

Author: Mason McManimon-Myers, Athletic Training Student
 Project Sponsors: Brian Zeller, Ph.D., ATC, Nora Kraemer, Ph.D., ATC, CSCS
 Health, Exercise and Rehabilitative Sciences Department
 Winona State University

ABSTRACT

Clinical Scenario: There is a clinical need to evaluate the effectiveness of non-operative versus operative treatment of the anterior cruciate ligament (ACL)-medial collateral ligament (MCL) combined knee injury. The incidence of these injuries is frequent in athletic populations and requires the best treatment for optimal patient outcomes and function in day-to-day life as well as athletics. The appraisal focuses on whether or not to pair ACL reconstruction with MCL reconstruction or ACL reconstruction with MCL bracing. **Focused Clinical Question:** What is the effect on patients with a combined ACL-MCL injury of the knee with conservative treatment compared to surgery on patient reported outcomes (PROs)? **Search Strategy:** The search strategy included searching PubMed, CINAHL Plus with Full Text, ProQuest Nursing Collection, Cochrane Library, and EBSCO Host for original research studies. The terms used included “ACL”, “MCL”, “ligament”, “knee”, “surgery”, “bracing”, “conservative”, and “treatment”. The initial results started at 5,593 and narrowed to 13. Three of those studies discarded because they did not fulfill the clinical question. **Evidence Quality Assessment:** Methods of evidence evaluation included the Oxford 2011 Levels of Evidence (OCEBM) and the Physiotherapy Evidence Database (PEDro) scales. OCEBM levels ranged from two to four. PEDro scores ranged from 5/10 to 7/10. **Results and Summary of Search:** The studies demonstrated that non-operative management of the MCL with surgical treatment of the ACL allowed for the best patient outcomes. This treatment regularly scored higher in Tegner Lysholm Knee Scoring Scale, Knee Injury and Osteoarthritis Outcome Score (KOOS), and International Knee Documentation Committee (IKDC) scores as compared to operative treatment of both ACL-MCL, 94.5 to 92 Lysholm, 88.2 to 74.4 KOOS, and 87.6 to 76.0 IKDC. A higher number signifies a higher level of function in a patient. Five studies used Lysholm scale and one study utilized the KOOS score. Stability and function also graded higher in non-operative groups, with stability rated as excellent in 91% of the non-operative groups and 58% rated as excellent in operative groups. Strengths of studies included follow-up above 85% in all studies with a weakness being only four studies being randomized control trials. **Clinical Bottom Line:** The recommendation is that the patient undergo ACL reconstruction with non-operative management of the MCL via bracing with rehabilitation exercises. Strength of Recommendation Taxonomy (SORT) grade of this appraisal is a B. **Implications:** Patients with combined ACL-MCL injuries of the knee should undergo ACL reconstruction with non-operative treatment of the MCL for best possible PROs. Non-operative treatment would be bracing of the MCL combined with ACL reconstruction. The evidence indicates that this is the best treatment available for this injury and results in the best functional outcomes for patients with this debilitating injury. **Word Count:** 442 words

CLINICAL SCENARIO

- Patients with combined ACL-MCL knee sprains
- Common mechanism of injury is a valgus force to the knee, with or without rotation, to a firmly planted leg
- Treatment of combined injury: ACL reconstruction with MCL bracing or MCL reconstruction
- Effects of treatment on patient reported outcomes are important because the patient wants to get back to full strength and carry on with normal activities
- This is important to an athletic trainer because it is a very common injury that occurs in athletics and the athletic trainer must know the best way to treat it for the good of the patient
- 90% of all knee ligament injuries are ACL, MCL, or combined ACL-MCL injuries²

FOCUSED CLINICAL QUESTION

- What is the effect on patients with a combined ACL-MCL injury of the knee with conservative treatment of the MCL compared to surgery of the MCL on patient reported outcomes (PROs)?

SEARCH STRATEGY

- Original research studies
- Terms- “anterior cruciate ligament”, “ACL”, “medial collateral ligament”, “collateral tibial ligament”, “MCL”, “bracing”, “surgery”, “knee”, “conservative” and “conservative treatment”
- Databases- PubMed, CINAHL Plus with Full Text, ProQuest Nursing Collection, Cochrane Library, and EBSCO Host
- Inclusion criteria- healthy patients with combined ACL-MCL injuries treated with conservative methods or surgery.
- Exclusion criteria- isolated PCL injuries, animal studies, cadaver studies, meta-analysis, systematic review, and surgery groups alone in the studies.

Results

- PubMed- 1,999 to 53
- CINAHL Plus with Full Text- 654 to 9
- ProQuest Nursing Collection- 5,593 to 242
- Cochrane Library- 45 to 1
- Included Studies
- 13 original research studies identified for inclusion in this critically appraised topic

EVIDENCE QUALITY ASSESSMENT

- Oxford 2011 Levels of Evidence (OCEBM): Studies ranged from 2 to 4
- Physiotherapy Evidence Database (PEDro): Studies ranged from 5/10 to 7/10

RESULTS AND SUMMARY OF SEARCH

- Non-operative management of MCL with ACL reconstruction is the best option
- Higher PROs with non-operative management of the MCL
- Muscle power higher with non-operative management of the MCL³
- Both operative and non-operative treatments returned athletes to former level of play¹
- Strengths: all studies had 85% or higher patient follow up
- Weaknesses: only two randomized studies and most studies had more than one surgeon performing operations

Table 1. Lysholm Values of Selected Studies

Study	PRO Operative	PRO Non-Operative	P Value
Blanke et al ¹	92	94.5	>0.05
Halinen et al ²	92	93.5	0.09
Millett et al ⁴	94.3	94.6	>0.05
Sankar et al ⁵	94.3	94.6	0.05

Table 1. PRO values from selected studies of this critically appraised topic.

Table 2. IKDC Grades of Halinen et al² Study

IKDC Grade	Operative (%)	Non-Operative (%)	P Value
A	30.4	37.5	>0.05
B	39.1	45.8	>0.05
C	21.7	12.5	>0.05
D	8.7	4.2	>0.05

Table 2. IKDC grades from Halinen et al². IKDC is International Knee Documentation Committee and (%) is percentage of patients categorized into each IKDC grade.

Table 3. PRO Values of Westermann et al⁶ Study

Study	PRO Operative (scale)	PRO Non-Operative (scale)
Westermann et al ⁶	74.4 (KOOS Sports Rec)	88.2 (KOOS Sports Rec)
Westermann et al ⁶	68.4 (KOOS QOL)	81.3 (KOOS QOL)

Table 3. Values of PROs in Westermann et al⁶. Results deemed clinically important⁶. KOOS is Knee Injury and Osteoarthritis Outcome Score, QOL is Quality of Life, and Sports Rec is Sports Recreation.

RESULTS AND SUMMARY OF SEARCH, CONT.

Table 4. Knee Extension Strength Deficit

Halinen et al ²	Operative (%)	Non-Operative (%)	P Value
Knee Extension Strength Deficit Percentage of Uninvolved Side	90.2	93.4	0.15

Table 4. Non-operative management shows better preservation of strength than operative management. (%) is percentage of pre-operative strength.

Table 5. Knee Flexion of Groups Postoperatively of Halinen et al³ Study

Weeks After Procedure	Operative (Degrees)	Non-Operative (Degrees)	P Value
1	70	78	0.4
2	81	96	0.07
3	90	97	0.5
6	100	112	0.009*
12	119	128	0.043*
36	130	136	0.011*
52	132	134	0.07
104	137	137	0.23

Table 5. Knee flexion of groups. Non-Operative group maintains better flexion through almost all of the follow up. (Degrees) is degrees of range of motion and * indicates a significant P value.

CLINICAL BOTTOM LINE

- Recommendation that the patient undergo ACL reconstruction with non-operative management of the MCL via bracing with rehabilitation exercises
- Based on faster recovery of muscle activation and higher patient reported outcomes
- Strength of Recommendation Taxonomy (SORT) grade of this appraisal is a B

IMPLICATIONS

- Patients with combined ACL-MCL injuries of the knee undergo ACL reconstruction with non-operative treatment of the MCL for best possible results
- Best non-operative treatment of the MCL determined to be bracing of the MCL paired with rehabilitation exercises
- Speeds recovery and allows the regaining of strength and range of motion faster
- Best patient reported outcomes with this specific treatment

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