The Lateral Collateral Ligament Sprain

Ashley DeMarco

Pathology and Evaluation of Orthopedic Injuries I

Professor Rob Baerman
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Throughout my research and observation I had obtained a diagnosis of a grade one lateral collateral ligament sprain. The rehabilitation process that had followed helped to further any knowledge about strength and conditioning an injured body part. It is shown that special tests and palpations helped create most of a patients evaluation and can help determine the diagnosis as simply as showing exactly what movements and body parts are truly effected. Football players are vulnerable in obtaining many different types of injuries but an LCL grade one sprain is one of those injuries are not seen as horrible as it’s differential diagnosis’. The signs of a grade one LCL sprain could cause a person to maybe believe that a LCL, ACL, or PCL ligament was affected and maybe torn. It could also make a person believe that he lateral meniscus plays a role in where the pain is coming wrong. Treatment would be created as much as the person allows due to pain and willingness to participate. LCL grade one sprains are not one of the more severe injuries and can be seen a lot during a sport with high velocity impact, so uniqueness of this injury all depends on how a specific athlete acquires the injury itself. Concluded from this case study was that all injuries no matter how severe or minor have to have a plan of action to be followed through as soon as a person receives the said injury.

Key Words: LCL, ligament, sprain, grade 1, treatment, diagnosis
Introduction

College level sports cause a lot more wear and tear on an athlete’s body than just high school level sports. This select student was a male football player who was in his junior year at the university. His position is defensive linemen and this specific LCL sprain was not his first injury he has sustained in the collegiate level. He weighs in at 260 pounds and has a height of 6’4” and has been playing football most of his life.

Ligament strains are a lot more common than a person realizes. Ligaments are elastic materials consisting of collagen fibers that change due to the strength and stiffness of the loading force placed upon them (1).

Chief Complaint

This injury was sustained during a game a few days prior to entering the athletic training room. The exact mechanism was when he went to side step but his foot planted and his right knee sustained a varus force before landing directly onto the right knee cap. No sounds were recalled being heard or felt and the athlete was able to continue playing. However, the athlete feels a crunchy feeling and a clicking in the knee when it bends. At the time of the injury the pain was perceived as a 1 out of 10, however, since the injury has occurred the pain has increased while the player goes up steps or runs.

Physical Examination

Not many observables were present at the time of the evaluation besides some abrasions to the knee. Redness was present but there were no signs of deformity, bruising or discoloration. He was not limping and was able to put normal pressure on his right knee when standing and walking. Since there are three stages to any form of strain, it is possible to not have any obvious observations to determine some sort of injury. A grade one sprain would not show any physical
symptoms but would in fact just have mild tenderness and slight pain over the area of the lateral collateral ligament (2). No swelling, deformity, or discoloration would be present, so just a physical observation for this specific athlete would have no diagnosis (2).

Since there were no visible signs the palpations were all that was left to help determine a probable cause of the pain. Upon palpating only a few areas were positive for pain and they were: lateral collateral ligament, proximal gastrocnemius heads, and popliteal fossa. No bony palpation sites caused the athlete any discomfort or pain, and this made it very clear that it was not a bony injury we were looking at but a soft tissue one. Range of motion did not seem to cause a lot of pain to this athlete. He was able to complete active and passive range of motion with no pain until he reached the extreme end of flexion or extension. Crepitus was felt bilaterally during both flexion and extension when moved passively and actively. Resistive range of motion had pain during flexion, but not as much with extension. The muscle weakness was noted differently bilaterally. Due to his weakness in his right leg, the strength was noted as pain with manual muscles tests. The neuromuscular tests were within normal limits and he was not experiencing any numbness or tingling in any part of his leg. Due to not being able to obtain a lot of information physically from the patient, quite a few special tests were performed to help determine the diagnosis. The tests performed were: lochmans test, valgus stress test, varus stress test, anterior drawer test, posterior drawer test, patellar apprehension test, patellar grind test, mcmurrays test, bounce home, and childress. The varus stress test was a positive test for pain at 30 degrees of flexion. The childress test was seen as positive for pain as soon as the athlete squatted down into the position; the walk was just as difficult due to the pain from squatting. The rest of the tests came back negative and helped to rule out any tears to soft tissues of the knee.

Results
They had concluded that the injury resulting was a lateral collateral ligament grade 1 sprain. The athlete took it as not being serious and from this point forward did not really listen to what the athletic trainer had to say to them. He was written up a rehabilitation program and was told to come in before every practice or game to get his knee taped up for more strength. Since he did not need an x-ray or laboratory tests he did not feel the need to follow through with the rehabilitation program. He did however come in for taping before his games and practices for a couple weeks following the injury.

**Diagnosis**

Due to the findings that the Athletic Trainer had found they concluded that the injury sustained by this football player was a grade 1 Lateral Collateral Ligament, LCL, sprain. The slight tenderness and discomfort with the areas surrounding the LCL and that a varus stress test was positive for pain at 30 degrees of flexion indicated that the LCL was affected. I agree with their diagnosis for the LCL sprain being the leading cause of pain. For a grade 1 sprain there would be no visible swelling, discoloration, or deformity (2). The athlete would have a chief complaint simply that their knee is irritated along the lateral side and that there is slight tenderness over the LCL positioning (2). Also with a grade one LCL sprain, the affected person would be in the most pain at 30 degrees of flexion which was what the varus stress test had shown to be true (2). There was no sounds heard at the time of injury would also lead me to believe that no matter what ligament was affected it would not be higher than a grade one sprain. It is also noted that with a grade one LCL sprain the main mechanism is a twisting of the knee due to cutting or planting of the foot, alongside a varus force being placed on the knee which the athlete had explained during his evaluation (3). A grade one would also leave the athlete with full function during range of motion, just some pain (3).
Treatment

The plan of treatment for a grade one LCL sprain can be divided into four stages. The first stage is immediate and follows right after the injury takes place (4). In this stage cold therapy or ice is applied to control any swelling and to minimize the pain due to the sprain (4). As soon as the pain allows you would move into stage two which is regaining full range of motion and using static strengthening techniques (4). Cold therapy and compression should be applied three times a day for 15 minutes following the rehab exercises (4). Stage three takes place typically between 2 to 4 weeks after the injury, this stage aims to maintain complete range of motion and begin equaling the strength between both legs (4). Once strength is built, you can then further the rehabilitation by adding running, sideways running, and increasing speeds (4). Stage four would include sports specific drills, and with the pain allowing competition training. Taping and/or knee support will be added for the athlete in this stage to give them optimum support when they return to play (4).

However, even though that is how rehabilitation should be conducted for a grade one LCL sprain the Athletic trainer for the football player did things a little differently. The football player did not actually go through with the rehabilitation that the athletic trainer created because he believed he was fully capable of playing on his sprained LCL. The program that was created for him was as follows: warm up on bicycle, perform straight leg raises in flexion/extension/adduction/abduction, leg press, wall squats with five pound weight, cybex machine, practicing balance on an airex pad with the affected knee bent at 30 degrees, side stepping with band, step ups, heel taps, and heel raises. He was expected to come in for rehab daily and continue for a two to four week period. This rehab was designed for him to be able to regain full strength in his knee and to help prevent any more injuries in result of the LCL sprain.
Even though he did not come in for treatment he did come in for taping of the knee before all of his practices and games to add more support.

**Returning to Play**

This specific case of an LCL sprain ended in good news with the athlete returning to play the following day after his diagnosis. However, not all end that way. Athletes need to be able to prove that they have functional progression and have the strength high enough to return to a normal level of play. It is important not to send an athlete back too soon because you do not want an athlete to relapse and reinjure that same body part to create an even more intense injury.

Without the proper strength or range of motion needed for the sport, the injury is at a much higher risk of returning to the athlete.

**Discussion**

Learning about different case studies and how injuries are applied in real life puts into perspective exactly how to handle that situation. Without doing any research on a topic you would never learn how to handle that topic when you come across it. It is important to know all about your case study because if you are not knowledgeable in that area of study you will not have the best requirements needed to help the injured athlete to return to play. This case was unique in the sense that I have never seen an athlete deny wanting to go complete a rehabilitation program before. It showed me that some athletes think they actually know more than the athletic trainer and you cannot force them to complete what is needed, as long as you have them sign off that they were told and decided not to go through with it.

**Conclusion**

I learned through this project that athletic training does in fact take a lot of work. You have to be able to remember how to determine what an injury is and narrow it done to the probable causes.
It helped me be able to put everything I have learned up to this point into perspective and go over all of the differential diagnosis’ in my head while I watched the original evaluation take place. As we learned which tests were positive and what sites of palpations caused pain it helped me to dig into the information to help determine the exact diagnosis with the information obtained.
Works Cited


3. LCL Tear (Lateral Collateral Ligment). Physio Advisor.

