Objectives

Upon completion of this session, participants should be able to:
1. Name 4 exam maneuvers to use when suspecting a meniscus tear.
2. Identify 6 clinical criteria that raise the likelihood of a diagnosis of knee osteoarthritis (OA) in a patient with knee pain.
3. Identify indications for knee arthroscopy in patients with knee OA, knee OA with meniscus tear, and meniscus tear without knee OA.
4. Name 2 causes of shoulder pain when both active and passive range of motion are limited.
5. Identify a full thickness rotator cuff tear on physical exam.

Case #1

25 y/o man with medial-sided pain and swelling of the R knee for 6 weeks since he twisted the knee playing soccer. No locking, no instability.
All of the following tests, if positive, would raise concern for a meniscus tear except…

A. Joint line tenderness  
B. Pain when he stands and pivots on the knee  
C. Pain when you axially load and rotate the knee  
D. Pain when you flex the R knee and extend the R hip with the patient lying on his left side.  
E. Pain when he squats

4 tests for meniscus tear
1. Isolated joint line tenderness  
2. McMurray  
3. Thessaly  
4. Squat

Joint line tenderness

Meniscus: McMurray

Sensitivity medial 65%, Specificity medial 93%*  
Meniscus: Thessaly

Video used with permission from Anthony Luke, MD

Meniscus: squat

Ober’s Test for tight IT Band

Case #2

60 y/o woman presents with 3 months of medial knee pain. (+) swelling and instability. No frank locking. Pain is worse with weight bearing. Better with rest, ice, and NSAIDs. She brings a knee MRI for your review.

Exam: Neutral knee alignment when standing. Knee is not warm. There is tenderness of the medial joint line + medial femoral condyle + medial tibial plateau. Small effusion. ROM 0-120, limited by pain. (+) crepitus. (+) medial McMurray, medial knee pain with squat and Thessaly tests. No ligamentous laxity.
Case #2: MRI results

- Small effusion
- Moderate chondrosis medial femoral condyle and medial tibial plateau
- Degenerative medial meniscus tear

Clinical criteria for diagnosis of knee OA

Case #2

60 y/o woman presents with 3 months of medial knee pain. (+) swelling, and instability. No frank locking. Pain is worse with weight bearing. Better with rest, ice, and NSAIDs. She brings a knee MRI for your review.

Exam: Neutral knee alignment when standing. Knee is not warm. There is tenderness of the medial joint line + medial femoral condyle + medial tibial plateau. Small effusion. ROM 0-120, limited by pain. (+) crepitus. (+) medial McMurray. Medial knee pain with squat and Thessaly tests. No ligamentous laxity.

What do you recommend?

A. Refer for arthroscopic debridement of meniscus tear and lavage
B. Nonoperative knee OA program
C. Refer for total knee arthroplasty
A Randomized Trial of Arthroscopic Surgery for Osteoarthritis of the Knee

- 188 patients followed x 2 years
- Primary endpoint WOMAC score (knee pain + fxn)
- Avg age 60, 2/3 female, BMI 31
- Excluded bucket handle meniscus and severe varus or valgus alignment

Interventions

- Control
  - P.T.: 1 hour/week x 12 weeks
  - Home ex program 2x/day
  - Instruction on ADLS
  - Self management arthritis education reading + videotape
  - Medications (APAP, NSAIDs, hyaluronic acid injections)

- Arthroscopic surgery
  - Irrigation with saline
  - 1 or more of the following:
    - Debridement or excision of degenerative meniscus tears
    - Removal loose bodies, chondral flaps, bone spurs
  - Medical and physical therapy like controls


Results

Surgery vs PT for meniscal tear and OA

- Multicenter RCT
- 351 patients with meniscus tear + OA
- Meniscus sx (clicking, popping, catching, giving way, joint line pain, pain with twisting)
- Avg. age 60 years
- 50% men, 50% women
- Primary outcome = change in WOMAC physical-function score between groups at 6 mo


Interventions

- Control (PT)
  - Usually 6 weeks
  - 3-stage program
  - APAP, NSAIDs, intraarticular steroid injections as needed

- Arthroscopic partial meniscectomy (APM)
  - Trim damaged meniscus back to stable rim
  - Remove loose cartilage and bone
  - PT protocol
  - APAP, NSAIDs, intraarticular steroid injections as needed


Results

Conclusions

- 30% crossed over from PT to APM at 6mo
  - These people had WOMACs that didn’t improve until crossover
- No sig difference in adverse events
- PT and APM are reasonable options with similar outcomes for these patients (with allowed cross over if not achieving relief with PT)
- Starting with conservative approach is reasonable


Osteoarthritis with meniscus tear

- Meniscus tear is part of the natural history of osteoarthritis
- Treat as osteoarthritis initially
- Imaging: Start with xray. Consider referral vs MRI if exam c/w meniscus tear and not improving with PT
- Could consider arthroscopic meniscus surgery if weight loss, PT, medications, injections not helping or if patient prefers surgical treatment.

Case #3

60 y/o woman presents with 4 months of medial knee pain and swelling. Pain is worse with weight bearing and twisting activities. Better with ice, NSAIDs. She has done physical therapy.

Exam: Neutral knees on standing exam, tender medial joint line without bony tenderness, small knee effusion. ROM 0-120, limited due to pain. (+) McMurray, squat, and Thessaly testing. No ligamentous laxity.


What do you recommend?

A. Refer for arthroscopic debridement of meniscus tear
B. Physical therapy, medication for pain as needed
C. Refer for total knee arthroplasty
• 35-65 y/o (n = 146)
• Inclusion: > 3 months medial joint line pain, tried conservative care first, exam consistent the MMT, MRI with MMT confirmed on arthroscopy
• Exclusion: traumatic onset of symptoms, locked or unstable knee, previous surgery, OA by ACR criteria or x-ray

Results

• Improvement in both groups at 12 mo
• No significant between-group differences in 3 primary outcomes

Would she benefit if she had locking or catching of the knee?

• FIDELITY post hoc analysis
• Same exclusion and inclusion criteria
• Resection of torn meniscus did not result in greater relief of knee catching and locking compared to sham arthroscopy

Degenerative meniscus tear, no OA

• FIDELITY studies suggest no benefit from arthroscopic partial meniscectomy, even with mechanical symptoms, over sham arthroscopic surgery.
• Limitations
  • Definition of degenerative meniscus tear?
  • No radiographic OA but these patients had some mild cartilage wear
Who to refer for knee arthroscopy

- Younger patients
- Traumatic onset of symptoms
- Bucket handle meniscus tears
  - Knee locked due to meniscus blocking joint movement
- Locking (knee stuck, cannot move it)
- Not improving despite conservative treatment (?)
- Patient prefers surgery to conservative treatment (?)

Case #4

50 y/o RHD woman with type 2 diabetes presents with 3 months of severe R shoulder pain. No injury. Waking up at night due to pain. Shoulder feels very stiff. She is having trouble reaching behind and raising arm above head.

On exam she has no muscle atrophy and no point tenderness. There is decreased active and passive range of motion of the right shoulder. Her rotator cuff strength is 5/5 though difficult to perform due to limited range of motion and pain. A R shoulder xray is normal.

How would you treat this patient?

A. Provide R shoulder sling to use for comfort.
B. Provide shoulder steroid injection to reduce pain.
C. Obtain shoulder MRI.
D. Obtain PET CT.
E. Refer to surgeon for arthroscopy.

Adhesive capsulitis

http://www.aurorahealthcare.org/healthgate/images/si55551230.jpg
Shoulder: diagnosis driven exam

- Active ROM
  - Normal
  - Decreased
  - Rotator cuff disease
  - Labral tear
  - Biceps tendinitis
  - AC joint OA

- Passive ROM
  - Normal
  - Decreased
  - X-ray

- Frozen shoulder
  - Normal
  - Decreased

- GH joint arthritis

Abnormal


Shoulder active range of motion

- Abduction
- Flexion

Limited ER key finding
Supine shoulder passive range of motion

Adhesive capsulitis is associated with
- Diabetes → screen for this if hasn’t been done recently
- Hyper and hypothyroidism
- Hypoadrenalism
- Parkinson’s disease
- Cardiac disease
- Pulmonary disease
- Stroke
- Surgery (cardiac, cardiac cath, neurosurgery, radical neck dissection)

Adhesive capsulitis is a clinical diagnosis
- No need for MRI
- Xrays helpful to r/o GH joint arthritis

3 stages of adhesive capsulitis

Freezing
- 3-9 months
- ↑ pain
- ↓ ROM
- Pain at rest, sleep

Frozen
- 4-12 months
- ↓ pain
- Stable
- Decreased ROM

Thawing
- 12-42 months
- Gradual ↑ ROM

Resolution
Average time to resolution: 1-3 years
Treatment for adhesive capsulitis

- Pain control: NSAIDs, oral or injected corticosteroids
  - Does not change disease course
  - Does help significantly with pain control
- +/- physical therapy to help restore ROM
- Capsular distention injections
- Surgery
  - Manipulation under anesthesia
  - Arthroscopic release and repair


Case #5

57 y/o RHD man presents with R shoulder pain that started after he slipped and fell 3 months ago. Pain at R deltoid. He tried physical therapy without benefit. Waking at night from sleep due to pain.

Exam: Point tenderness just below the acromion. AROM intact with pain on abduction between 60 and 120 degrees. Difficulty fully abducting the R arm. Moderate pain with resisted internal and external rotation of the shoulder. (+) External rotation lag test, (+) internal rotation lag test.

Differential diagnosis?

- Impingement
- Tendinitis/tendinopathy
- Partial thickness tear
- Full thickness tear

What is rotator cuff disease?
Rotator cuff disease treatment

Most do well with conservative treatment
- Impingement
- Tendinitis, tendinopathy
- Partial tear
- **Full thickness tear → Consider ortho referral.**

Physical exam maneuvers that increase likelihood of rotator cuff disease

1. **Painful arc**
2. **Drop arm test**

Pain test: **Painful arc**

If painful, positive LR 3.7 for rotator cuff disease.
If not painful, negative LR 0.36 for rotator cuff disease.

Pain/strength test: **Drop arm test**

Positive LR 3.3, negative LR 0.82 for rotator cuff disease.

JAMA. Rational clinical exam: Does this patient have rotator cuff disease? Aug 2013.
Physical exam maneuvers that increase likelihood of full thickness rotator cuff tear

1. External rotation lag test
2. Internal rotation lag test

Strength test:
External rotation lag test

Positive LR 7.2, Negative LR 0.57 for full thickness rotator cuff tear

JAMA. Rational clinical exam: Does this patient have rotator cuff disease? Aug 2013.

Strength test:
Subscapularis = internal rotation lag test

Positive LR 5.6, negative LR 0.04 for full thickness rotator cuff tear

JAMA. Rational clinical exam: Does this patient have rotator cuff disease? Aug 2013.

Case #5

57 y/o RHD man presents with R shoulder pain that started after he slipped and fell 3 months ago. Pain at R deltoid. He tried physical therapy without benefit. Waking at night from sleep due to pain.

Exam: Point tenderness just below the acromion. AROM intact with pain on abduction between 60 and 120 degrees. Difficulty fully abducting the R arm. Moderate pain with resisted internal and external rotation of the shoulder. (+) External rotation lag test, (+) internal rotation lag test.
What is the next step?

A. Refer for surgical consult.
B. Repeat trial of physical therapy.
C. 2 week trial of NSAIDs.
D. Give subacromial injection.

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Name 4 exam maneuvers to use when suspecting a meniscus tear.

Clinical criteria for diagnosis of knee OA

Identify indications for knee arthroscopy in patients with knee OA, knee OA with meniscus tear, and meniscus tear without knee OA.

- Knee OA: knee arthroscopy not indicated
- Knee OA and meniscus tear in same compartment: conservative treatment first
- Degenerative meniscus tear, no OA: conservative treatment first, may not benefit from knee arthroscopy

Name 2 causes of shoulder pain when both active and passive range of motion are limited.

- Arthritis of glenohumeral joint
- Adhesive capsulitis

Identify a full thickness rotator cuff tear on physical exam.

- Internal rotation lag test
- External rotation lag test

Thank you!

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