

## Abstract

**Background:** MCL tears and PCL tears are common in football due to the sudden changes in direction and complex movements of the patellofemoral joints. Grade III PCL tears are usually accompanied by another torn ligament, the MCL being that ligament in 31% of cases. In this level 3 case report, the athlete reported a zero on the pain assessment scale post-injury. The athlete presented with no swelling post-injury. Both levels of pain/swelling remained unchanged throughout the early duration of the injury which is abnormal compared to research. This allowed rehabilitation to start earlier with a higher level of intensity. At week five of rehabilitation, the athlete was walking without crutches. Comparatively, athletes who sustain a grade III PCL tear are normally advised to stay on crutches six to eight weeks post-injury, especially if another ligament of the knee is involved.

**Patient:** Athlete is a 19-year-old (193 cm and 104 kg) male JUCO football tight end. Athlete has no prior medical history. Athlete was in a scrimmage when he was tackled with a valgus force below the left knee with his left foot planted. An unstable feeling in the knee was reported. Initial evaluation revealed no swelling, obvious deformities, or signs of trauma. Athlete denied pain following injury with no point tenderness upon palpation. Full Active ROM with knee flexion/extension. Full strength in knee flexion. 3/5 strength in knee extension. (+) Posterior Drawer, Sag Test, Valgus Test, (-) Anterior Drawer, and Varus Test. MRI revealed grade III MCL/PCL tears.

**Intervention or Treatment:** Athlete was treated with ice to prevent swelling, kinesiology tape for lymphatic draining, a brace set to 0° to restrict range of motion and crutches for gait assistance. Home treatment/exercise protocol included protection, rest, ice, compression, elevation of the knee, and quadriceps activation. Physician evaluation warranted X-Ray and MRI. X-Rays were normal, MRI revealed grade III MCL/PCL tears. Athlete's ROM brace was set to 30° extension. Conservative treatment was warranted for four weeks. Conservative treatment included similar modalities to initial treatment. Phase I rehabilitation exercises included patellar mobilizations, isometric quadriceps activation, side-lying hip abduction/adduction, and isometric straight leg raises. Phase II, III, and IV are all made of progressing exercises based on the previous phases. Phase V exercises include leg presses, hamstring curls, stationary bike, and treadmill exercises.

**Outcomes or other Comparisons:** Typically, grade III MCL/PCL tears present with pain/swelling shortly post-injury. In this case, both components were absent. This allowed the athlete's progression to happen more quickly. Although the absence of pain/swelling could be viable reasons for approaching rehabilitation cautiously, there were no setbacks. Evidence shows that athletes who suffer from grade III MCL/PCL tears take around nine months to return to all activities. The athlete is on track to return to all activities by the middle of month seven post-injury.

**Conclusions:** An atypical presentation of no pain/swelling in a football athlete with grade III MCL/PCL tears usually alerts licensed healthcare professionals to approach rehabilitation cautiously. Without pain, it is unknown when to progress with rehabilitation and if the injury should be approached conservatively or not. In this case, conservative treatment vaulted the athlete to an early recovery when compared to the normal return-to-activity of this injury. For further clinical practice, athlete's who present no pain/swelling post grade III MCL/PCL tears should first be approached conservatively. If this method is not progressing, surgery may be considered.

**Clinical Bottom Line:** The absence of pain/swelling in grade III MCL/PCL tears is atypical and conservative treatment of the injury should be considered first.

## Introduction

The medial collateral ligament (MCL) and posterior cruciate ligament (PCL) are both frequently torn in contact sports; especially football due to the repeated change of directions and multiple forces that occur in and on the knees. The combination of acute grade III MCL and PCL tears have unclear optimal rehabilitation strategies and minimal evidence of choosing conservative versus surgical treatment. The following information will explore evidence to assist in the decision-making process that may loom over patients with grade III MCL and PCL tears.

## Purpose

The purpose of this case report was to introduce a 19 year-old Junior College football athlete who suffered from grade III MCL/PCL tears during competition. The athlete presented with no pain or swelling during the early stages of the injury. With the absent of pain and swelling, a conservative approach was taken in the treatment of the grade III MCL/PCL tears. The combination of acute grade III MCL and PCL tears have unclear optimal rehabilitation strategies and minimal evidence of choosing conservative versus surgical treatment. An overview of this unique case study is presented to help aide in the decision of conservative vs. nonconservative treatment in grade III MCL/PCL tears without pain and swelling.

## Case Report

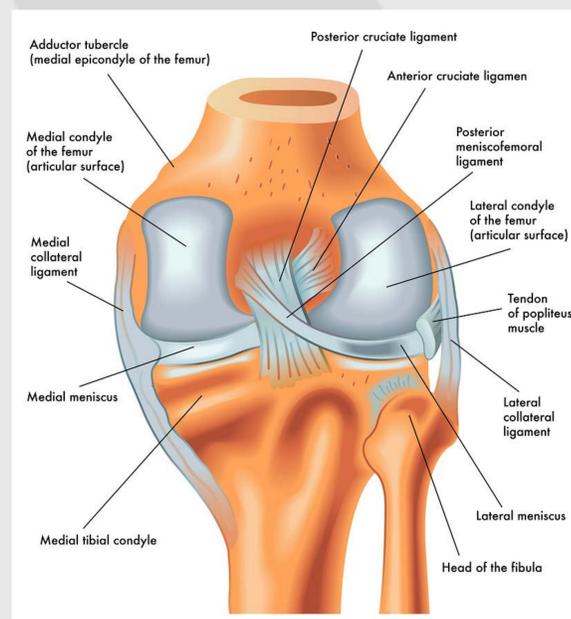
**Patient:** Athlete is a 19-year-old (193 cm and 104 kg) male JUCO football tight end. Athlete has no prior medical history. The following information will explain the athlete's mechanism of injury, clinical examination, treatments, and outcomes to provide additional details to this individuals case.

**Mechanism of Injury:** Valgus knee loading is the main mechanism of injury for MCL tears. Abrupt knee extension and forceful trauma causing the tibia to translate posteriorly are the main mechanisms of injury for PCL tears. This athlete was participating in a football scrimmage when he was tackled with a valgus force below the left knee with his left foot planted.

**Clinical Examination:** . An unstable feeling in the knee was reported. Initial evaluation revealed no swelling, obvious deformities, or signs of trauma. Athlete denied pain following injury with no point tenderness upon palpation. Full Active ROM with knee flexion/extension. Full strength in knee flexion. 3/5 strength in knee extension. (+) Posterior Drawer, Sag Test, Valgus Test, (-) Anterior Drawer, and Varus Test. MRI revealed grade III MCL/PCL tears.

**Treatment:** In this individual case, the athlete opted for a conservative (non-surgical) course of treatment. Athlete was treated with ice to prevent swelling, kinesiology tape for lymphatic draining, a brace set to 0° to restrict range of motion and crutches for gait assistance. Home treatment/exercise protocol included protection, rest, ice, compression, elevation of the knee, and quadriceps activation. Physician evaluation warranted X-Ray and MRI. X-Rays were normal, MRI revealed grade III MCL/PCL tears.

**Outcomes:** Although the absence of pain/swelling could be viable reasons for approaching rehabilitation cautiously, there were no setbacks. Evidence shows that athletes who suffer from grade III MCL/PCL tears take around nine months to return to all activities. The athlete is on track to return to all activities by the middle of month seven post-injury



## Conservative Treatment

The most frequently injured ligament in the knee is the MCL which accounts for up to 43% to 52% of knee injuries. MCL tears, whether in isolation or not, have consistently undergone nonsurgical treatment with excellent short-term outcomes. Long-term outcomes of conservative treatment remain inconsistent. Conservative treatment of the MCL for almost all isolated Grade I and II MCL injuries is warranted. Isolated Grade III MCL tears are atypical and should be treated the same as Grade II MCL tears. Grade I and II isolated PCL tears can undergo conservative rehabilitation with a high likelihood of return to play and pre-injury performance . However, long-term consequences may occur to those who decide conservative treatment. A study of 68 acute, isolated grade III PCL tears over the span of 10 years showed that 11% suffered from moderate to severe osteoarthritis regardless of previous return to play rates. With conservative treatment, the knee is immobilized for a maximum of four weeks while implementing a quadriceps strengthening program. A PCL brace is utilized to prevent tibial sagging, assist in applying an anterior counterforce, and for promotion of overall knee immobilization with protection. Since the athlete opted to undergo conservative treatment, this allowed for rehabilitation to begin more quickly. Phase I rehabilitation exercises included patellar mobilizations, isometric quadriceps activation, side-lying hip abduction/adduction, and isometric straight leg raises. Phase II, III, and IV are all made of progressing exercises based on the previous phases. Phase V exercises include leg presses, hamstring curls, stationary bike, and treadmill exercises.



## Discussion and Summary

Overall, there are many different circumstances that go into the decision of surgical versus conservative treatment in this grade III multi-ligament injury. The research uncovered the benefits and potential consequences of both conservative and surgical treatment in acute isolated grade III MCL tears as well as acute isolated grade III PCL tears. Typically, in grades I and II of both MCL and PCL tears, conservative treatment is justified. In grades III, the evidence of both isolation tears does not conclude to either surgical or conservative treatment. Acute isolated grade III MCL tear information was brought together separately from acute isolated grade III PCL tear information to study each injuries path by themselves. This allowed the most educated mix of information on these injuries for those who have been diagnosed with acute grade III MCL and PCL tears. This research was gathered in hopes of developing an educated choice for those collegiate football athletes debating on surgical or conservative treatment of acute grade III MCL and PCL tears. Each individual patient should weigh both the advantages and disadvantages of each treatment type based on their individual case. The information in this research does not include every possible acute grade III MCL and PCL scenario. More research needs to be conducted to come to a definite conclusion on the best treatment for acute isolated grade III MCL and PCL tears.

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