Case Report

Additional Effect of Mobilization with Movement with Positional Release Therapy In Plantar Fasciitis: A Case Report

Dr. Kshipra Shastri[1], Dr. Shyam D. Ganvir[2]

[1]MPTH Student, [2]Principal, Professor & HOD Community Physiotherapy, DVVPFs College of Physiotherapy, Ahmednagar-414111, Maharashtra, India

Abstract:

Plantar fasciitis (PF) is one of the common musculoskeletal problem causes of heel pain often observed by clinicians. It is defined as pain on the plantar surface of the heel and is the most common cause of inferior heel pain or sub-calcaneal pain. It occurs as a result of inflammation of the plantar aponeurosis of the foot at its attachment on the calcaneal tuberosity. We report a case of 43-year female who experienced heel pain in the last 3 months. Positional Release Therapy (PRT) and Mobilization with Movement (MWM) was given for 3 times per week for 2 weeks, which result significant improvement in pain range of motion (ROM) and foot function index.

Key words: Plantar fasciitis (PF), Movement with mobilization (MWM), Positional release therapy (PRT), Physiotherapy intervention.

Introduction:

The plantar fascia is the thick fibrous connective tissue which supports the arch on the bottom of the foot. It runs from the tuberosity of the calcaneus forward to the heads of the metatarsal bone. The function of the plantar fascia is to support the medial longitudinal arch or foot and has role in dynamic function of gait.[1] It is defined as pain on the plantar surface of the heel and is the most common cause of inferior heel pain or sub-calcaneal pain. It occurs as a result of inflammation of the plantar aponeurosis of the foot at its attachment on the calcaneal tuberosity.[2] Inflammation at the calcaneal insertion can lead to enthesopathy or fasciosis, which induces a lot more pain and discomfort.[3] The incidence of planter Fasciitis or heel pain is about 15 % of all foot related complaints. Females are more commonly affected than males. This condition is common in middle aged group that is from 40-50 years of age. about 65% reported to be overweight, it is most common in weight bearing occupation, particularly factory workers, store clerks and nurses.according to (Lutter, 1997),65 percent of the non-sports demographic is overweight, with unilateral involvement occurring in 70 percent of cases, the majority of the literature agrees that plantar fasciitis occurs most frequently after fifth decade and has been linked to fat atrophy.[4] Extreme pain after a period of rest, decreased pain with exercise, limitation of ankle range of motion (ROM), and tenderness over the medial part of the calcaneus are all classic symptoms of plantar fasciitis.[5] Passive dorsiflexion of the toes aggravates the discomfort. At the time of presentation, the symptoms could have been present for weeks or months. Obesity and a deficit of ankle dorsiflexion are also known risk factors. Plantar fasciitis has also been linked to biomechanical issues in the foot, including a tight Achilles tendon, pes cavus, and pes planus.[6] The most important contributors to the development of plantar fasciitis were pes planus and subtalar joint pronation.[7] The Patho-mechanics of plantar fasciitis are due to Tightness of gastro-soleus muscles, Tibialis posterior weakness and absence of windlass mechanism.[8] In some previous studies, both manipulative therapy (MT) and positional release therapy has been used as a treatment approach for PF. Hence, this study this study was undertaken to assess the combined effect of mobilization with movement in weight bearing position and positional release therapy on pain and ankle range of motion.

Corresponding Author: *Dr. Shyam D. Ganvir*

Email ID: *shyam.ganvir@gmail.com*

Address: *Department of Community Physiotherapy, DVVPFs College of Physiotherapy, Ahmednagar-414111, Maharashtra, India.*

ISSN No. *: (p) 2348-523X, (o) 2454-1982*

DOI: 10.46858/vimshsj.10105

Date of Published : *31st March 2023*

Case Report:

A 43 years female presented with pain in back of right heel in the last 3 months and have difficulty in prolong standing, walking so she went to orthopaedist with same complain where some medication was prescribed and referred for physiotherapy. So, she visited physiotherapy department with having complain of pain which is 7 on Visual Analogue Scale (VAS) on activity and 4 on VAS while resting. The onset of pain was gradual and intermittent in nature. Patient complains off dull aching type of pain. Mild severity and 24-hour behaviour were present during morning which reduces after 30 min of walking and started after resting. Since the patient is a housewife, she complained of pain when doing household chores.

Case evaluation: When patient came to physiotherapy department OPD with positive findings. The female had BMI of 26.6 ka/m2 and was physically active (walking approximately 2 km) with presence of diabetes milieus. The patient reported pain and tenderness over the medial part of the calcaneus. There was swelling present at medial malleolus Patient had tightness of Tendo Achilles and plantar fascia. During examination, her ranges were different between left and right ankle. Dorsiflexion, plantarflexion, inversion of right ankle was affected which was incomplete and painful (Table 1 show both active and passive range of motion). End feel of ankle dorsiflexion, plantarflexion, inversion is movement is empty due to pain. Manual muscle testing examination findings of left ankle dorsiflexors, plantar flexors, inverters, evertors was grade 4 according to MRC grading and for dorsiflexors, plantar flexors, inverters, evertors it was grade 3. Resisted isometrics evaluation suggested that the right ankle is weak and painful. During gait analysis, the patient had reduced step length, stride length of affected leg.

A foot function index is a self- administered index consisting of 23 items divided into 3 subscales to measure the impact of foot pathology on function in terms of pain, disability and activity restriction. According to foot function index outcome score patient gives 61% score which suggests the moderate involvement of function. foot function index score is a valid and reliable measure.

Table 1: Pre-treatment evaluation of active and passive range of motion and MRC muscle power grading at base line

	Right	Left
Ankle Active ROM		
• Dorsiflexion	13	20
• Plantarflexion	30	40
• Inversion	15	20
• Eversion	30	30
Ankle Passive ROM		
• Dorsiflexion	15	20
• Plantarflexion	35	40
• Inversion	20	20
• Eversion	30	30
MRC Muscle power grading		
• Dorsiflexion	Grade 3	Grade 5
• Plantarflexion	Grade 3	Grade 5
• Inversion	Grade 3	Grade 5
• Eversion	Grade 3	Grade 5

Diagnosis: The diagnosis of PF was made based on the patient' history and a physical examination that followed published PF guidelines.

Intervention: The patient was treated for 3 weeks in which in which her treatment regimen includes Ultrasound for 7 minutes, Icing, Stretching of Tendo achillis, Mayo-facial release (MFR), subtalar and navicular mobilization, intrinsic muscle strengthening and home program regimen with towel. 1-week post intervention regimen patient reported there is reduction swelling, but there is no significant improvement in pain (6 on NPRS) and ROM. As a result, her treatment plan has been modified. Mulligan's mobilization in weight bearing position and positional release technique (PRT) was applied.

Mulligan's mobilization in weight bearing was applied in standing, a posteroanterior glide of the tibia applied by non-elastic belt around both the distal leg of the subject and the waist of the therapist and then the subject was actively asked to do the movement.(Fig. 1) For each treatment set, the procedure was performed 4 times in succession, followed by a 20-second rest interval and sustained for 10 seconds.

PRT where patient placed lie in prone with 90 knee flexion then by application of brief mechanical pressure on tender point with one fingertip in order to determine tenderness. (Fig. 2)

Then ankle of patient moved in plantarflexion and gentle finetuned by rotation, until the score pain reduce by at least 70%. Pressure held for 90 sec with 3 repetitions.

Six treatment sessions were performed, each lasting for approximately 30 minutes 3 times per week for 2 weeks.

Fig. 1: Mobilization with Movement (MWM)

Fig. 2: Positional Release Technique

Outcome measure: Tenderness over the medial part of the calcaneus was reduced. Pain was reduced which is 2 on NPRS on activity and 0 on NPRS while resting. There were on sign of swelling. There is improvement in ROM of ankle dorsiflexion, plantarflexion and inversion and improvement in muscle strength of dorsiflexors, plantar flexors and invertors and evertors. According to the foot function index scale, the patient's score was 20.7% which was towards good Patient is able to complete her household work after mulligan mobilization and positional release technique.

Table 2: Post-treatment evaluation of active and passive range of motion and MRC muscle power grading at base line

	Right	Left
Ankle Active ROM		
• Dorsiflexion	18	20
• Plantarflexion	38	40
• Inversion	20	20
• Eversion	30	30
Ankle Passive ROM		
• Dorsiflexion	20	20
• Plantarflexion	40	40
• Inversion	20	20
• Eversion	30	30
MRC Muscle power grading		
• Dorsiflexion	Grade 4	Grade 5
• Plantarflexion	Grade 4	Grade 5
• Inversion	Grade 4	Grade 5
• Eversion	Grade 4	Grade 5

Discussion:

This case report illustrates the additional effect of movement with mobilization and positional release therapy in plantar fasciitis condition. According to Nguyen AP. Application of mulligan mobilization with movement in subacute lateral ankle in people with dorsiflexion ROM, responded well comprising three different mobilization and taping technique. in our case mulligan mobilization and PRT exercises in PF were effective in reducing pain and improving range of motion.[9]

According to Harlapur A. et.al conducted study in which they compared myofascial release and positional release therapy in plantar fasciitis concluded that both the interventions are effective therapeutic options in the treatment. This study is parallel to our study with addition of mulligan mobilization.[10]

Yelverton et al. compare manipulation of the foot and ankle and cross friction massage of the plantar fascia; cross friction massage of the plantar fascia and gastro soleus complex stretching; and a combination of the aforementioned protocols in the treatment of plantar fasciitis and found out that all three protocols had a positive effect on the ROM and pain perception to patients. In our study we try to combine PRT with mobilization technique.[3]

Conclusion:

Plantar fasciitis physiotherapeutic management show effective results after mulligan mobilization and PRT. It also improves functional activities of daily living. 2 weeks of PRT protocol is effective in reducing pain and mobilization shows improvement in ROM. Hence in future it needs to be done on larger scale with more functional and objective outcomes to see effectiveness in PF.

Informed consent: informed consent of patient was taken.

Acknowledgement: We thank the participants who contributed to this study.

Conflict of Interest: no conflicts of interests.

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