Multi-Ligament Knee Injury in a College Football Athlete

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Abstract

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 present or other symptoms. 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 aids in the decision of conservative vs. nonconservative treatment in grade III MCL/PCL tears without pain and swelling.

Conservative Treatment

The most frequently injured ligament in the knee is the MCL which accounts for up to 52% of knee injuries. MCL tears, whether in isolation or not, have consistently undergone nonoperative treatment with excellent short-term outcomes. Long-term outcomes of nonoperative 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 complications may occur to those who decide on nonoperative 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 osteoarthritides regardless of previous return to play rates. With conservative treatment, the knee is immobilized for a maximum of 4 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 raise.

Surgical Treatment

Grade III MCL tears result in pain and evidential loss of function with an inability to produce a plantar flexion force. Although nonoperative treatment of the MCL from the medial epicondyle, the distal part of the injured MCL is under the medial meniscus, if the MCL injury is an open wound, surgical repair is indicated. Acute isolated grade III MCL tear information was brought together separately from acute isolated grade III PCL tear information to study each injury pathway by themselves. This allowed the most educated mix of information on these injuries for those who have been diagnosed with acute isolated 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.

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 disadvantages of both the surgical and conservative treatments 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 isolation 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 injury pathway by themselves. This allowed the most educated mix of information on these injuries for those who have been diagnosed with acute isolated 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.

References

Studies have shown that a proper prehabilitation before surgery significantly affects the postoperative recovery. Taking the surgical route may increase recovery time as a prehabilitation phase is implemented as well as the chance of a setback during surgery. In acute isolated PCL tears, regardless of grade, nonoperative treatment is the preferred option based on research. A significant surgical indication for any PCL tear is when it is more than 12 mm of posterior tibial translation present. The goals of PCL reconstruction are to reproduce the normal anterior tibial step-off, restrain posterior tibial displacement, and allow stable weight-bearing on the pain-free knee function. Essentially, these same goals can be accomplished through a conservative treatment by reteaching the knee its natural kinematics. Likewise, to the grade III MCL surgical approach, prehabilitation plays a major part in making a full recovering after surgery. Consequently, the knowledge of prehabilitation will be necessary to surgically repair acute grade III MCL/PCL tears is difficult.