

Medial and Lateral Collateral Ligament Injuries Isolated and Combined

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• Learning Objectives

1. To review the anatomy and function of the collateral ligaments of the knee
2. To review the current recommendations for the treatment of medial and lateral collateral ligament injuries of the knee

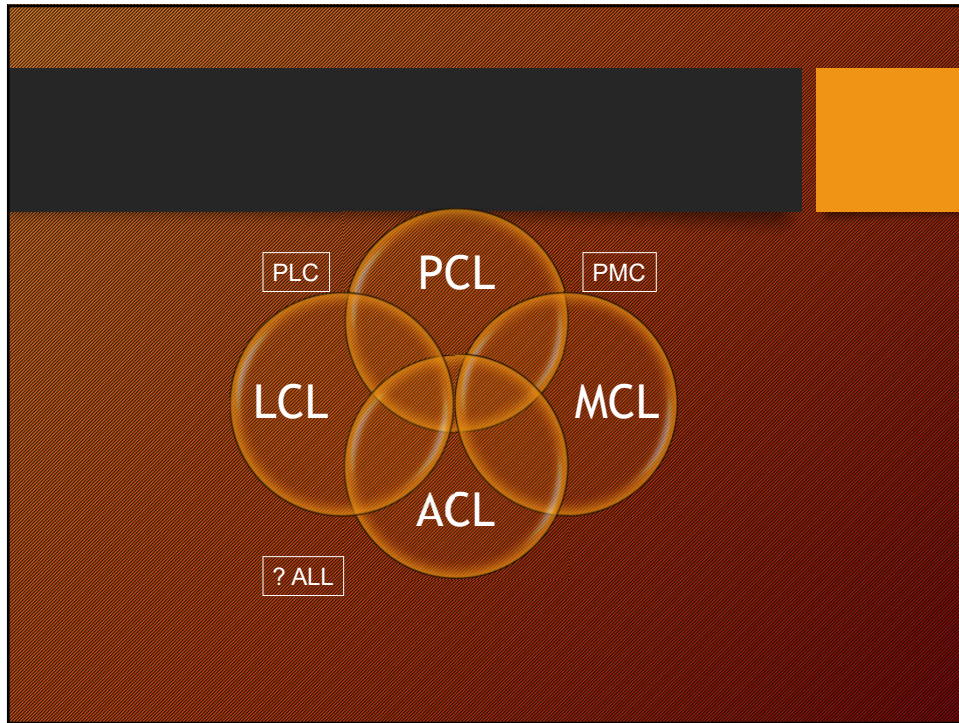
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Medial Collateral Ligament

Anatomy

Superficial MCL
a delta shaped ligament that extends from the medial femoral epicondyle to 3-4 cm below the medial joint line beneath the pes anserinus tendons

Deep MCL
a thickening of the medial capsule, is divided in the meniscofemoral and meniscotibial ligaments, this portion is firmly attached to the medial meniscus

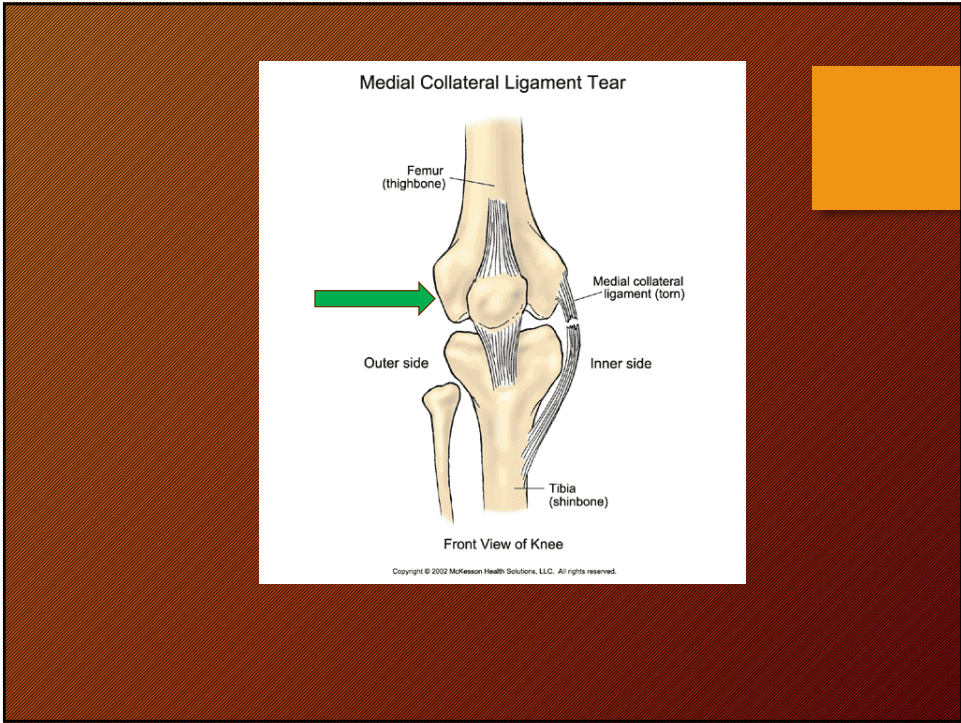
Posterior oblique ligament
the superficial and deep portions of the MCL blend together in the posteromedial portion of the knee

Highest strain levels at the femoral origin

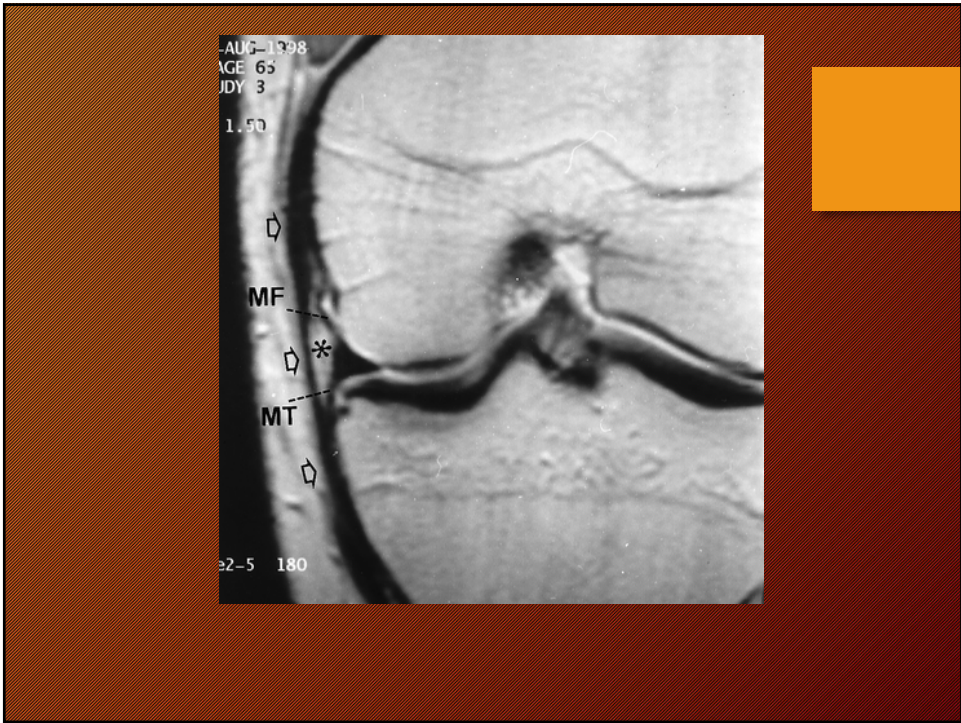
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LEFT KNEE

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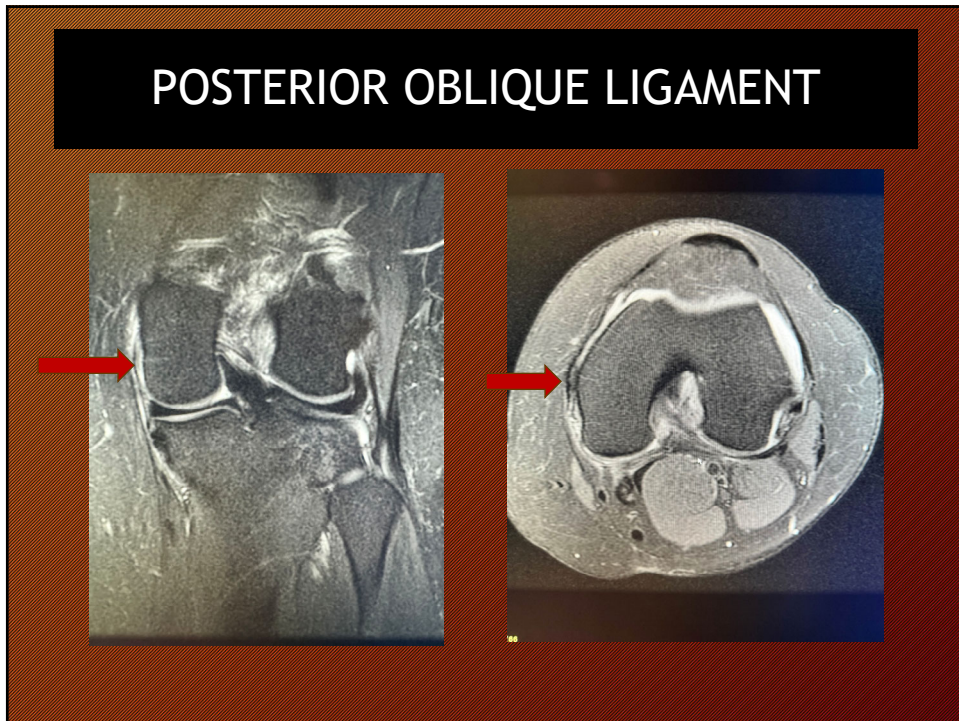


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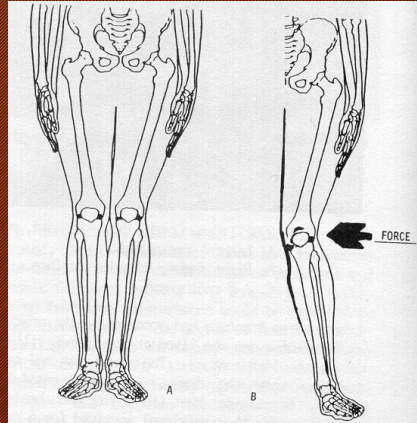
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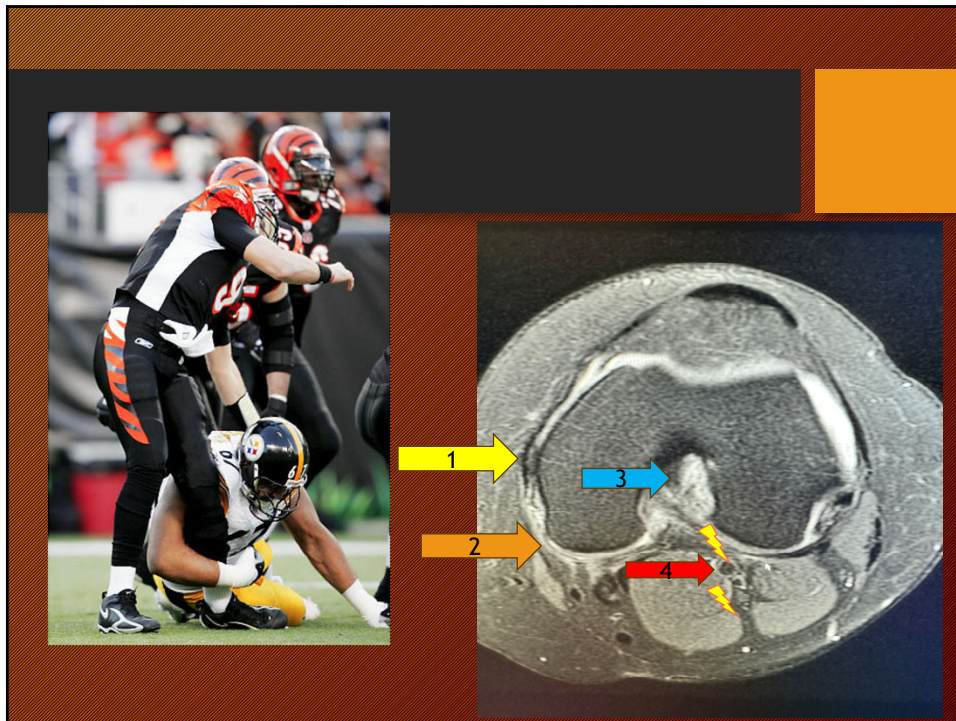
Medial Collateral Ligament

- Mechanism of Injury

- Valgus Stress
- Contact or non contact
- Complete tears often less painful than incomplete



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Medial Collateral Ligament

Physical Exam

- Assess valgus stress at 0 and 30 degrees of flexion in addition to complete knee exam
- If valgus opening in extension consider ACL injury (78%) or posterior capsular injury
- ? Effusion
- ? Medial meniscus tear
- Consider limb alignment (valgus)
- AMA classification
 - I. 0-5mm
 - II. 6-10mm
 - III. >10mm

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VALGUS STRESS - KNEE IN FULL EXTENSION



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VALGUS STRESS - KNEE IN FLEXION 30 Degrees



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Medial Collateral Ligament

- Treatment
 - Early motion
 - Hinged bracing
 - Early weight bearing
- Operative Treatment
 - Controversial
 - ? Valgus knees
 - ? Bony Avulsion
 - ? Avulsion of tibial attachment
 - ? Alignment



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Medial Collateral Ligament

- Prophylactic Bracing?
- Most NCAA programs brace offensive linemen
- Cadaveric studies: small benefit at slowly induced loads
- Surrogate models: bracing most effective for low velocity, high mass loads
- ? Functional impairment (probably minimal)
- Epidemiologic studies: small level of protection for the MCL
- Soheil Najibi and John P. Albright. The Use of Knee Braces, Part 1: Prophylactic Knee Braces in Contact Sports. *Am. J. Sports Med.*, Apr 2005; 33: 602 - 611.



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Chronic MCL Laxity

- Pellegrini Stieda Lesion

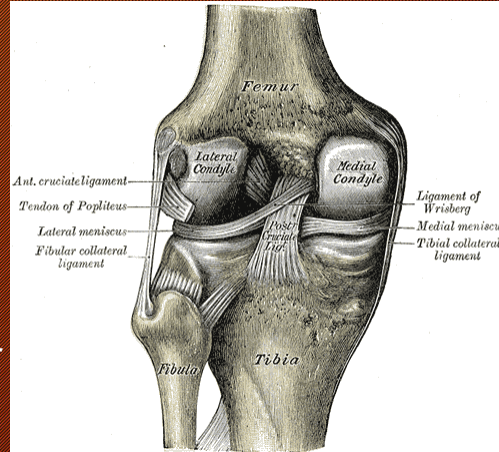


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Lateral Collateral Ligament

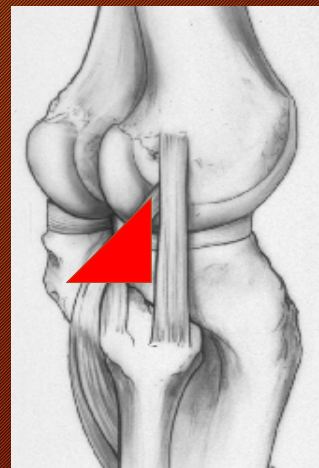
- Anatomy
- Origin: lateral epicondyle
- Insertion: head of fibula
- Major varus stabilizer in extension



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Lateral Collateral Ligament

- Posterolateral Corner
 - Popliteus tendon
 - Lateral Collateral ligament
 - Popliteofibular ligament
 - Arcuate complex
 - Posterolateral capsule
 - Biceps femoris
 - Iliotibial tract



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Lateral Collateral Ligament

- Mechanism of Injury
 - Varus stress (usually contact)



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Lateral Collateral Ligament

- Physical Exam
- Varus stress at 0 and 30 degrees of flexion
- Always compare to contralateral knee!
- Consider limb alignment (varus)
- AMA classification
 - Grade I: 0-5mm
 - Grade II: 5-10mm
 - Grade III: >10mm (often posterolateral corner involved)

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VARUS STRESS IN EXTENSION



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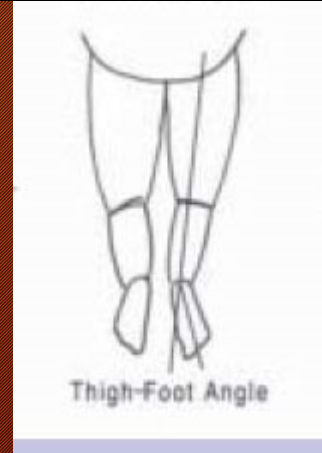
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Lateral Collateral Ligament

Posterolateral Corner Injury

- Highly unstable injury pattern
- Key to recognition:
asymmetric external rotation
(30 and 90 degrees of flexion)

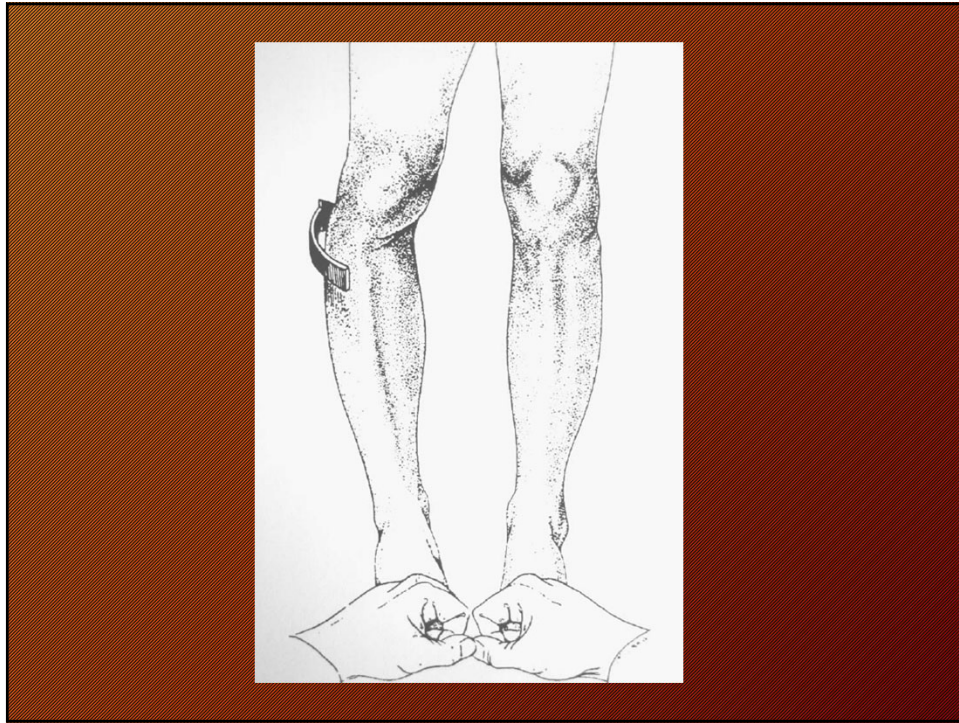


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Lateral Collateral Ligament

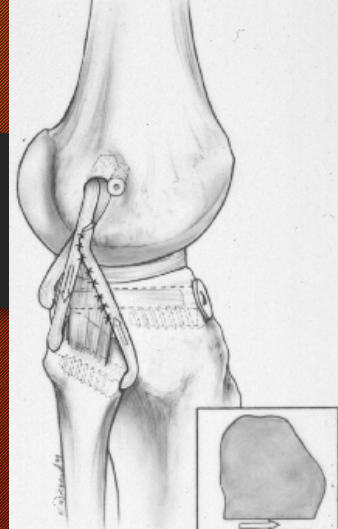
- Treatment
 - Generally non-operative for Grade I and II injuries (similar to MCL treatment)
 - Likely surgical for Grade III injuries
 - Consider surgical intervention with bony avulsion injuries

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POSTEROLATERAL CORNER

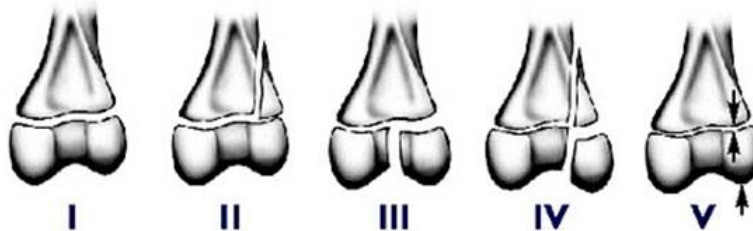
Acute repair (within 2-3 weeks of injury)
Reconstruction



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Growth Plate Injuries

The Salter-Harris Classification of Growth Plate Injuries



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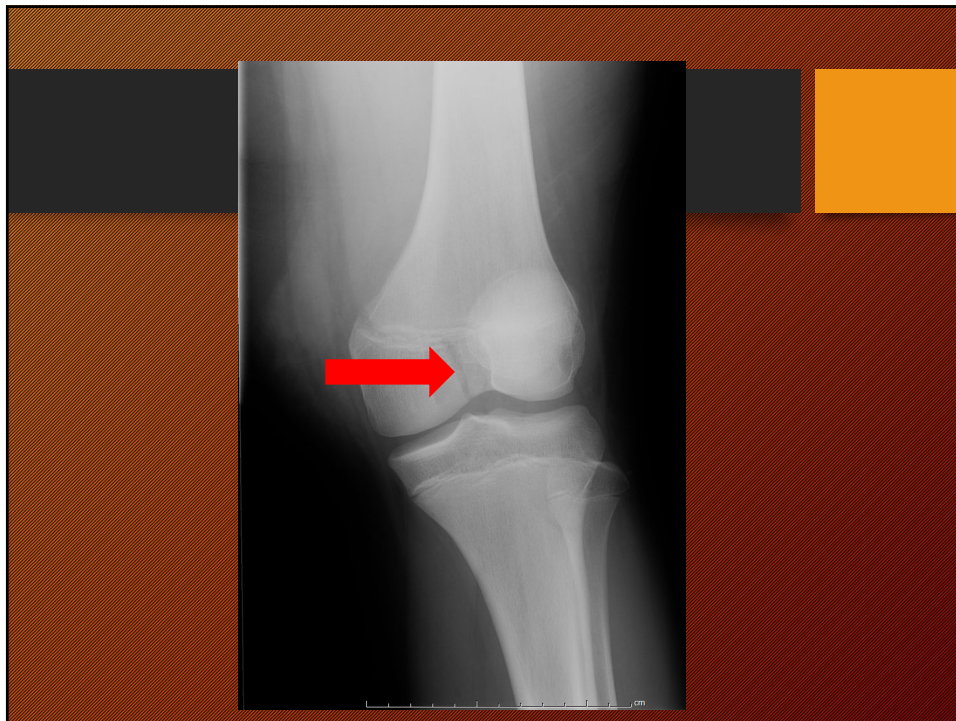
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Special Considerations

- Skeletally Immature
 - Always consider physeal fracture
 - Must obtain stress x-rays!
 - MRI often helpful



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Treatment Recommendations for MCL Injuries

- Grade I and Grade II
 - Ace wrap
 - +/- Knee immobilizer (at night if off the femur)
 - +/- Crutches (if patient limps) until patient has leg control
 - ROM
 - WBAT
- Grade III
 - Valgus knee - consider repair
 - Off the tibia - consider repair

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Treatment Recommendations for LCL Injuries

- Grade I and Grade II
 - Ace wrap
 - +/- Knee immobilizer
 - +/- Crutches (if patient limps) until patient has leg control
 - ROM
 - WBAT
- Grade III (rare)
 - **Beware of PLC injury!!**
 - Varus knee - consider repair

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Summary

- Most isolated collateral ligament injuries are successfully treated WITHOUT surgery
- Physical exam is critical to rule out associated ligament injuries (ALWAYS compare to the other side)
- Prophylactic Bracing will remain a controversy
- Don't forget about the growth plates!