

TAPING APPLIED IN CASES OF SPRAINED LATERAL LIGAMENTS OF THE ANKLE

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Introduction

A sprained ankle is a common injury among sportsmen. If it is not treated correctly it can generate chronic instability or a chronic sprain. The most frequently hurt ligament is the Lateral external ligament (LEL) in its anterior fibular astragalus fasciculus. The ligamentous injury is often accompanied by ankle fractures that go by unnoticed if there is no movement.

The lateral external ligament of the foot gets sprained because of a traumatism of the ankle's articulation.

When the articulation is forced in an inverted position, the lateral external ligament stretches causing anatomic damage that ranges from a strain to a complete fracture. It is the anterior fibular astragalus bundle of the lateral external ligament that gets injured in this type of traumatisms. In case of a maximum inversion, the injury of the fibular calcaneus fascicle adds to it.

Anatomy and physiology of the tepid -fibular-tarsan articulation

Three elements determine the stability of the ankle's articulation:

- 1- the bony structures
- 2- the peri-articular muscles
- 3- the capsular and muscular structures

The ligaments that maintain the stability are:

- Internal lateral ligament or deltoid ILL
- External lateral ligament ELL
- anterior tepid-fibular ligament
- posterior tepid-fibular ligament
- Interosseous tepid-fibular ligament

The ELL ELL is made out of three bundles, which are the anterior fibular astragalus, the fibular-calcaneus, posterior fibular astragalus.

The inverted traumatism of the fibular muscles can cause the latter to stretch widely, provoking an injury of the sheath of the lateral fibulas and sometimes a dislocation of the latter before the external maleolus.

The articular complex of the ankle and the posterior tarsal allows for three degrees on a functional level: bending-stretching; adduction-abduction; pronation-supination. The result of the combination of these three degrees of liberties is:

Inversion.- Bending of the sole, adduction, supination.

Eversion.- Dorsal bending, abduction, pronation.

The external ankle is larger than the internal, about 10mm, as a consequence of this the eversion is limited by this bony ending. As a matter of fact, inversion traumatisms are the most common ones.

Traumatism of an ankle sprain

The first treatment phase of an ankle sprain consists in reducing the inflammation, stopping the bleeding and the pain that comes after the injury.

- Put ice on the injury for 20 minutes each 2 or 3 hours.
- Put up the injured member for at least 24 hours.
- Rest in combination to (according to some authors) a partial discharge position using an English walking stick. The duration depends on the clinical evolution.
- Adhesive contention or functional bandage, according to the different techniques and based upon the clinical examination, evolution and the final aims.
- Medical anti-inflammatory and analgesic treatment
- After 24/48 hours, you can start with physiotherapy in combination to drainage techniques, active assisted mobilization in the sense of the flexion-extension and in such a way it does not cause any pain.

· It is imperative to start a static manual treatment against resistance of the stabilizing muscles of the ankle: anterior and posterior tibial, lateral fibulas and sural triceps.
We will hereafter explain you how to apply a bandage in case of an ankle sprain.

MATERIALS BEING USED:

a roll of tape of 3,8 cm. Wide, pretape, adhesive spray (optional).

OBJECTIVE:

To put the injured ligaments in a shortening position to improve recovery.

PROCEEDING:

This type of bandage has to be applied with adhesive tape which can cause skin irritation. In order to avoid the latter as much as possible, first wash the area where the bandage is to be applied and remove the hair from the areas of adherence.

In order to firmly fix the bandage an adhesive spray can be applied in the upper area of adherence.

The ankle must be placed in 90° position.

EXECUTION:

- 1- Make the patient lay down on his back on a treatment bed, put a roll below the knee to avoid the injured area touching the bed. We can now easily apply the bandage.
- 2- We start with two adherentes to fix the bandage to. One superior, at about 10 cm of the ankles(fig 1.), and the other on the back of the foot (fig 2).



fig 1



fig 2

- 3- At continuation we apply the pretape in the injured area, leaving the two adherentes free. (fig 3)



fig 3

- 4- Apply the first strap that will give stability to the bandage. Depending on whether the internal or external lateral ligaments are sprained, the strap will be placed from the outside to the inside (internal LL sprain) or from the inside to the outside (external LL injury). The strap is placed from the superior adherence on the one side and towards the superior adherence on the other side. Once the first strap of tape passes underneath the foot directing towards the opposite side, we start exerting pressure (allows exert the pressure towards the side of the injured ligament in order to assure the latter remains in a shortening position). Make sure the tape does not wrinkle on the foot sole. On figure 4 and 5 we can see how a strap should be applied in case of a sprained lateral internal ligament.



fig 4



fig 5

5- Fix the strap with a piece of tape to the adherence area. Fijaremos (fig 6)



fig 6

6- Apply two more straps in the same way as in step 4 but one of them a few degrees below and the other one a few degrees above the first one. (fig. 7) The three straps must cross at the height of the ankle. Fix the straps as in step 4 (fig. 8).



fig 7



fig 8

7- Finally we fix the bandage with pieces of tape that run from the proximal to the distal. The pieces of tape should not be circular, the bandage will be closed first on top (fig.9) and then below (fig. 10)



fig 9



fig 10

We have now successfully bandaged the ankle. (fig.11)



fig 11

If at the same time we would like to avoid the extension of the foot, we can do the following:

8- Apply a strap with pressure, running from the upper towards the lower adherence on the back of the foot (fig 12).



fig 12

9- Attach it to the upper adherence with a piece of tape (fig 13)..



fig 13

10- Give pressure towards the lower adherence and attach the strap to this adherence with another piece of tape.(fig 14). Apply pieces of tape along the entire strap to close the bandage.



fig 14