

A Comparative Study of Conventional Versus Interventional Treatment in Patients of Plantar Fasciitis

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Objective: To compare the outcome of conventional versus interventional method of treatments in patients presented with plantar fasciitis.

Study Design : Descriptive comparative study

Place and Duration of Study : This study was conducted at Department of Orthopaedic Surgery, Pakistan Institute of Medical Sciences from November 1 2006 to April 30 2009.

Subjects and Methods: A total number of 276 patients diagnosed as having plantar fasciitis were included in this study. They were divided into two groups of equal number. Group A was controlled group managed by conventional method i.e. non-steroidal anti inflammatory drugs (NSAIDs), foam heel pad, exercises and extracorporeal shock wave therapy (ESWT). Group B was managed by interventional method in which a steroid (Methylprednisolone) injection was used in addition to conventional method.

Results: In Group A, out of 138 patients, 83 patients had still pain on weight bearing and pain after rest and 55 patients had remission in symptoms after treatment. Similarly, in Group B, 29 patients had pain while 109 patients were relieved after treatment.

Conclusion: Interventional treatment method using steroids along with conventional modalities have significant benefit as compared to conventional treatment alone. If the approach and expertise are proper we can expect the best results.

Key Words: Plantar fasciitis, Methylprednisolone injection, ESWT, NSAIDS

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Introduction

Plantar fasciitis, inflammation of the plantar fascia at its origin is one of the most common causes of the heel pain. Predisposing factors of plantar fasciitis are obesity, prolong standing, nature of job, limited ankle flexion and acute or chronic injury to the heel from repeated overload stress. In runners, it appears to be associated with over use, improper or excessively worn footwear resulting into microtrauma to the plantar fascia at a rate that exceeds the body ability to recover.¹ In sedentary adults, it is often attributable to poor intrinsic muscle strength and poor force attenuation secondary to acquired pes planus and compounded by a decrease in the body healing capacity.²

This over use syndrome has been recognized for almost two hundred years. In 1812, Wood described this condition which has been referred by various synonyms including heel pain syndrome, subcalcaneal bursitis, periostitis, neuritis, heel spur syndrome, runner's heel and policeman's heel. The plantar fasciitis is a very common painful disorder of foot and for understanding its cause, it is essential to know the basic

anatomy and physiology of the plantar aspect of the foot.

During takeoff phase of the gait, the dorsiflexion of the toes tightens the plantar fascia and tensile forces generated in the Tendo Achilles increases the tensile strain in the plantar fascia. These repeated stresses result into microtrauma which induces inflammatory process in the proximal part of the plantar fascia and surrounding structures.³ Spontaneous rupture of all or part of the fascia may occur in extremely high load situations and the natural healing of torn fascia often is complicated by painful scar formation.

Materials and Methods

This study was conducted at out patient department of Orthopaedic Surgery, Pakistan Institute of Medical Sciences, Islamabad from November 1,2006 to April 30,2009. A total number of 276 diagnosed plantar fasciitis patients of either sex between the ages of 20-70 years, who presented with heel pain without history of recent foot trauma were included in this study by simple random sampling. An informed consent was obtained

from all the patients for inclusion in the study. These patients were divided into 2 groups of equal number Group A (138 patients) managed by conventional method i.e. anti inflammatory drugs, foam heel pad, exercises and extracorporeal shock wave therapy (ESWT) and Group B (138 patients) were given local steroid injection Methylprednisolone (Depomedrol) 80mg with 2% injection Lignocaine along with the conventional treatment. Every patient of each group underwent ten sessions of physiotherapy. Patients with history of any bleeding disorder, septic arthritis, rheumatoid arthritis, gout, diabetes and local skin disease were excluded from the study.

We assessed the response to treatment of 2 groups according to the Visual Analog Scoring System (VAS). The VAS was used to describe the pain on weight bearing. The range of VAS of zero to 4, 5 to 7 and 8 to 10 was considered as mild, moderate and severe respectively. The follow up visits were on 1st, 3rd and 8th weeks after getting the treatment.

Results

Out of 138 patients of Group A, 94 were female patients and consist of 68.1% of total strength, whereas, 44 were male patients and they were 31.9% of total. Similarly, out of 138 patients of Group B, 82 were female patients and consist of 59.4% of total strength, whereas 56 were male patients and they were 40.6% of total.

The minimum age of patient of Group A was 20 years, whereas maximum age was 70 years. Mean age of patient was 45.15494 years $\pm$ 13.36203. The Minimum age of patients of Group B was 20 years, whereas Maximum age 70 years. Mean and Standard Deviation of age of Group B was 45.6522 years and $\pm$ 11.28765, respectively.

Comparison of both the groups in terms of pain on weight bearing and remission in symptoms is shown in Table I.

Table I: Pain on weight bearing and remission in symptoms(n=138 each group)

	GROUP A		GROUP B	
	Frequency	%	Frequency	%
Pain on weight bearing	83	60.1	29	21.0
Remission in symptoms	55	39.9	109	79.0
Total	138	100.0	138	100.0

In Group A, there were 83 patients (60.1%) who felt pain on weight bearing after receiving conventional treatment. The minimum 5 steps were taken by a patient of this group without pain and maximum 75 steps were taken without pain by a patient. The mean and standard deviation of steps taken without pain were 21.20 and $\pm$ 15.335 respectively. Similarly, in Group B, there were only 29 patients (21%), who felt pain on weight bearing after receiving interventional treatment. In this group, the minimum 45 steps were taken by patient of this group without pain and maximum 140 steps were taken without pain by a patient. The mean and standard deviation of steps taken without pain were 80.52 and $\pm$ 24.800 respectively.

Each patient of Group A was evaluated on visual analog scoring system (VAS-Score) i.e. no pain, mild pain, moderate pain and severe pain. Similarly each patient of Group B was also evaluated on VAS with same pattern as in Group A (Figure 2).

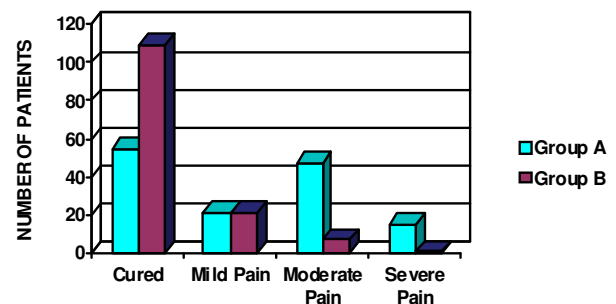


Figure I: Visual Analog Score (n=138 each group)

With the assumption of equal variances of both the groups, the value of t-test was -15.094 with 110 degree of freedom with mean and standard error difference was -59.31 and $\pm$ 3.930 respectively. Similarly, with the assumption of non-equivalent variances of both the groups, the value of t-test was -12.097 with 35.763 degree of freedom with mean and standard error difference was -59.31 and $\pm$ 4.903 respectively.

Discussion

Most of the international studies have been carried out in literate communities with good compliance of the patients, while we faced certain problems during this study. Many patients reporting to us had already taken multiple types of medication by themselves and most were from low socioeconomic and illiterate class. They came from rural or some far flung areas and they didn't know any thing about the nature of the disease. They were treated by the hakeems or by the traditional healers in the villages and small towns. Many of the patients were taking oral steroids since long time and

some were treated even by the heavy doses of antibiotics and due to excessive use of so many drugs they were not responding to the routine treatment of plantar fasciitis. The ineffective multiple modes of treatment of this common condition have always been a clinical dilemma for orthopaedic surgeons.

The latest modality which we used in our study was extracorporeal shock wave therapy (ESWT) which is being used in different international centers with encouraging results. For provision of ESWT to our patients, we made a liaison with the physiotherapy department. ESWT has been found the most famous modality without any complications during research in the west.⁵ In a very comprehensive prospective randomized controlled trial which was performed by Rompe, et al⁶ on 112 patients and was proved that the extracorporeal shock waves therapy is very effective in treating plantar fasciitis of foot. We also found that our patients got better after getting ESWT.

During this study, we observed that the combination of two modalities ESWT and local steroid application is effective in treating this painful condition of plantar fasciitis of foot and these results match with the study did by Nuefeld SK et al.⁷ He showed that in his experience, nonsurgical treatment of plantar fasciitis by using these modes of treatment the success rate was 90%.

The judicious use of local steroid treatment is also mentioned and proved in many authentic studies. The biggest advantage of its use is that it reduces the inflammatory process in the healing of plantar fasciitis patients; patients recover fast and reduces pain on weight bearing which completely settles later on. Motifard M et al conducted a study to evaluate the therapeutic effects of local steroid injections in comparison with casting and they enrolled 90 patients. It seemed that corticosteroid injection was a more effective therapeutic method in heel pain treatment, there was no complication if it is use with care. We also were very careful in injecting local steroid. This conclusion is again matching with our results.⁸

Nuefeld SK⁷ (Founder and president, Orthopaedic Foot and Ankle center of Washington) and Rebecca Cerrito emphasize that 90% of the patients of plantar fasciitis of foot respond to non surgical modes of treatment like local steroid injection, nonsteroidal anti-inflammatory drug and ESWT. We have the same outcome in our patients by using these treatment modalities.⁹

Buccilli TJ⁹ reported a case of abscess formation after local steroid injection in foot. We didn't experience these types of complications. We were very

particular and strict about the sterilization.

So, the importance of this study was that the treatment was inexpensive, available in the hospital, there was good follow up and access to the doctor was easy, consultant opinion on every OPD day and availability of latest machines of physiotherapy used in this study. We tried to counsel each patient properly about their disease and the treatment.

Conclusion

Management of plantar fasciitis with a combined approach using local Injection Methylprednisolone 80mg with 2% Lignocaine, NSAIDs, foam heel pad, extracorporeal shock wave therapy (ESWT) and exercises is highly effective but care of aseptic techniques and good expertise are required to avoid complications. Treatment can be done on outpatient basis and almost all the patients can bear the expenses.

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