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# High Prevalence of Injuries Associated With ACL Tears: A Detailed Analysis of 253 Patients From a National Multicenter Cohort Study

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I and my co-authors have no conflict to disclose

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**Background:** There is a lack of literature evaluating in detail the epidemiology of associated injuries in combination with anterior cruciate ligament (ACL) tears.

**Purpose:** To define in detail the prevalence of associated injuries in patients with ACL tears.



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# Materials and Methods (1)

- Data from a national multicenter longitudinal cohort ACL study (NACOX)
- Only patients with available magnetic resonance imaging (MRI) included
- All MRI scans reviewed by an orthopaedic knee surgeon and a musculoskeletal radiologist
- Mean time from ACL injury to MRI  $19.6 \pm 15.2$  days
- Total of patients included 253 (52.2% males)
- MRI 1.5 Tesla (n = 115) or 3.0 Tesla (n = 138)
- Three planes (sagittal, axial and coronal) using T1-weighted, T2-weighted and proton density (PD) fat saturation sequences

## Materials and Methods (2)

- Injuries to the medial meniscus (MM), lateral meniscus (LM), medial collateral ligament (MCL), lateral collateral ligament (LCL), cartilage, and the presence of a Segond fracture were recorded.
- Injuries to the **MCL** or **LCL** defined as partial rupture/discontinuity with some preserved fibers or complete disruption.
- **Isolated deep MCL** injuries were defined as tears of the menisofemoral and/or meniscotibial ligament with intact superficial MCL on axial images.

## Materials and Methods (3)

- The presence and location of **bone bruising** was evaluated
- Bone bruising in the posteromedial tibial plateau (**PMT**) and medial femoral condyle (**MFC**) was recorded.
- **Pivot-shift** bone bruising was defined as the presence of bone marrow edema in the posterior aspect of the lateral tibial plateau and the midportion of the lateral femoral condyle (LFC)
- The presence of a **fracture of the posterolateral tibial plateau** and an **LFC impaction** (osteochondral depression with an intact or disrupted articular surface) were recorded

MCL injury



Isolated deep MCL injury



MM ramp lesion



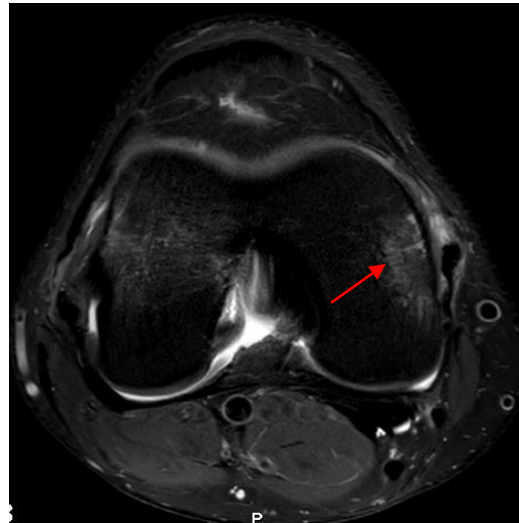
# LM injury



# LFC impaction



# MFC bone bruising





# Results (1)

- LCL injury : 2.4%
- MCL injury (both superficial and deep MCL): 16.6%
- Isolated deep MCL injury: 25.5%
- MM injury: 61.4% (Ramp lesions 39.5%)
- LM injury: 27.2%
- Cartilage injury: 15.0%



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## Results (2)

- Posterolateral tibial plateau fracture: 4.7%
- Second fracture: 7.5%
- LFC impaction: 45.7%
- Pivot shift bone bruising: 72.3%
- PMT bone bruising: 39.5%
- MFC bone bruising: 19.0%



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# Conclusions

- The prevalence of injuries associated with ACL tears was very high.
- This study provides a detailed overview of the possible associated injuries in patients with ACL tears.
- These findings might be helpful for radiologists and orthopaedic surgeons for the treatment of patients with ACL tears.

# Thank you!



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