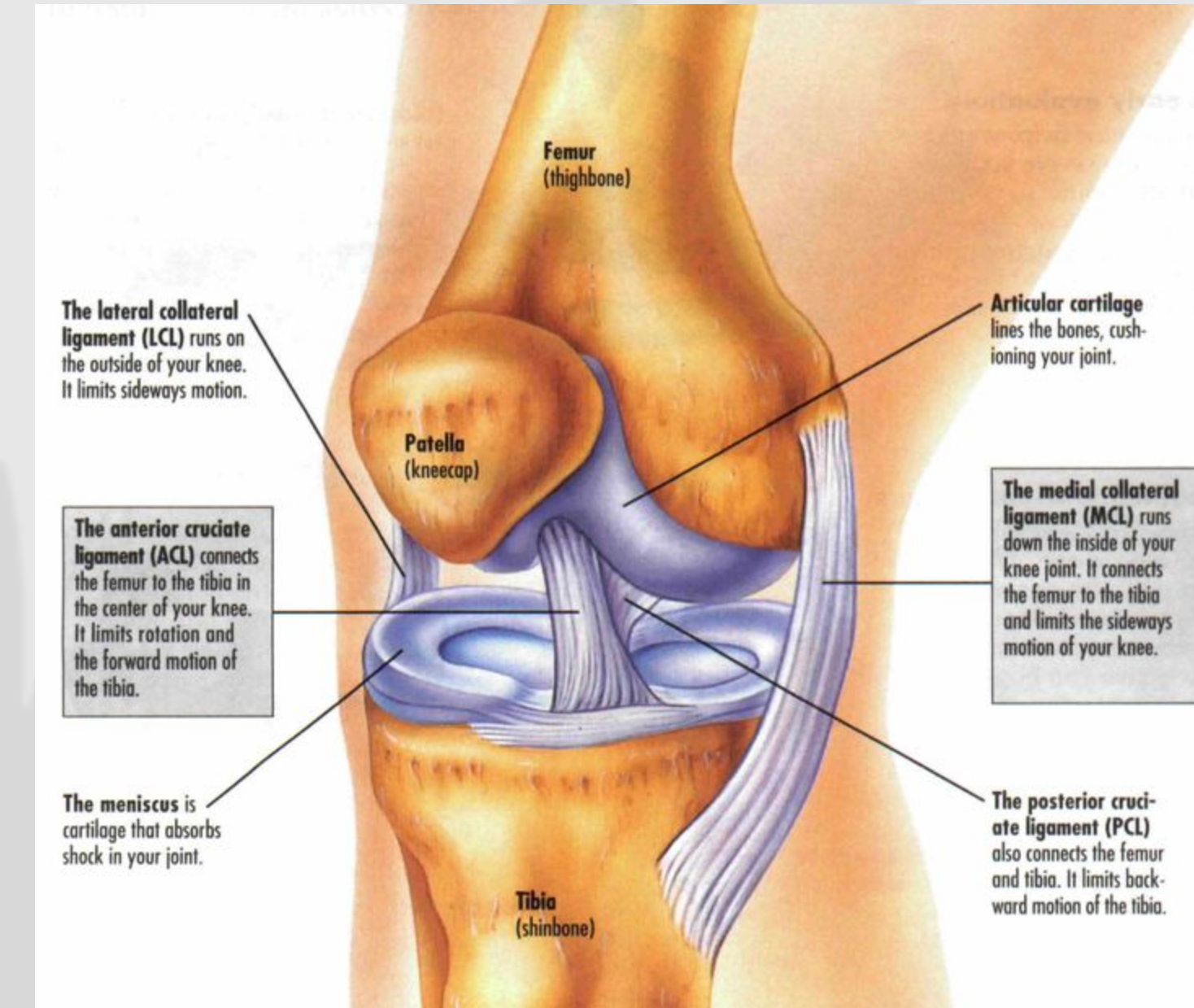


Abstract

Background: This Level 4 Case study presented an athlete that was an 18-year-old (89kg, 183cm) male outside linebacker. Athlete's prior medical history included a right shoulder labrum repair surgery, fractured left wrist, and multiple bilateral ankle sprains. His injury occurred on the field during his first game of the season. The athlete said he planted his foot and turned his upper body quickly, heard an audible pop, and noted that he felt his knee "gave out" as he fell to the ground. He claimed to be in no pain, but was weak when moving his leg. Upon initial evaluation, athletic training staff discovered (+) Lachmans, (+) Valgus, (-) Varus. We assisted him off the field to be evaluated by the team physician who found the same tests to be prevalent, in addition to (+) Pivot Shift. **Differential Diagnosis:** Anterior Cruciate Ligament (ACL) tear, Medial Collateral Ligament (MCL) tear, bilateral meniscus tear, joint capsule damage. **Treatment:** Athlete began conservative treatment with AT staff two days after following injury. Although the athlete was able to ambulate without pain or compensation, damage to the MCL required immobilizing the knee with a locked ROM brace to protect from other injury and initiate healing. Secondary physician examination took place with an X-Ray and MRI without contrast. X-Ray presented normal while MRI confirmed a torn ACL, bilateral meniscus and medial joint capsule with damage to the MCL. Athlete was further treated with therapeutic exercise, intramuscular electrical stimulation for muscle activation via dry needling, intermittent compression, and cryotherapy. Athlete had positive outcomes from the treatments rendered and underwent a successful ACL reconstruction surgery using a patella tendon autograft. **Uniqueness:** In football, ACL tears are a common injury due to the nature of the sport and the movements that take place. Evidence shows that linebackers are at the greatest risk of ACL tears among the possible positions in football. Although tears of the ACL itself wouldn't necessarily cause significant pain since it is not innervated by pain receptors, the mechanism of injury for an ACL tear to occur usually results in damage to other structures, which will cause a great deal of pain and swelling. This cause is unique because the athlete never experienced any pain and very minor swelling regardless of the complexity of damage to other structures in the knee. This allowed athletic training staff to be more aggressive with his rehabilitation program, resulting in greater preservation his muscle activation and girth, making him stronger going into surgery. This case highlighted the use of intramuscular electrical stimulation for muscle activation to reduce atrophy before reconstructive surgery in addition to blood flow restriction (BFR) training to induce muscle hypertrophy after surgery. There is very minimal evidence-based research on the effectiveness of these methods in regard to muscle strength and size related to ACL injury pre and post-operative treatment. **Conclusion:** This case highlighted the diagnosis and treatment of an athlete that obtained a torn ACL, MCL, Medial Capsule, and bilateral meniscus while playing in a football game on a turf field. This CASE is classified as a Level 4 category due to the rareness of the injury associated with the athlete. The athlete had experienced minimal pain, swelling, or prolonged dysfunction pre or post surgery compared to the standard athletic population. Athletic training staff utilized a more aggressive approach for rehabilitation through complex modalities and therapeutic exercise, which contributed to a quicker progression in muscle strength, joint mobility, and overall function. This case provided an investigation on the use and effectiveness of the described techniques and provides other athletic trainers a possible alternative in treating similar injuries.

Introduction

In this case report, the athlete was playing in a football game and planted his foot before pivoting to change direction and heard a pop and felt his knee gave out. After running out to the field for an initial evaluation, the Athletic Trainers assisted the athlete off the field where the team physician conducted a more thorough secondary evaluation. After the athlete went for an MRI and X-Ray, it was confirmed that he had sustained injuries to his ACL, MCL, both menisci, and the medial portion of his capsule. Prehab for surgery and post-surgical rehabilitation included BFR, intramuscular electrical stimulation via dry needles, and rehabilitative exercises/protocols that allowed the athlete to be cleared for non-contact sports specific activity by his physician at 19 weeks post surgery and contact sports specific activity at 6 months.



Purpose

The purpose of this case report was to explore the uniqueness of the specific injury as well as outline the benefits of the methods used to rehabilitate the athlete.

Differential Diagnosis

- Anterior Cruciate Ligament (ACL) tear
- Medial Collateral Ligament (MCL) tear
- Bilateral meniscus tear
- Joint capsule damage.

Clinical Evaluation

Initial evaluation included Lachman's (+), Valgus Test at 30 degrees flexion(+), Valgus Test at 0 degrees flexion (+). Secondary evaluation revealed the same results, so the team physician called for an MRI and X-Ray to confirm effected structures. Since damage to the ACL and MCL and other structures were suspected, we set the athlete up with a range of motion brace locked at 30 degrees of flexion and crutches for ambulation.

Treatment

Athlete began conservative treatment with AT staff two days after following injury. Although the athlete was able to ambulate without pain or compensation, damage to the MCL required immobilizing the knee with a locked ROM brace to protect from other injury and initiate healing. Secondary physician examination took place with an X-Ray and MRI without contrast. X-Ray presented normal while MRI confirmed a torn ACL, bilateral meniscus and medial joint capsule with damage to the MCL. Athlete was further treated with therapeutic exercise, intramuscular electrical stimulation for muscle activation via dry needling, intermittent compression, and cryotherapy. Athlete had positive outcomes from the treatments rendered and underwent a successful ACL reconstruction surgery using a patella tendon autograft.



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Implications

In football, ACL tears are a common injury due to the nature of the sport and the movements that take place. Evidence shows that linebackers are at the greatest risk of ACL tears among the possible positions in football. Although tears of the ACL itself wouldn't necessarily cause significant pain since it is not innervated by pain receptors, the mechanism of injury for an ACL tear to occur usually results in damage to other structures, which will cause a great deal of pain and swelling. This cause is unique because the athlete never experienced any pain and very minor swelling regardless of the complexity of damage to other structures in the knee. This allowed athletic training staff to be more aggressive with his rehabilitation program, resulting in greater preservation his muscle activation and girth, making him stronger going into surgery. This case highlighted the use of intramuscular electrical stimulation for muscle activation to reduce atrophy before reconstructive surgery in addition to blood flow restriction (BFR) training to induce muscle hypertrophy after surgery. There is very minimal evidence-based research on the effectiveness of these methods in regard to muscle strength and size related to ACL injury pre and post-operative treatment.

Conclusion

This case highlighted the diagnosis and treatment of an athlete that obtained a torn ACL, MCL, Medial Capsule, and bilateral meniscus while playing in a football game on a turf field. This CASE is classified as a Level 4 category due to the rareness of the injury associated with the athlete. The athlete had experienced minimal pain, swelling, or prolonged dysfunction pre or post surgery compared to the standard athletic population. Athletic training staff utilized a more aggressive approach for rehabilitation through complex modalities and therapeutic exercise, which contributed to a quicker progression in muscle strength, joint mobility, and overall function. This case provided an investigation on the use and effectiveness of the described techniques and provides other athletic trainers a possible alternative in treating similar injuries.