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# COMPARATIVE STUDY ON FUNCTIONAL OUTCOME OF STEROID INJECTION VS CONSERVATIVE MANAGEMENT IN PLANTAR FASCITIIS

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**Abstract:**

**Aim:** Plantar fasciitis is the most common cause of inferior heel pain. Steroid injections have been described to treat plantar heel pain since many years. The need for this study is to evaluate the functional outcome following steroid injection versus conservative management of plantar fasciitis.

**Material and methods:** 45 patients were included in the study, 3 lost to follow up. 20 patients were given local steroid injection in the heel (group 1) and 22 were managed conservatively (group 2). The patient was reassessed in 2 weeks, 4 weeks and 8 weeks using VAS Numeric Pain Distress Scale.

**Results:** At week zero the mean of group 1 was  $7.70 \pm 0.35$  and that of the group 2 was  $7.58 \pm 0.33$  which was not statistically significant. By the follow up week 2, the mean dropped significantly from 7.70 to 4.87 in group 1 while the mean VAS scores dropped in group 2 only from 7.58 to 6.60. This difference was statistically significant ( $p < 0.001$ ). At 4th week the mean VAS scores were 2.92 in group 1 while in group 2, the mean was 3.6 ( $p < 0.001$ ). By week 8 the group 1 reached VAS scores of  $1.65 \pm 0.41$  and VAS score of group 2 was  $1.8 \pm 0.49$  (statistically not significant).

**Conclusion:** Corticosteroids when used for short term give better results in treating plantar fasciitis although the long term complications of steroids must be kept in mind before initiating treatment.

**Keywords:** Planter Fasciitis, Steroid injection, conservative treatment

## Introduction

Plantar fasciitis is the most common cause of inferior heel pain<sup>1</sup> accounting upto 15% of foot pain<sup>2</sup> It is synonymous with calcaneal spur which is the accumulation of calcium near the attachment of the plantar fascia on the calcaneum. Symptoms include insidious onset of pain particularly in the morning or after rest<sup>3</sup> The pain is usually accompanied in situations of sudden weight gain, prolonged standing, change in activity, or incorrect training and is aggravated by increased activity like running, dancing, and playing basketball<sup>4</sup>

Pathognomonic feature is pain on palpation of medial and lateral parts of the heel and on extending great toe.<sup>5</sup>

The etiology of heel pain is often difficult to diagnose but is commonly related to biomechanical dysfunction, trauma, neuralgias, infections, arthritic factors and autoimmune disease. Most authors agree that the majority of heel pain stems from biomechanical factors that lead to chronic repetitive stress upon the soft tissue structures surrounding and including the plantar fascia, (Hence the term ‘Plantar Fasciitis’).<sup>6</sup>

In the literature, PF has been described as painful heel syndrome, chronic plantar heel pain, heel spur syndrome, runner’s heel, and calcaneal periostitis<sup>7,8</sup>

In most persons it is a self-limiting condition, lasting from 6-18 months on an average and presenting commonly among women ages 40-60 years<sup>9</sup>. The diagnosis is usually clinical but in atypical cases the diagnosis can be augmented using high-resolution ultrasonography which shows increased thickness and hypoechoic fascia<sup>10-12</sup>

Pain may be exacerbated by passive dorsiflexion of the toes or having the

patient stand on the tips of the toes<sup>13</sup>. Tightness of the Achilles tendon (with dorsiflexion at the ankle limited by 5” or more) is found in almost 80 percent of patients<sup>14</sup>.

In common with other musculoskeletal conditions, steroid injections have been used to treat plantar heel pain since the 1950<sup>15</sup> and are one of the most frequently described treatments for painful heels in the medical literature. There are drawbacks in injecting the heel with steroids mainly rupture of the plantar fascia and atrophy of the fat pad<sup>16,17</sup>.

An injection is best given from the medial rather than the inferior aspect of the heel<sup>18</sup>; a series of minor withdrawals and reinsertions are necessary so as to infiltrate the whole breadth of the superior aspect of the inflamed fascia, avoiding the inferior surface so as not to cause fat pad atrophy<sup>19</sup>.

The need for this study is to evaluate the functional outcome following steroid injection versus conservative management of plantar fasciitis.

## Material And Method

**Study Area:** Departemnt of orthopaedics, JK Hospital & LN Medical College ,Bhopal

**Study Population:** We included 45 patients. 3 patients were lost to follow up. The patients who fulfilled the below mentioned criteria were included in the study (n= 42).

- All patients were offered Injection Depomedrol locally at heel
- Patients who agreed for injection were included in Group 1 (n=20)
- Patients who refused injection were given conservative management in

form of NSAIDS, Contrast Fomentation, Ankle Stretching Exercise and Foot Wear Modification/Silicon Heel Pad were included in group 2(n=22)

- A detailed informed consent form was signed by each patient and all information were kept confidential

**Study Duration:** six months (July2017-December 2017)

**Study Design:** A prospective longitudinal analytical study

## Inclusion Criteria

- AGE: 20-70 Years
- H/O at least 8 weeks of heel pain combined with point tenderness over the medial tubercle of the calcaneus

## Exclusion Criteria

- AGE: Patients below 20 years and above 70 years
- Patients with Calcaneal fractures, Hagelunds disease and pes planus
- Patients with Systemic illnesses like diabetes, gout, rheumatoid arthritis
- H/O Previous injection corticosteroid in previous six months
- Patients who had received any previous form of injection therapy, surgical fasciotomy or extensive therapy for plantar fasciitis
- Allergic to Depomedrol
- Current pregnancy or current nursing mothers, and
- Chronic NSAID use were excluded

Patients receiving corticosteroid injection were injected with 80 mg methyl prednisolone mixed with 1 ml 2% plain lignocaine locally at the heel throughout the distribution of plantar

fascia.

Following injection gentle massage is applied to the heel for 1 minute.

All patients were told to avoid weight bearing on the heel pad for 48 hours and were allowed to continue with their usual pain medications

**Follow Up**

The patient was reassessed in 2 weeks, 4 weeks and 8 weeks using VAS Numeric Pain Distress Scale:



**Results**

Majority of the patients had severe pain on first consultation as depicted in the VAS analog score (Table 4).

- On first visit or week zero – the mean of the depomedrol group (group 1) was 7.70±0.35 and that of the conservative group (group 2) was 7.58±0.33 which was not statistically significant.
- By the follow up week 2, the mean dropped significantly from 7.70 to 4.87 in the depomedrol group (group 1) while the mean VAS scores dropped in conservative group (group 2) only from 7.58 to 6.60
- By the 4<sup>th</sup> week the mean VAS scores were 2.92 in depomedrol group (group 1) while in the conservative group (group 2), the mean was at 3.6.
- By week 8 the steroid

groups(group 1) reached VAS scores of 1.65 ±0.41 and VAS score of conservative group(group 2) 1.8±0.49 which was found again to be statistically not significant.

- Thus it can be concluded that there is a fast response in form of VAS score in group 1 (depomedrol group) as compared to the conservative group

**Tables:**

**1. Distribution Of Patients Based On Age:**

| Age Group (Yrs) | Group 1   |      | Group 2   |       | P Value  |
|-----------------|-----------|------|-----------|-------|--|
|                 | Frequency | %    | Frequency | %     |  |
| 20-30           | 2         | 10%  | 1         | 4.5%  | Chi-Square=0.62<br>Degree of Freedom=4<br>P Value=0.96 |
| 30-40           | 4         | 20%  | 5         | 22.7% |  |
| 40-50           | 7         | 35%  | 8         | 36.4% |  |
| 50-60           | 5         | 25%  | 5         | 22.7% |  |
| 60-70           | 2         | 10%  | 3         | 13.6% |  |
| TOTAL           | 20        | 100% | 22        | 100%  |  |

**2. Distribution Of Patients Based On Sex:**

| Sex    | Group 1   |      | Group 2   |        | P Value  |
|--------|-----------|------|-----------|--------|--|
|        | Frequency | %    | Frequency | %      |  |
| Male   | 09        | 45%  | 08        | 36.36% | Chi-Square=0.32<br>Degree of Freedom=1<br>P Value=0.57 |
| Female | 11        | 55%  | 14        | 63.64% |  |
| Total  | 20        | 100% | 22        | 100%   |  |

**3. Distribution Of Patients Based On Side:**

| Side      | Group 1   |      | Group 2   |        | P Value   |
|-----------|-----------|------|-----------|--------|---|
|           | Frequency | %    | Frequency | %      |   |
| Right     | 10        | 50%  | 10        | 45.45% | Chi Square=0.1145<br>Degrees of Freedom=2<br>p-value=0.9443 |
| Left      | 7         | 35%  | 8         | 36.36% |   |
| Bilateral | 3         | 15%  | 4         | 18.18% |   |
| Total     | 20        | 100% | 22        | 100%   |   |

**4. Comparison Of VAS Score:**

|        | Group 1 (N=20) |           | Group 2 (N=22) |         | P Value |
|--------|----------------|-----------|----------------|---------|---------|
|        | Mean±SD        | Min - Max | Mean±SD        | Min-Max |         |
| 0 week | 7.7±0.35       | 7.2-8.4   | 7.58±0.33      | 7.2-8.4 | 0.26    |
| 2 week | 4.87±0.40      | 4.2-5.4   | 6.6±0.32       | 7.0-6.0 | <0.001  |
| 4 week | 2.92±0.38      | 2.2-3.8   | 3.6±0.39       | 2.8-4.2 | <0.001  |
| 8 week | 1.65±0.41      | 1.0-2.4   | 1.8±0.49       | 1.0-2.6 | 0.29    |

At 2 week and 4 week , p value is significant

**Discussion**

As the aetiology behind plantar fasciitis is poorly understood (Meyer et al. 2002<sup>20</sup>; Thomas et al. 2010<sup>21</sup>; Young et al., 2004<sup>22</sup>) it is more difficult to determine what has led to this patient's

symptoms. Mechanical overload is the most commonly accepted theory for the development of plantar fasciitis (Thomas et al., 2010<sup>21</sup>). But most often this history is difficult to elicit. Crawford *et al.* evaluated the

short-term effects of corticosteroid injection and it was compared with local anaesthetic in the treatment of heel pain in 106 patients and evaluated with VAS scores<sup>23</sup>. They concluded that heel steroid injection helped in pain alleviation in a short interval whereas local anaesthetic had no effect in treatment.

In our study we compared two different treatment modalities (corticosteroid vs conservative) and final outcome (VAS Score) were measured and it was observed that there were better results with the use of corticosteroid injection as compared to conventional conservative method

One of the most common complications following steroid injection includes heel pad atrophy and Achilles tendon rupture<sup>23</sup> however there was no such complication in present study.

We also conclude by saying that corticosteroids when used for short term give better results in treating plantar fasciitis although the long term complications of steroids must be kept in mind before initiating treatment .

The study had limitations like relatively small study group and shorter duration of follow up. A randomized studies course will be needed in the future to validate the present study's findings

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