Displaced Posterior Cruciate Avulsion Fracture Fixation With Medial Collateral Ligament Repair Using Combined Open and Arthroscopic Methods

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Background
Posterior cruciate ligament (PCL) injuries are rare, occurring at a rate between 3% and 38%. PCL avulsion fractures are less commonly observed and often result from motor vehicle collisions. Concomitant intra-articular injuries are commonly observed in as many as 28% or patients being treated for PCL injuries. Medial collateral ligament (MCL) injuries are much more common in isolation and may account for as many as 40% of all knee injuries. The combination of an MCL tear with a PCL avulsion fracture is much less common and may represent a higher energy injury. Although isolated PCL injuries and isolated MCL injuries may be managed nonsurgically, surgical management is indicated in patients with a multiligamentous knee injury who have knee pain and instability.

Purpose
This video demonstrates fixation of a displaced PCL avulsion fracture and MCL repair via a combination of open and arthroscopic approaches.

Methods
The case presentation of a 26-year-old man with left knee pain after falling from his bicycle is discussed. Physical examination and plain radiographs indicated a large avulsion of the PCL facet, a bucket-handle lateral meniscus tear, and a proximal full-thickness tear of the MCL. The diagnosis and treatment options were reviewed, and the surgical plan was discussed in detail before the procedure. The decision was made to perform diagnostic knee arthroscopy, lateral meniscus repair, open MCL repair, and open reduction and internal fixation of the PCL avulsion fracture.

Results
With the patient in a sloppy lateral position, diagnostic arthroscopy and lateral meniscus repair were performed via an all-inside technique. A 4-cm incision was then made medially over the MCL to identify the proximal tear. Two suture anchors were placed at the medial epicondyle, and the sutures were passed through the MCL and the adjacent capsule. A curvilinear incision was made on the posterior aspect of the knee, and dissection was carried down beneath the capsule to the PCL avulsion fracture. The fracture was fixed with the use of two partially threaded cannulated screws and backed up with the use of a suture anchor. The MCL sutures were tied down with the knee in 30° of flexion and a varus force.

Conclusion
Surgical fixation of PCL avulsion fractures in combination with a meniscal tear and an MCL proximal avulsion tear presents a unique challenge because of patient positioning, the necessity of open and arthroscopic approaches, and the complex nature of the injuries. Although a paucity of data is available on PCL avulsion fractures in combination with MCL tears and meniscal injuries, a reasonable understanding exists, that in the setting of a multiligamentous knee injury, they should be managed surgically to attain the best outcome. Sloppy lateral positioning of the patient provides a unique ability to perform arthroscopic and open approaches and complete all aspects of the procedure successfully.