THE EXAMINATION OF THE ACUTELY INJURED KNEE

A DEMONSTRATION LECTURE

Barry Jay Miller, MD
Office of Graduate Medical Education
Kaiser Santa Clara
THE STRATEGY
Separate all patients with knee problems into one of three categories:

1. The Routine office visit
2. The Hot swollen atraumatic knee
3. The Acutely Injured knee
THE PHYSICAL EXAM Is KEY:

Expensive tests are rarely needed
THE HISTORY:
The Critical Questions

- 1st time or many
- Pop?
- Timing of swelling
- Continued activity or NO
SIX STEPS TO EVALUATING THE ACUTE INJURED KNEE

1. Support the knee with a can
2. Check for Effusion? Hemarthrosis?
3. Check ROM assisted: Is knee locked? (slide)

Then examine
4. **Patella**: For stability and retinacular tenderness
5. **Ligaments**: Palpate and stress, special tests
6. **Extensor mechanism**: Integrity versus Disruption
A
Normal meniscus

B
Longitudinal or “bucket-handle” tear

C
Tear of the posterior horn
SIX STEPS TO EVALUATING THE ACUTE INJURED KNEE

1. Support the knee with a can
2. Check for Effusion? Hemarthrosis?
3. Check ROM assisted: Is knee locked?

Then examine
4. **Patella**: For stability and retinacular tenderness
5. **Ligaments**: Palpate and stress, special tests
6. **Extensor mechanism**: Integrity versus Disruption
Physical Exam

THE PATELLA: R/O DISLOCATION

- Apprehension Test (Fairbank’s Test)
- Retinacular tenderness
- Hemarthrosis
Physical Exam

LIGAMENTS

- Medial collateral lig: Palpate and stress
- ACL: Lachman and pivot shift
- LCL: Palpate, stress
- PCL: Sag sign
Ligament Injuries

- **Grade 1:** Functionally intact, no laxity. Tender, swollen
- **Grade 2:** Partly functional, mild laxity, resistance to stress
- **Grade 3:** Non-functional, gross laxity, complete disruption
Lateral collateral ligaments: the right hand now stabilizes the thigh, and the left hand applies medially directed force, which produces a varus stress at the knee.

Medial collateral ligament: valgus stress is supplied to the right knee by placing laterally directed force on the lower leg with the examiner’s right hand while stabilizing the thigh with the left hand.

Lateral collateral ligaments: the right hand now stabilizes the thigh, and the left hand applies medially directed force, which produces a varus stress at the knee.
Diagnosis of Anterior Cruciate Ligament Rupture

Lachman Test. With knee bent (20°-30°), tibia alternately pulled forward and pushed backward.
Anterior drawer test is performed with the knee in 20 degrees of flexion and the patient completely relaxed (Lachman Test).
POSTERIOR CRUCIATE LIGAMENT

A

Normal knee alignment. The anterior tibia is slightly anterior to the femoral condyles (tibial step-off).

B

Posterior displacement (sag) is present, indicating a torn posterior cruciate ligament.
Physical Exam

THE EXTENSOR MECHANISM

- Active extension possible?
- Palpate patellar tendon
- Compare location of patellae? High?
- Palpate defect in quads tendon
RUPTURES OF THE EXTENSOR MECHANISM

- Rupture of quads tendon
  - Palpable defect
  - Rupture repaired surgically

- Rupture of patellar ligament
  - Rupture repaired surgically
The Acute injured Knee

INVESTIGATION

- **X-ray:** Must Do! Fx’s (osteochondral, avulsion, major) loose bodies
- **MRI, CT:**
  Never needed acutely if at all
- **Instrumented Knee Testing:**
  More help Later
INITIAL TREATMENT
(Except Displaced Fx’s)

- Aspiration rarely needed
- Minor:
  - RICE - Crutches PWB, quads, Ace wrap
- Major:
  - Large compressive bandage “Jones”
  - Splint slightly flexed
  - Crutches
  - Analgesics
REFERRAL DECISIONS

- Immediate Consultation
  - All Fractures
  - Quad Tendon Tear
  - Patellar Tendon Tear
  - Dislocated Patella (unreduced)
  - Locked Knee

- Early Consultation
  - Acute ACL/PCL Tears
  - Grade 3 MCL/LCL Tears
  - Acute Patellar Dislocation

- Elective Consultation
  - Recurrent Patellar Dislocation
  - Chronic ACL/PCL Tears

The Acute Injured Knee
SIX STEPS TO EVALUATING THE ACUTE INJURED KNEE

1. Support the knee with a can
2. Check for Effusion? Hemarthrosis?
3. Check ROM assisted: Is knee locked?

Then examine

4. **Patella**: For stability and retinacular tenderness
5. **Ligaments**: Palpate and stress, special tests
6. **Extensor mechanism**: Integrity versus Disruption

- Pg-37