



Medial and Lateral Collateral Ligament Injuries

John C. Pearce, MD

Medial Collateral Ligament

- Most commonly injured
- Incidence is probably higher
- 50% chance of meniscal injury
- ACL most commonly associate

Lateral Collateral Ligament

- Incidence not known
- Isolated tear rare
- More functional knee disabilities



Medial Collateral Ligament

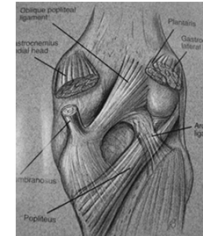
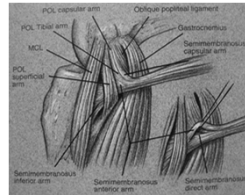
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Anatomy - MCL

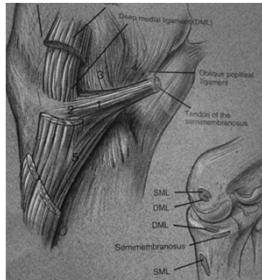
■ Static

- Superficial medial collateral ligament
 - Medial femoral epicondyle to anteromedial tibia
 - Anterior fibers are constant tension throughout flexion
 - Posterior fibers are slack in flexion

- Posterior oblique ligament
 - Triangular capsular ligament
 - Tight in extension - slack in flexion
 - Dynamized by semimebranosus



- Deep medial collateral ligament
 - Capsular ligament
 - Meniscotibial and meniscofemoral fibers



■ Dynamic

- Semimebranosus
- Pes Anserine
 - Sartorius
 - Semitendinosus
 - Gracilis
- Vastus medialis



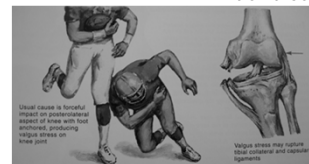
Biomechanics

- Resist valgus and external rotation of tibia
- Superficial medial collateral ligament
 - 5-7 mm increase in laxity
 - 200-300% increase in rotational laxity

Clinical Evaluation

■ History

- | | |
|-----------|-------------------|
| When | ability to return |
| Activity | previous injury |
| Mechanism | since injury |
| Pain | initial treatment |
| Swelling | |



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Physical Exam

■ Observation

Gait

Effusion

edema

ecchymosis

deformity



■ Mechanical

Palpation

Neurovascular

ROM

Abduction stress test

Other ligament and structures



Abduction stress test at different degrees of flexion

grade I

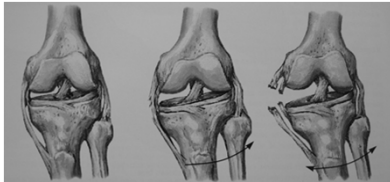
1-4 mm

grade II

5-9 mm

grade III

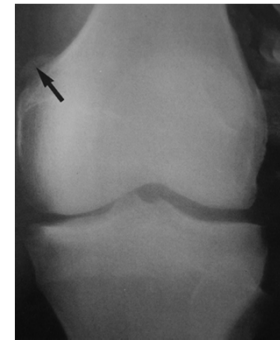
10-15 mm



Diagnostic Testing

■ Radiographs

- Fractures
- Loose bodies
- Physical injuries



■ MRI

- Location of tear
- Degree of tear
- Associated injuries



Treatment

■ Non-operative

- Grade I and grade II injuries criteria
 - Stable in extension
 - No more than 10 mm of valgus opening at 30 degree flexion
 - No rotational instability
 - Localized tenderness
 - Minimal effusion
 - Normal radiographs

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■ Operative treatment

- Grade III injuries
- Primary repair
- Usually associated with other injuries
- Reconstruction and/or augmentation



Rehabilitation

■ Non-operative treatment

- Immobilization for pain
- Isometrics - early
- WBAT
- ROM
- Functional bracing

■ Return to play:

- 90% muscle strength
- No pain with valgus stress at 30%
- No effusion

■ Operative treatment

- Isolated MCL repair or reconstruction
- Longer immobilization
- Limited weight bearing
- Return to play delayed



Rehabilitation

- Rehabilitation is dominated by the major ligament repaired
- Return to play is delayed by the extent of treatment

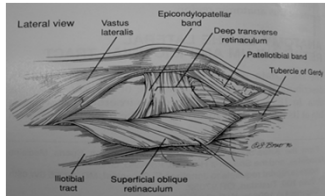


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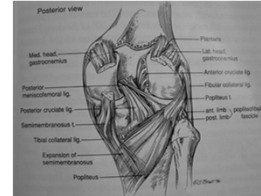
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Anatomy: LCL and PLC

- Arcuate complex
 - Lateral collateral ligament
 - Static restraint to varus
 - Static restraint to external rotation of the tibia



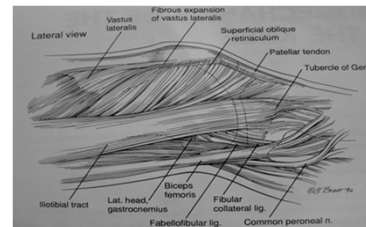
- Arcuate ligament – static
 - Variable
 - Reinforces posterolateral capsule
- Popliteus muscle – dynamic
 - Reinforces posterior lateral capsule
 - Internally rotates tibia



- Popliteofibular ligament
 - Variable
 - Static resistance to external rotation of the tibia



- Biceps femoris tendon and iliotibial band
 - Dynamic stability



Biomechanics

- Lateral and posterolateral structures
 - Variable
 - Stronger and more substantial
 - Subject to greater forces
 - Primary resistance
 - Varus rotation
 - External tibial rotation
 - Posterior tibial translation

Clinical Evaluation

- History

When	ability to return
Activity	previous injury
Mechanism	since injury
Pain	initial treatment
Swelling	

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Physical Exam

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■ Mechanical

– Palpation

– Neurovascular

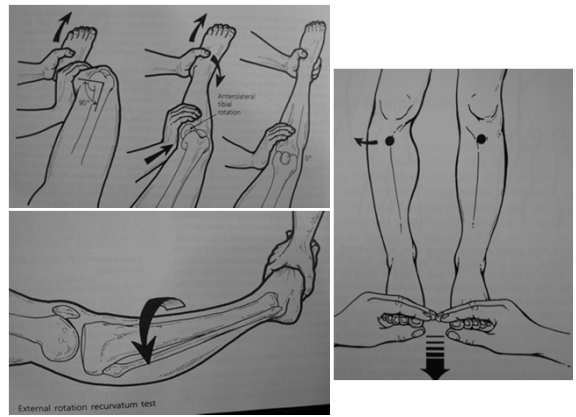
▪ Peroneal nerve injury 15-30%

– ROM

– Adduction stress test

– Increased external rotation of tibia at 30 degrees and 90 degrees of flexion

- Dial test
- Posterior tibial translation at 30 degrees not at 90 degrees
- External rotation recurvatum
- Reverse pivot shift test



Diagnostic Testing

■ Radiographs

– Fractures

– Loose bodies

– Physeal injuries



■ MRI

– Location of tear

– Degree of tear

– Associated injuries



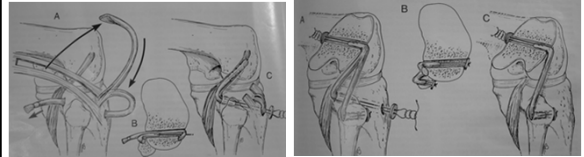
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Treatment

- Non-operative
 - Grade I and grade II
 - 2-4 weeks of protected weight bearing
 - Progressive rehabilitation

- Operative
 - Generally grade III injuries
 - Combination injuries
 - Primary repair – augmentation
 - Acute injuries much easier



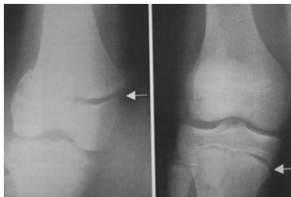
Rehabilitation

- Depends upon repair and/or augmentation
 - Limited weight bearing
 - Immobilization or combination of ROM and immobilization
 - Slow progression back to play



Adolesants

- Consider physeal injuries
- Knee pain – think hip



Thank You

John C. Pearce



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