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Practice profile:
- Location: academic medical center (32 residents and 3 fellows)
- Research: Clinical, Basic Science
- Years in practice: 15
- Number of repair / augmentation MCL’s /yr: 6-8
- Number of reconstruction MCL’s /yr: 4-6

Anatomy
- MCL has 3 components
  1. Superficial Medial Collateral Ligament
     - One femoral attachment and two tibial attachments
  2. Posterior Oblique Ligament
     - Fibrous extension of the distal aspect of the semimembranosus
     - Reinforces the posteromedial aspect of the joint capsule
     - Three fascial attachments at the knee joint
  3. Deep Medial Collateral Ligament
     - Thickened of the medial aspect of Joint capsule. Two components:
       - Meniscofemoral and Meniscotibial
- **Biomechanics**
  - Superficial MCL is the primary restraint to valgus laxity of the Knee
  - Posterior Oblique Ligament functions as an internal rotator and valgus stabilizer at between 0 and 30 degrees of knee flexion
  - Complementary relationship between sMCL and POL
  - Deep MCL is valgus stabilizer at 60 degrees and provide restraint against external rotation torque between 30-60 degrees.

  - **Classification**
    - Accordance with the amount of laxity at 30 degrees of knee flexion with a valgus applied moment: (subjective gapping of the medial joint line)
      - Grade 1+ 3 to 5 mm
      - Grade 2+ 6 to 10 mm
      - Grade 3+ > 10 mm

- **Diagnosis**
  - Mechanism of injury involving a contact or non contact valgus force
  - Pain and swelling along the medial aspect of the knee (femoral, midsubstance, tibial)
  - Chronic injuries: Instability with cutting and pivoting maneuvers

- **Image evaluation**
  - Valgus stress radiographs useful for quantitative grading
  - Magnetic Resonance Imaging is commonly used to identify place of injured MCL, other injuries to the knee, trabecular micro fractures and bone bruises

- **Treatment**
  - Non Operative
    - Favorable outcome specially femoral and midsubstance injuries
    - Early controlled motion, protected valgus stress and external rotation (4-6 weeks)
    - Functional rehabilitation program
  - Operative
    - Repair (Acute)
      - Primary repair
      - Recover tibial attach
    - Repair with augmentation (Acute)
    - Reconstruction Techniques (Chronic)
      - “Don’t use hamstrings”

- **Postoperative Rehabilitation**
  - Motion of the knee as soon as posible (High risk of arthrofibrosis)
  - Weight bearing is encouraged when pain has subsided
  - Strengthening exercises
  - Hinged brace for 6-8 weeks
  - Return to sports 6-9 months
Conclusions:
- Not all MCL injuries are the same
- Most isolated MCL injuries are still treated non-operatively
- Surgical decision regarding repair tibial attach is important in acute cases with medial instability.
- Repair, or repair with augment is useful in the setting of multilig. injuries
- Reconstruction just for chronic cases.

Case Examples

1. **MCL repair tibial attach**
   - 26 years
   - ACL-MCL injury during soccer game
   - AL/AM instability
   - Pain at tibial insertion MCL
     - ACL reconstruction + MCL repair
2. **MCL repair**
   - 49 years
   - Motorcycle accident
   - Dislocated Knee
   - ACL/PCL/MCL. No vascular injury.

   - MCL repair
     - Joint capsule
     - Meniscotibial Lig
     - sMCL

   - Protect infrapatellar branch of saphenous nerve
3. **MCL repair & augmentation (POL)**
   - 53 years
   - Construction site accident
   - ACL/PCL/MCL No vascular injury
   - Dislocated Knee
- “Dimple sign”: Buttonholding of femoral condyle through capsule

- MCL repair
  - Joint capsule
  - Meniscofemoral Lig
  - MPFL
  - sMCL

- POL (Augmentation with Allo Tib. Ant.)
REFERENCES


