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# Association Between the Progression of Articular Cartilage Damage and Meniscal Surgery in Conjunction with Anterior Cruciate Ligament Reconstruction: A Second-Look Arthroscopic Evaluation

**Atsuo Nakamae, MD, PhD, JAPAN**
Mitsuo Ochi, MD, PhD, JAPAN
Nobuo Adachi, MD, PhD, JAPAN
Masataka Deie, MD, PhD, JAPAN
Masakazu Ishikawa, MD, PhD, JAPAN

Department of Orthopaedic Surgery, Hiroshima University
Hiroshima, JAPAN

**Summary**:
Partial meniscectomy in conjunction with anatomic ACL reconstruction was associated with progression of articular cartilage damage.

**Abstract**:
Introduction:
It is well known that meniscal damage often occurs in conjunction with anterior cruciate ligament (ACL) injury. The meniscus facilitates the normal function of the knee joint, and meniscal damage and meniscectomy have been shown to be associated with an increased risk of osteoarthritis. Nevertheless, a recent study has reported that meniscectomy is performed 2 to 3 times more frequently than meniscus repair during ACL reconstruction. The purpose of this study was to evaluate the association between progression of articular cartilage damage and meniscal surgery in conjunction with anatomic ACL reconstruction, using second-look arthroscopy.

Study Design:
Case-control study. Level of evidence: 3.

Methods:
This study examined 168 patients who underwent second-look arthroscopic evaluation and hardware removal between 18 and 36 months after ACL surgery. All patients were followed up for at least 2 years. At the time of ACL reconstruction, 30 lateral menisci and 16 medial menisci had been subjected to partial meniscectomy, while 13 lateral menisci and 25 medial menisci had been subjected to meniscal repair. Forty-six lateral menisci and 30 medial menisci had minor damage, which did not require repair or meniscectomy. The remaining 79 lateral menisci and 97 medial menisci were normal.
Of the 168 patients, 41 patients had undergone anatomic single-bundle ACL reconstruction and 68 had undergone anatomic double-bundle ACL reconstruction. The remaining 59 patients had undergone single-bundle ACL augmentation. Follow-up examinations included Lysholm knee score determination, Tegner activity score determination, anterior knee laxity measurement using an arthrometer, the pivot-shift test, and second-look arthroscopic evaluation. We compared the condition of the articular cartilage at the time of ACL surgery and at the second-look arthroscopy, and the conditions were graded according to the International Cartilage Repair Society (ICRS)-articular cartilage injury classification (Grades 0 to 4).

Results:
In the partial meniscectomy group, the mean increase in the ICRS grade for the lateral femoral condyle, lateral tibial plateau, medial femoral condyle, and medial tibial plateau was 0.5, 0.4, 0.7, and 0.4, respectively. These increases were significantly larger than those in the normal meniscus group. However, there was no significant difference in

the increase in the ICRS grade between the normal meniscus group and the minor damage and meniscal repair groups. The surgical technique used for ACL reconstruction did not significantly influence the progression of articular cartilage damage. Tegner activity score at the final follow-up and time between injury and ACL reconstruction had no significant correlation with the progression of articular cartilage damage. BMI and pivot shift test at the final follow-up influenced the progression of articular cartilage damage only in the medial compartment following ACL reconstruction.

Conclusions:
The results of this study indicate that partial meniscectomy was associated with progression of articular cartilage damage after anatomic ACL reconstruction. In addition, the surgical technique used for ACL reconstruction did not significantly influence the progression of the cartilage damage. Although proper anatomic ACL reconstruction is clearly important, meniscal repair should be performed, where possible, to limit the progression of articular cartilage damage.