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Contact vs. Noncontact ACL Injuries: Is mechanism of injury predictive of concomitant knee pathology

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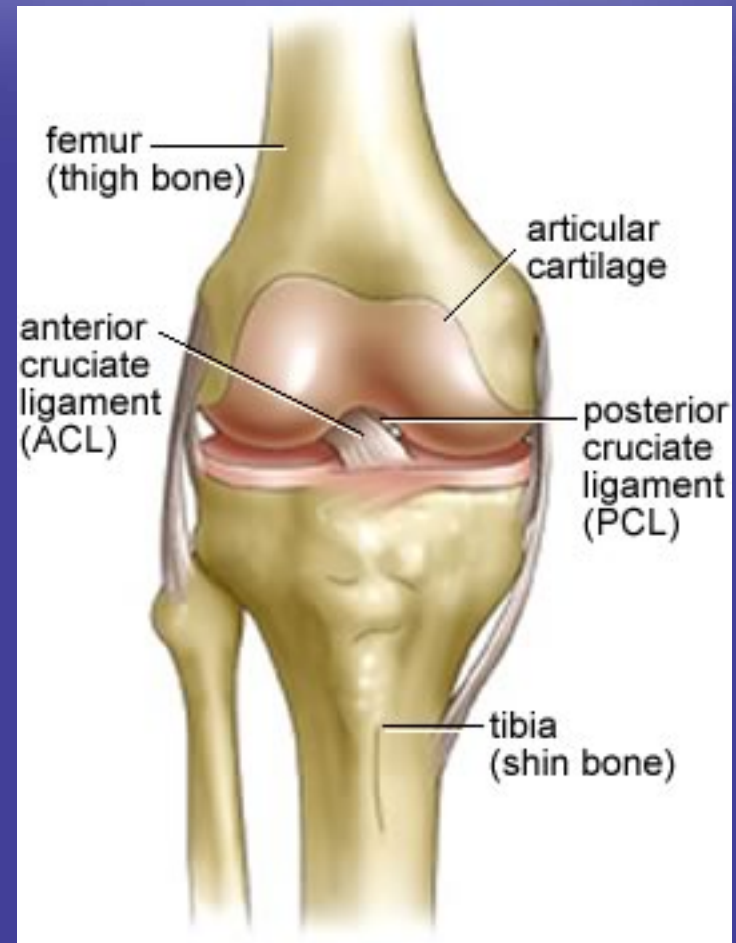


Disclosures

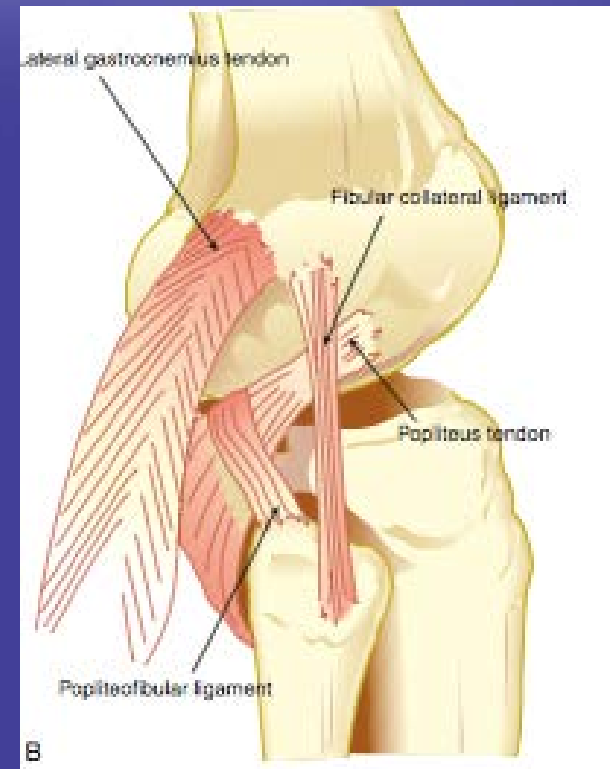


- No relevant disclosures

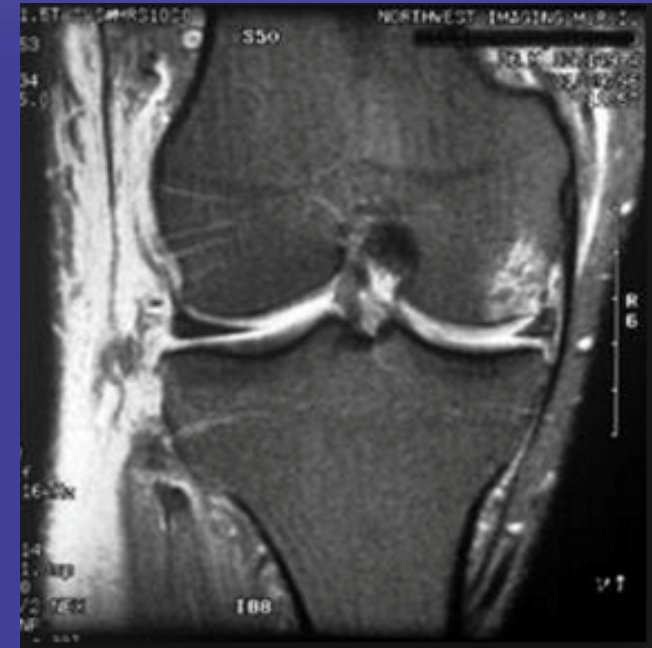
- Extremely common: approximately 250K-300K ACL tears per year
- Estimated annual health-care cost of ACL surgery is \$3 billion in the US alone.
- Two primary mechanisms of injury
 - **Non-contact:** most common, accounting for approximately 2/3 of ACL injuries
 - **Contact:** 1/3 of injuries



- ACL injuries are often not found in isolation
 - Meniscus injuries
 - Collateral ligament injuries
 - Chondral injuries
- Imaging studies are less sensitive for the presence of concomitant intra-articular pathology in the presence of ACL tear.
- Knowledge of incidence of concomitant pathology may aid in patient counseling and preoperative planning.

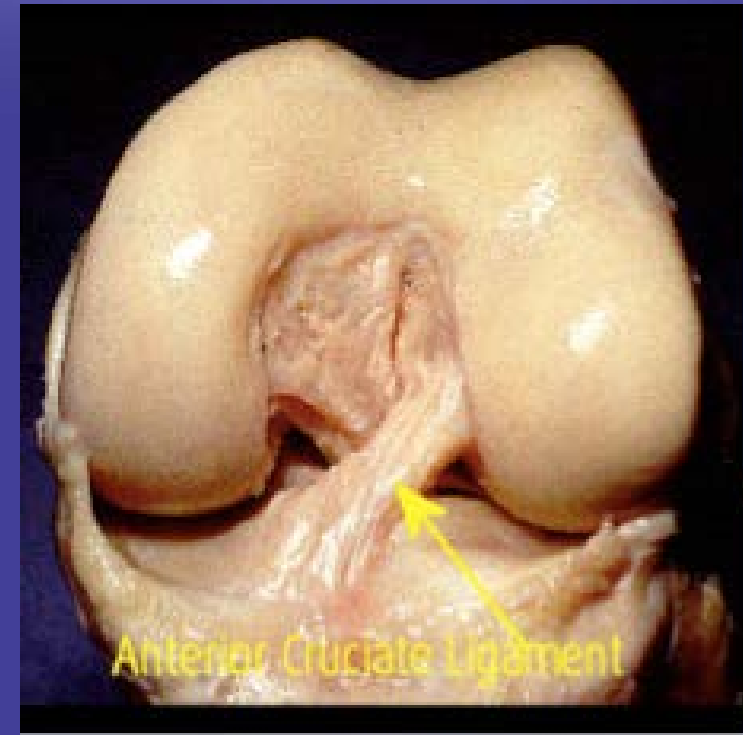


- To determine whether mechanism of injury (contact vs. non-contact) can predict the presence of concomitant knee pathology.
- **Hypothesis:** Contact injuries will have a higher incidence of concomitant pathology.



- Retrospective review
- Patients between age 16-40 who underwent ACL reconstructions between January 2009 and December 2013 were included
 - 210 consecutive noncontact ACL injuries
 - 100 consecutive contact ACL injuries
 - Patients with history of prior knee surgery were excluded.
- Mechanism of injury was provided from patient history.

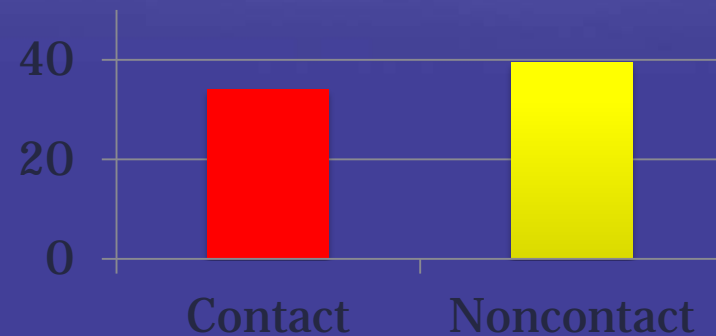
- Identified presence of concomitant injury based on MRI review, clinical examination, and intraoperative findings.
 - Medial and lateral meniscus tears
 - Outerbridge grade III and IV chondral lesions
 - MCL, LCL, PCL



- Medial meniscus: no difference ($p=0.38$)
 - Non-contact: 39.5%
 - Contact: 34%

- Lateral meniscus: no difference ($p=0.90$)
 - Non-contact: 45.7%
 - Contact: 46%

% Medial Meniscus



% Lateral Meniscus



- G3 injuries: significant difference noted ($p=0.005$)

- Non-contact: 7.14%

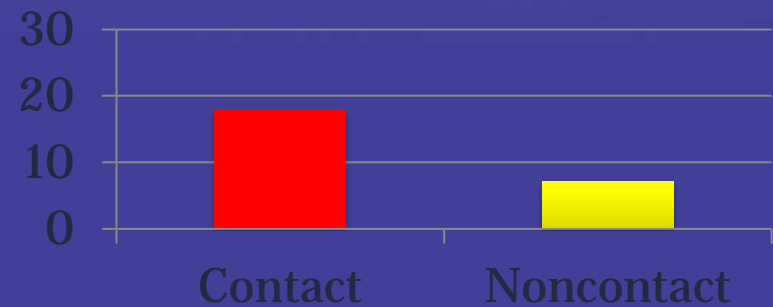
- Contact: 18%

- G4 injuries: significant difference noted ($p=0.032$)

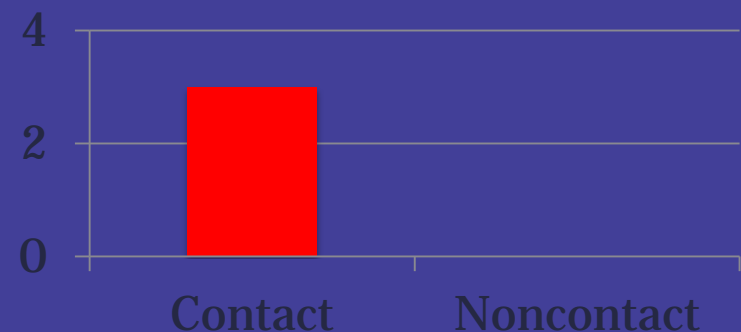
- Non-contact: 0%

- Contact: 3%

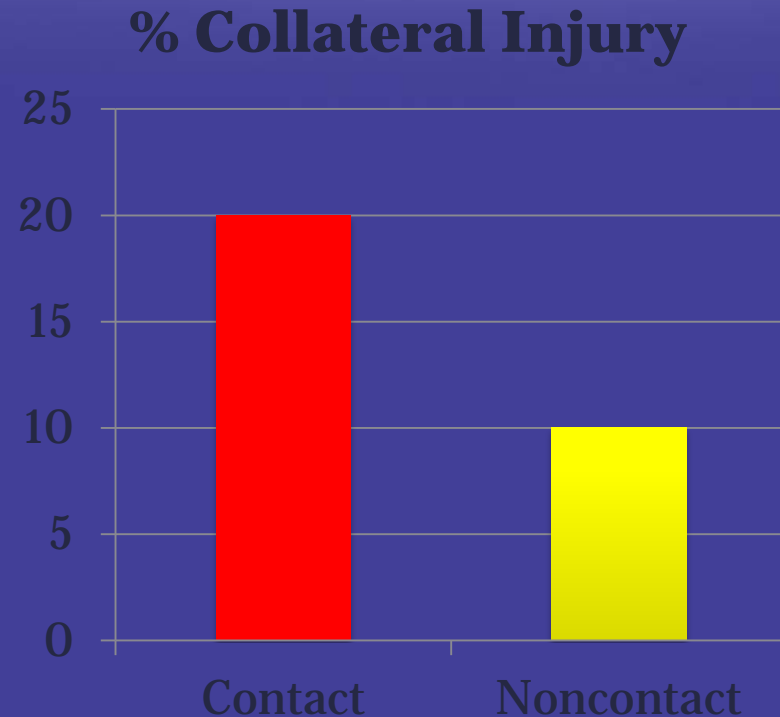
% G3 Chondral Injury



% G4 Chondral Injury



- Significant increase noted ($p=0.03$)
 - Non-contact: 10%
 - Contact: 20%



- Articular cartilage and collateral ligament injuries were found to occur at a higher rate in contact injuries when compared to non-contact mechanism.
- Results may aid in patient counseling and preoperative planning
- Further studies are required to determine if increased risk of concomitant damage in contact injuries portends a worse outcome following ACL reconstruction.

- Agel J, Arendt EA, Bershadsky B. Anterior Cruciate Ligament Injury in NCAA Basketball and Soccer. *Am J Sports Med.* April 2005;33,4:524-531.
- Gianotti SM, Marshall SW, Hume PA, Burnt P. Incidence of anterior cruciate ligament injury and other knee ligament injury: A national population based study. *Journal of Science and Medicine in Sport.* 2009.12,6;622-627.
- Sri-Ram K, salmon LJ, Roe JP. The incidence of secondary pathology after anterior cruciate ligament rupture in 5086 patients requiring ligament reconstruction. *The Bone and Joint Journal.* 2013. 95-B:59-65.
- Ghodadra N, Mall NA, Karas V, Grumet RC, Kirk S, McKnickle AG, Garrido CP, Cole BJ, Bach BR. Articular and meniscal pathology associated with primary anterior cruciate ligament reconstruction. *J Knee Surg.* 2103.26:185-193.
- Kluczynski MA, Marzo JM, Bisson LJ. Factors associated With Meniscal Tears and Chondral Lesions in Patients Undergoing Cruciate Ligament Reconstruction: A Prospective Study. *Am J Sports Med.* 2013 Dec; 41(12)2759-65



THANK YOU.



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