



ORIGINAL RESEARCH PAPER

Physiotherapy & Rehabilitation

EFFECTIVENESS OF INSTRUMENT ASSISTED SOFT TISSUE MOBILIZATION (IASTM) AND CONVENTIONAL MANAGEMENT ON PATIENTS WITH CHRONIC PLANTAR FASCIITIS.

KEY WORDS:

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ABSTRACT

Background: Plantar fasciitis is a common cause of heel pain, especially in the elderly. The plantar fascia is a multi-layered fibrous connective tissue on the planter side of the foot that causes tissue thickness to increase. This disease affects approximately 2 million people each year and is treatable with rest, oral NSAIDs, and surgical techniques. Plantar heel pain and tenderness are the most common symptoms of chronic plantar fasciitis. **Methodology:** The Foot and Ankle Disability Index (FADI) is a region-specific self-report of function that can be used to assess the efficacy of instrument-assisted soft tissue mobilization (IASTM) in treating patients with plantar fasciitis. The Graston Technique (GT), which improves musculoskeletal function, is one type of IASTM used for both therapeutic and diagnostic purposes. **Procedure:** The study attempted to assess the efficacy of IASTM in the treatment of plantar fasciitis patients in terms of pain relief and improved function. Patients were treated with the Graston Technique in addition to conventional therapy, and plantar pain was measured before and after six sessions. **Result:** Graston assisted soft tissue mobilization combined with conventional therapy resulted in significant pain relief and improved function. **Conclusion:** Combining Graston assisted soft tissue mobilization with conventional therapy results in effective pain reduction and functional improvement in patients with chronic plantar fasciitis.

INTRODUCTION

Plantar fasciitis is one of the most common causes of heel pain, particularly in older people. The plantar fascia is a multi-layered fibrous connective tissue found on the planter side of the foot. Plantar fasciitis causes an increase in tissue thickness. The arches on the plantar side of the foot are maintained by the aponeurosis known as plantar fascia. It extends all the way from the calcaneal bone to the tubercle of the head of the metatarsals bone. The inflammation of plantar fascia is known as plantar fasciitis. This particular disease affects about 2 million people annually and is treated. The overloading due to excessive weight-bearing and repetitive micro trauma can cause plantar fasciitis. Plantar heel pain and tenderness are the most common issues observed in patients with chronic plantar fasciitis. Plantar fasciitis diagnosis may be enabled by realizing this complaint.

The foot typically assumes a plantar flexed position at night, and following a prolonged period of inactivity, the foot assumes a dorsiflexion during walking when the patient gets out of bed. The majority of the night, fascia contracts, which results in morning pain from the fascia's initial stretching during walking. Additionally, a branch of the lateral plantar nerve passes between the flexor digitorum brevis and the calcaneus. This nerve is thought to be the cause of plantar pain as well.

Plantar fasciitis can be treated conservatively with a variety of good to excellent clinical outcomes, including rest, oral non-steroidal anti-inflammatory drugs (NSAIDs), and surgical techniques. Conventional treatments can effectively treat plantar fasciitis in the majority of cases. Patients with plantar fasciitis be helped by manual therapy's ability to improve mobility and reduce pain.

Martin et al. (1999) initially described the Foot and Ankle Disability Index (FADI), a region-specific self-report of function. The 34-item Foot and Ankle Disability Index is broken down into the Foot and Ankle Disability Index Sport and the Foot and Ankle Disability Index subscale. There are 26 items in the FADI and 8 in the FADI Sport.

Instrument-assisted soft tissue mobilization (IASTM) introduced by Cyriax is a known treatment for myofascial

restrictions. One kind of IASTM that is used for both therapeutic and diagnostic purposes in a range of soft tissue disorders is the Graston Technique (GT). The main purpose of the GT is to increase musculoskeletal function by enhancing soft tissue mobilization. It should be applied for a period of 5 to 15 minutes each session. Small devices created with stainless steel known as graston provide specific release for plantar fasciitis.

OBJECTIVES

To evaluate the effectiveness of instrument-assisted soft tissue mobilization (IASTM) in treating plantar fasciitis patients in terms of pain relief and improved function.

To evaluate the effectiveness of conventional therapy for patients with chronic plantar fasciitis in terms of pain relief and improved function.

To evaluate how positively plantar fasciitis patients respond to instrument-assisted soft tissue mobilization (IASTM) in addition to conventional plantar fasciitis therapy in terms of improved function and pain reduction.

METHODOLOGY

Study Design – Experimental study

Study Setting – Thanthai Roever college of physiotherapy, Perambalur.

Sample Size – 30

Study Duration – 6 sessions.

Inclusion Criteria

Both male and female.
Age 25-45
Chronic plantar fasciitis

Exclusion Criteria

Rheumatoid arthritis
Osteoporosis
Calcaneal spur
Recent fracture

TECHNIQUE

Patient was treated with Graston Technique (GT) along conventional therapy (n = 30). Informed consent was obtained from each participant. It was recorded both before the first day of classes and following the Graston application. After six sessions, the plantar pain was measured in order to compare the pre- and post-Graston improvements using FADI and NPRS.

PROCEDURE

GRASTONTECHNIQUE

The soleus, plantar fascia, and bulk of the gastrocnemius were all mobilized using Graston multi-strokes. Greater force and shorter stroke duration were used when applying Graston pressure in areas of increased tissue restriction. The patient was placed in a prone position with the knee extended position.

On the plantar surface of the heel and midfoot, IASTM cream was applied. The Sweep technique was used to administer Graston technique.

A cold pack was applied for five minutes at the conclusion of the treatment.

ConventionalTherapy

Patient received therapeutic ultrasound in continuous mode during every session of the treatment.

Duration – 7 minutes

Mode – Continuous

Intensity – 1W/cm²

Frequency – 1 MHz

Then Patients underwent static stretching exercises for the plantar fascia and calf muscles stretching exercise.

Repetition – 5 for each exercise

Hold time – 10 seconds each.

Outcome Measures

The foot and ankle disability index (FADI) and numerical pain rating scale (NPRS) values were included in the questionnaire, both before and after the intervention.

Statistical Analysis

Graston's effects on the foot and ankle disability index and NPRS variables within group analysis. Using variables, the P value was used to compare assessment levels.

Table 1: Comparison Of Pre Test And Post Test Of Numerical Pain Rating Scale (NPRS).

PRE TEST	POST TEST	P VALUE
4.96 ± 1.5	1.04 ± 1.32	0.001

Table 2: Comparison Of Pre-test And Post Test Of Foot And Ankle Disability Index (FADI).

PRE TEST	POST TEST	P VALUE
35.63 ± 8.92	75.24 ± 1.5	0.001

Pre and post-test Information related to NPRS, and FADI of the patients showed significant pain relief and improved function through Graston assisted soft tissue mobilization with conventional therapy (Table 1).

Within group analysis, P value was applied on NPRS and FADI which showed significant improvement in the pain, range and functional ability of foot and ankle after Graston application (Table 2)

RESULT

The results indicate that using Graston assisted soft tissue mobilization with conventional therapy shows effective result in reducing pain and improve function in patients with chronic plantar fasciitis.

DISCUSSION :

Our findings show that using Graston to release soft tissue was

an effective way to treat chronic plantar fasciitis. According to the study, administering instrument-assisted soft tissue mobilization reduced pain and improved function.

The combined approach of Instrument-Assisted Soft Tissue Mobilization (IASTM) and conventional management for chronic plantar fasciitis is gaining attention in clinical discussions. Integrating IASTM with conventional methods, such as stretching exercises, and ultrasound therapy, may offer a more comprehensive treatment strategy. Some studies suggest that the combination can lead to improved pain relief, increased flexibility, and enhanced functional outcomes in patients. However, further research is needed to establish the long-term effectiveness and compare it to other treatment modalities. Individualized patient assessments and considering the synergistic effects of these interventions are crucial for optimizing outcomes in chronic plantar fasciitis cases.

Combining Instrument-Assisted Soft Tissue Mobilization (IASTM) with conventional management for chronic plantar fasciitis has shown promise in some studies. The rationale is that IASTM may help address soft tissue restrictions and improve tissue mobility. When used in conjunction with stretching exercises, and ultrasound therapy, a comprehensive treatment plan may offer synergistic benefits. Evidence suggests that the combination of IASTM and conventional management could lead to enhanced short-term outcomes, including reduced pain and improved function. However, the long-term effectiveness and superiority over individual interventions require further investigation.

Patient-specific factors, such as the severity of symptoms, activity levels, and response to treatment, should guide the selection of interventions. A multidisciplinary approach that considers both IASTM and conventional strategies may offer a more holistic and tailored approach to managing chronic plantar fasciitis. It's essential for healthcare professionals to stay updated on emerging research findings and adapt treatment plans accordingly.

One limitation of combining Instrument-Assisted Soft Tissue Mobilization (IASTM) with conventional management for chronic plantar fasciitis is the lack of extensive high-quality, long-term research supporting its efficacy. While some studies suggest positive short-term outcomes, the overall evidence is still evolving, and more rigorous research is needed to establish its long-term effectiveness.

Additionally, individual responses to treatment can vary, making it challenging to predict which patients will benefit most from this combined approach. Patient adherence to the prescribed home exercises or lifestyle modifications is another potential limitation that can impact treatment outcomes. Moreover, the cost and availability of IASTM tools or specialized practitioners may pose challenges for widespread implementation.

In summary, while there's promise in combining IASTM with conventional management, limitations include the need for more robust research, individual variability in treatment response, patient adherence, and potential practical constraints. Healthcare professionals should carefully consider these factors when incorporating this combined approach into the management of chronic plantar fasciitis.

Despite the potential benefits, there are limitations to the effectiveness of Instrument-Assisted Soft Tissue Mobilization (IASTM) along with conventional management for chronic plantar fasciitis. It is the variability in individual responses, as not all patients may experience the same level of improvement. The severity and duration of plantar fasciitis can also influence the outcomes.

Moreover, the quality of evidence supporting the effectiveness of IASTM for plantar fasciitis is still evolving, with some studies having methodological limitations or small sample sizes. Additionally, the long-term sustainability of the benefits achieved through IASTM and conventional management remains an area of ongoing research.

Patient adherence to prescribed exercises and treatments can be another challenge, impacting the overall effectiveness of the combined approach. It's crucial for physiotherapist to consider these limitations and modify treatment plans based on individual patient characteristics and preferences.

CONCLUSION

It is concluded that Instrument assisted soft tissue mobilization along with conventional therapy is effective in reducing pain and improve function of foot in patients with chronic plantar fasciitis.

Conflicts Of Interest

We have no conflict of interest to declare.

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We did not receive support from any organization for the submitted work.

Ethical Clearance

Approval was obtained from local ethics committee.

REFERENCES

1. Trojjan T, Tucker AK. Plantar fasciitis. *Am Fam Physician* 2019;99:744-50.
2. U ular M, Sönmez MM, U ular ÖY, Adıyeko L, Yıldırım H, Eren OT. Effectiveness of Four Different Treatment Modalities in the Treatment of Chronic Plantar Fasciitis during a 36-Month Follow-Up Period: A Randomized Controlled Trial. *J Foot Ankle Surg* 2018;57:913-8.
3. Hansen L, Krogh TP, Ellingsen T, Bolvig L, Fredberg U. Long-Term Prognosis of Plantar Fasciitis: A 5- to 15- Year Follow-up Study of 174 Patients With Ultrasound Examination. *Orthop J Sports Med* 2018;6:1-9.
4. Brugh AM, Fallat LM, Savoy-Moore RT. Lateral column symptomatology following plantar fascial release: a prospective study. *J Foot Ankle Surg.* 2002;41(6):365-371.
5. Hale SA, Hertel J. Reliability and Sensitivity of the Foot and Ankle Disability Index in Subjects with Chronic Ankle Instability. *J Athl Train* 2005;40:35-40.
6. Johannsen FE, Herzog RB, Malmgaard-Clausen NM, Hoegberget-Kalisz M, Magnusson SP, Kjaer M. Corticosteroid injection is the best treatment in plantar fasciitis if combined with controlled training. *Knee Surg sports Traumatol Arthrosc* 2019;27:5-12.
7. Priyanka. N.H.M, Kavith. K, Usha Nandhini. M, C.V. John Franklin. Effectiveness of ultrasound, massage Therapy, kinesio taping and exercises on De-Quervain's tenosynovitis. *Int J Health Sci Res.* 2023; 13(12):140-144.
8. Lemont H, Ammirati KM, Usen N. Plantar fasciitis: a Degenerative process (fasciosis) without inflammation. *J Am Podiatr Med Assoc* 2003;93:234-7.
9. Petraglia F, Ramazzina I, Costantino C. Plantar fasciitis In athletes: diagnostic and treatment strategies. A Systematic review. *Muscles Ligaments Tendons J* 2017;7:107-118.
10. Tahririan MA, Motififard M, Tahmasebi MN, Siavashi B. Plantar fasciitis. *J Res Med Sci* 2012;17:799-804.
11. Cheatham SW, Lee M, Cain M, Baker R. The efficacy of Instrument assisted soft tissue mobilization: a systematic Review. *J Can Chiropr Assoc* 2016;60:200-211.
12. Carey-Loghmani MT. Clinical foundations for Graston Technique®. 201560(3):p.200.
13. Hawker GA, Mian S, Kendzerska T, French M. Measures Of adult pain: Visual Analog Scale for Pain (VAS Pain), Numeric Rating Scale for Pain (NRS Pain), McGill Pain Questionnaire (MPQ), Short-Form McGill Pain Questionnaire (SF-MPQ), Chronic Pain Grade Scale (CPGS), Short Form-36 Bodily Pain Scale (SF-36 BPS), And Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP). *Arthritis Care Res* 2011;63:240-52.
14. Looney B, Srokose T, Fernández-de-las-Peñas C, Cleland JA. Graston instrument soft tissue mobilization and home Stretching for the management of plantar heel pain: a case Series. *J Manipulative Physiol Ther* 2011;34:13842
15. Verbruggen LA, Thompson MM, Dural CJ. The effectiveness of low-dye taping in reducing pain associated with plantar fasciitis. *J Sport Rehabil.* 2018;27(1):94-98.
16. Radford JA, Landorf KB, Buchbinder R, Cook C. Effectiveness of low-dye taping for the short-term treatment of plantar heel pain: a randomised trial. *BMC Musculoskelet. Disord.* 2006 7(1):1-7.
17. Tsai CT, Chang WD, Lee JP. Effects of short-term treatment with kinesiotaping for plantar fasciitis. *J Musculoskelet Pain.* 2010;18(1):71-80.
18. Hyland MR, Webber-Gaffney A, Cohen L, Lichtman SW. Randomized controlled trial of calcaneal taping, sham taping, and plantar fascia stretching for the short term management of plantar heel pain. *J Orthop Sports Phys Ther.* 2006;36(6):364-371.
19. Park C, Lee S, Lim DY, Yi CW, Kim JH, Jeon C. Effects of the application of lowdye taping on the pain and stability of patients with plantar fasciitis. *J Phys Ther Sci* 2015;27(8):2491-2493.