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ORIGINAL ARTICLE

Effectiveness of Plantar Fasciitis Taping and Calcaneal Taping in Plantar Heel Pain

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ABSTRACT

Background: Heel pain is one of the most common foot problems especially among older individuals. Mechanical factors play very important role in heel pain. Pain under the heel on weight bearing can cause disability towards movement.

Objective: The objective of the study was to compare the effectiveness of planter facilities taping and calcaneal taping along with stretching and therapeutic ultrasound on heel pain.

Methodology: It was a Quasi experimental study in which data was collected from Canada Orthopedic and Rehabilitation Center. Non Probability convenience sampling technique was used for sample collection and patient were assigned in two groups. Data was collected by using prescribed validated questionnaire, which include Standardized Visual Analogue Scale (VAS) and Foot Function Index Scale (FFI).

Results: The Comparison of percentage of pain decrease post-treatment after evaluation on VAS and FFI in both groups. The decrease of pain in both indicators was significantly higher in group-A (Planter fasciitis tapping group) as compared to group-B (Calcaneal taping group). The decrease of pain in VAS significant at P=0.019 and in FFI at P =0.000 level showing that plantar fasciitis taping is more effective than calcaneal taping.

Conclusion: Plantar fasciitis taping is more effective than Calcaneal taping in planter heel pain.

Key Words: Heel Pain, Activities of Daily Living, Calcaneal Taping

INTRODUCTION

Plantar heel pain or plantar fasciitis can cause considerable pain. The condition is self-limiting and not always very much disabling [1,2]. Many people may bear painful signs and symptoms for many months before going to medical practitioner [3]. Plantar heel pain is characterized as 'first-step' pain, which occurs after a period of non-weight bearing, such as sleeping or resting[4,5].

It is an estimate that one million patients visit every year at medical centers and hospitals outdoor are with intense pain of plantar heel pain. This disease is very much common in people having sedentary life style [6]. 65 years or above older people or aged patients found with plantar heel pain are 7% . Major causes of planter fasciitis are heel bursitis, Tarsal tunnel syndrome and bone cyst[7]. It total makes one quarter of overall foot injuries in runners ten and up to eight percent of all injuries to people take part in sports activities [8]. It is third very most common running injury after iliotibial band friction syndrome and Patellofemoral pain[9].

This condition is considered as multi factorial disorder. Plantar fasciitis or heel pain patients faced many mechanical issues along with variable pain[10]. Poor abnormal forces that place abnormal pressure on already degenerated plantar fascia and every time when patient walks abnormal forces interrupt heeling and leads to more damage of fascia [11]. Excessive weight bearing during exercise is one of the very common factors seen now days in practice. It is also seen that increase in levels of negative arthopathies like Riters disease and spondylitis are also a cause of plantar heel pain or plantar fasciitis.

There are nine studies that are conducted on it and consider as the very strong evidence for it[12]. There is only one research that does not support this factor in this introduction. Obesity as a risk factor for plantar heel pain has significant evidence supporting it. So we can say that the obesity is one of the primary factors that influence and leads to the plantar heel pain or plantar fasciitis. Therefore, more work should be done on it that weather stiffness in the heel pad can be a risk factor of plantar fasciitis[13].

Radiological findings are necessary to rule out that

weather the heel spurs have any association with the plantar fasciitis or plantar heel pain[14]. There are three researches found in favor that increasing in the running miles also increase in the plantar heel pain or plantar fasciitis [15,16]. Increase in the pronation of the foot also leads to increase in the plantar fascia of the foot that is the major cause of the micro degeneration of the fibrous bands of plantar fascia and inflammation. Decrease in the flexibility of the lower limb specially the calf muscle of leg. There are four researches that show the decreased in dorsiflexion of the foot leads to the plantar heel pain or plantar fasciitis [17]. Lower limb tightness is also the risk factor that leads to the plantar heel pain or plantar fasciitis [18]. Messier and Pittaladid a research that patient of plantar fasciitis or heel pain have more leg length discrepancy of 6.4 millimeters and this is the only research that provides the solid evidences regarding the relationship of leg length discrepancy. So according to it leg length discrepancy is considered as a risk factor of plantar fasciitis or heel pain[19].

Powel did a high quality evidence based research on night splints in plantar heel pain or plantar fasciitis.Two groups were selected randomly, participants of one group were provided with night splints along with all conservative managements in the medical centers and second group was provided with no treatment at all. The research went very well but the only point here is that the plantar fasciitis or plantar heel pain is a self limiting disorder that can be settle in twelve months with conservative management. But the results are really good as shown on visual analogue scale so it cannot be denied[20].

Taping is the common way to relieve the symptoms of plantar fasciitis, adds support, reduces stress and relieves pain on the plantar fascia[21].Taping is a cost-efficient treatment choice, especially for people having acute symptoms of plantar fascia problems. The low-dye taping procedure is one of the very commonly used Cryotherapy, laser therapy and calf muscle stretching [18]. Stretching is the deliberate act of lengthening of muscles in the order to increase muscle flexibility and joint range of motion[22]. Dr. Ralph Dyein was a first person who explained a definite accurate procedure of the application of low dye tapes in plantar heel pain or plantar fasciitis. Although, the procedure of low dye technique is very simple and can be taught to the patient and the can apply it very easily in their homes and medical officer can also go and apply this taping procedure during their home visits. If the skin is clean and properly shave with spirit or lotion it assist in adhesion of taping. Taping should apply firmly according to the barrier of skin[23].

METHODOLOGY

Study design is Quasi Experimental trial. Data was collected from Canada Orthopedic and Rehabilitation Centre and Ganj Bakhash Spinal Research and Rehabilitation Hospital.

Study was completed in 3 months after the approval of synopsis. Non probability convenient sampling was used to get the sample. Sample size was calculated by using statistical software (Primer of Biostatistics Version 3.01, McGraw-Hill, 1992), it was determined that a minimum of 17 subjects per Group was sufficient. Both male and female with age group 10-40 years, Subjects complaining of plantar heel pain less than one month of duration, Clinically diagnosed cases of plantar heel pain, Pain located at the heel or plantar surface of the mid-foot with plantar fasciitis, Those who are willing to participate in the study and willing to take treatment for plantar heel pain for successive 7 days were included in study. Subjects with deformed foot, with traumatic injuries, underwent foot surgeries, with deep heel ulcers, with metal implants, Subjects with clinical disorder where the ultrasound therapy is contraindicate, Referred pain, with any neurological disorder were excluded in study. Patient from Canada Orthopedic and Rehabilitation Centre who fulfill inclusion criteria will complete the study after taking history of patient. For the analysis of data SPSS v.16 used and data is presented in form of charts and appropriate graphs as well as standard deviation and mean is also used.

RESULTS

Results showed that FFI scale in plantar faciitis taping group before treatments (Mean± SD) (2.52±0.51) and after treatment reduced to 1.41±0.50. Calcaneal group showed reduction in

FFI scale from Pre to post (2.58±0.50) to (1.94±0.74). VAS scale in plantar faciitis taping group before treatments (Mean ± SD) (7.47±1.23) and after treatment reduced to 2.64±0.70 Calcaneal group showed reduction in FFI scale from Pre to post (7.82±0.95)to(3.70±0.77).

Table I : Frequency Distribution

Groups	Variables	N	Mean	Std. Deviation	P Value
Foot function index scale before treatment	Plantar fasciitis taping	17	2.5294	51450	0.739
	Calcaneal taping	17	2.5882	.50730	0.739
Foot function index scale after treatment	Plantar fasciitis taping	17	1.4118	.50730	0.22
	Calcaneal taping	17	1.9412	.74755	0.22
Viusal analouge scale before treatment	Plantar fasciitis taping	17	7.4706	1.23073	0.356
	Calcaneal taping	17	7.8235	.95101	0.357
Visual analouge scale after treatment	Plantar fasciitis taping	17	2.6471	.70189	0.00
	Palcaneal taping	17	3.7059	.77174	0.00

This table showed that both treatment groups are significant and p value is less than 0.005. Table showed the mean score of VAS in both groups before and after applying the taping. Mean score of planter fasciitis group before applying taping is 7.47 and it decreases to 2.65 while in calcaneal taping group it decreases from 7.62 to 3.71. Table II showed the score of FFI before treatment. All patients were in moderate and severe category of pain.The above table showed that after applying planter fasciitis taping the patients who were in severe category shifted towards mild and moderate category according to FFI but in calcaneal taping group some patients still remain in severe category and showed no significant results.

DISCUSSION

The effectiveness of two different types of taping (plantar fasciitis taping and calcaneal taping) varies considerably between studies according to different studies found in literature. The effectiveness of taping is checked by two standard pain and activity limitation scale named Visual Analogue Pain Scale and Foot Function Index Scale through questionnaire before and after treatment and it was found that according to visual analogue scale pain relived in plantar heel pain patients of group A on which plantar fasciitis taping was applied is 62.9% and group B was 51.5% and according to Foot Function Index Scale pain relieved in patients of plantar heel pain was 45.8% in group A on which plantar fasciitis taping was applied and 29.1% in patients of group B on which calcaneal taping was applied.

Kelley et al demonstrate his results that low dye taping produces small but statistically important results on plantar heel pain patients. Pain decrease was noted on visual analogue scale. The change of 12.3mm on 100mm VAS is greater than 9 to10 mm difference taken as very important clinically[23].

Landorf KB et al reported that there was no significant difference in pain score between groups when different two taping techniques were applied for one week. Improvement in foot pain was noted by Foot Health Status Questionnaire and the main points were activity limitation, stiffness, foot function and general foot health[24].

Researchers found a statistically very important improvement for first-step Pain with different types of taping techniques. It is known that these symptoms that a sharp pain felt when get up from bed first in the morning is a sign of plantar heel pain and for this logic it was added as the criteria of inclusion in the trial. Oppositely, the Foot function index scale Questionnaire is not very sensitive and specific enough to correlate with the improvement found in first step pain as measured separately by using a100mm Visual Analogue Scale[25]. There is non-randomized trial that had previously examined on low-Dye taping for plantar heel pain. A small series of small eight participant's patients reported their beneficial effect from the taping technique applied where as no data was published[26].

There were randomized group trials to check the foot taping technique for Plantar heel pain. A big trial of n 51was reported a 32 mili meters reduce in pain on a 100mm VAS scale on a low dye taping group as compare to blind control group. However the research sample was not collected randomly. The result and discussion of the current trial shows 30mili meters reduce of pain of the low dye taping

group but the control group face in 19 mille meters reduce in pain. The randomized clinical trials shows that 19 mille meters reduce in non randomized clinical trial was because of the confounding variable.

Participant's qualities in this trial were same to the samples in the previous heel pain patient's research. Mostly participants were middle aged women. They were also overweight and spent the most of day time on the foot heel. There are many adverse events happened while doing this trial. The participants were very short-lived and they have mild to moderate pain in their intensity. Five participants remove their tape before the time because of the adverse events. Three participants remove their tape because of allergy reactions the taping technique and two were because of tightness of the taping, all issues were resolved after the removal of taping spontaneously. These types of events can be control by the usage of tape to decrease the tightness and allergy etc.

CONCLUSION

In short term treatment of plantar heel pain it was found that plantar fasciitis taping along with starching and ultrasound is more effective than calcaneal taping .Accordingly, plantar fasciitis taping is recommended for the treatment of plantar heel pain.

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