

## Should the Iliotibial Band Defect be Closed After Lateral Tenodesis?

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### Summary:

Recent evidence has suggested a key role of the superficial and deep layers of the ilio-tibial band in the control of knee rotation. In the context of an extra-articular tenodesis, we present a robotic study evaluating the presence of over-constraint following closure of the ITB defect and report no significant difference; this supports surgical preference as to whether or not to close the defect.

### Abstract:

There has been a renewed interest in lateral extra-articular tenodesis (LEAT) procedures in combination with anterior cruciate ligament reconstruction as a way of potentially reducing the rate of re-injury. A variety of these procedures have been described and mostly rely upon passing a strip of the iliotibial tract (ITT) under the lateral collateral ligament and performing a tenodesis with either proximal or distal fixation. One of the concerns with this procedure is that it may overconstrain the lateral compartment by limiting internal rotation of the tibia, potentially increasing the rate of development of osteoarthritis. The aim of this study was to evaluate the kinematics of the knee comparing a proximally-based (Lemaire) and distally-based (Ellison) LEAT technique. A secondary aim was to evaluate the effect closure of the ITT had on lateral compartment rotation.

### Hypothesis

A Lemaire LEAT results in greater restraint to internal rotation of the lateral compartment of the knee compared to an Ellison LEAT. Closure of the ITT will over constrain the knee significantly.

### Method

Twelve fresh frozen cadaveric knees were tested to evaluate the kinematics of an intact anterolateral capsule, a sectioned capsule, an Ellison LEAT and a Lemaire LEAT with and without ITT closure. A 6 degrees of freedom robot with the addition of a novel pulley system to load the ITT (30-N) was used to assess knee stability using a universal force-moment sensor. At different flexion angles, anterior-posterior, internal-external, and internal rotational laxity in response to a simulated pivot-shift were tested. Data were analysed using repeated-measures analyses of variance and paired t-test.

### Results

Transection of the oblique anterolateral fibers significantly increased anterior draw and rotation during isolated displacement and a simulated pivot-shift ( $P < 0.05$ ). No significant differences were seen between 'defect open' and 'defect closed' states after either tenodesis ( $P > 0.05$ ). The Ellison procedure closely restored the native kinematics of the intact knee following an anterolateral injury ( $P > 0.05$ ).

### Conclusion

Closure of the ITT defect following an Ellison or Lemaire lateral tenodesis does not significantly over constrain the kinematics of the knee.

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### Clinical Relevance

Closure of the ITT defect following these procedures is common practice in order to avoid subsequent herniation and a palpable defect for the patient. Over constraint of the lateral compartment has classically been associated with these procedures, however, these findings support: the use of these techniques in the context of an anterolateral injury; the continued use of a closing technique.