

Evaluating Knee Pain

Matthew T. Boes, M.D.

Raleigh Orthopaedic Clinic

September 24, 2011



Introduction



- Approach to patient with knee pain / injury
 - History
 - Examination
 - Radiographs
 - Guidelines for additional imaging



History

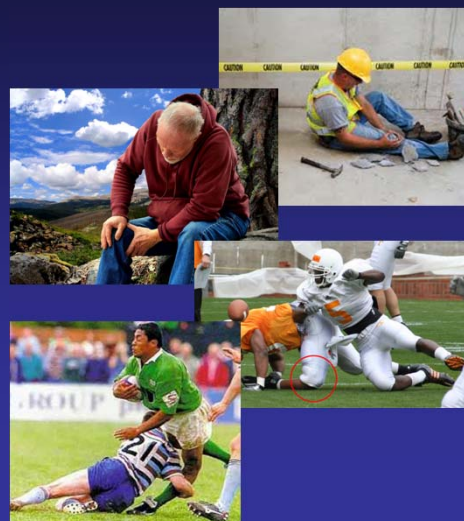


- Age
- History of specific injury / traumatic event?
- Location of pain
- Nature of pain
- Are there mechanical symptoms?
- Aggravating / precipitating factors

Was There A Specific Injury?...



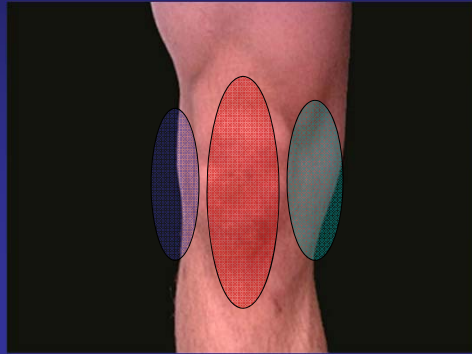
- How did the pain start?
- Exact mechanism
 - Direction of force
 - Side of impact
- Gives clues to specific structures involved



Location of Pain



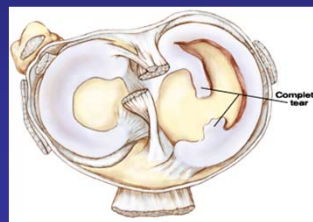
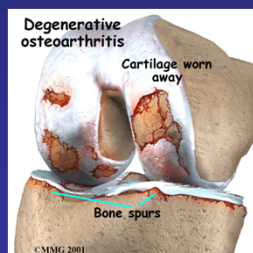
- Localized and specific vs. general
- Nature of pain – sharp vs. achy



Mechanical symptoms



- Usually indicates an intra-articular process
- Disruption of smooth articular surfaces, cartilage fragment, subtle instability
- Ex: catching, locking, buckling / giving way, “unstable”



Aggravating / Precipitating Factors



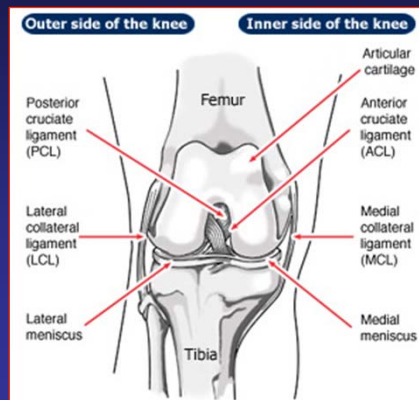
- Stairs
- Start up
- Prolonged sitting
 - Driving
- Twisting / squatting
- Side-to-side activity
- Impact activity



Examination



- Gait and Alignment
- Swelling / Ecchymosis
 - Side-to side-deformity
- Joint Effusion
- Tenderness
- Range of Motion
- Ligament exam
- Special Tests



Gait and Alignment



- Painful weight-bearing
- Guarding with certain motions
- Varus or valgus alignment



Swelling and Ecchymosis



Is There an Effusion?



- Intra-articular injury, synovial irritation
 - Rare to have a significant intra-articular process without an effusion.
 - Long-standing DJD or meniscus tear



Knee Aspiration



- Supine; 20-30 deg flexion
- Supra-patellar – med / lat
- Local anesthetic
- Aspirate 18G needle
- Specimen
 - g/s, cell count, crystal analysis
 - a/an cultures



Knee Effusion... Intra- vs. Extra-articular

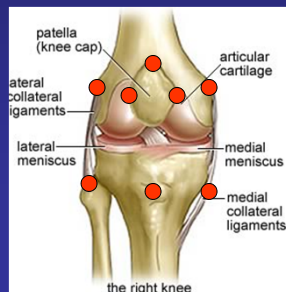


- Intra-articular:
 - DJD
 - Meniscus tear
 - Ligament injury (ACL)
 - Cartilage injury
 - OCD
 - Crystalline arthritis
 - Synovial disorder
- Extra-articular
 - Patella / quad tendonitis
 - Patello-femoral syndrome
 - Pre-patellar bursitis
 - ITB syndrome
 - HS strain
 - Gastroc injury
 - Pes bursitis

Tenderness



- Specific vs. global
- Joint line
- Collateral Ligaments
- Patello-femoral
- Quad and Patellar tendons



Range of motion



- Pain with deep flexion / full extension
- Active SLR or knee extension
- Crepitus



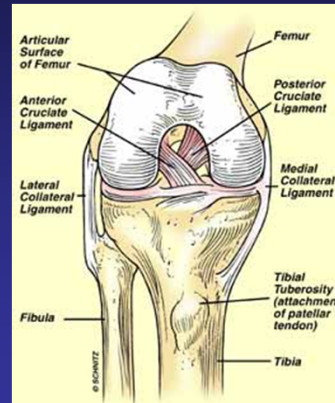
Patellar Compression / Grind



Ligaments



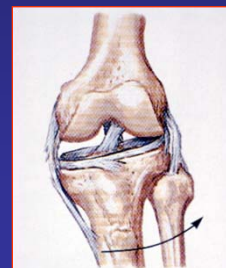
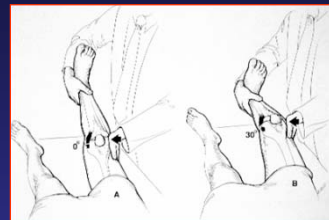
- Compare difference with uninjured side
- Pain and / or instability
 - Significant instability generally not subtle
- Collaterals (MCL and LCL)
 - Medial collateral ligament
 - Lateral collateral ligament
- Cruciates (ACL and PCL)
 - Anterior cruciate ligament
 - Posterior cruciate ligament



Collateral Ligaments.. MCL and LCL



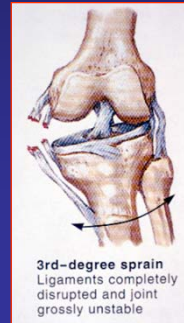
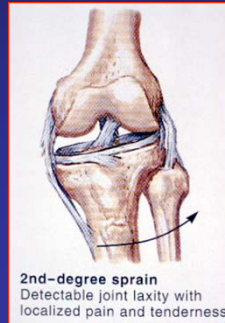
- Varus and valgus stress @ 0 and 30 deg
 - Normally more lax to varus
- Instability at full extension means significant injury
 - 0 degrees – collaterals, capsule, and cruciates
 - 30 degrees - collateral ligament complex



Grading Ligament Injuries



- I - pain to stress; no instability
- II - pain to stress; + instability; firm endpoint
- III - complete tear; laxity; no endpoint



Medial Collateral Ligament



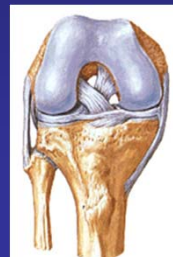
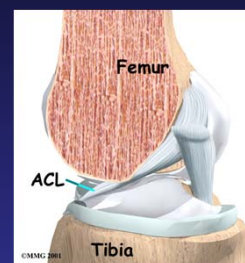
Lateral Collateral Ligament



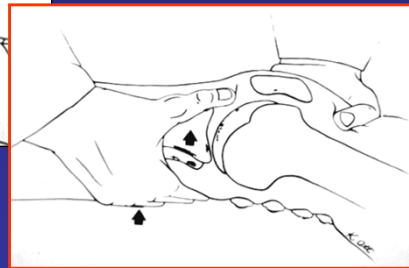
Anterior Cruciate Ligament (ACL)



- Lachman test
- Pivot-shift test
- Anterior drawer test



Lachman Test



Lachman Test



Pivot-Shift Test



Posterior Cruciate Ligament (PCL)



- Posterior Drawer
 - 90 deg flexion
 - Posterior force on proximal tibia
- Medial tibial stepoff



Special Tests...

McMurray's test



- Meniscus pathology
- Flexion 90 deg; axial compression; IR & ER foot
- “captures” unstable meniscus with rotation



Special Tests...

Apley's compression test



- Prone; 90 deg flexion; IR & ER foot



DX: meniscus tear



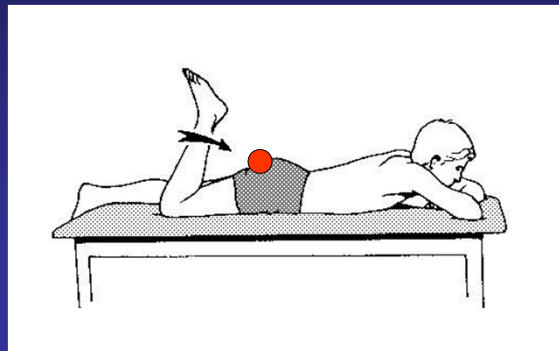
- Joint line tenderness
- Effusion
- Pain with forced flexion
- Block to full extension
- (+) McMurray's or Appley's test

Special Tests...

Quad / Extensor Mechanism Tightness



- Prone position; pelvis stabilized; passive knee flexion

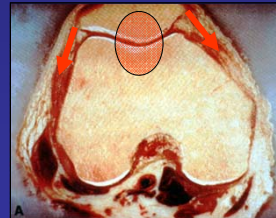
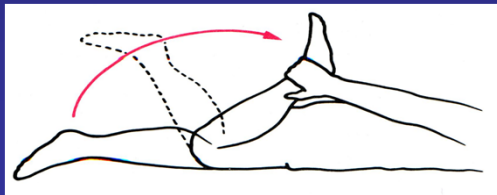


Special Tests...

Quad / Extensor Mechanism Tightness



- Indicates patello-femoral overload
 - May cause significant pain without objective findings
 - Anterior pain, global
 - Worse with stairs, start-up, prolonged sitting



Radiographs...

Routine initial x-rays



- Evaluate bone quality, alignment, joint space narrowing, degenerative changes.
- Age < 40 yrs
 - AP, lateral, sunrise (PF) views

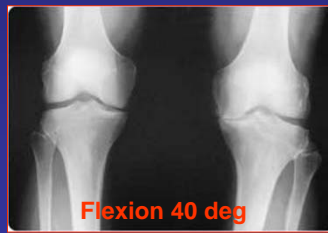


Radiographs...

Routine initial x-rays



- Age > 40 yrs
 - Bilateral AP, Rosenberg, lateral, and sunrise views
 - Standing (weight-bearing) to evaluate for joint space narrowing

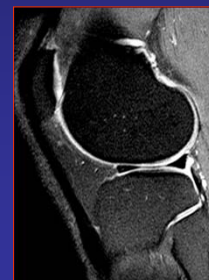
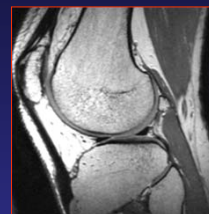


Further imaging...

MRI indications



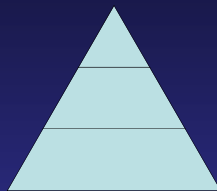
- History of specific injury
- Effusion
- Sharp, localized pain
- Instability
- Mechanical symptoms



Thank You



Madeline



- C c b v b v cxc,ll
- Ybgtb
- “”-;l,nm

