

Case Report

EFFICACY OF EXTRACORPOREAL SHOCK WAVE THERAPY IN THE TREATMENT OF A PATIENT WITH A CALCANEAL SPUR: A CASE REPORT

Rathish Manickam *, Dirk Laubscher, Mohamed AG Elbaz.

Department of Physiotherapy & Department of Orthopaedics, Medeor 24x7 Hospital, Abu Dhabi, UAE.

ABSTRACT

Plantar fasciitis is one of the most common causes of pain in the inferior heel. During the chronic stage of this condition, a calcaneal heel spur might develop which leaves the patient in agonizing pain whenever the heel undergoes any weight bearing activity like standing and walking, adversely affecting the patient's activities of daily living. Thus the purpose of the study was to find the efficacy of ExtraCorporeal Shock Wave Therapy in the treatment of calcaneal spur.

Our patient was treated in the outpatient department of physiotherapy in which 6 sessions of Extracorporeal Shock Wave Therapy were administered. Plantar fascia stretching exercises and deep friction manipulation was also given to the fascia during the treatment. Outcome measures used were the Numeric Pain Rating Scale (NPRS) and Foot & Ankle Ability Measure (FAAM). During a one month follow up period, there were no reoccurrence of heel pain. The patient also used viscoelastic insoles which provided a cushioning effect and comfort during walking and other daily activities. Thus it was concluded that ExtraCorporeal Shock Wave Therapy is effective in the treatment of calcaneal spur and improving patients functional activities

KEY WORDS: Plantar fasciitis, Calcaneal spur, Pain, ExtraCorporeal Shock Wave Therapy, Numeric Pain Rating Scale (NPRS).

Address for correspondence: Mr. Rathish Manickam, Department of Physiotherapy, Medeor 24x7 Hospital, A Unit of VPS Health Care, Abu Dhabi-United Arab Emirates. **E-Mail:** rathish605@gmail.com

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INTRODUCTION

Heel pain is one of the most common conditions which is characterized by severe pain in the inferior or posterior aspect of the heel which is aggravated by weight bearing particularly on hard surfaces, becoming progressively worse resulting in the evidence of a spur in about 50% of cases [1]. Until now the exact cause of the condition is uncertain, but numerous factors have been claimed, resulting in heel pain with a bony spur: functional overuse, degenerative diseases, inflammatory diseases and metabolic diseases [2]. Conservative treatment options are usually as follows: insole support, plantar fascia stretches, ice massage, nonsteroidal anti-

inflammatory drugs and steroid injections [3]. In our clinical practice, good results are revealed with conservative treatment during the initial stage, but during the chronic stage of plantar fasciitis and with the development of a heel spur, many physiotherapists feel challenged using only conservative treatment. All conservative physiotherapy approaches seems to help in reducing the symptoms of heel pain but seems ineffective for treating a calcaneal heel spur. We report a case study where we treated a calcaneal spur successfully using Extracorporeal Shock Wave Therapy along with other physiotherapy approaches.

CASE REPORT

A 38- year old female complaining of unbearable heel pain (10/10 on the Numeric Pain Rating Scale) and severe difficulty in walking came to see us at the Physiotherapy department after being referred by our Orthopedic Doctor. She had been experiencing pain on and off for the past 6 months but rushed to our Hospital after sudden aggravation of the pain. During examination of her heel, she presented with grade 3 tenderness at the inferomedial aspect of the calcaneus.

After confirmation of the presence of a right calcaneal spur using X- ray we decided to treat it by administering extracorporeal shock wave therapy directly to the spur.

On day 1 it was hard to convince the patient that we wanted to use shock wave as she was in unbearable pain and was fearful about this particular treatment. Due to her level of pain, cryotherapy was given instead along with soft tissue manipulation throughout the plantar fascia. Plantar fascia stretching and calf stretching exercises were also taught to the patient and she was instructed to do 5 to 10 repetitions at home twice a day. Foot and Ankle Ability Measure (FAAM) was administered on the same day as she was not able to walk and reported that her activities of daily living had been limited by 80%. Inspection of her shoes revealed a high heel boot with a hard sole as she works as a police officer and are not able to use comfort sports shoes during her working hours. We decided to prescribe her a Viscoelastic insole and advised her to use it inside the shoe as it would help in reducing the ground reaction forces and help alleviate the pain temporarily.

On day 2 the patient was informed that even though she might experience some pain at the time of receiving ECSWT, it would slowly wear off. She then instructed us to proceed. Extracorporeal shock wave therapy was given with an optimal dosage of 2000 impulses per session with a frequency of 15Hz; pressure bar of 2 bar and with the energy density of 0.2mJ/mm².

ECSWT was administered for a total of 6 sessions at the frequency of 2 sessions per week. The patient continued doing home exercises which included plantar fascia stretching and calf stretching. This was confirmed by telephone calls

and she was also advised to wear the viscoelastic insole in her shoes. During her 3rd session of shock wave therapy the patient noticed that her pain level has reduced. Palpation also revealed the tenderness decreased to grade 1. The values of NPRS and FAAM also came down which showed a marked improvement using shock wave therapy.

During the 6th session of ECSWT her activities of daily living had improved to almost 100% using FAAM and her pain level came down from 10/10 to 0/10 using NPRS. She was walking much better without pain and she reported feeling very happy during her working hours. During her last session's physical examination no pain was found, her activities of daily living were normal and she walked out of the department without any pain. She was advised to wear the viscoelastic insole and to continue the exercises for a month.

DISCUSSION

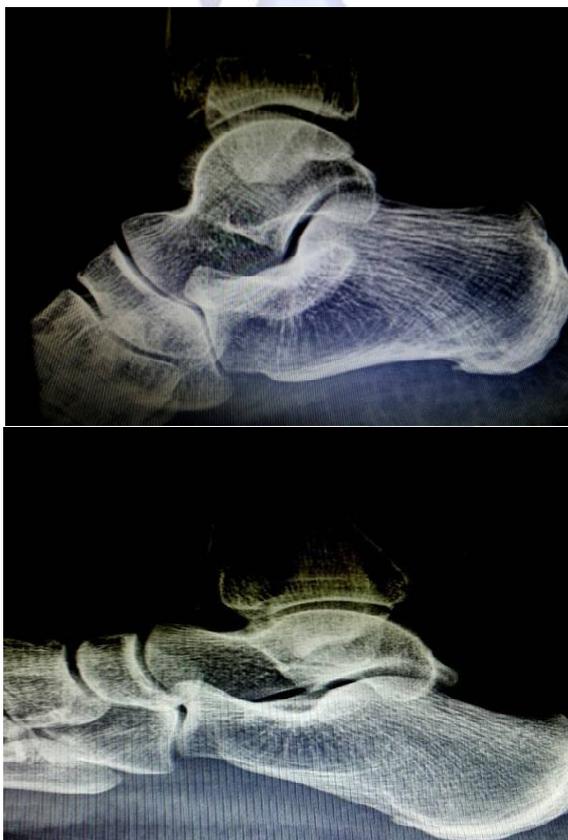
Although there are varied physiotherapeutic approaches for treating heel pain, calcaneal spurs are one of the most challenging problems encountered among physiotherapists in many parts of the world. It is seen among physiotherapists in clinical practice that plantar fasciitis can be treated by many approaches like ultra sound therapy, stretching of plantar fascia & calf, taping and shoe inserts, but most of the calcaneal spur do not respond to these techniques. Hence many patients prefer corticosteroid injections if physiotherapy doesn't work. Treatment of a calcaneal spur without using ECSWT leaves the physiotherapy treatment protocol incomplete as all the previous listed treatment techniques can reduce the symptoms but does not address the root cause.

In our case an X-ray confirmed the presence of a calcaneal spur. Maier et al reported that low energy ECSWT should be considered as an optional therapeutic method to avoid surgery in patients with chronic plantar fasciitis and heel spur [4] as it is noninvasive and without major side effects. In our study we evaluated the efficacy of ECSWT on pain levels and Activities of daily living by using NPRS and FAAM respectively [7,8]. According to Davis et al. (1994), painful heel syndrome is the most common problem

encountered in foot clinics and found that the major cause is inflammation of the plantar fascia. In many of the studies viscoelastic inserts were also shown to be successful in providing partial or total resolution of the condition.

Levitz & Dykyj (1990) found that viscoelastic insoles helped in alleviating the symptoms of pain by providing a cushioning effect and also by reducing the Ground Reaction Forces among patients with pain beneath the medial calcaneal tubercle (part of the anatomy mostly associated with X ray evidence of heel spurs). Plantar fascia and calf stretches are inexpensive and are easy to teach to patients. In our study our patient performed a plantar fascia specific stretch by dorsiflexing the toes with one hand (taking advantage of the windlass mechanism) and palpating the fascia with the other hand to ensure that the fascia is tight. The stretch was held for a count of 30 seconds and repeated three times in each sessions [9].

Fig. 1: X- ray showing Calcaneal spur before and after ECSWT respectively.



In developing countries few physiotherapists are aware of the existence of ECSWT. Because of this, they are able to treat an acute case of plantar fasciitis but unfortunately fail to give an

effective treatment in the case of chronic plantar fasciitis and calcaneal spurs. As our case study reveals that calcaneal spurs can be treated successfully by adding ECSWT to the treatment protocol.

Even though pain was reduced and the patient's Activities of Daily Living also improved by giving ECSWT, other approaches used in our case study also resulted in the reduction of pain and improvement of ADL. They were; stretching of the plantar fascia and calf muscles and viscoelastic insoles for making the patient comfortable. In the future further studies should be carried out using only ECSWT to reveal the results among patients with calcaneal spurs. X- ray was taken after the sessions of ECSWT and found that the spike found in the calcaneal spur was reduced. Even though a small part of spur seems to be left in X-ray, by using ECSWT and plantar fascia stretching exercises there was no pain and symptoms found which bothered the patient.

In conclusion, Extra Corporeal Shock Wave Therapy can be effectively used in the treatment of chronic plantar fasciitis and calcaneal spurs. It cannot be given daily to the patient as high dosages can damage body tissue. Therefore other physiotherapeutic modalities like Viscoelastic insoles, cryotherapy and stretching exercises also play a significant role in reducing the symptoms and promoting comfort to the patients.

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Conflicts of interest: None

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