

## Outcome of Conservative Approach with or without Steroid Injection for Treatment of Plantar Fasciitis

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### Abstract:

**Background:** Plantar fasciitis is a common cause of heel pain in adults. Although it is usually a self-limiting condition, the pain may become prolonged and severe enough to cause significant distress and disruption to the patient's daily activities and work. Planter Fasciitis is a pain and sensitivity are experienced in the bottom of the foot, particularly beneath the heel, when standing or walking, and is classified as a self-limiting issue

**Objective:** This study was undertaken the outcome of conservative approach with or without steroid injection for treatment of plantar fasciitis.

**Seating and duration:** This study was six months at Orthopedic Department Bolan Medical College /BMCH a Tertiary health care Hospital Quetta.

**Materials and Methods:** Patients by random sampling were divided in two groups. Group A as: Conservative group and Group Steroid Injections group, two hundred patients in each. Patients were assessed as per Visual Analogue Scale at the start of treatment and then after 4weeks and 8 weeks duration on follow up.

**Results:** The difference in the distribution of subjects belonging to either of the treatment modalities regarding the treatment outcome at four and eight weeks was found to be statistically insignificant.

**Conclusion:** As both treatment modalities are at par on comparison of their treatment outcome it is better to go for conservative approach because this can save the patients from the complications of steroid therapy.

**Keywords:** Orthoses, Planter fasciitis, Steroid injection, stretching

## INTRODUCTION

Plantar fasciitis is a prevalent foot condition that affects adults, with estimates suggesting a prevalence rate of 4 to 7% [1,2,3]. This condition can be quite bothersome and causes pain and tenderness in the sole of the foot, particularly under the heel, especially when standing or walking. It may also result in tightness of the Achilles tendon. The pain is typically most severe in the morning upon waking up, often accompanied by difficulty walking downstairs or getting up after sitting for a while. Various interventions are employed to treat plantar fasciitis, although there is limited evidence to determine which interventions are the most effective [4]. One commonly

used treatment for plantar fasciitis is corticosteroid injection [5]. However, there is limited evidence to support its frequent use. Plantar fasciitis is a pathological condition that can cause significant pain and disability [6]. It has been identified as the third most common running-related health issue [7], but it can also affect individuals who are not athletes and older adults who are less physically active [8].

Plantar fasciitis occurs in a wide range of age with the mostly affected between 40 to 60 years [9]. While **the main cause** of condition is not known, several risk factors have been reported, but the most accepted theory is repetitive micro tearing and subsequent chronic inflammation of the plantar fascia at its insertion to the medial calcaneal tubercle [10]. It is an overuse injury from repetitive micro trauma that leads to inflammation and local tissue damage [11]. A portion of the components as often as possible accepted to encourage plantar fasciitis to incorporate atypical foot biomechanics and additionally foot types, ill-advised footwear, and obesity [12-17]. All the more explicitly, foot over pronation is accepted to put an expanded strain on the plantar delicate tissues and make the potential for injury to occur [18]. The most common presenting symptom of plantar fasciitis is a sharp pain of insidious onset with maximal tenderness at the anterior medial border of the calcaneus. The pain is typically worst on the first few steps in the morning and with initial steps after prolonged sitting or inactivity, and on examination, there is mild to severe tenderness on medial calcaneal tubercle and sometimes, on lateral aspect of heel.

A variety of approaches have been recommended for the treatment of Plantar fasciitis, such as rest, non-steroidal anti-inflammatory drugs, night splints, foot orthosis, stretching protocols, extra corporeal short wave therapy, steroid injections, and surgical intervention [19].

In the earlier, corticosteroid injections were commonly used for the treatment of plantar fasciitis, resulting in temporary symptom relief. However, in this study, we examined the impact of corticosteroid injections on the thickened plantar fascia and found them to be effective.

## **MATERIALS AND METHODS**

A prospective study was done at Bolan Medical College /BMCH a Tertiary health care Hospital Quetta after approval from institutional ethical committee in a period of six months. Total 200 patients were taken up for the study that completed the follow-up. Patients by random sampling were divided in two groups. Group A as: Conservative group and Group B as Local Steroid Injections group, 100 patients in each. Consent was taken from all patients.

For diagnosis the scientific guidelines as given in Apley's Textbook of Orthopedics [1] were diagnosis of plantar fasciitis is determined by adhering to guidelines that indicate it is reliant on the patient's medical background and the outcomes of the physical assessment. The patient's history typically reveals discomfort and sensitivity in the bottom of the foot, particularly beneath the heel, when standing or walking. The onset of the condition is typically gradual, with no specific incident or injury. However, there are cases where a sudden increase in sports activity, a change in footwear, sports shoes, or running surface has been reported. Pain is usually most severe upon waking up in the morning or after prolonged periods of sitting - a common symptom known as start-up pain and stiffness. During examination, tenderness in the heel while bearing weight and applying firm pressure with the thumb through

palpation, particularly on the medial side of the heel, were the two primary criteria used to diagnose plantar fasciitis. Patients between the ages of 18 and 65 who met the aforementioned diagnostic criteria were included in the study.

Patients with history of trauma, Stress fracture calcaneum, and acute planter fascias rupture cases, patients with neurological pathology, Haglund's deformity cases and flat feet cases. Pregnant women, patient's less than 18 years, and those with history of bleeding disorder or on anti coagulant therapy and cases of bilateral planter fasciitis were also excluded.

Overall five procedures were combined together that is Soft Insoles, Stretching, Ultrasound therapy and Contrast baths as following: Patients were prescribed Celecoxib 200 mg daily for two week. Soft insoles of Liberty Company were placed in the shoes of males. In females soft rubber sole cushioned footwear's were given. Both male and female patients were instructed not to stand or walk bare feet. Patients were subsequently attended by a qualified physiotherapist who made them to do stretching exercises for planter fascia. They were asked to sit with the knees bent and heel flat on the floor and then to grab all five toes and pull them back toward the knee, hold for 30 sec and repeat five times. They were also advised planter fascia stretches against the wall. Feet was placed against the wall and after gentle leaning forward slowly were asked to hold for 30 sec and repeat the procedure five times.

After stretching exercises ultrasound therapy was given in pulsed mode for 15 min in the first week after the application of gel and for 10 min after the application of gel in the second week. Contrast baths therapy was advised at home. Limb to be placed in a hotter bath at 40-42 Centigrade temperature for 3-4 min and then in a colder one at 15-20 Centigrade, for about 1 min alternatively with an instruction: to practice begin and end with the hotter bath.

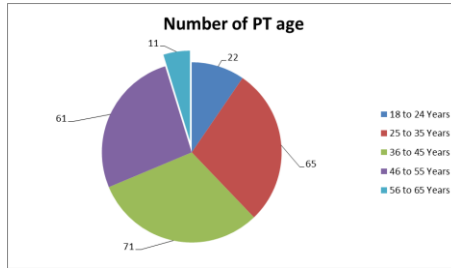
Patients were given local steroid injection in the form of 40 mg methyl prednisone mixed with 1ml of 2% lignocaine at weekly intervals up to three injections after subcutaneous sensitivity test of lignocaine in a sterile atmosphere i.e. minor OT after part preparation.

## RESULTS

Total number of patients reached to 276. Out of this 100 patients of each group who completed the follow up were taken for study. Male female ratio in our study was 126/74. Maximum numbers of patients (136) were in the age group of 25 to 45 y [Table/Fig-2]

Weight-percentage of patients who were obese was 34%. Duration of heel pain symptoms on average was three week. Number of cases of calcareous spurs in group A and B was 35 and 39. The difference in the distribution of subjects belonging to either of the treatment modalities regarding the treatment outcome at four and eight week was found to be statistically insignificant [Table/Fig-3,4].

**Fig-1: Showing distribution of patients according to their age groups**



**Table 1: Comparison of treatment outcome at four weeks between Groups**

The difference in the distribution of subjects belonging to either of the treatment modalities regarding the treatment outcome at 4 weeks was found to be statistically insignificant

Treatment	Treatment outcome at 4 weeks			p-value(Chi sq test)
	Excellent	Good	fair	
Conservative treatment	75	20	05	0.67
Local Steroid Injections	77	16	07	
Total	152	36	12	

**Table 2: Comparison of treatment outcome at four weeks between Groups**

The difference in the distribution of subjects belonging to either of the treatment modalities regarding the treatment outcome at 8 weeks was found to be statistically insignificant

Treatment	Treatment outcome at 8 weeks			p-value(Chi sq test)
	Excellent	Good	fair	
Conservative treatment	80	19	01	0.59
Local Steroid Injections	79	18	03	
Total	159	37	04	

## DISCUSSION

No clinical trials comparing the use of oral NSAIDs by themselves have been found, only in combination with other therapies such as orthosis and exercise [4], so no evidence for their isolated benefit exists.

Donley et al. conducted a randomized controlled trial to assess the efficacy of NSAIDs in the treatment of plantar fasciitis. 29 patients were randomly allocated to receive either 200mg of Celecoxib daily or a placebo for thirty days, in addition to Achilles tendon stretching, viscoelastic heel cups, and night splinting. While there was a slight improvement in the group receiving Celecoxib, no statistically significant difference was found [5]. Similar to Donley et al., we also recommended the use of Celecoxib 200 mg daily.

The aim of orthotic therapy is to reduce strain on the planter fascia by cushioning and elevating the heel and/or providing medial arch support. Orthotics may also be useful for overweight planter fasciitis patients, as they help to reduce shock and cause more even weight distribution over the planter fascia and its insertion on the calcaneus [6]. Many types of shoe inserts have been used to manage planter fasciitis. One RCT showed that magnet embedded insoles were no more effective than placebo insoles in alleviating pain [7]. Another study that compared custom orthotics and prefabricated shoe inserts e.g. silicone heel pad, felt pad, rubber heel cup combined with stretching found that the use of prefabricated insoles plus stretching was significantly more effective than custom orthotics plus stretching [8]. Sharma et al., in their study

have used UC-BL, shoe insert in cases of planter fasciitis and good results were obtained. It was considered that UC-BL shoe insert should be able to take over, at least in part, the contribution of planter aponeurosis to longitudinal arch stability by holding the foot in a position that relieves tension on the planter fascia and by holding the heel in inversion and by applying forces against navicular and the outer side of the forefoot, without direct pressure on the soft tissue under the longitudinal arch [9]. As in our study, most of the patients were poor, we recommended cheaper insoles which we found quite soft and durable of a branded company i.e. Liberty. Stretching of the planter fascia and Achilles tendon is considered to be one of the hallmark treatments in the management of planter fasciitis. The goal of a stretching program is to relieve the stress put on the planter fascia by either the planter fascia itself being tight or the fascia being tightened by a tight Achilles tendon, as both the planter fascia and Achilles tendon insert onto the calcaneus [10]. Di Giovanni et al., assessed the role of Achilles tendon stretching versus planter fascia stretching in a randomized study of 101 patients. Both Achilles stretching groups and planter fascia stretching groups appreciated a decrease in pain upon first steps in morning as well as increased function; however, the planter stretchers appreciated a statistically significant improvement in activity function and first step pain as compared to the Achilles stretchers [11]. We noticed that the stretching exercises which we recommended were easy to understand by the patients, further many of them claimed, that because they are like yoga they are quite beneficial for them and they have been doing at home without supervision easily. Ultrasound is a high frequency sound wave with an affinity for tendons and ligaments. Ultrasound heats these tissues and the tissues absorb the energy, resulting in an increase in tissue temperature and metabolism, tissue softening, and increase in circulation. Ultrasound has also been purported to increase chemical activity in tissues, increase cell membrane permeability, deform molecular structures, and alter diffusion and protein synthesis rates, all potentially affecting the speed of tissue repair [12]. We had to convince our patients that this modality is compulsory and for this reason they underwent this procedure but their constraint was to visit hospital daily.

Although Steroid injection is the mainstay for the management of many hyper inflammatory disorders, there is little known about steroid affect at the cellular level and, consequently, little about the aetiology of the risks of connective tissue rupture after the same [13]. A number of complications were noted including planter fascial rupture, planter fat pad atrophy, lateral planter nerve injury secondary to injection, and calcaneal osteomyelitis. Fascial rupture and fat pad atrophy are especially serious complications. Fascial rupture interrupts the intrinsic windlass mechanism of the foot and can promote further inflammation in the surrounding tissue, thus promoting pain. In addition planter fat pad atrophy diminishes subcalcaneum cushioning, availing the planter fascia to further insult and, hence, more pain. Because of the recent availability and facility of ultrasound to improve needle placement accuracy in clinical practice, enhanced therapeutic response rates have been reflected in some of the studies. Further limiting the number and frequency of steroid injections and educating patients on reduction of aggressive physical activity during a 2-wk post injection period has been suggested [14]. In our patients apprehension was noted for the adverse effects and also for further increase in pain after local steroid injections.

## CONCLUSION

As both treatment modalities are at par on comparison of their treatment outcome it is better to go for conservative approach because this can save the patients from the complications of steroid therapy

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