Surgical Management and Treatment of the Anterior Cruciate Ligament/Medial Collateral Ligament Injured Knee

Kevin M. Dale, MD[a,*], James R. Bailey, MD[a], Claude T. Moorman III, MD[b]

KEYWORDS

• Anterior cruciate ligament • Medial collateral ligament • Surgical technique

KEY POINTS

- Diagnosis should start with physical examination and can be confirmed with MRI and radiographs.
- Anterior cruciate ligament (ACL) reconstruction should be done in a delayed fashion after swelling has gone down and range of motion has returned. This will allow time for the medial collateral ligament (MCL) to potentially heal.
- Proximal MCL injuries have an excellent chance of healing, and distal MCL injuries should be ruled out for a "Stener"-like lesion of the MCL over the pes anserinus.
- Grade 1 and 2 MCL injuries can be treated nonoperatively, and increased scrutiny should be given to grade 3 MCL injuries at the time of surgery.
- After ACL reconstruction, the MCL should be tested with valgus stress testing at 0° and 30° of flexion to evaluate for medial-sided opening of the knee joint necessitating MCL repair or reconstruction.

Video content accompanies this article at http://www.sportsmed.theclinics.com.

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[a] Department of Orthopaedics, Duke University Medical Center, Box 3615, Durham, NC 27710, USA; [b] Department of Orthopaedics, Duke University Medical Center, Box 3639, Durham, NC 27710, USA

* Corresponding author.

E-mail address: Kevin.dale@duke.edu

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INTRODUCTION

Nature of the Problem

Of knee ligament injuries, the medial collateral ligament (MCL) is the most commonly injured.[1] When there is a severe grade III MCL injury, the risk of associated ligament injury is 78%, and 95% of the time the anterior cruciate ligament (ACL) is involved.[2] ACL injuries alone usually result from a noncontact mechanism, whereas an ACL-MCL injury will result from a contact mechanism that involves a valgus stress with external tibial rotation.

Histologically, the ACL resembles fibrocartilage with poor healing capability.[3] Also, most ACL tears pull apart, leaving frayed tissue with poor healing potential. Therefore, ACL reconstruction is often recommended to allow patients to return to activities that involve change of direction.[4] Histologically, the MCL resembles fibroblast-type cells with good healing capability.[3] Unlike ACL tears, most MCL tears are either proximal or distal with good blood supply for healing.[5] Patients are usually able to return to competitive activities with nonoperative treatment of the MCL.[6]

Controversy arises when dealing with combined ACL-MCL knee injuries. A canine model has shown that when there is transection of the MCL and ACL, the MCL healing was negatively affected by the injured ACL.[7] A recent systematic review confirmed the recommendation for ACL reconstruction, but there is no one recommendation for treatment of the MCL.[8] The treatment of the MCL injury is usually driven by the severity and location of the injury.

Evaluation

A thorough history is the first part of the patient evaluation. This history should include the mechanism of the injury and any treatment that has occurred up to the presenting visit. As with any multiligamentous knee injury, neurologic and vascular status should be evaluated to rule out limb-threatening injury.

A comprehensive knee examination should be performed. This examination should be done with the affected knee joint visible for inspection. Inspection will usually show a medial-sided hematoma or bruising. A knee effusion is usually absent because of the capsular disruption. The contralateral knee should be evaluated as well. With any medial-sided knee injury, the hamstrings, meniscus, medial patellofemoral ligament, posterior cruciate ligament, MCL, and ACL should all be tested (**Table 1**). During the

Table 1
Physical examination of the medial collateral ligament and anterior cruciate ligament

Ligament	Examination
MCL	Palpation: Tenderness along medial side of the knee: proximal for a tear at MCL origin and distal for a tear at MCL insertion Valgus stress at 30° extension: Isolates sMCL, tear if gapping compared with opposite side Valgus stress at 0° extension: Medial laxity associated with cruciate or posteromedial capsular injury Anterior drawer in external rotation: Increased anteromedial translation occurs with injury to the posteromedial capsule (POL, dMCL, semimembranous attachment)
ACL	Lachman: Increased forward translation of the tibia with the knee at 30° of flexion Pivot shift: With the tibia internally rotated and valgus stress applied, the tibia will reduce under the femur as the knee is brought from extension into flexion