

MRI Evaluation of the Anterolateral Ligament of the Knee In The Setting of ACL Rupture

Ross Wodicka¹, Jean Jose, DO², Michael G. Baraga, MD³, Lee D. Kaplan, MD¹, Bryson P. Lesniak, MD⁴

¹University of Miami, Miami, FL, USA, ²University of Miami Miller School of Medicine, Miami, FL, USA, ³UHealth Sports Medicine, Miami, FL, USA, ⁴UHealth Sports Med, Miami, FL, USA.

Objectives: The anterolateral ligament (ALL) of the knee was recently described in the literature. It was hypothesized to help control internal tibial rotation and affect the pivot shift phenomenon. The purpose of this study was to identify the normal appearance of the ALL on magnetic resonance imaging (MRI) and to examine its role in stability of the knee.

Methods: A retrospective chart review was performed and 50 patients from a single surgeon's practice with full thickness anterior cruciate ligament tears over a 2 year period were selected at random. Operative reports detailing the pivot shift examination under anesthesia were documented. Preoperative MRIs were reviewed by a fellowship trained musculoskeletal radiologist. Axial, sagittal, and coronal cuts were used to identify the presence and degree of injury to the ALL (Grade 0-3). The popliteus tendon, lateral collateral ligament, biceps femoris tendon, and iliotibial band were analyzed and graded 0-3. The presence or absence of a Segond fracture was noted.

Results: The ALL was identified in 100% of the anterior cruciate ligament deficient knees evaluated. In 27 knees, there was no MRI evidence of ALL injury (Grade 0). A grade 1 injury was noted in 18 knees. A grade 2 injury was noted in 2 knees. A grade 3 injury was observed in only 1 knee. This was the same knee in which the single Segond fracture among the group was noted. Eighty four percent (42/50) of knees showed a positive pivot shift on examination under anesthesia. A positive pivot shift was noted in 37 patients who had no (Grade 0) or mild (Grade 1) ALL injury. Thirteen MRIs showed evidence of injury to the posterolateral corner structures, with 92% (12/13) consisting of mild (Grade 1) injuries.

Conclusion: The anterolateral ligament of the knee is readily identifiable on MRI. Its structural integrity was maintained in the overwhelming majority of knees with a complete tear of the ACL, both with and without the presence of rotatory instability on examination. We found no correlation between degree of injury to the ALL and degree of instability. The only complete rupture of the ligament was in the setting of complete rupture of the IT band, which supports its identity as an extension of the IT band. Therefore, we propose that the ALL in itself plays a minimal if any role in stability of the knee. Further biomechanical studies are needed to confirm this.

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