Is arthrometric testing a reliable option for diagnosis of ramp lesions?

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More and more attention has been directed to injuries around the posteromedial menisco-capsular junction, known as meniscal ramp lesions, which occur in 15–24% of the adult population with anterior cruciate ligament (ACL) rupture. Preoperative diagnosis of ramp lesions represents a challenge even for the most experienced knee surgeons. The diagnostic accuracy of magnetic resonance imaging in detecting ramp lesions, when compared to arthroscopy as the reference standard, has been reported to exhibit a relatively modest sensitivity. Undiagnosed and untreated injuries in this knee region may be associated with ongoing dynamic rotational laxity of the knee after ACL reconstruction and an increased risk of ACL graft failure. The purpose of this study is to evaluate whether arthrometric test can predict with sufficient accuracy the presence of medial meniscus ramp lesions. METHODS:

This study was performed by evaluating a cohort of 48 patients (46 males and 2 females) with complete ACL lesion. The mean age of the included cohort was 26.5 ± 10.9 years, with a mean body mass index of 24.9 ± 4.1 . The mean time from injury to surgery was 60.4 ± 51.8 weeks. The mean preinjury activity sport level was 7 ± 1.9 , according to the Tegner activity level, with 7 (14.6%) professional athletes. The prevalence of associated ramp lesions was determined, and each lesion was classified according to the Thaunat classification. A multiple logistic regression was performed to assess which of the following factors can be statistically related to the presence of RAMP lesions: age at injury time, weeks from injury to surgery, arthrometric testing values using KT-1000 (evaluating the injured leg, the contralateral uninjured leg and the side-to-side difference), rates of Lachman test grade 2 or more, rates of Pivot shift grade 2 or more, pre-injury Lysholm score, sport activity level according to the Tegner scale and VAS score). A Receiver Operating Characteristic (ROC) curve analysis was constructed for each factor that was found to be statistically associated, determining the diagnostic performance in terms of sensitivity and specificity. The ANOVA one-way test was used for comparison among patients with isolated ACL injuries, patients with ACL and concurrent ramp lesions and patients with ACL injuries and combined meniscal tears other than ramp lesions. A p <0.05 was defined as statistically significant.

Ten patients (20.8%) had a concomitant RAMP lesion. Among these lesions, 5 tears were classified as stable tears (2 type I and 3 type II lesions), 1 tear as "hidden lesion" (type III according to Thaunat classification) and 4 tears as unstable (Type 4 lesion). The performed logistic regression demonstrated that only arthrometric tests, and specifically the side-to-side difference, was statistically associated with the presence of a ramp lesion. The ROC curve analysis (AUC 0.781, 95% CI 0.590 - 0.992) showed that a side-to-side difference in arthrometric tests > 5.5 mm can diagnose the presence of RAMP lesion with a sensitivity of 0.75, but a specificity of only 0.56. Indeed, the mean side-to-side difference was greater in patients with RAMP lesions than in patients with isolated ACL tears, but no statistically significant difference was found when compared to patients with ACL tear and combined other meniscal tears. DISCUSSION AND CONCLUSION:

Preoperative arthrometric testing showed low diagnostic accuracy. As a result, a proper arthroscopic evaluation of these lesions remains essential in order to reduce the risk of misdiagnosed tears and to not compromise the success of ACL reconstruction. A side-to-side difference on arthrometric tests > 5.5 should alert the surgeon to the presence of associated

