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## EVIDENCE-BASED ORTHOPAEDICS

## Operative and Nonoperative Treatments of Medial Collateral Ligament Rupture Were Not Different in Combined Medial Collateral and Anterior Cruciate Ligament Rupture

Halinen J, Lindahl J, Hirvensalo E, Santavirta S. Operative and Nonoperative Treatments of Medial Collateral Ligament Rupture with Early Anterior Cruciate Ligament Reconstruction: A Prospective Randomized Study. *Am J Sports Med.* 2006 Jul;34:1134-40.

**Question:** In patients with combined anterior cruciate ligament (ACL) and medial collateral ligament (MCL) injuries, are outcomes different if the MCL is treated operatively or nonoperatively?

**Design:** Randomized (allocation concealed)\*, unblinded, controlled trial with 2-year follow-up.

**Setting:** Helsinki University Central Hospital, Helsinki, Finland.

**Patients:** 47 patients who were  $\geq 18$  years of age (mean age range, 38 to 40 y; 57% women) with complete ACL rupture and rupture of most of the medial ligament structures (grade-III MCL rupture) and no other ligamentous deficiency. Patients with posterior cruciate ligament, lateral collateral ligament, or only grade-I or II MCL injury were excluded. Follow-up was 100%.

**Intervention:** All patients had ACL reconstruction within 4 to 23 days. On the day of surgery, patients were allocated to operative (n = 23) or nonoperative (n = 24) treatment of MCL injuries. ACL reconstruction was done with use of the single-incision transtib-

ial technique and a bone-patellar tendon-bone autograft. MCL structures were repaired with suture anchors or were sutured through bone tunnels and completed with direct suturing. The posterior oblique ligament or superficial MCL were not reefed, and the range of motion was checked before closing.

**Main outcome measures:** Lysholm knee score (<65 = poor, 65 to 83 = fair, 84 to 94 = good, and 95 to 100 = excellent). Secondary outcomes were measures of subjective function of the knee, stability, range of motion (ROM), and muscle power. The study had 90% power to detect a 10-point difference between the groups in Lysholm score.

**Main results:** At 2 years, there was no difference between operative and nonoperative groups in Lysholm score (excellent to good scores, 83% vs 83%). Operative and nonoperative groups were not different in measures of ROM ( $2^\circ$  vs  $1^\circ$ ,  $p = 0.4$ ), mean side-to-side difference in anteroposterior displacement (1.3 vs 1.2 mm,  $p = 0.8$ ), mean side-to-side difference in medial opening tested with valgus radiography (0.9 to 1.7 mm,  $p = 0.067$ ), or quadriceps muscle function tested with the isokinetic Biodex dynamometer (14.4 vs 9.7,

$p = 0.2$ ) or the single-leg hop test (90.2% vs 93.4% of uninvolved side,  $p = 0.15$ ). Stability was normal or nearly normal in 96% of the patients in the operative group and 100% of the patients in the nonoperative group. 70% of the operative patients and 83% of the nonoperative patients had normal or nearly normal results on the overall International Knee Documentation Committee (IKDC) evaluation. The groups had no differences with respect to change in the levels of activity.

**Conclusion:** In patients with combined anterior cruciate ligament and medial collateral ligament injuries, outcomes at 2 years were not different whether the MCL was treated operatively or nonoperatively.

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## Commentary

Halinen and colleagues found no difference between nonoperative and operative MCL repair for patients with grade-III MCL injuries receiving early ACL reconstruction. Of interest, the surgery was performed between 4 and 23 days after the injury, which is quite early. Grade-III MCL injuries take at least 4 weeks to heal. The thinking behind the standard practice of allowing the MCL to heal before proceeding with ACL reconstruction is to avoid abnormal valgus stress on the newly reconstructed ligament, which can lead to graft failure.

There are two potential reasons why the nonoperative group may have fared well. First, the mean age in the operative and nonoperative groups was 40 and 38 years, respectively, with associated low activity levels before and 2 years after the injury. The mean IKDC formula for activity level before the injury for the 2 groups was 2.7 and 2.8, respectively, and after the injury it was 2.3 and 2.5, respectively. Because a level of 3 is graded as heavy work, skiing, or tennis, and a level of 2 is graded as light manual work, jogging, or running,

the patient population included many relatively low-demand patients. Second, patients were treated with continuous use of a hinged knee brace for 6 weeks after surgery (and for an additional 2 weeks of daytime use).

In summary, Halinen and colleagues showed that patients with complete ACL and MCL injuries who undergo surgery early after the injury may do well without surgical treatment of the MCL, although patients should be treated with a hinged brace. Furthermore, these results should be applied with caution to high-demand athletes.

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