

Kaplan fiber injury not correlated with high-grade pivot shift in ACL injury

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Video Abstract

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Abstract

One of the goals of ACL reconstruction surgery is to eliminate anterolateral rotational laxity of the knee. Biomechanical studies have shown that rotational control of the knee is largely controlled by the iliotibial band—specifically, the Kaplan fibers that anchor the band to the distal femur. Despite this critical connection, it remains unclear how often the iliotibial band and Kaplan fibers are compromised in association with ACL injury. To find out, researchers examined data for 267 patients with ACL-injured knees undergoing reconstruction surgery. They analyzed MRI scans to determine the extent of Kaplan fiber injury, and correlated those findings with the grade of pivot shift reported by the surgeon before the procedure. Only 47 patients, or approximately 18% of all patients, showed a Kaplan fiber injury. The majority of patients in the intact and injured Kaplan fiber groups had a grade-2 pivot shift. While only about 5% of all patients had a grade-3 pivot shift. When present, Kaplan fiber injuries were not associated with a higher-grade pivot shift. However, there was an association between Kaplan fiber injury and lateral meniscal tears identified at the time of ACL reconstruction surgery. The MRI analyses and assessments of pivot shift are subject to some variation, as they were conducted by different clinicians. Nevertheless, the findings are informative. They suggest that the role of Kaplan fibers in controlling rotational laxity in acute ACL injury may be less evident in the clinical than in the biomechanical setting.