was used to compare the results between two groups of study.

## RESULTS

Seventy-five patients were entered into the study; the number of involved heels was 84. Nine out of 75 patients had bilateral symptoms (12%), and the remaining 66 patients had unilateral symptoms. Five patients with seven heels were lost to follow up, so that their outcome measurements were unknown to us. Seventy patients with 77 heel pain continued with their follow up. The study subjects were predominantly female (48 patients, 69%). The patient's age ranged between 36-60 years while the mean age was 48 years. Group 1 had 32 patients with mean heel pain duration of five weeks (range 3-8 weeks) while Group 2 had 45 patients with mean heel pain duration of 90 weeks (range 10-208 weeks). The base line pain scores for Group 1 and 2 were 6.3 and 6.2 respectively. The mean baseline pain score and mean pain score at one, three and six months are shown in Table 2.

There was a marked improvement of pain score in both groups at one month interval; it was more obvious in the first group (3.5) than in the second

group (4.6).

While interviewing the patient during the clinical visit at three and six months, there was a significant improvement in pain score in the first group (2.5, 1.2 respectively) and minimal improvement in the second group ( 3.8, 2.9 respectively).

No relationship was found between (BMI) and pain reduction at one month interval ( $p = 0.3$ ). There was no correlation between patient's age and pain score ( $p = 0.3$ ). No heel infection or plantar fascia rupture were reported among our study. There was no correlation between patient's occupation and pain score ( $p = 0.3$ ).

## DISCUSSION

Conservative treatment of plantar fasciitis is successful when treatment is started within six weeks after the onset of symptoms<sup>[13]</sup>. The earlier the patient present, the more likely that conservative measure will help. This can prevent long standing heel pain and complications which lead to degenerative changes of proximal plantar fascia.

Intrinsic muscles exercises have been advocated. Stretching and strengthening program plays an important role in conservative treatment. It can correct functional risk factor such as: tightness of gastrosoleus complex, weakness of the intrinsic foot muscles and increasing flexibility of calf muscles<sup>[1,14]</sup>.

Recent evidence suggests that non-weight-bearing stretching exercises to plantar fascia provide improvement in pain and mobility compared to weight bearing achilles tendon stretching exercises. When stretches were combined with the use of heel cup, up to 95% patients improved. Orthosis made of soft materials provide cushioning by reducing the shock on walking by up to 42%. Shoes should have an arch support and cushioned heel<sup>[15-17]</sup>.

Steroid injection can provide short pain relief. An injection is best given from medial rather than the inferior aspect of the heel<sup>[15]</sup>. The analysis did not detect relation ship between pain reduction and patient (age, BMI, occupation) and according

to these findings, patient heel pain does not benefit from weight loss. We find that plantar heel pain predominantly affects adults, often in mid to late life with a female predominance.

The loss to follow up of seven heels (5 patients) at one month was insignificant and did not affect the trial. There was no difference between the two groups of patient at the time of injection and first visit. This explains the short term effect of steroid therapy. There was significant improvement in Group 1 patients at three and six months. The slight improvement in Group 2 is explained by the effect of exercise and the use of heel pad which reduce plantar fascia tension and provide shock absorption.

In conclusion, the present study demonstrates that the early diagnosis and treatment (three arm trial therapy of steroid, heel pad, and exercises) could prevent long standing heel pain in more than 95% of patients.

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