INJECTIONS OF HAYALURONIC ACID, MANUAL THERAPY AND ECCENTRIC TRAINING ON ACHILLES TENDON MID PORTION AFFECTED BY TENDINOPATHY IN AGONISTIC ATHLETES

Boni G[1], Spaccapanico Proietti S[1], Bizzi E[2], Migliore A[2]

1. CR Umbria - FMSI - Surgery of Sport Medicine – Foligno (Italy)
2. Dep. of Rheumatology, S.Pietro FBF Hospital – Rome (Italy)

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BACKGROUND:

Achilles tendinopathy is relatively common in athletes, especially among runners. Overuse is generally considered to be the inducing factor, however, the exact pathogenesis has not been demonstrated yet. Postulated alternative theories include poor vascularity, diminished flexibility, heredity, age, gender, as well as endocrine and/or metabolic factors. Realistically, the pathogenesis is likely a combination of multiple intrinsic and extrinsic factors. It is hypothesized that physical activity may be involved in the provocation of symptoms acting as the primary cause of the pathology.

AIM:

To **evaluate the efficacy of the synergy between the Hyaluronic Acid (HA) injections (peritendinous) and the rehabilitation** in **athletes affected by tendinopathy of the mid portion of the Achilles Tendon** (AT).

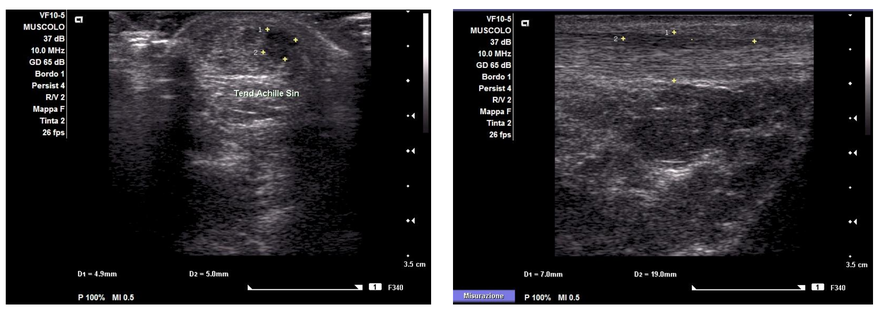


Fig.1 AT Ultrasound Scan

Fig.1
AT Ultrasound Guided Injection

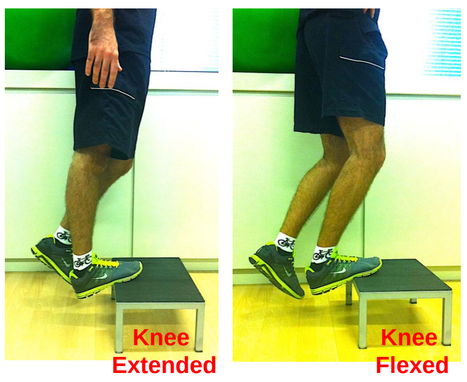


Fig.2
Eccentric Training Exercises

Methods:

From **February to April 2011** we studied **ten agonistic athletes** with an **average age of 33.6**. Eight out of these ten subjects were male and two female. They practiced different sports and referred **pain at the mid portion of the AT, 3 to 5 cm proximal to its site of attachment on the back of the calcaneus**.

They underwent a weekly **cycle of 4 injections of peritendinous HA with medium weight hyaluronans** (Fig.1) **and 5/10 sessions of manual therapy (MT), together with a 4/6 week eccentric training (ET) programme carried out at home and consisting of sets of 12-15 reps with an increasing load repeated 1-2 times daily**. Regarding the eccentric training, according to Alfredson et al, pain must be considered part of the normal recovery process; patients were recommended to continue the entire exercise programme even if pain worsened at the beginning of the programme. According to what stated above, if the patient experienced no pain doing the programme, he or she was exorted to increase the load until the exercises provoked pain. We included two types of heel-drop exercises into the programme (Fig. 2). **Administration of ultrasound ecoguided HA was made by means of four accesses, two medial and two lateral, near the region of pain and in the proximity of the mio tendineous zone. The needle, same used in mesoetraphy (30 Gx ½ ”12 mm) introduced parallel to the tendon, between paratenon and AT, avoided the infiltration of HA into the tendon itself**. however, no dosing studies have been published to date, and dosing in the tendon remains an area for discussion. **We used 2 ml of medium weight Ha for each infiltration, well tolerated by the patient.**

Manual Therapy consisting of a Myo-Fascial Manipulation of the calf muscles and the AT was **performed immediately before the infiltration and lasted from 30 to 45 minutes** (Fig.3-4). By palpation the Therapist detects the part to be treated, the following step is the tissue release consisting of a pressure whose intensity varies in function of the level adopted to work. This pressure is applied in parallel with a tension of the myofascial complex that is being treated. This operation allows to exert an action of the connectival pre-tensioning enhanced by the manual stimulus. The direction of the tension follows the natural direction of the muscle fibres. After this stage, passive movements ranging not above 10-15˚ are induced in order to facilitate the fascial release and detect new tensions to treat.

The technique must be carried out over an extended period of time (>2min.) so to enable the mechanical stimulus to determine those corrective biological events inside the tissues.

At the end of the ‘passive release’ a post-isometric release was applied, it has the function to allow a deeper tissue release, an increase in mobility and a first embedding of the newly acquired range into the patient’s functional schemas.

Fig.3
Myo-Fascial Manipulation of the Gastrocnemius

Fig.4
Myo-Fascial Manipulation of the Soleus

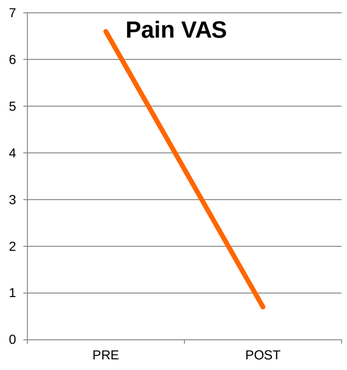
FOOT AND ANKLE DISABILITY INDEX SCORE - SPORT

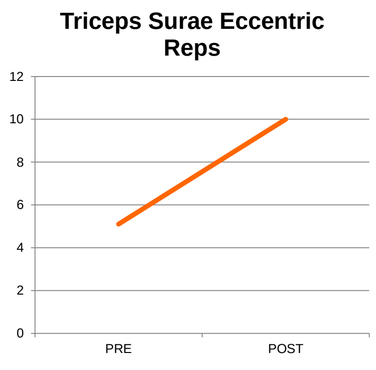
Patient Name_____ Date_____

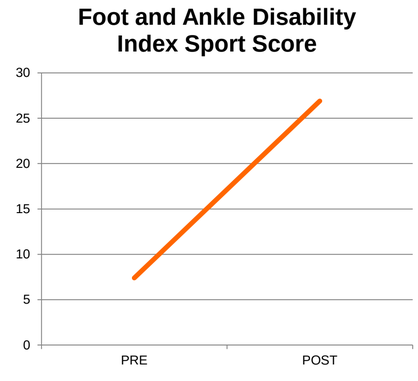
Please answer every question with one response that most closely describes your condition within the past week by marking the appropriate number in the box. If the activity in question is limited by something other than your foot or ankle, mark N/A.

0 Unable to do | 1 Extreme difficulty | 2 Moderate difficulty | 3 Slight difficulty | 4 No difficulty

Running	
Landing	
Cutting, lateral movements	
Ability to perform activity with your normal tecnique	
Jumping	
Squatting and stopping quickly	
Low impact activities	
Ability to partecipate in your desired sport sas long as you would like	







Results:

All patients were evaluated by **average pain VAS** (6.6 pre to 0.7 post synergy of rehabilitation) and **average repetition of eccentric contraction of the triceps surae inducing pain** (5.1 pre to 10 post) **and Foot and Ankle Disability Index Sport Score** (AVG 7.4 pre to 26.9 post) **at baseline and after 8 weeks.**

On every occasion each patient had an ultrasound scan of the AT (Fig. 4), and two of them an MRI scan.

Patients showed a **significant reduction in pain symptoms and a complete functional recovery that enabled them to return to competitive sports**.

Conclusions:

In our experience, the combination of infiltrative therapy with HA, MT and ET represents an effective incentive to reduce symptoms and restore the function in competitive athletes with tendinopathy of the mid-portion of AT.

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