

The Efficacy of Combining Stretching Exercises along with a Non-Steroid Medication Versus a Local Steroid Injection for Treating Plantar Fasciitis

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Received: 1- march-2023

Revised: 1- April -2023

Accepted: 18- May -2023

Abstract:

A study comparing the effectiveness of plantar fascia injection with steroid medication to combination therapy, which entails using non-steroid medication together with stretching exercises for the plantar fascia and Achilles tendon, was carried out between January 2020 and January 2021. There were 56 individuals in this prospective study; 10 were excluded because of the exclusion criteria and 6 were abandoned because they did not attend follow-up exams, leaving 40 patients who met the study's eligibility requirements. The study's participants' patients were divided into two categories, A and B. Participants in category A (non-steroid drug plus stretching activities) and category B (injection one) underwent pain assessments prior to therapy, at 4 weeks, 8 weeks, and 12 weeks using a 10 cm visual analogue scale. According to the study's findings, category B pain significantly decreased at 4 weeks and 8 weeks after treatment began compared to category A pain (p value 0.05); however, at 12 weeks, both categories showed good pain relief and showed no significant difference between the two categories (p value > 0.05), even though category A's mean pain value was lower. **Conclusion:** Although it takes a little bit longer time, combining stretching exercises with non-steroid therapy offers a simple, non-invasive way to treat plantar fasciitis, especially when local steroid injection is contraindicated or the patient rejects the procedure. Injection of the plantar fascia with steroid drugs provides a rapid and effective way to treat fasciitis in the first 12 weeks after beginning treatment, but injecting steroid treatment into the plantar fascia may have side effects, which can be avoided.

Keywords: efficacy; combining stretching exercises; non-steroid medication; injection; treating; plantar fasciitis.

Introduction

The condition is characterized by pain at the plantar fascia's calcaneal origin that is made worse by weight bearing after extended periods of rest [1]. Plantar fasciitis is one of the most often reported causes of discomfort in the inferior heel [1,2].

One million visits to hospital outpatient clinics in United States and 10% of Americans experience this condition at some point in their life [3]. Plantar fasciitis pathogenesis is not fully understood [4]. Plantar fasciitis, more properly known as plantar fasciosis, is a condition of degenerative alterations in the fascia, contrary to popular belief that it is an inflammatory process [5].

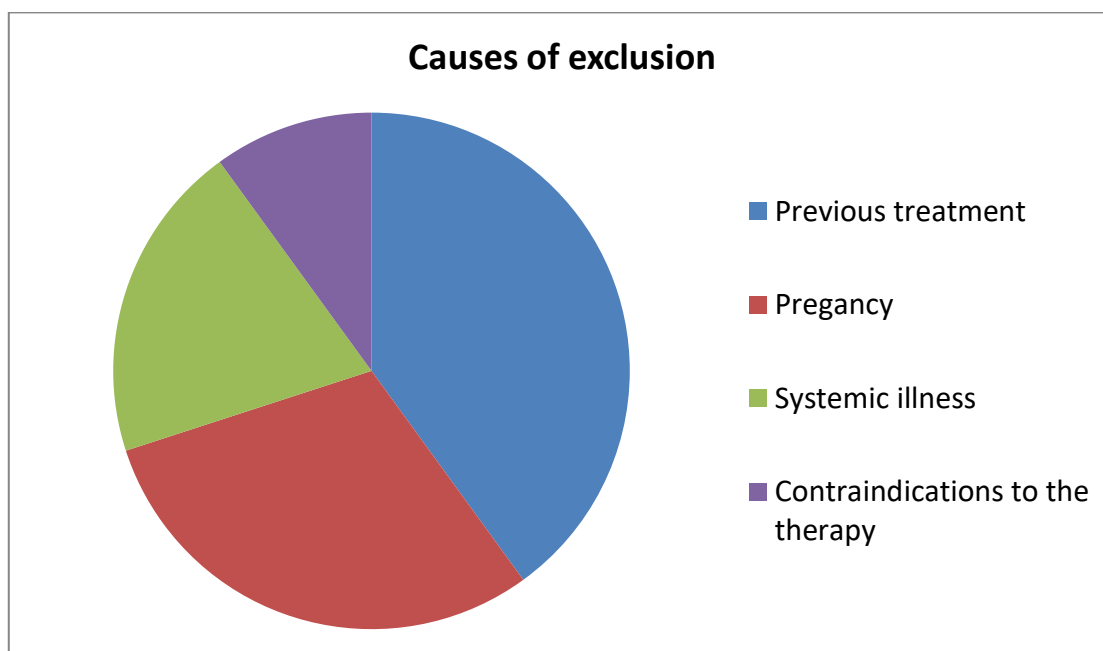
It has been found that this ailment is more likely to develop in people who move around more at work [6]. Both athletes and sedentary adults, especially those in their middle years and older, are susceptible to plantar fasciitis [7]. Heel discomfort has been treated since the 1950s [8] using corticosteroid injections. Rheumatologists and orthopedic surgeons have both been known to utilize them frequently [9].

There are numerous therapy options available for this illness. Low cost, minimal complexity, and quick pain relief are some of the benefits of corticosteroid injections, but many people are worried about potential consequences. In contrast to employing steroid injections, stretching exercises for the plantar fascia and Achilles tendon were performed in this study to compare invasive to non-invasive.

Materials and methods

Between 1-2-2020 and 1-2-2021, a prospective, randomized study including 56 participants were involved. 10 of them were excluded and 6 of them were abandoned from the study because they did not attend follow up examination. So only 40 patients with plantar fasciitis were included in this trial after taking their agreement. All participants had criteria of plantar fasciitis pain. The patients attend orthopedic outpatient clinic within 2-3 weeks after starting symptoms. Patients ranged in age from 30 to 60, including 23 women and 17 men.

Exclusion standards: (previous treatment; a dual illness; surgery or damage to the affected area; pregnancy; Systemic illnesses that lead to plantar fasciitis; local bone disease and contraindications of local steroid injection and nonsteroidal drugs).



The participants in this study were divided into two groups; group (category A) got non-steroid medicine as well as stretching treatments for the plantar fascia and Achilles tendon. The second category (B) participants received local steroid injections into the most painful region of the heel.

Instance A Participants underwent stretching exercises for the plantar fascia and Achilles tendon for eight weeks in addition to taking oral non-steroid therapy in the form of diclofenac sodium 50 mg twice day for two weeks. The patients instructed how to undertake exercises. The problematic heel is placed over the opposite leg while the patient is seated in a chair, and the toes are dragged toward the shin to exert tension on the foot's arch. After holding this position for 10 seconds, repeating it 10 times, and doing it twice daily, while doing this, the patient must feel tension in the plantar fascia. Stretching the achilles tendon is done as a floor stretch, which involves the patient taking a step back with the leg they want to stretch and pressing their heel into the ground with their toes turned slightly in. This is done while they are about half a meter from a wall and with their hands on the wall. The patient must bend the other leg just enough to feel a tension in the Achilles tendon. The stretch must be applied for 15 seconds, repeated twice, and performed five times daily.

Participants in Category B received local injection. A local steroid injection of 40 mg of methylprednisolone and 0.5 ml of 2% lidocaine was given via the medial side of the foot distal to the calcaneum using a 22 gauge needle and aseptic technique to the most painful part of the heel. It is advised that patients rest from strenuous exercise for two weeks.

It was advised that neither group should stroll barefoot or stroll for a long time. The visual analogue score (VAS), which ranges from 0 to 10 cm (0 being the absence of pain and 10 the maximum agony conceivable), is used to assess pain after thoroughly explaining how to use it to the patients. Before starting treatment, as well as 4 weeks, 8 weeks, and 12 weeks afterwards, pain is measured. Using SPSS version 19 statistical analysis is performed. Statistics were regarded significant at a p value <0.05.

Results

The forty patients who took part in this study had a mean age of 43.1 years. The mean ages of the two groups were 43.8 and 45, respectively; there was no statistically significant difference between the two ages (p value =.567). There was no statistically significant weight difference between the two categories. There were 12 women in the first group(category A) and 11 in the second (category B), totaling 23, or 57.5% of the attendees. There were 17 guys (42.5%), of whom 8 fell into category A and 9 into category B.

On the right side, (55%) of the participants have heel pain, compared to 18 (45%) on the left.

Table (1). Demographic distribution in both groups

	Stretching plus non-steroid drug	Local steroid injection
No. of patients	20	20
Age in years	45	43.8
male/female	8/12	9/11

Before starting treatment, the mean VAS values for the stretching exercises plus nonsteroid medication group (CA) and the local steroid injection group (CB) were statistically insignificant (P value > 0.05).

According to the mean VAS value at 4 weeks following the commencement of treatment, which was 4.9 for category A and 2.7 for category B, there was a drop in the mean pain score in both groups, but more so in the second group (category B). At the 8-week follow-up, the mean VAS for category A and category B, respectively, improved to 3.65 and 2.6, respectively. The p value indicated a significant difference in the pain score (0.05) at the follow-up exams conducted at 4 and 8 weeks. By 12 weeks, category A had improved even more, scoring 2.45 on the VAS, while category B had a score of 2.75, and the P value (p > 0.05) shows that there was no statistically significant difference between the two groups in terms of pain score.

Table-2. mean VAS of the two groups with p value

	Before treatment	4 weeks	8weeks	12 weeks
Category A(stretching exercises plus oral NSAID)	6.95	4.9	3.65	2.45
Category B(local steroid injection)	6.8	2.7	2.6	2.75
P value	0.699	.000	.000	.282

Discussion

A significant percentage of patients who contact doctors seeking treatment for heel pain due to plantar fasciitis have this bothersome condition. There are numerous ways to cure this problem.

Instead of utilizing NSIAD alone in this study, non-steroid medications were used in conjunction with stretching exercises for the plantar fascia and Achilles tendon to treat this illness.

In a study by Chaitali Biswas et al., it was demonstrated that local steroid injections are more effective than oral NSAIDs alone, and that NSAID use is also associated with a higher risk of heel pain recurrence at 1 week, 1 month, and 2 months[10].

Yet, there are advantages to using NSAIDs, including pain relief and help with more effective stretching exercises. According to a study by Donley BG et al., taking an NSAID to treat plantar fasciitis may help patients feel better and have less disability[11].

In this study, stretching exercises combined with oral NSAIDs showed a reduction in mean VAS at 2 weeks and after 1 month from mean VAS prior to treatment, but the local steroid injection group showed a greater and statistically significant reduction in mean VAS at 2 weeks and after 1 month (p value 0.05). However, analysis of the mean VAS at the end of the first two months of treatment shows that stretching exercises combined with NSAIDs produce better results than local steroid injections, and there was no statistically significant difference between the two groups ($p > 0.05$). Stretching exercises produce superior outcomes than taking an oral NSAID medicine alone, as was previously discussed and found in numerous research.

In a study by Babak Siavashi et al. comparing local steroid injection with plantar fascia stretching exercises, it was found that at two weeks, the steroid group had lower mean pain scores and better function, but at two months, both groups had lower VAS of pain and better function with the same outcomes[12]. Stretching exercises for the Achilles tendon and plantar fascia were combined. Numerous research used only individual stretching exercises for the plantar fascia. In a research by Benedict et al, patients who underwent Achilles stretching exercises showed greater improvement than those who underwent plantar fascia stretching exercises[13]

Regarding treatment with local injection of steroid, results in this study showed rapid improvement in VAS compared to the first group at 2 weeks and at 1 month after starting therapy, but this improvement was only short-lived, as was the case in other studies, such as Crawford et al study, which measured the VAS for 106 patients with plantar fasciitis treated with local injection of steroid at 1, 3, and 6 months[14]. Moreover, steroid injection carries some risk.

Fat pad atrophy and plantar fascia rupture are significant complications, however they are infrequent.

51 patients with fascial rupture were documented by Acevedo et al., 44 of them as a result of steroid injection[15]. In study done by Sellman found persistent symptoms in patient with plantar fascia rupture due steroid injection and not all patient spared from this complication [16].

Conclusion

Although it takes a little longer, combining stretching exercises with non-steroid therapy offers a simple, non-invasive way to treat plantar fasciitis, especially when local steroid injection is contraindicated or the patient rejects the procedure. Injection of the plantar fascia with steroid drugs provides a rapid and effective way to treat fasciitis in the first 12 weeks after beginning treatment. Injecting steroid treatment into the plantar fascia may have side effects, which can be avoided.

References

1. Buchbinder R. plantar fasciitis. *N Engl J Med* 2004;350:2159-66.
2. Singh, Angel J, Bentley G, Trevino S. Fortnightly review: plantar fasciitis. *BMJ* 1997;315:172-5.
3. Riddle DL, Schappert SM. Volume of ambulatory care visit and patterns of care for patients diagnosed with plantar fasciitis: a national study of medical doctors. *Foot Ankle Int.* 2004;25:303-10.
4. Wearing SC, Smeathers JE, Urry SR, Hennig EM. The pathomechanics of plantar fasciitis. *Sports Med.* 2006;36(7):585-611.
5. Lemont H, Ammirati KM, Usen N. Plantar fasciitis. A degenerative process (fasciosis) without inflammation. *J Am Podiatr Med Assoc* 2003;93(3):234-237.
6. Riddle DL, Pulisic M, Pidcoe P, Johnson RE. Risk factors for plantar fasciitis: a matched case-control study. *J Bone Joint Surg Am.* 2003;85-A:872-7.

7. Scher DL, Belmont PJ, Jr, Bear R, et al. The incidence of plantar fasciitis in the United States military. *J Bone Joint Surg Am.* 2009;91:2867-72.
8. Lapidus PW, Guidotti FP. Local injections of hydrocortisone in 495 orthopedic patients. *Ind Med Surg.* 1957;26:234-44.
9. Fadale PD, Wiggins ME. Corticosteroid injections: Their Use and Abuse. *J Am Acad Orthop Surg.* 1994;2:133-140.
10. Chaitali Biswas, Anirban Pal, Amita Acharya. A comparative study of efficacy of oral nonsteroidal anti-inflammatory agents and local injectable steroid for the treatment of plantar fasciitis. *Anesth Essays Res.* 2011;5(2):158-161.
11. Donley BG, Moore T, Sferra J, Gozdanovic J, et al. The efficacy of oral nonsteroidal anti-inflammatory medication (NSAID) in the treatment of plantar fasciitis: a randomized, prospective, placebo-controlled study. *Foot Ankle Int.* 2007 Jan;28(1):20-3.
12. Siavashi B, Naghshbandi SF, Zehtab MJ. Comparison of two methods of decreasing heel pain: Corticosteroid injection versus plantar fasciitis stretching. *Iran J Surg.* 2009;17:26-31.
13. Digiovanni B, Nawoczenski D, Malay D, Graci P, et al. Plantar fascia-specific stretching exercise improves outcomes in patients with chronic plantar fasciitis. A prospective clinical trial with two years follow up. *J Bone Joint Surg Am.* 2006, 88:1775-81.
14. Crawford F, Atkins D, Young P, Edwards J. Steroid injection for heel pain: evidence of short-term effectiveness. A randomized controlled trial. *Rheumatology* 1999;38:974-977.
15. Acevedo JJ, Beskin JL. Complications of plantar fascia rupture associated with corticosteroid injection. *Foot Ankle Int* 1998;19:91-97.
16. Sellman JR. Plantar fascia rupture associated with corticosteroid injection. *Foot Ankle Int.* 1994;15:376-81.