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Effectiveness of a Combined IASTM and Exercise-Based Protocol in Plantar Fasciitis Rehabilitation: A Case Report

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ABSTRACT

BACKGROUND: A typical explanation of heel pain that affects 10-15% of general population during their lifetime was Plantar Fasciitis. Davidson first discussed the success treating tendinitis patient with a therapeutic technique called Augmented Soft Tissue Mobilization (ASTM). ASTM then be modified, and use of specifically designed solid instruments came in account. Instrument Assisted Soft Tissue Mobilization (IASTM) along with improved limb function also quicken up tendon healing by recruitment and activation of fibroblasts. This study aims to find out the effectiveness of IASTM in plantar fasciitis.
METHODS: IASTM was given in following steps including Warm-up; IASTM done at 30-60^0 angle for 40-120 seconds, followed by 3 repetitions of Stretching for 30 seconds, then strengthening with higher repetitions low dose exercise and at last ending by Cryotherapy given for 10-20 minutes. Intervention was provided for 2 weeks, 3 sessions per week. VAS is used to analyze Pain, Foot Function Index (FFI) is used to analyze disability and ROM for ankle Dorsi-Flexion ranges.
RESULT: Improvements were seen in the range of ankle dorsi flexion (10^0) at baseline increased to (12^0) after intervention and pain according to VAS (6/10) decreased to (4/10) after intervention.
CONCLUSIONS: IASTM along with proper warm-up, stretching, strengthening and Cryotherapy improves the ankle function and promotes the daily living activities. IASTM shows a significant result in the treatment of Plantar Fasciitis.

KEYWORDS: Plantar fasciitis; Heel pain; IASTM; Foot Function Index; Physical Therapy, Plantar aponeurosis loading

INTRODUCTION

Plantar fasciitis is a musculoskeletal condition which limits the daily activities. It affects almost more than 1 million persons per year amongst them two third of patients will take care from their family physician. It mostly impacts persons with sedentary lifestyle and athletes. Plantar fascia is a broad band of connective tissue that supports the arch of the foot. It includes a thick central component and thinner medial and lateral components [1]. Patient usually presents with pain at the anteromedial prominence of the calcaneum. Passive dorsiflexion of toes will lead to an increase in pain. There are many plans of care for patients suffering

from plantar fasciitis. It includes approaches like myofascial release, soft tissue mobilization techniques, IASTM (Instrument Assisted Soft Tissue Mobilization), etc. Purpose of this case study is to find out the effectiveness of IASTM for patient with plantar fasciitis. One emerging intervention is Instrument-Assisted Soft Tissue Mobilization (IASTM), which involves the use of handheld instruments to apply controlled pressure and promote tissue healing. This report aims to compare amongst IASTM and Exercise therapy

CASE REPORT

A 37-year-old lady is suffering from severe heel pain because of plantar fasciitis in left foot. She has been complaining of pain at the Antero-medial aspect of the foot. The pain was utmost during the commencement of first step from bed in morning. When she performs some activity, the pain will subside. Or mainly after rest the pain was increased and decreased while doing activities. Patient marks her foot pain 6/10 on VAS and on Foot Function Index (FFI) she scores 68/230 points. Dorsi flexion at toe was reported as aggravating factor for the pain. Patient has no history of trauma, surgery or any associated medical condition. Outcomes were measured for pain on VAS, disability on FFI and ROM of foot by performing dorsi flexion in standing. Foot Function Index (FFI) was developed to measure the impact of foot pathology on function in terms of pain, disability and activity restriction [2]. On physical examination, when patient is asked to shift weight in forward direction by putting affected foot in front, it was painful for her to perform this activity which ensures that she was having difficulty in performing dorsi flexion at foot. Windlass test in weight bearing position was reported positive along this limping was also present. Pain on palpation at the antero-medial aspect of the affected foot with tenderness present. The diagnosis was a left foot Plantar Fasciitis as the windlass test was positive, presence of tenderness, pain in dorsi flexion of foot and pain while commencing first step from bed in morning. The treatment was planned for 6 sessions in total for 2 weeks, 3 sessions weekly [3]. The IASTM tool IASTM4-SCANNER is used. Treatment time required for one session was almost 45 minutes.

IASTM

Patient was in prone lying position with feet slightly off the edge of the bed. Examiner was either standing or sitting at the end of the table. The Scanner (IASTM4) tool was used. Sweeping strokes were performed which is characterized as contact points moving in one direction at same rate in either linear or curvilinear path. While performing IASTM a lubricant (say coconut oil) was applied to the foot so the frictional force is avoided amongst the skin and the tool.

IASTM was performed in steps mentioned below:

- Warm up (10-12 minutes).
- IASTM, done for 40-120 seconds at 30-60^0 angle.
- Stretching 3 reps for 30 seconds.
- Strengthening, high repetitions low dose exercise.
- Cryotherapy, 10-20 minutes. [4]

Stretching includes Achilles tendon stretching, calf stretch and plantar fascia self-stretch.

Strengthening includes aponeurosis loading, ball rolling exercise.

Figure 1: Therapist is performing IASTM on patient's affected foot.

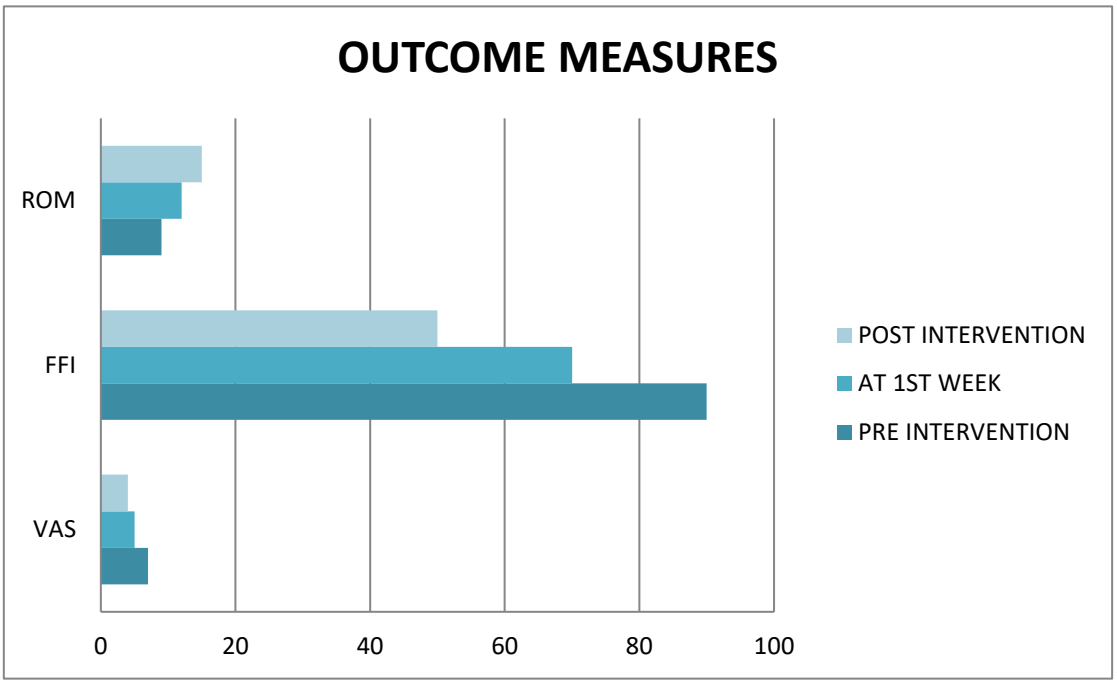
RESULT

Data was recorded in the form of VAS score, FFI and dorsiflexion ROM at ankle (standing). Measurements were taken as

baseline and post treatment i.e. after giving 6th session of treatment.

Outcome measures:	At baseline	At 1st week	After 6th session
VAS (on 10-point scale)	7/10	5/10	4/10
FFI (on 23 question scale)	90/230	70/230	50/230
Dorsiflexion ROM	9^0	12^0	15^0

Table 1: showing values of outcome measure pre and post intervention



Graph 1: Showing pre and post intervention scores of outcome measure

DISCUSSION

This study shows that the application of IASTM to the plantar fascia results to an increase in dorsal flexion ROM at ankle and decreases the FFI score along this a significant improvement in pain was observed. Application of IASTM to the fascia promotes the increased blood flow, in breaking down of soft tissue adhesions, promotes the restoration of normal texture of tissues by the production of mast cell and phagocytes which help in healing (Cyriax,1984) [3,5]. Myofascial Release technique used as a complimentary which shows a significant result in decreasing pain, improving functional disability [6]. There are many options to treat the soft tissue adhesions some acts on the superficial layer and some had their effects to the deep layers; few of them are like cupping therapy, compressive myofascial release [7], dry needling, Soft Tissue Manipulation, IASTM; all these interventions work on to break tissue adhesions. According to Cheatham et al, 2016 IASTM is said to be able to cause greater effects on flexibility the manual mobilization without using the instrument because pressure is applied to the deeper parts of the soft tissue by using these tools [8,9]. The result of this study supports the previous studies. Markovic et al.,2015 also reported the significant improve in joint ROM when IASTM is used [10]. However, some study also contradicts, Justin Stanek et al.,2018 represented a pronounced response of compressive myofascial release as compared to the graston technique in his one-time study [7]. It is found that the female suffering from the plantar fasciitis following two weeks of Instrument Assisted Soft Tissue Mobilization technique according to the protocol shows a significant change in

improvement of pain, ankle dorsi flexion ROM and functional disability.

CONCLUSION

Instrument Assisted Soft Tissue Mobilization is the use of hard tools to manipulate soft tissue and was derived from Cyriax cross-friction massage [11]. Using IASTM on the plantar aspect of heel of the patient with plantar fasciitis will result a significant increase in dorsi flexion ROM at ankle, reduced disability index (FFI) score and reduction in pain.

Limitation

Further studies do take the follow up, will increase the samples to get the better results.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Cutts S, Obi N, Pasapula C, Chan W. Plantar fasciitis. The Annals of The Royal College of Surgeons of England. 2012 Nov;94(8):539-42.
2. Budiman-Mak, E et al. "The Foot Function Index: a measure of foot pain and disability." *Journal of clinical epidemiology* vol. 44,6 (1991): 561-70. doi:10.1016/0895-4356(91)90220-4
3. Vinod Babu. K, Lisa Michael Pereira, Sai Kumar. N, Ayyappan. V.R. Effectiveness Of Instrumental Assisted Soft Tissue Mobilization Technique With Static Stretching In Subjects With Plantar Fasciitis. Int J Physiother.2014; 1(3):101-111
4. Kim J, Sung DJ, Lee J. Therapeutic effectiveness of instrument-assisted soft tissue mobilization for soft tissue injury: mechanisms and practical application. Journal of exercise rehabilitation. 2017 Feb;13(1):12.
5. Davidson CJ, Ganion LR, Gehlsen GM, Verhoestra BE, Roepke JE, Sevier TL. Rat tendon morphologic and functional changes resulting from soft tissue mobilization. Medicine and science in sports and exercise. 1997 Mar 1;29(3):313-9.
6. Lipa LY, Kalita A, Dutta A. A Comparative Study to Find Out the Effectiveness of Myofascial Release Technique Along with Stretching Versus Myofascial Release Technique in Patients with Plantar Fasciitis. (2022). Int. J. Life Sci. Pharma Res.;12(1): L183-193.
7. Stanek, Justin et al. "Comparison of Compressive Myofascial Release and the Graston Technique for Improving Ankle-Dorsiflexion Range of Motion." *Journal of athletic training* vol. 53,2 (2018): 160-167.
8. 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(3):200-11
9. Ikeda N, Otsuka S, Kawanishi Y, Kawakami Y. Effects of instrument-assisted soft tissue mobilization on musculoskeletal properties. Medicine and science in sports and exercise. 2019 Oct;51(10):2166
10. Markovic, Goran. "Acute effects of instrument assisted soft tissue mobilization vs. foam rolling on knee and hip range of motion in soccer players." *Journal of bodywork and movement therapies* vol. 19,4 (2015): 690-6. doi: 10.1016/j.jbmt.2015.04.010
11. Seffrin CB, Cattano NM, Reed MA, Gardiner-Shires AM. Instrument-assisted soft tissue mobilization: a systematic review and effect-size analysis. Journal of athletic training. 2019 Jul;54(7):808-21.

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