Medial Patellofemoral Ligament Reconstruction Evaluation and Treatment

The *diagnosis du jour* for your athlete

Justin Segotta MA, AT, CES
Scott Ellis PT, DPT, AT
Anatomy Review

- Medial patellofemoral ligament (MPFL) is a thickening of medial retinacular fibers which originates at the medial epicondyle (adductor tubercle and adductor tendon) as well as the MCL
- Deep fascia and aponeurotic edge of the VMO fuses with the superior border of the medial patellofemoral ligament
- It runs transversely (deep to the distal VMO) and inserts on superomedial aspect of patella;
- Helps resist lateral migration of patella (provides 50%-80% of the restraining force to lateral patella dislocation)
- MPFL is most effective between 0 and 30 deg flexion (trochlea is primary restraint with additional flexion)
Clinical presentation

- Most commonly associated with non-contact lateral patellar dislocation
  - Chronically lax or chronic subluxer can present without a specific MOI
- Pain along medial retinaculum
  - R/O MCL tear, plica band irritation, MMT
- Chronic Patellar instability/ Genetic predisposition
- Clinical evaluation for non-acute injury
Immediate Acute Care

- Immobilize
- Compression/Crutches/WBAT
- Refer for imaging
  - Initial Xray r/o fracture or OCD lesion
  - MRI for DDx
    - MMT
    - MCL tear
    - Plica irritation
What happens during the injury?

- Location of tear
  - Patellar attachment (~50%)
  - Femoral attachment (~25%)
  - Both (~10-15%)
- Non-rupture loosening of MPFL (type 1) (~13%)
- Other complications:
  - Loose bodies (~13%)
  - MMT (~25%) (seen more in females)
  - Patellar avulsions/fractures (5-10%)
  - OCD lesions (50%) (seen more in males)
Non-operative approach

- Nonoperative treatment of acute patellar dislocation has been shown to result in recurrent dislocation in 15% to 49% of patients. In addition, there are a significant number of patients who experience recurrent subluxation but do not formally redislocate.

- In 1979, McManus et al published a study on the natural history of acute patellar dislocation. Recurrent dislocation occurred in 15% of patients, with an additional 33% of patients experiencing feelings of instability or apprehension.

- Hawkins et al also reported on the natural history of acute patellar dislocation. Redislocation occurred in 15% of patients, and feelings of instability or “mistrust” of the knee persisted in an additional 20% of patients.

- Maenpaa and Lehto monitored 100 patients treated nonoperatively after patellar dislocation for an average of 13 years. Forty-four percent of patients experienced redislocation, and an additional 19% of patients experienced recurrent subluxation and patellofemoral pain.

  - In patients with recurrent patellar dislocation, the MPFL is functionally incompetent, and many authors have advocated formal MPFL reconstruction. In patients with recurrent patellar subluxation, the MPFL is lengthened or attenuated but may still be in continuity.

- Nomura explored the MPFL in 49 knees with recurrent patellar instability. The MPFL lacked continuity or could not be identified at all in 22% of patients. In 78% of knees, however, the MPFL was scarred or loose but remained in continuity. In this patient population, a less invasive procedure may be appropriate, such as an MPFL-based medial imbrication.

*The Medial Patellofemoral Ligament: Systematic Review*  
Orthopedics, April 2009
Surgery? Bracing? Taping?

- Non-operative bracing/taping for RTP?
  - Patellar stabilizing brace
  - Patellar stabilizing taping (McConnell, etc)

- Surgical techniques
  - 4 classifications of tear will determine surgery
    - Type 1: No disruption on evaluation, intra-operatively noted loose femoral attachment
    - Type 2a: Disruption of MPFL mid-substance with scar tissue formation
    - Type 2b: Disruption of MPFL at femoral attachment with scar tissue formation
    - Type 3: Absent tissues/ Complete rupture
Surgical Intervention Types

- **MPFL Repair vs Reconstruction**
  - Depends on type of tearing

- “Crescent Imbrication” of MPFL

- Reconstruction with various graft types
Post-op Acute care
Phase 1

- Weeks 0-6
- Knee locked in extension brace (unlocked for sleep/rehab)
- AA/PROM: 0-30 degrees (2 weeks), progressing to 90 degrees by 6 weeks NWB
- WBAT in locked brace
- Table-based NWB ROM and strengthening (quadsets/glut sets/clams/etc), pre-gait activities, heel slides, stretching, A/P patella mob
- Proprceptive/Core/UE cardio
- Stationary bike 4-6 weeks for ROM
- Goals for progression:
  - 1) Decreased inflammation
  - 2) AAROM 0-90
  - 3) Volitional quadriceps control
Post-op Sub-acute Phase 2

- 6-8 weeks
  - Progress to FWB with unlocked brace
  - Return to Full ROM
  - Begin DL strengthening and proprioceptive exercises

- Goals
  - 1) Full AROM
  - 2) Normal Gait mechanics
  - 3) DL strengthening with protective mechanism intact/ decreased femoral collapse
Post op Functional ADL’s
Phase 3

- 8-12 weeks
- Progress strengthening as tolerated
  - DL => SL as form and pain dictates
  - Progressing to multi-plane
- 10-12 weeks (varied time frames) begin pre-running plyometrics/agilities
  - (begin running level, straight plane 12 weeks)
Post-op RTP
Phase 4

- Average return to full sport is 6 months
- Progressed to multi-plane plyometrics
- LE/CORE CONDITIONING!
- Functional Outcome Assessments?
- Must retain proper LE form when fatigued!
And in summary....

- Dislocated patella injuries should not necessarily be “reduce and strengthen”
- Know your outcomes for conservative care vs surgical intervention
  - When should you cut?
- Regardless of surgical intervention...
  - KNOW YOUR ANATOMY & BIOMECHANICS!
  - Protect the compromised tissue
- Prevention is your best treatment
Thank you!