

Editorial Commentary: The Timing and Treatment of Combined Anterior Cruciate Ligament–Medial Collateral Ligament Injuries: Conservative Management, Early Repair, Augmentation, and Delayed Reconstruction of the Medial Collateral Ligament



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Abstract: Medial collateral ligament (MCL) injuries are commonly encountered in conjunction with anterior cruciate ligament injuries. MCL tears do not universally heal, and residual MCL laxity is not always well tolerated. Although residual MCL laxity results in excess stress on an anterior cruciate ligament reconstruction and may require additional treatment, relatively little interest has been paid to concomitant treatment. Adherence to the dogma of universal conservative treatment of MCL tears in this setting squanders opportunities for preservation of native anatomy and improvements in patient outcomes. Although we currently lack the necessary information to provide evidence-based decision making for combined injuries, the time has come to renew both clinical interest and research interest in pursuing better management of these injuries in high-demand patients.

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As knee specialists whose practices involve a large proportion of skiers, most of our patients with acute anterior cruciate ligament (ACL) injuries present with at least some medial collateral ligament (MCL)

involvement. The reasons for this involve the unique mechanics of skiing and the evolution of the sport. Although several mechanisms of injury have been proposed, the slip-catch mechanism seems to be the most consistent in creating this combined injury pattern in practice. In this mechanism, the downhill ski first “slips” from under the skier downhill, placing the knee in valgus. The front edge of the ski then “catches” and rapidly accelerates along its curve, creating a forced internal rotation moment.^{1,2}

Because of the seasonal nature of skiing and the long recovery from ACL reconstruction, there is tremendous pressure to return to sport as soon as possible so as not to miss the next season. This is at odds with the traditional approach to combined ACL-MCL injuries to wait 6 weeks for healing of the MCL before performing ACL reconstruction.

As with many things in orthopaedics and medicine, it is both refreshing and slightly daunting when long-held dogma comes under scrutiny. Whether it be the nonoperative treatment of posterior cruciate ligament injuries or the notion that all clavicle fractures heal without surgery, we often find that the status quo

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(literally “existing state of affairs”) changes dramatically in light of a new “state of affairs”: new information, new technologies, and patients who expect more in terms of outcomes and function.

So, it was with great interest that we read the article “Treating Combined Anterior Cruciate Ligament and Medial Collateral Ligament Injuries Operatively in the Acute Setting Is Potentially Advantageous” by Holuba, Vermeijden, Yang, O’Brien, van der List, and DiFelice,³ which challenges the dogma and recommends that we should consider acute operative management of combined ACL and high-grade MCL injuries. Specifically, Holuba et al. raise the limitations of the current treatment approach—residual laxity, delay in definitive treatment, and risk of ongoing intra-articular injury—and wonder what we could consider doing differently. This is refreshing because a few things quickly become clear to those surgeons who treat higher-level athletes in sports that result in repetitive valgus loading of the knee: (1) MCL injuries are legion, (2) not all MCL tears heal, (3) residual MCL laxity is not always well tolerated, (4) residual MCL laxity results in excess stress on an ACL reconstruction, and (5) our patients are evermore demanding in terms of returning to activity rapidly and at higher levels than were tolerated in the past (i.e., the status quo).

If we are to open this Pandora’s box, then we are obligated to approach the decisions about when and how to treat these combined ACL-MCL injuries with the same scientific rigor that has been shown historically in our evolving paradigms of treatment of other complex orthopaedic injuries. For example, our collective understanding of posterolateral corner injuries evolved from relative ignorance to a clear delineation of the complex structural anatomy, to consideration of malalignment and its influence on the feasibility of repair, to the description of procedures that best anatomically restore the functional axial, coronal, and sagittal stability of the lateral knee.⁴

Similarly, our experience with lateral extra-articular surgery over the past 5 years has gradually led to increasing indications for adding a lateral extra-articular tenodesis or anterolateral ligament augmentation. To some extent, this has been driven by an acknowledgment of the limitations of primary ACL reconstruction alone and a desire to reduce the rerupture rate.^{5,6} It has been well documented that residual MCL laxity can similarly contribute to failure of ACL reconstruction grafts, and yet, there is little enthusiasm comparatively for adding extra-articular procedures to reduce this risk.⁷⁻⁹

Although the solution to the ACL-MCL-injured knee is not likely to be as simple as treating every combined ACL-MCL injury by adding tape suture between the medial epicondyle and the center of the MCL insertion and crossing our fingers that nature will take care of the

rest, neither should it be as simple as waiting for 6 weeks for the MCL to heal and then hoping historical dogma is correct and that any minor residual laxity will be well tolerated—in many athletes in certain sporting activities, it is not. If the MCL remains grossly lax at 6 weeks, the surgeon will have compromised the opportunity to anatomically repair good-quality tissue.

Although we currently do not know enough to do better, we should not be satisfied with where we are. Holuba et al.³ encourage us to consider that, ultimately, we must develop a rational, algorithmic approach to the treatment of combined ACL-MCL injuries that accounts for the myriad relevant factors: the patient’s alignment, the activity profile, the energy of the injury and degree of tissue disruption, and concomitant repairs that must be protected.

On the basis of the existing literature, the best candidates for nonsurgical management are mid-substance lesions of predominantly the superficial MCL, without significant rotational laxity, without associated knee pathology beyond the ACL injury.^{10,11} However, in light of improving technology, better rehabilitation protocols, and better recognition of associated pathology, there are situations in which we treat MCL lesions more aggressively. The following is an amalgamation of evolving indications that we have learned from our colleague surgeons and our patients that may serve as nothing more than a list of considerations when contemplating acute management of the combined ACL-MCL injury or may serve as a jumping-off point for directions of future study and investigation:

1. Situations in which unconstrained valgus laxity will be detrimental to the healing of the MCL or other structures. An example is patients in whom the lateral meniscus is torn and should be repaired acutely, such as those with root disruptions or radial tears. Additionally, patients with valgus malalignment are at high risk of poor innate healing without repair and/or augmentation or reconstruction of the ligament during the healing phase.
2. High-grade and/or high-velocity injuries in which MCL tissue quality and apposition have been markedly compromised or in which anteromedial rotational instability is present. These injuries often have a robust healing response, but they also tend to have tissue stripping, as well as coincident capsular rents or injuries, and to heal “nonanatomically” with stiffness and flexion loss but, ironically, valgus instability. In these cases, early repairs as possible augmented with anatomic reconstruction, such as the modified Bosworth technique using low-profile semitendinosus autograft that restores both the superficial and deep MCL continuity and the posterior oblique ligament, is ideal when

- accompanied by an aggressive early physical rehabilitation program.¹²
3. MCL injuries with ligament stripping from the femoral origin or tibial insertion. In such cases, an anatomic suture anchor based repair with or without augmentation is probably ideal. These lesions are less likely to heal reliably based on previous studies and more likely to have residual anterior translation even after healing.¹³
 4. Higher-demand athletes who are subjected to repetitive valgus loading of the knee or repetitive knee valgus trauma, including competitive alpine skiers, martial arts participants, or surfers.
 5. Patients undergoing combined ACL repair. Because there is less stiffness with ACL repair and generally less trauma to the knee, the protocol can be accelerated. In this case, it is beneficial both to protect the repair and to protect the MCL. Furthermore, ACL femoral avulsion patterns that are amenable to primary repair tend to be lower-energy injuries with less risk of inflammation and subsequent arthrofibrosis. Much of the literature and experience we have on modern ACL repair comes from Dr. DiFelice, and it makes sense that MCL repair and bracing would dovetail into his practice experience.¹⁴

When reconstruction or augmentation is required, our preferred technique is a modification of the technique originally described by Bosworth using autologous hamstring as a graft. We recently described this technique in *Arthroscopy Techniques*¹² and use it frequently in clinical practice. In summary, we have a long way to go in terms of understanding, but it is time to begin the journey.

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