Knee Extra-Articular Tenodesis Has Minimal Effect On Tibiofemoral Contact Pressures

João V. Novaretti\textsuperscript{1,2}, Justin W. Arner\textsuperscript{1}, Calvin K. Chan\textsuperscript{1}, Sene Polamalu\textsuperscript{1}, Christopher D. Harner\textsuperscript{3}, Richard E. Debski\textsuperscript{1}, Bryson P. Lesniak\textsuperscript{1}

\textsuperscript{1}Orthopaedic Robotics Laboratory, Departments of Orthopaedic Surgery and Bioengineering, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

\textsuperscript{2}Orthopaedics and Traumatology Sports Center (CETE), Department of Orthopaedics and Traumatology, Paulista School of Medicine (EPM), Federal University of São Paulo, São Paulo, Brazil

\textsuperscript{3}University of Texas Health Science Center, Houston, Texas, USA
João V. Novaretti, MD

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INTRODUCTION

- Rotatory knee instability may persist after ACLR
  - Injury to anterolateral knee structures?
  - Recent increase in LET procedures combined with ACLR

- Concerns about overconstraint after LET procedures
  - Increase in lateral compartment contact pressure?
  - Possibly leading to accelerated knee OA?
OBJECTIVE

To quantify the effects of LET on tibiofemoral compartment contact pressures and area
METHODS

- Nine fresh-frozen cadaveric knees
- Mean age: 66.4 years
- Robotic Testing System (MJT Model FRS2010)
- Two loading conditions:
  - 200 N compression with 134 N anterior load
  - 200 N compression with 7 Nm internal tibial rotation
- Pressure sensors (Model 4000, Tekscan Inc.) inserted and secured to the tibia
METHODS

Anterolateral capsule (ALC) separated from surrounding tissue with three incisions.

2-cm-wide strip of ALC removed to simulate ALC deficiency.

LET performed utilizing a 6-mm semitendinosus graft.
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**METHODS**

**Knee States**
- Intact
- ALC Separation
- ALC Deficient
- LET Procedure
- Remove all soft-tissue and insert sensors

**Statistical Analysis**
- ANOVA with post-hoc Bonferroni
- At 0°, 30°, 60° and 90° of knee flexion
- Wilcoxon signed rank test for non-normally distributed data
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**RESULTS**

- LET significantly reduced mean contact area in the medial compartment by 33.1% at 90° compared to the intact knee.
- No significant differences in the lateral compartment contact pressure or area among knee states.

*P < .05*
ALC deficiency significantly reduced mean contact area in the lateral compartment compared to intact knee by 16.0% at 30° and by 21.7% at 60°
**DISCUSSION**

**MAIN FINDING**

- No increase in contact pressure nor decrease in contact area in the tibiofemoral lateral compartment were observed after LET with a semitendinosus graft.

  - Indicate that the potential for osteoarthritis may not be of great concern after LET with semitendinosus graft.
Clinical and biomechanical studies have raised the concern of overconstraint of the knee after LET procedures. May lead to lateral compartment OA. Present study and literature: multiple LET procedures may have unique biomechanical behaviors and different results. The biomechanical results of one type of LET procedure should not be extrapolated to others.
CONCLUSION

LET did not significantly increase contact pressures or area in the medial or lateral compartments, possibly indicating that the potential for osteoarthritis is not affected by the LET procedure. Further clinical studies are needed to evaluate the mid- and long-term outcomes of LET for knee rotational instability.
REFERENCES