



MANAGEMENT OF PLANTAR FASCIITIS BY NATUROPATHIC VS HOSPITAL METHODS- A PROSPECTIVE STUDY

Orthopaedics

**Dr Utsav
Katakwar***

Shalby Hospital, Jabalpur, MP, India *Corresponding Author

**Dr Jayanta Kumar
Laik**

Tata Main Hospital, Jamshedpur, Jharkhand, India

ABSTRACT

Treatment of plantar fasciitis is a common problem of middle age affecting productivity in any industry / domestically. This prospective study was done in 50 patients attending a naturopathy clinic and 100 patients in a tertiary hospital for a period of one year. All patients presenting with heel pain excluding trauma, arthritis, infection, tumours and neuropathy were included. Mean age of 45.6 years with female to male ratio of 3.8:1 was found.

Protocols for both treatment methods were standardised revealing 12 weeks of treatment by naturopathy healing 82% patients whereas hospital treatment healed 98%. BMI < 25 held statistical significance in final outcome. This study showed superiority of hospital treatment methods as compared to traditional ones.

KEYWORDS

Plantar fasciitis, Heel Pain, Naturopathy, steroid injection, yoga, Mud bath, faradic foot bath

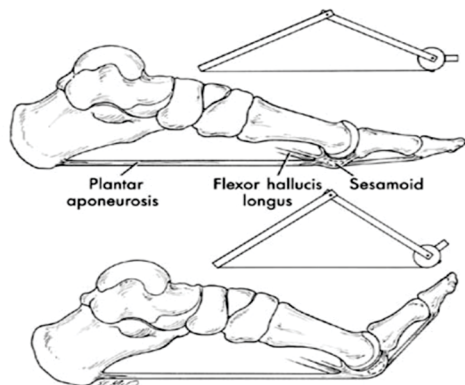
INTRODUCTION

Plantar heel pain is a very common complaint between 40 to 60 years of age. The patient describes the gradual onset of plantar heel pain which is worse in the morning and abates after a few steps, worsening late in the day being quite severe on standing after an extended sitting period¹⁰. This pain is described as burning, aching or lancinating. In economic terms, the problem is very significant as it affects the effective manpower utilization and productivity in relation to industry or at the domestic front.

Age related degenerative changes have been often attributed to the cause of heel pain. It is a constant finding that there are degenerative changes in the elastic adipose tissue of the heel pad in ageing population. Aging also brings about a reduction in the collagen and water content as well as elastic fibrous tissue. This degenerative process in the calcaneal heel pad can amount in part for soreness under the heel.

PATHOMECHANICS-

According to Paul I.I., Munro M.B. and Abernathy P.J. underlying structures of the heel are covered by a highly specialized heel fat pad whose main function to absorb 20-25% of the contact force at heel strike⁷. In the windlass mechanism of the plantar fascia as the toes are dorsiflexed, the plantar fascia is under constant traction as it is pulled constantly under "the drum of the windlass", i.e. the metatarsal heads⁶.



This abnormal tension on the plantar fascia may be subclinical unless other stresses like running, sudden increase in activity, obesity or inadequate shoes or prolonged standing or walking occur¹²

Causes of subcalcaneal heel pain:-

Inflammatory, Infections, Tumours, Metabolic, Degenerative, Neurogenic-

TREATMENTS

There are various methods available in a modern hospital to treat a painful heel. These can be broadly divided into two categories –

A)Conservative- Rest, stretching exercises, heel pads, splinting/casting, medications, wax bath, USG therapy, Faradic foot bath, Extracorporeal shock waves.

B)Interventional- Local steroid injections and surgical release.

Naturopathic methods including steam baths, sauna baths, hot clay treatment, herbal oil massage, acupressure rollers/footboards, ice cold rollers, yogic stretching exercises².

This prospective study was conducted to know if and why the naturopathic treatment is better than the institutional treatment which bases its modalities on scientific principles.

MATERIALS AND METHODS

50 patients attending Mahatma Gandhi Arogya bhavan (Naturopathy centre) (Group A) and 100 patients attending a tertiary hospital (GroupB) were included. Study was carried out over the period of twelve months (September 2011- August 2012)

Exclusion criteria- Local trauma, arthritis, infections, tumours, neuropathies, systemic rheumatoid diseases⁴

Study design –Prospective study

Three weekly follow-ups were done for a total of 12 weeks in both groups and results compared. Change of BMI over time was considered.

Group A did yoga (Taadasan, Veerasan, Akarna Dhanurasan), hot and cold foot bath, acupressure foot pad treatment, water vibrator, mud bath, oil massage, steam and sauna bath^{2,8,16}

Patients in group B were first given conservative treatment. They were initially given 4 modalities of treatment (exercises, use of soft soled shoe, NSAIDs and night splinting) and assessed after three weeks. This was group B1.

After 3 weeks, the patients relieved were excluded and remaining were grouped as B2 and subjected to treatment of B1 group plus wax bath and moist packs. After another 3 weeks (total 6 weeks) patients not relieved were taken as group B3 and given ultrasound therapy and faradic foot bath¹ along with the treatments of group B2

After giving all types of conservative treatment (up to group B3) patients were given a series of two intralesional corticosteroid injections and were grouped as B4-1, B4-2 depending on them taking 1 or 2 injections respectively at 1 week interval.

Patients still having less than 75% pain relief were labelled as “**Failed to treatment**”. Finally a **late follow-up at 16 weeks** from the day of starting of treatment was done to assess the long term benefit of the therapy given.

RESULTS AND DISCUSSION

Age analysis showed that the mean age of patients was 45.6 years in group A and 44 years in group B. Tanz S.S.¹¹ in 1963, Gill L.H.²² in 1987⁵, in their studies regarding heel pain have also reported that patients were mainly between 40 to 60 years of age, although they may vary from 8 to 80 years. **Sex distribution** in group A was 40 females and 10 males and in group B was 72 females and 28 males. **Duration of symptoms** at inclusion in group A and B was 2 to 12 weeks with a mean of 7.16 weeks and in group A and 6.92 weeks in group B respectively. Shikoff M.D. et. al., Snider M.P. et.al. and many other authors have showed that there is a significant relationship with **obesity** and heel pain^{9,10}.

We have analysed obesity in terms of **body mass index**. In group A, the mean BMI for males was 31.34kg/m² and females was 29.78kg/m². In group B, the mean BMI for males and females was 32.12 kg/m² and 28.89 kg/m².

After treatment in both groups, the BMIs were found reduced than earlier in relieved patients. Thus our study reinforces the factor of obesity causing plantar fasciitis.

Trepman reviewing occupational disorders of the foot and ankle have tabulated a variety of **footwear** which may lead to heel pain¹⁴. Tisdell has explored casting to give rest to the region¹³. Our study showed that group A had 58% and 32% patients using hard soles and semisoft soled footwear respectively (total being 90%). In group B this figure was 40% and 47% (total 87%). This shows that there was significant relationship in the type of footwear causing heel pain

Treatment Analysis

Outcome related to treatment modalities provided in naturopathy could not be stratified. The providers of treatment in the naturopathy clinic believed in giving every available treatment to all its patients. We have compared the results of the entire course of treatment given in the naturopathy centre with the treatment in the hospital. Since individual modalities in both groups were different, we have thus not compared each modality separately.

Group A modalities were conservative in nature. Follow-ups were at 3, 6, 9 and 12 weeks, dividing the groups into A1, A2, A3 and A4 respectively.

In group A1, 7 patients (14%) got relief. In the next three weeks (i.e. group A2 at six weeks follow-up) out of the 43 patients left, 10 got more than 75% pain relief. This leads us to figures quoting 23.2% of 43 patients and a total of 17(34%) patients having pain relief after six weeks which is not significant ($\chi^2 = 1.32$; $p > 0.05$) to consider this treatment to be opted only for six weeks. An addition of 23.2% patients (of group A2) to the earlier 14% (of group A1) shows that continuing naturopathic methods for period of six weeks does provide pain relief to a larger group of patients who may not be happy with the treatment only for three weeks. At 9 weeks (group A3) another 11 patients (33.33% of 33 patients) were relieved making the total patients relieved at the end of the treatment to 28 (56%). There was no significance between results of groups A2 and A3 ($\chi^2 = 0.94$; $p > 0.05$).

After 12 weeks of treatment (group A4), 13 (59%) out of 22 patients got relief. There was significant result between A3 and A4 ($\chi^2 = 7.36$; $p < 0.05$). This can be attributed to the long term dietary control and reduction in weight. In the final analysis of naturopathic treatment (tables 5.12, 5.13; figure 5.8) we observe that out of the total 50 patients 7(14%), 10(20%), 11(22%) and 13(26%) patients were relieved in groups A1, A2, A3 and A4 respectively. This observation corresponds with Wolgin et al in his long term follow-up of conservative treatment¹⁵. **9(18%)** of the total were left unrelieved and were taken as **Failed to treatment**.

In hospital treatment methods, study revealed relief in 11(11%) patients out of 100, in the first three weeks of follow-up i.e. group A. A low result of only 11% relief may be attributed to the fact that three weeks of treatment may not be enough. Also it was noted that 100% of the patients relieved in group B, had BMI below 25kg/m². This is of

statistical significance (p value < 0.001) indicating that obesity may have a definitive role. 89 patients not relieved in B1 were grouped as B2.

In B2 group it was found that 16(17.9%) patients out of 89 got satisfaction. These were in addition to the patients relieved in the group B1. Thus in B2 group along with moist packs and wax bath, treatments of group B1 i.e. soft shoes, stretching exercises, NSAIDs and night splinting may also have their role. Out of the total number of hospital patients at six weeks follow-up by two broad categories of treatment modalities (B1 and B2) it was found that 27 (27%) patients i.e. (11 from B1 and 16 from B2) had pain relief. We conclude that at six weeks follow-up, treatment does not prove to be significant in labelling it as a successful modality ($\chi^2 = 1.87$; $p < 0.05$). On comparing the results at six weeks follow-up by naturopathic methods (group A2) it was observed that 34% of patients had pain relief i.e. 7(14%) patients of A1 + 10(20%) patients of A2 = 17 patients = 34% of 50. This difference may be attributed to multiple reasons namely difference in the total number of patients in the study groups, methods of treatment, obesity, type or footwear and compliance.

In group B3 another 19 patients were found to be relieved i.e. after a total of 9 weeks of treatment. This amounts to 26.02% of the patients of group B3 ($n=73$) and taking the total number of relieved patients to 46(46%) out of the total 100 patients; (11 of B1 + 16 of B2 + 19 of B3 = 46). The amount of relief in B3 as compared to B2 is not clinically significant ($\chi^2 = 1.53$; $p < 0.05$). We can thus say that ultrasound therapy and faradic foot bath may have a role in reducing plantar heel pain but they don't provide significant relief. The average BMIs of patients in group A and B had decreased at the end of therapy. In group A males the change in BMI was (31.34-25.0) 6.34 kg/m² and females was (29.78-22.1) 7.68 kg/m². As compared to this in group B change in BMI of males was (32.12-30.2) 1.92 kg/m² and females was (28.89-26.8) 2.09 kg/m². Thus the BMIs of group A patients decreased to larger extent. This suggests that the compliance of dietary restrictions was better in group A. Our results showed that after the first injection (B4-1) 40 out of 54 patients (74.07%) got relief from pain (table 5.17; figure 5.12). Comparing results of group B3 with group B4-1 there is a statistically significant improvement in pain relief after the first injection ($\chi^2 = 28.8$; p value < 0.001). After one week of follow-up the remaining 14 patients were given a second injection. (Group B4-2). Among them, all patients reported to have a pain free period after the first injection, but recurrence of pain was the reason for the second injection. Rest of 40 patients (74.07%) in group B4-1 reported pain relief at this follow-up.

After two weeks of follow-up of second injection group B4-2 relief was reported in 12 out of 14 patients (85.71%). This again is statistically significant ($p < 0.05$) comparing individual treatment regimens from group B1 to B3 with B4-2. However on comparing group B4-1 with B4-2 i.e. 74.07% relief versus 85.71% relief results of injections are almost similar in the two groups ($\chi^2 = 0.84$; $p > 0.05$).

We can therefore statistically conclude that steroids **do** give substantial relief in painful heel, as compared to conservative treatment.

The total of 98 (98%) relief in hospital treatment as compared to 82% relief in naturopathic treatment. Late follow-up of 16 weeks, in group A 8(82-74) of the total relieved (82%) patients at the end of therapy, had recurrence of pain after 16 weeks while the rest of the 74% patients were pain free. Compared to this in group B (98-74=24) 24% of the relieved patients had recurrence of pain after 16 weeks of follow-up after the end of treatment period (12 weeks). This fact was in agreement with the observations of Davis et. al, that injection therapy is for short term relief and cannot be the only modality for treatment to be used for painful heel. Among the various advantages in the naturopathic treatment, there is no use of external medications like NSAIDs or injections of steroids which have their side effects. Furthermore, therapies like yoga and meditation elevate the general level of well-being in a patient along with treatment of the specific conditions

SUMMARY AND CONCLUSION

1. People requiring prolonged standing in their occupations need to take as this can eliminate one of the causative factors.
2. In sports persons the cause could be attributed to over stretching of the plantar fascia during activities of **sudden spurt** like running, sprinting or jumping without wearing proper footwear.

3. Obesity (BMI > 26 kg/m²) has been found to have a direct correlation with plantar heel pain and it has been observed that reduction in body weight improves the symptoms.
4. The age between 40 to 50 years has the highest incidence of subcalcaneal heel pain. The causative factors in this age group could be :-
 - a) Decrease in muscle tone,
 - b) Sudden increase in body weight due to metabolic and hormonal changes taking place during that time,
 - c) Decreased resiliency of plantar fascia.
5. In treatment modalities of both groups A and B, common factors which could be attributing in improvement of symptoms are:-
 - a) Stretching exercises and enhancement of muscle tone.
 - b) Heat treatment like hot-cold hand-foot bath, warm water vibrator, steam/sauna bath, moist heat packs, wax baths, faradic foot bath or warm oil massage, possibly act by increasing the vascularity and flushing out of irritant metabolites.
 - c) The acupressure board could be acting as a counter irritant obliterating the trigger points. This justifies the "Gate theory of pain".
6. Corticosteroids decrease the inflammation in plantar fasciitis and act as anti-inflammatory agents. Since a good percentage of patients are relieved without steroid therapy and steroids have their side effects thus it should not be given as a first line of treatment. All heel pains may not have the same pathomechanism. The demand for each heel pain is different and no standard treatment can be recommended.

REFERENCES

1. Angela Forster, Palastanga Nigel: Clayton's Electrotherapy: theory and practice, 8th ed. CBS Publishers and Distributors.
2. ArogyaSanjivani, Pioneer Books Co. Publication Ltd. Mumbai. Vol.10:4,56-59,2002.
3. Davis PF, Severud E, Baxter DE: Painful heel syndrome: Results of non operative treatment. *Foot Ankle Int* 1994; 15:531-535.
4. Eastmond CJ, Rajah SM, Tovey D, et al: Seronegative pauciarticular arthritis and HLA B27. *Ann Rheum Dis* 39:231-234, 1980.
5. Gill LH, Keibzak GM: Outcome of non-surgical treatment for plantar fasciitis. *Foot Ankle Int* 1996; 17:527-532.
6. Hicks JH: The mechanics of the foot: The plantar aponeurosis and the arch. *Jr Anat* 88:25-32, 1954.
7. Paul IL, Munro MB, Abernathy PJ et al: Musculoskeletal shock absorption: Relative contribution of bone and soft tissues at various frequencies. *Jr Biomechanics* 11:237-239, 1978.
8. Research Ayurveda Journal; nirogdham; Ajit printers and publications Indore:14,37-39,2004.
9. Snider MP, Clancy WG, McBeath AA: Plantar fascia release for chronic plantar fasciitis in runners. *Am J Sports Med* 11:215-219, 1983.
10. Snook GA, Chrisman OD: The management of subcalcaneal pain. *Clin Orthop* 82:163-168, 1972.
11. Tanz SS: Heel Pain. *Clin Orthop* 28: 169-178, 1963.
12. Taunton JE, Clement DB, McNoil K: Plantar fasciitis in runners. *Can J Appl Sport Sci* 7:41-44, 1982.
13. Tisdell CL, Harper MC: Chronic plantar heel pain: Treatment with a short leg walking cast. *Foot Ankle Int* 17:41-42, 1996.
14. Trepman E: Biomechanics of the foot and ankle. In Hall H, Lutter LD, Mizel MS, Pfeffer GB(eds): *Orthopaedic knowledge update: Foot and Ankle*. Rosmont, IL, American academy of orthopaedic surgeons, 1994, Chapter 1-pg 1-5.
15. Wolgin M, Cook C, Graham C, et al: Conservative treatment of plantar heel pain: Long term follow-up. *Foot Ankle Int* 1994; 15:97-102.
16. Yoga Journal YogSadha- chikitsarashtra: DivyaPrakashan. Divyayogmandir trust. Haridwar-Uttaranchal. 17:105, 111;2005.