TRAUMATIC SPORTS RELATED KNEE INJURIES

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Objective

• Provide an overview of traumatic meniscal injuries

• Provide an overview of traumatic ligamentous injuries
  – ACL
  – PCL
  – MCL
  – LCL

• At the end of session, participants should be aware of common acute knee injuries diagnosis and management
Lateral and Medial Meniscus

- Medial > lateral (3:1)\(^1\)
- 60-70 per 100,000 incidence\(^1\)
- 1/3 associated with ACL tear\(^2\)
- M > F (3:1)\(^3\)
- Younger pts yrs = traumatic\(^4\)
- Older pts = degenerative\(^4\)
Lateral and Medial Meniscus

• Symptoms
  – Localized pain
  – May recall hearing or feeling of a pop
  – Acute, delayed or recurrent swelling
  – Pain with squatting
  – Painful clicking, catching / locking

• Physical Exams
  – Joint line tenderness
  – Swelling
  – Joint line tenderness
  – McMurrays
  – Thessaly
  – Apleys
Lateral and Medial Meniscus

- **Diagnostics**
  - MRI is the gold standard
  - Highly sensitive and specific (comparable to PE)
Lateral and Medial Meniscus

• Treatment
  – Age, occupation, activity level, symptoms
  – Physical therapy
    • Knee strengthening (Quadriceps, esp. VMO)
    • ROM
    • Strengthening of other lower limbs (hips, pelvis)
  – Arthroscopic Surgery\(^5\)
    • Partial meniscetomy (80%–90% satisfactory results at short-term follow-up <2 yrs)
    • Meniscal repair – almost exclusively in young
Ligamentous Injuries

• 4 main ligaments
  – Anterior cruciate ligament (ACL)
  – Posterior cruciate ligament (PCL)
  – Medial collateral ligament
  – Lateral collateral ligament
ACL Injury

• Noncontact pivoting injury (~70%)

• Associated injuries
  – MCL, Medial Meniscus
  – Osteochondral contusions

• Risk Factors
  – Gender
    • Q angle (f > m)
  – Different neuromuscular
  – Different hormonal influences (estrogen)
ACL Injury

• Symptoms
  – Acute pain / swelling
  – Instability
  – Pop sensation
  – Quadriceps avoidance gait

• Physical exams
  – Lachman test (*most sensitive*)
  – Anterior drawer
  – Pivot shift
ACL Injury

• Diagnostics
  – X-ray – may show segond
ACL Injury

• Diagnostics
  – MRI is the gold standard
  – Highly sensitive and specific
ACL Injury

• Treatment
  – Age, occupation, activity level, stability, associated injuries
  – Physical therapy
    • Balance and proprioception training\(^9\)
    • Open-chain strength training\(^10\)
  – Knee bracing\(^11\)
  – Surgery (ACL Reconstruction)
    • Patella tendon vs Hamstrings tendon
      – None recommended over the other\(^12\)
    • Double-bundle vs Single Bundle
      – Limited evidence of superior results with double bundle\(^13\)
    • Allograft vs Autograft
      – Increase risk of rupture with allograft\(^14,15\)
PCL Injury

• **Mechanisms**
  – Direct blow to anterior tibia (dashboard injury)
  – Hyperflexion (noncontact)
  – Hyperextension

• **Symptoms**
  – Anterior tibial contusion
  – Popliteal ecchymosis

• **Physical Exams**
  – Posterior sag
  – Posterior drawer sign
  – Quadriceps active test
PCL Injury

ACL

PCL
PCL Injury

• Treatment
  – Grades 1-2\(^16\)
    • Physical therapy
      – Focus on quadriceps strengthening
  – Grades 3
    • Surgery – PCL reconstruction\(^17\)
Lateral and Medial Collateral Ligaments

- The MCL is injured more often than the LCL. Due to the more complex anatomy of the outside of the knee,
- History of trauma with valgus/valarus mechanism
- Medial or lateral knee pain
- Physical exam
  - Tenderness / swelling
  - Medial/lateral joint space opening with valgus/valarus stress at 30° (grade 0-3)
Lateral and Medial Collateral Ligaments
Lateral and Medial Collateral Ligaments
Collateral ligaments Injury

- Treatment
  - Most isolated heal – non-surgically
    - Bracing\textsuperscript{18}
    - PT\textsuperscript{18}
  - If not isolated or instability/laxity persist then surgery\textsuperscript{19}
Traumatic Fractures/Tendon Ruptures

- Patella
- Tibia Plateau
- Fibula head
- Quadriceps tendon rupture
- Patella tendon ruptures
References


Thank You