

## **Anatomy, diagnosis and management of ankle syndesmosis injuries: Part Four**

This is the final installment of my four part series on ankle syndesmosis injuries. If you haven't seen the previous three articles check them out in the archived resources section at [www.rehabroom.co.uk](http://www.rehabroom.co.uk).

This article will focus on what management strategies I have found useful with athletes following an ankle syndesmosis injury.

### **Immediate management**

Once we have established our patient has a syndesmotoc ankle injury the first intervention must be to protect the ankle joint. If you are lucky enough to be present immediately after the injury occurs, compressing the joint using tape and putting the ankle in a compression boot is ideal.

One good tip is to use foam anchors to aid patient comfort and promote adherence to wearing the strapping in the acute phase of injury. These anchors are made by cutting two pieces of foam padding into a U shape. These should then be placed with the bottom of the U sitting around the bottom of each malleoli and passing upwards to sit approximately 4 inches above the ankle joint. Do this prior to strapping the ankle joint with tape. This technique allows some degree of swelling to occur. Although not totally beneficial I have found that following ankle injury, very rigid taping, is very uncomfortable for the patient and if some swelling does occur athletes very rarely tolerate the strapping for very long. Thus, this techniques is abit of a trade off between adequate compression, comfort and patient adherence.



Picture from [blog.sportstrap.com.au](http://blog.sportstrap.com.au)

In addition to strapping the patient should be placed in a compression device if able.  
I commonly use the aircast compression boot.



Picture from [betterbraces.com](http://betterbraces.com)

Make sure the boot is inflated using the pump once the patient has the boot on. Patients should keep the boot on at all times, except showering, this includes during sleep.

In addition to the above, I always take the patient off their feet using elbow crutches. This is regardless of the grade of syndesmotic injury. The worst case scenario is that initial testing has overexaggerated patient injury and after a few days symptoms settle. In that case you might be left with an ankle that is a little stiff. On the other hand if you miss a syndesmosis and do not protect the joint in the acute phase that unstable ankle isn't going to improve and may as a result of weight bearing become more unstable.

If in doubt, BOOT it.....

### **Patient education**

One of probably the hardest aspects of managing such an injury is educating the injured. With the exception of a syndesmosis involving a fracture or high degree of ligamentous disruption (Grade 3), patients can sometimes have limited symptoms. For example, they may have minimal pain walking, minimal loss of ankle range and minimal loss of power. I have seen players obtain a syndesmosis injury and only report the injury once the game has finished. In such cases it is sometimes quite hard to advise a player to use elbow crutches and not weight bear through the joint in the acute phase. This I agree is maybe logical, as they have played with the injury, there might be minimal swelling if any and have minimal pain walking. To some degree in terms of pain and inflammation such an injury may be less severe symptom wise than a low grade inversion injury.

As a result patients and athletes need to be told what will happen if they don't unload the ankle joint. Every step they take, painful or not, with an unstable syndesmosis, is going to cause more joint separation and thus, limit the chance of ligament repair. Everytime force is put through the joint, the tibia and fibula will separate with such an injury and for every step the chances of being able to manage such an injury conservatively will be reduced.

## Time in the boot?

At present there are no clear guidelines on how long a patient with a syndesmosis injury should use a compression boot for. In addition, there are no such guidelines for clinical markers to use to progress from non weight, bearing, to weight bearing in the boot. This is a very important milestone but also a difficult management progression.

The extent of the injury will determine to a degree the length of time of each stage, as severity increases the length of time at each stage of management will be increased.

A patient must be non-weight bearing until the point they can partially weight bear. That might seem a simple point but it is key that all progression that occur in the acute and sub-acute phase are logical and guided by patient symptoms.

The ability to put some weight i.e. partial weight bearing, means just that: some weight. Jumping too quickly from non to partial weight bearing is often seen and will hamper ligamentous restructure and lead to an increased chance of conservative management being unsuccessful.

If we use a Grade 2 syndesmosis injury, to be managed conservatively, the time frames below might be an approximated plan:

- Non-weight bearing in compression boot (10 days)
- Partial weight bearing in compression boot (10 days)
- Full weight bearing in compression boot (14 days)

That equates to a total of 34 days or approximately 5 weeks in the compressive boot with progressions from non-weight bearing to full weight bearing. This example as stated is approximate and for a Grade 2 injury.

If after 2 weeks there had been no change in patient symptoms, based on subjective and objective testing, an MRI scan might be of use. Depending on the results this may then warrant a specialist referral. I would prefer to leave the injury for at least 3 weeks. If at this point there was no change in patient symptoms, it could then be envisaged that conservative management is not working and surgery might be a viable option. At this point specialist consultation would be advisable.

As stated the time frames above are estimates and the time frames for each stage can be decreased or increased based on patient symptoms. The key is making sure each progression is always symptom free and that such a progression does not initiate any symptoms. If it does, regress back to the previous stage.

One note of caution is to ensure that during both the stages of partial and full weight bearing in the boot, patients still try to stay off their feet as much as possible. I would always advocate patients using crutches for longer walking distances even when they are in a more advanced stage i.e. full weight bearing in the boot. Just because they are full weight bearing in the boot doesn't give them freedom to walk excessively. The joint is still in a state of injury and needs to be protected to enhance healing time.

The progress from boot to normal gait is a big transition. As previous this transition must be painfree. The patient must be able to mobilise on the flat and upstairs painfree. Walking downstairs requires a greater degree of dorsiflexion, a movement likely to be reduced following injury. As a result patients may need to be taught how to mobilise downstairs using a side on technique to limit the amount of dorsiflexion needed. To help my judgement as to when to remove the boot I will only do so when the patient has a negative squeeze test on objective testing. If they still have symptoms with squeeze testing they will stay in the boot .

## **Rehab**

Whilst wearing the boot open chain exercises can be conducted to ensure some glute and quad strength is maintained during the acute phase of injury. I like to use hip circuits that might involve 3 or 4 different exercises for set time periods. An example might be as follows:

30 seconds side lying hip clam shells

30 seconds side lying hip abduction

30 seconds side lying hip adduction static hold

30 seconds side lying hip external rotation in abduction

Rest 2 mins

Repeat x 4 each leg.

Loaded exercise can be progressed once the patient is full weight bearing. Caution must be applied as remember that whatever weight a patient has in their hands or on their back is adding more force through their ankle.

Exercises such as hip thrusts and rope pull throughs are hip dominant and safe options to use.

## **Restoring mobility**

Assuming a loss of ankle range of movement following injury, full range must be restored prior to commencement of any field rehab. Half kneeling ankle mobilisations are a great exercise to use for restoring ankle mobility in a joint restricted patient.



- Start in half kneeling position
- Place stick in front of 5<sup>th</sup> toe
- Stay tall throughout and drive knee OUTSIDE stick

Full ankle range must be restored prior to taking the patient/athlete into a field setting to begin any field progressions. In addition, they must have a painfree calf raise and had no reaction to any of gym based progressions. At this stage exercises such as rack pulls, split squats and lunges should have been intergrated with no symptoms produced.

### **Field rehab**

Ultimately this portion of rehab will be specific to the level of activity or sport that your patient or athlete is involved. Below I have listed a progressive exercise list that I follow. Full attainment of each level with no increase in symptoms must be completed prior to progression to the next level.

- Low level hopping
- Tempos running building up intensity
- Sub maximal acceleration and deceleration training
- Volume running i.e. fartlek
- Sub maximal and controlled change of direction training
- High end plyometric hopping
- High end speed
- High end acceleration and decelleeration training
- Chaotic change of direction training

Only when a player can show all the above and have had no reaction to any of the progressions would I clear the player to commence field training with their team/sport. Their progression once back in training should be planned so that both volume and intensity of training is initially low and if symptoms do not arise is progressively increased. Contact work should only be commenced once the player has successfully completed non-contact training with no reaction of symptoms.

### **Conclusion**

The management of syndesmotoc injuries in athletes is very challenging process. There are no clear guidleines when to progress patients through the various stages of injury. These ideas are my own thoughts based on my experieces and the things tht worked well for me. Ac always each individual should be reviewed and progressed accordingly and relative to their symptoms. I hope this series of articles has given an insight into how to diagnose and manage such an ankle syndesmosis injury to facilaitate a structured and progressive return to play/activity for patients and athletes alike.



Thanks for reading

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