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Is it correct to perform lateral release in combination with MPFL reconstruction in patients with acute patellar dislocation?

A finite element analysis study

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Faculty Disclosure Information

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A Biomechanical Insight

- MPFL injury occurs in most acute patellar dislocations
- MPFL reconstruction is a standard surgical treatment
- Lateral release is sometimes added to relieve pressure
- The biomechanical impact of lateral release **remains unclear**

Aim and Methods

Aim:

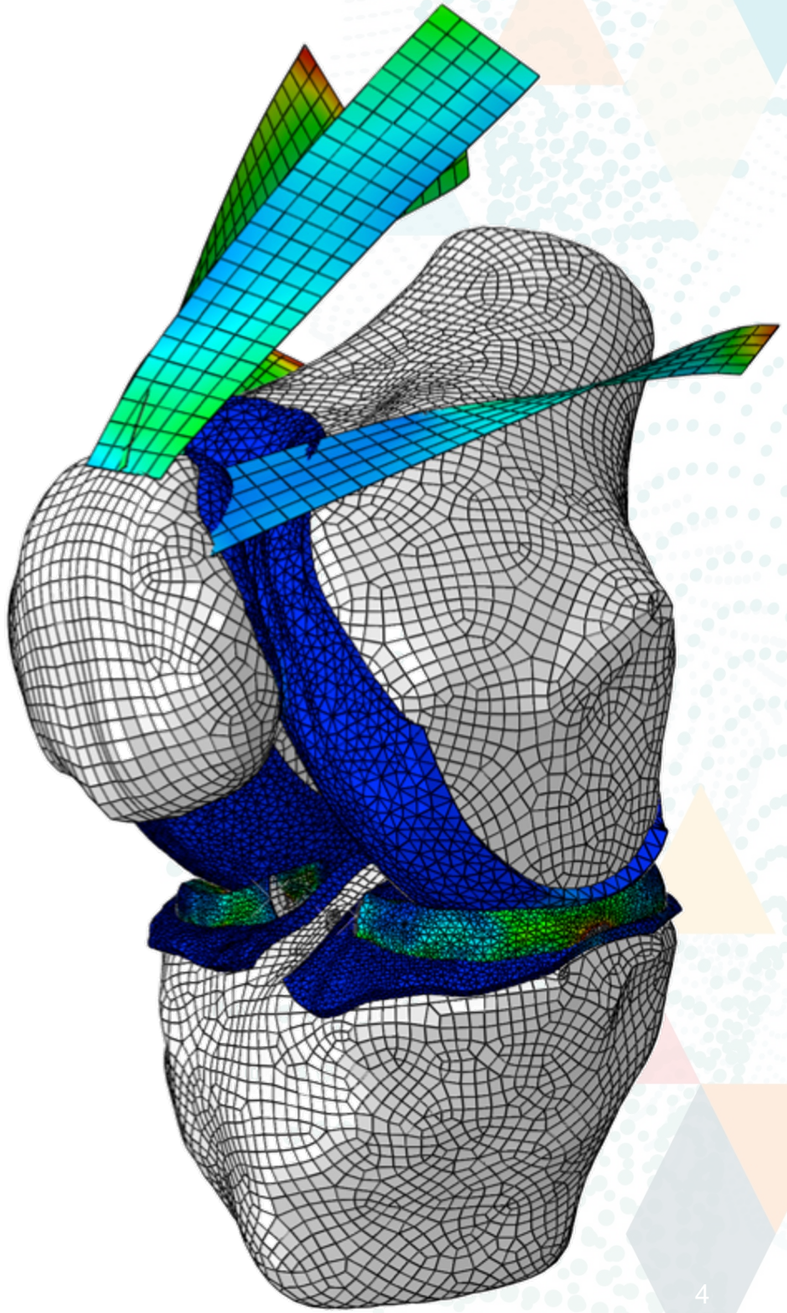
To evaluate the biomechanical impact of lateral release during MPFL reconstruction

Methods:

- Finite Element (FE) model used, previously validated

- Four simulated conditions:
  - Healthy knee
  - MPFL-injured knee
  - MPFL reconstruction
  - MPFL reconstruction + lateral release

- **Measures**: Contact Pressure (**CP**), Contact Area (**CA**), Lateral Displacement (**LD**)



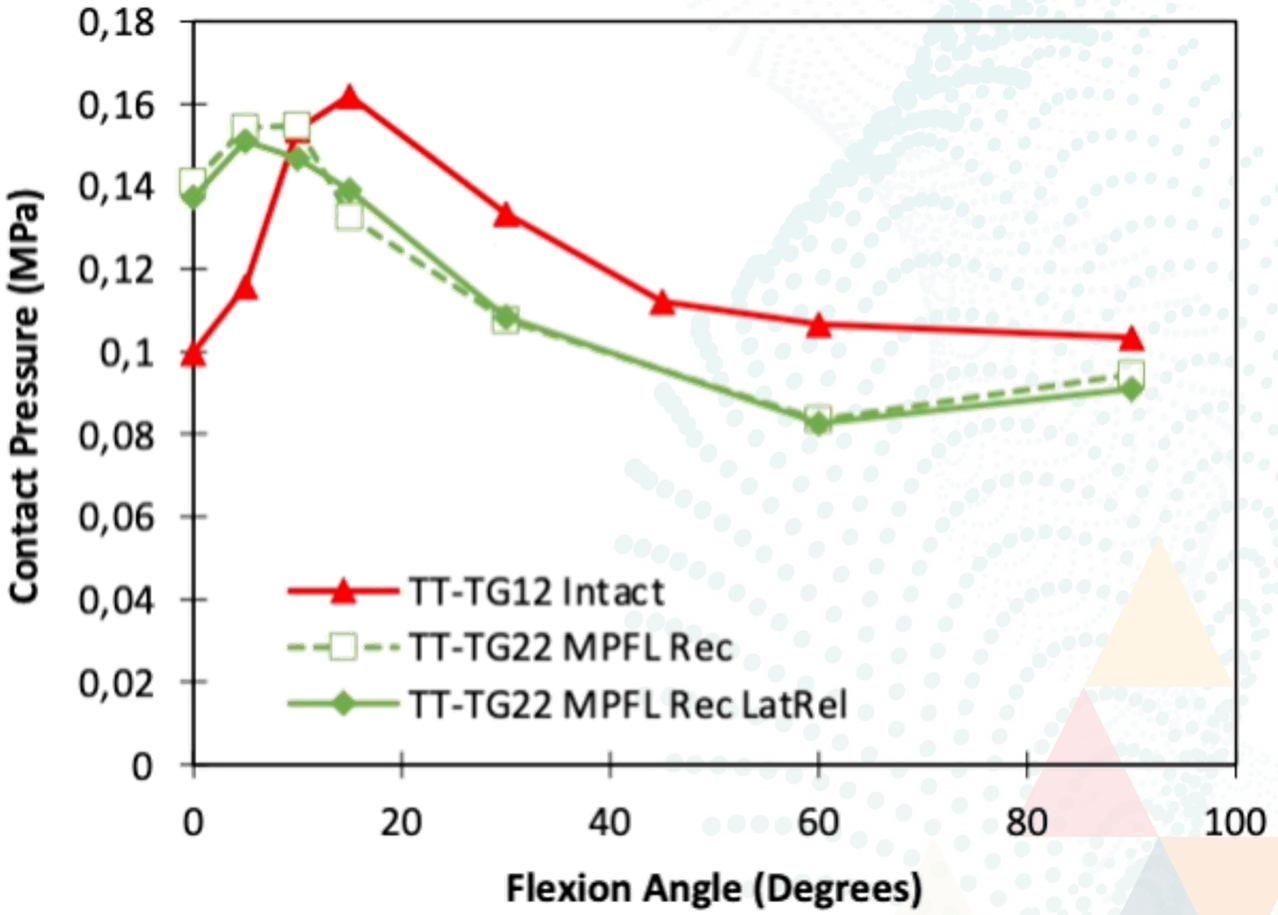
Results: Patellofemoral Contact Pressure (CP)

MPFL RECONSTRUCTION
MPFL RECONSTRUCTION + LATERAL RETINACULAR RELEASE

(Vs physiological condition)

Early degrees of knee flexion (0–15°):
→ higher contact pressures

Subsequent degrees of flexion:
→ lower contact pressures



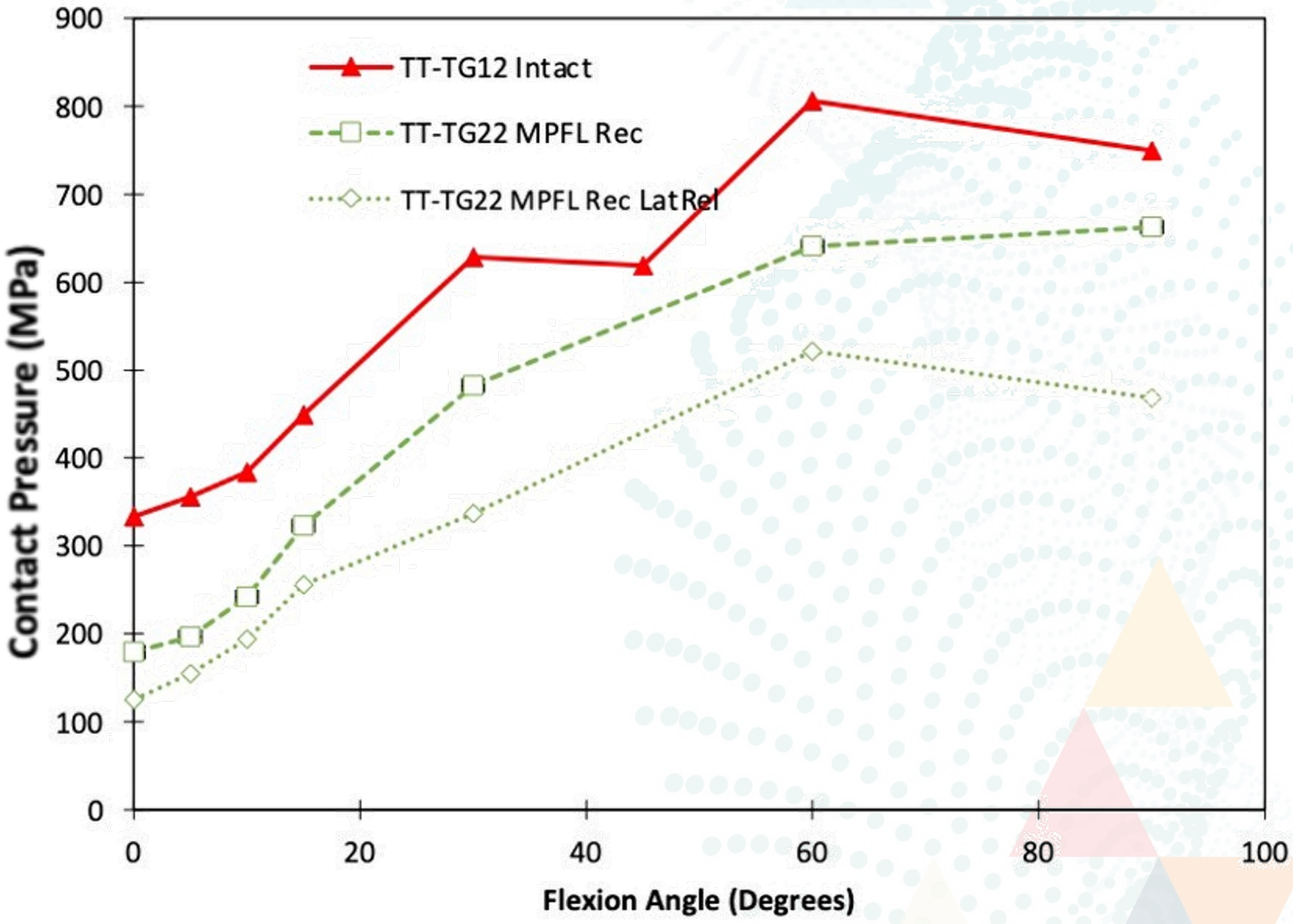
Results: Patellofemoral Contact Area (CA)

MPFL RECONSTRUCTION + LATERAL RETINACULAR RELEASE

(Vs MPFL reconstruction)

Throughout the entire range of motion

→ Significant reduction in contact area



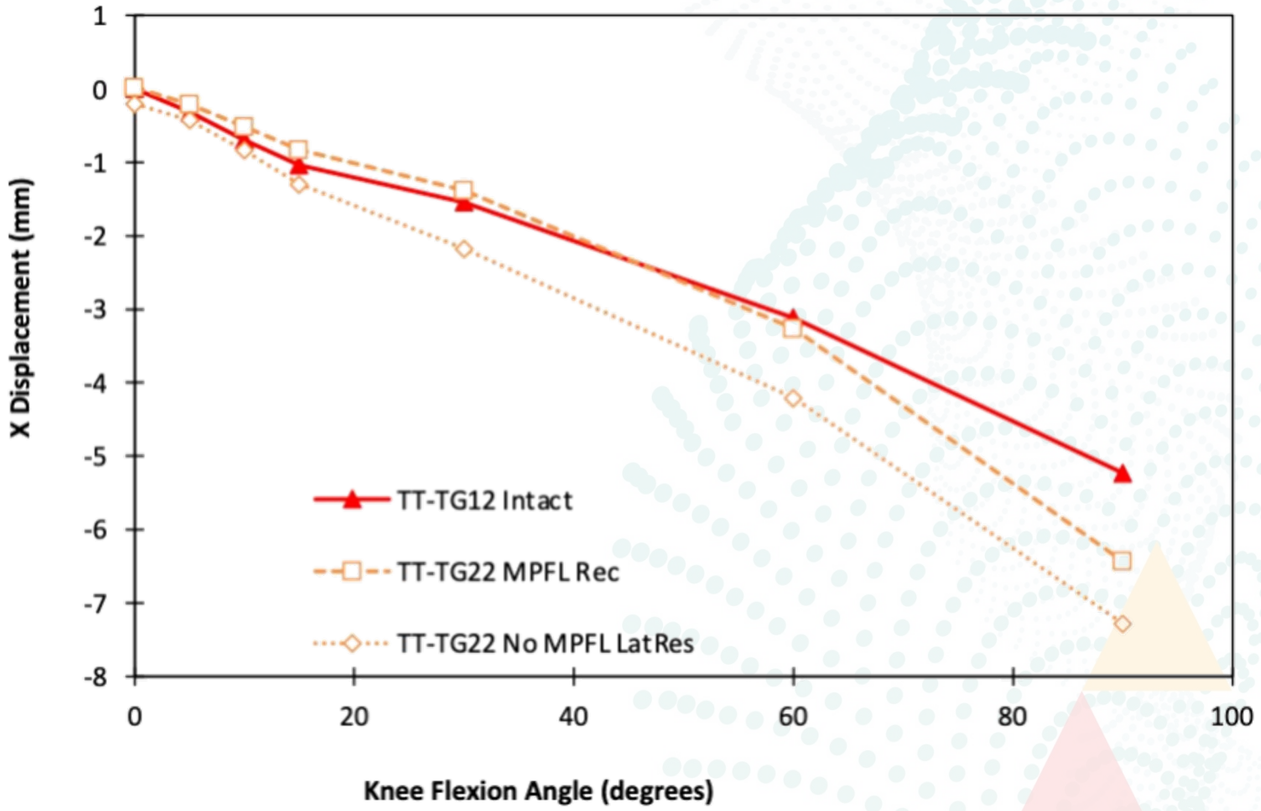
Results: Lateral Displacement (LD)

LATERAL RETINACULAR RELEASE

(Vs Intact and MPFL reconstruction)

From 10° to 90° of knee flexion

→ Greater lateral displacement



Conclusions

Lateral retinacular release is not recommended in combination with MPFL reconstruction,

as it leads to

- inappropriate adjustments in patellofemoral contact pressure and area
- as well as increased lateral displacement,

potentially **promoting patellar instability.**

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