

Paper #171

Injury to the Distal Kaplan Fibres of the Iliotibial Band is Not Associated with Increased Anterolateral Rotational Laxity in Anterior Cruciate Ligament-Injured Patients: A Radiological and Clinical Study

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Summary:

Injury to distal Kaplan fibres of the Iliotibial band can be identified by MRI in ACL injured patients but is not associated an increased grade of pivot-shift.

Abstract:

Introduction

Recent biomechanical and anatomical studies have highlighted the importance of iliotibial band (ITB) and, in particular, the distal Kaplan fibres (DKF) in controlling knee anterolateral rotational laxity. However, controversy exists as to whether the DKF are actually damaged during ACL injury and whether this can be identified radiologically with MRI. The aim of this study was to examine the ability of 3-Tesla (3T) MRI to identify the DKF in ACL-injured patients, to assess the prevalence of injury of this structure, and to correlate these findings with intraoperative assessment of the pivot shift.

Material And Methods

A retrospective, radiological study was conducted. 162 consecutive, preoperative knee MRIs (3-Tesla) were assessed in patients undergoing ACLR for isolated ACL rupture from July 2014 to April 2015. Three orthopaedic surgeons and a musculoskeletal radiologist performed the analysis based on a radiological assessment using an established protocol. The integrity of the DKF was assessed as intact, attenuated, or focally discontinuous. Other qualitative features were analysed, including the presence and location of soft tissue and bony oedema, and meniscal injury. A correlation was made between intraoperative examination findings performed under general anaesthetic and the presence of DKF injury on MRI.

Results

The mean patient age was 26 years with a preponderance of male patients (Male:110, Female:52). Radiological evidence of injury to the DKF was identified in 21 patients (13%); soft-tissue oedema was identified in each of these patients proximal to the lateral epicondyle and was associated with discontinuity of the DKF. Posterolateral tibial plateau bone oedema was seen in 93% of cases with a DKF tear vs 70% in the non-injured DKF group. Posteromedial tibial plateau bone oedema was present in 52.3% of injured DKF knees vs 40 % of non-injured MRIs. A lateral femoral condyle bone impaction was described in 15 patients (71.4%) with a DKF tear. No significant correlation was found between a radiologically identified DKF injury and a higher grade of pivot shift at intra-operative testing.

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Conclusion

This study demonstrated that injury to the DKF can be identified with MRI in a ACL-injured population with a prevalence of 13%. Qualitative radiological features such as soft-tissue oedema proximal to the lateral epicondyle and focal discontinuity of the fibres are highly suggestive of DKF injury. However, no association could be found with a high-grade pivot shift and the presence of a radiologically identified DKF injury. As such, the clinical role of the DKF in anterolateral rotational laxity remains unclear.