Knee Dislocations & Extensor Mechanism Disruptions

Dr. Scott Mandel
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Lower Extremity Teaching Session
Patellar Tendon Ruptures

- Usually an eccentric load
  - Landing from a jump
- Usually occurs at inferior pole of patella
- Usually under age 40
- Associated with tendinitis
  - Also steroid injections (Both kinds)
Patellar Tendon Ruptures

- **Signs and Symptoms**
  - Index of suspicion key to diagnosis
  - Pain, significant trauma
  - Palpable defect
  - *Inability to perform straight-leg raise*

- High-riding patella on X-rays
- Demonstrated on U/S, MRI
Patellar Tendon Ruptures

Treatment

- Non-operative only for partial tears
- Prompt surgical repair best treatment
  - Usually an avulsion from bone
  - Drill holes / suture anchors
  - Heavy non-absorbable sutures
  - Re-inforce prn with medial hamstrings, Dall Miles cable
Operative Repair - Acute
Patellar Tendon Ruptures

- **Post-op Rehab**
  - Weight-bearing ? *
  - Early gentle passive ROM ?
  - Splint v. cast ?
  - All seem to agree on 6 weeks protection post-op
Patellar Tendon Ruptures

- **Chronic Ruptures**
  - *Poorer prognosis*
  - Need to mobilize patella & quadriceps
    - Pre-op traction advocated by some
  - Reconstruct with medial hamstrings, allograft
    - Quadriceps turndown flap (Scuderi)
Operative Repair - Chronic

A

Steinmann pin in patella

Semitendinosus

Divide

B

Gracilis

Fixation wire

C

Gracilis

Twisted fixation wire
Quadriceps Tendon Ruptures

- More common later in life (50+)
- Usually at bone – tendon junction
- Can be associated with systemic problems
  - Diabetes, gout, chronic renal failure
  - Hyperthyroidism, cortisone injections
- ? Due to decreased vascularity
- Usually chronic tendon damage evident microscopically
Quadriceps Tendon Ruptures

**Signs and Symptoms**
- Intense pain, unable to walk
- Index of suspicion also key to Dx
- Palpable defect, hemarthrosis
- *Inability to raise leg / extend knee*
- Low-riding patella
- U/S, MRI helpful if Dx in doubt
Quadriceps Tendon Ruptures

- **Treatment**
  - *Early surgical repair gives best results*
  - Repair to bone as in patellar tendon
  - Remember trilaminar structure
    - Repair all layers
  - Re-inforce prn
    - Scuderi turndown flap
  - Rehab similar to patellar tendon
Operative Repair - Acute

Suture in stump of vastus intermedius

Trough in superior pole of patella
Quadriceps Tendon Ruptures

- **Chronic Ruptures**
  - Also worse prognosis than acute repair
    - Loss of quads strength
  - Turndown flaps, fascia lata augmentation
  - Codivilla tendon lengthening to close gaps
  - Protection by pull-out suture recommended
Operative Repair – Chronic (Scuderi)
Operative Repair – Chronic (Codivilla)
Knee Dislocations

- Rare to be unreduced, more common if you consider multiple ligament injuries
- Translational or rotary dislocations
  - Rotary can buttonhole through capsule
- Reduce (if needed), assess arterial status, neurovasc. status, esp. peroneal nerve
Knee Dislocations

- **Role of angiography controversial**
  - Remember fasciotomies!!!

- **Management less controversial**
  - Early surgical repair allows early ROM
    - Minimizes stiffness *
    - Preferably within 1-2 weeks
      - Anatomy more definable if done early
Knee Dislocations

- **Treatment Principles**
  - Bony avulsions can be *repaired*
  - **MCL** – suture repair / augment with medial hamstrings prn
  - **LCL / PLC** – repair, but reconstruct (LARS) as well
  - **PCL** – reconstruct (Achilles allograft)
    - One – bundle v. two – bundle
  - **ACL** – reconstruct (hamstrings, B-PT-B allograft)
  - Minimize injury to knee
    - Don’t harvest both hamstrings and bone – PT – bone
MCL Reconstruction

medial epicondyle
PCL Repair
Posterolateral Corner

- Restore function of popliteus, popliteofibular ligament and lateral collateral
- My experience – repair alone not gratifying
  - Add reconstruction – LARS, Clancy, Sling procedure
Acute LCL / PLC

LCL stump

Popliteus tendon
Acute LCL / PLC
Chronic PCL / PLC

Resting Position
Late Sequelae

- ACL – instability, meniscal damage
- PCL – medial and patellofemoral degeneration, fixed posterior subluxation
- MCL – valgus instability
- LCL / PLC – varus instability
Late Sequelae

- **ACL + LCL / PLC**
  - Role of osteotomy well established in the setting of ACL + LCL / PLC
  - *Diagnosis of PLC injury key*
    - Increased ER @ 30° vs. other side
  - Take pt. out of varus
  - Diminishes stress on ACL
Late Sequelae

- **MCL Insufficiency**
  - Rarer
  - Usually in females with valgus alignment
  - Capsular plication recommended
  - Augment with medial hamstrings
    - Attach to medial epicondyle (isometric point), then to posteromedial tibia
  - ?? Role of osteotomy