



Knee Pain in Primary Care

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Lecture Objectives

- ❖ To improve diagnostic skills with knee complaints
- ❖ To improve confidence and competence in practice when seeing patients for knee complaints
- ❖ To understand management and expected outcomes of common knee problems

Possible Causes of Knee Pain

- Meniscal Injury
- Ligament Injury
- Plica
- Osteoarthritis
- RA
- Synovitis
- Infection
- Patellar
- Osteochondral Defect
- PVNS
- Tumor
- Avascular Necrosis
- Referred Pain
- Vascular
- Radicular
- Bruise
- Sprain
- Tendinitis
- Osgood-Schlatters
- Tendon rupture
- Chondromalacia
- Bursitis
- Loose Body
- Deformity
- Dislocation
- Fracture
- Neuroma
- Gout

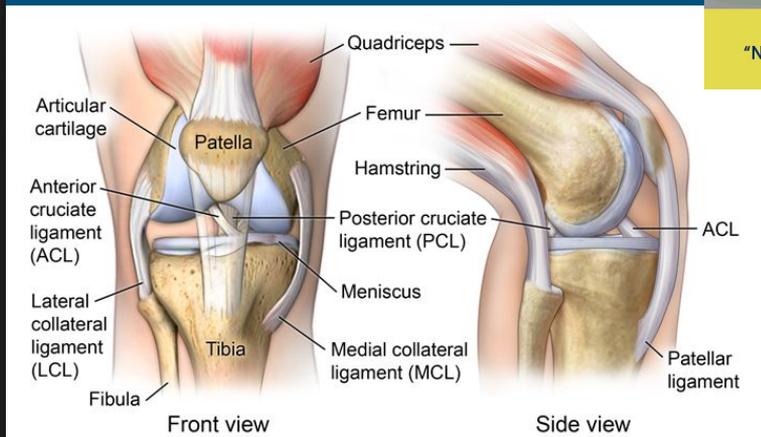
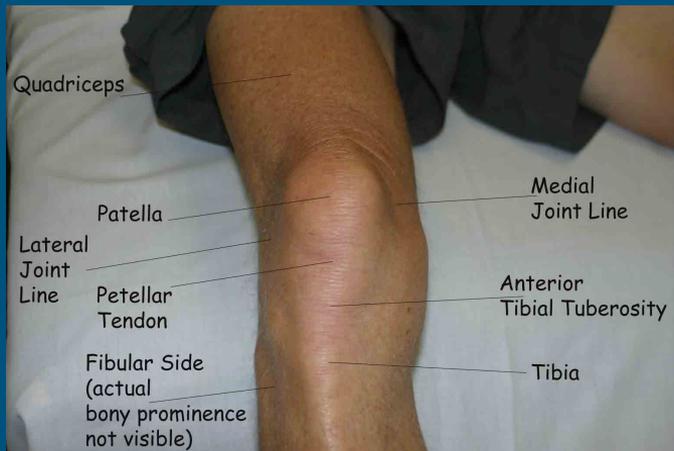
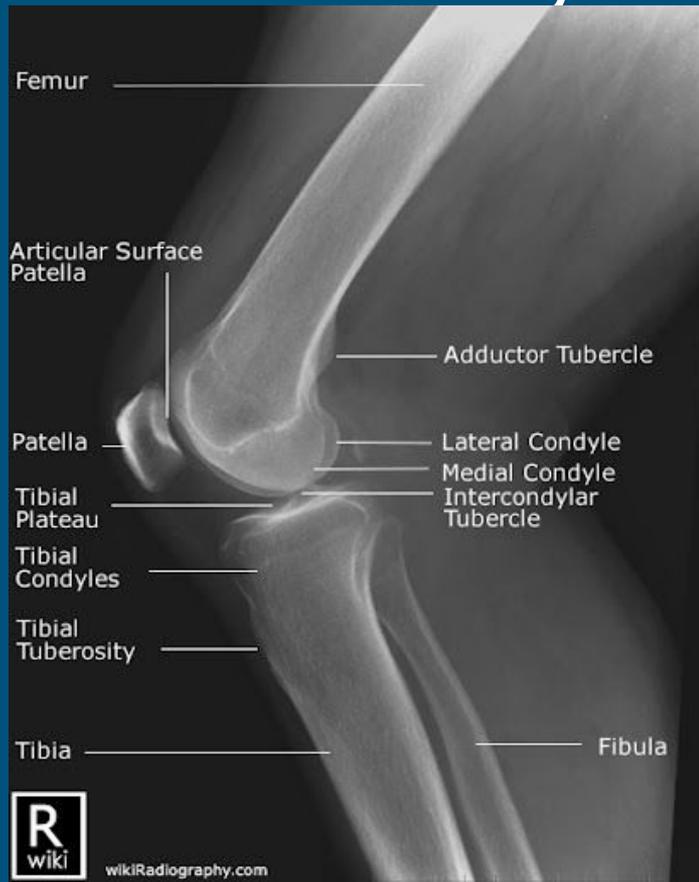
Statistics

25% of adults

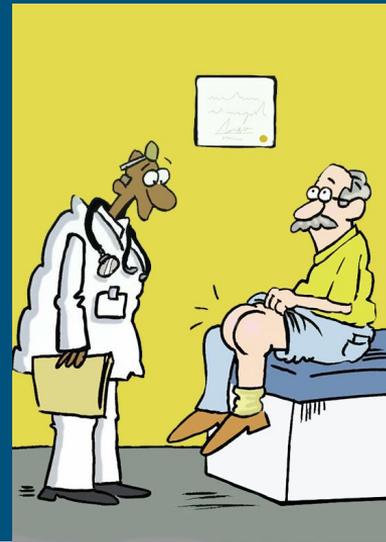
Prevalence is increasing, accounts for ~4 million PCP visits annually

Women experience ACL tears 9-10x more often than men

Knee Anatomy



Knee anatomy



"Now that's what I call a bum knee!"

Different Strategies

1. Knowing the different presentations
2. Separating the diagnoses by age
3. “Point to the Pain”
4. Relying on Examination
5. When can I refer them?

Ask These Questions

1. Trauma?
2. Is there an effusion?
3. Where exactly is the pain?
4. Associated with activity?
5. Hx of knee injury or previous surgery?
6. Other joints affected?
7. Constitutional symptoms?

If there's no trauma, is there an effusion?

Most commonly, pt will present as atraumatic knee pain without an effusion

If there's an effusion -> ARTHROCENTESIS

- Crystal arthropathy (gout)

- Infectious arthritis

- Systemic rheumatic disease (RA, psoriatic arthritis)

Point to the Pain

Use anatomy to your benefit

Osteoarthritis can cause diffuse or focal pain in any of several locations

Anterior Knee pain - most common

Medial Knee pain

Lateral Knee Pain

Posterior Knee Pain



Relying on Physical Exam

Inspect

Palpate

Range of Motion and Strength

Neurovascular Assessment

Special Tests (Provocative testing)



Physical Exam Notes

PE is moderately sensitive and specific for knee pain

Lachman - more sensitive and specific than anterior drawer sign (pubmed)

Joint line tenderness - sensitive for meniscal tears (75%), but not specific (27%)

McMurray Test is specific (97%) for meniscus tears, but not sensitive (52%)

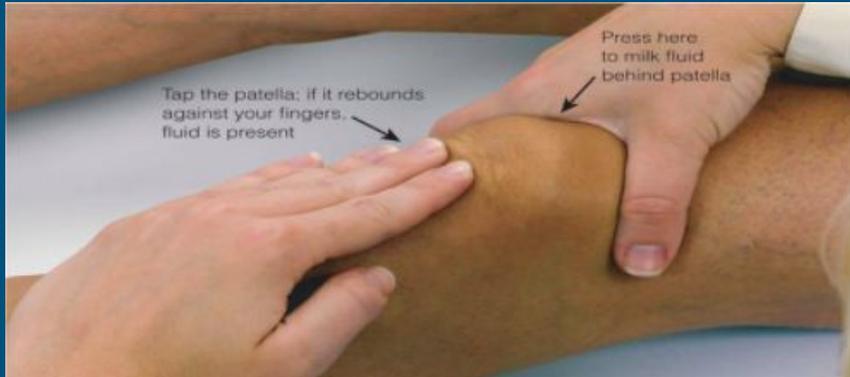
Thessaly test is preferred over the McMurray test or other evaluation for joint-line tenderness (C Evidence Rating)

Physical Exam Notes

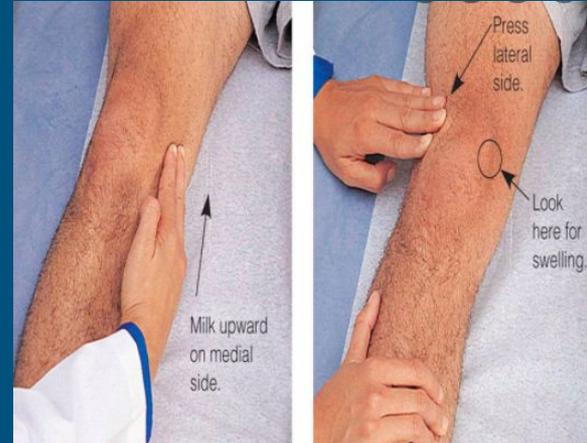
Evaluating for Effusion

- No particular test is the best

Ballotable Patella



Bulge Sign



Outline

Case 1: Knee pain following recent trauma - football game

Case 2: Atraumatic knee pain associated with joint effusion - on a plane, tap

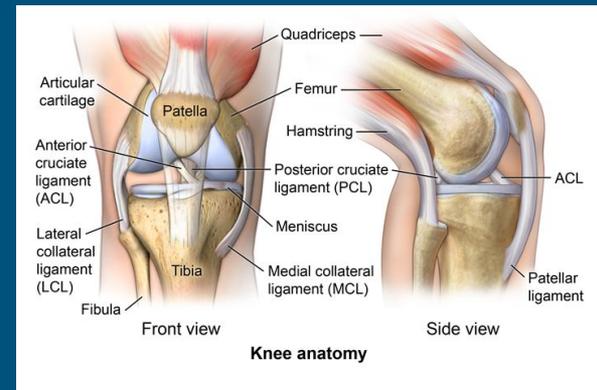
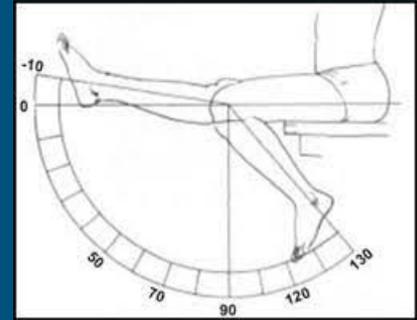
Case 3: Atraumatic knee pain NOT associated with joint effusion

Case 1: Knee Trauma

A 18 y/o football player presents to the office Monday morning after injuring his knee in the game last Friday night. He felt a pop, but was able to walk off the field after evaluated by the athletic trainer. He has been using Ibuprofen without relief. He denies any popping/clicking.

Case 1: Physical Exam

1. Inspect - no bruising, normal alignment
2. Palpate -
 - a. Lateral joint line tenderness
 - b. No patellar tenderness
 - c. + Fibular head tenderness
 - d. No Effusion
3. Examine:
 - a. ROM - Extension to 0 degrees. Flexion to 75 degrees.
 - b. Strength - 5/5 Extension, 4/5 Flexion
 - c. Special Tests: ***
 - i. Anterior Drawer - negative
 - ii. Posterior Drawer - negative
 - iii. McMurray's - negative
 - iv. Varus Stress - negative
 - v. Valgus Stress - positive



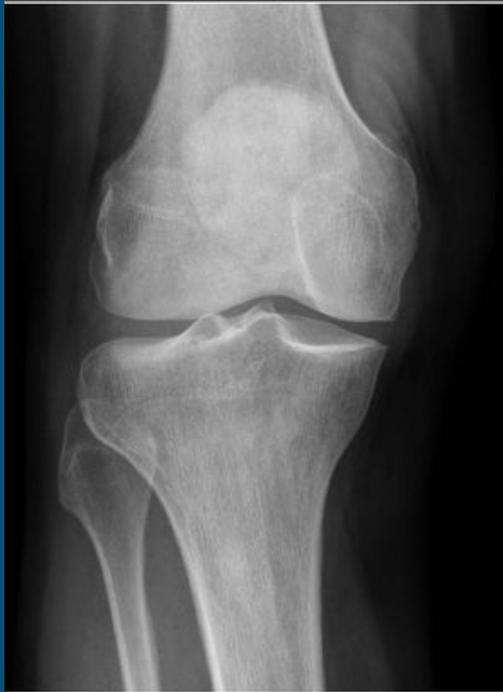
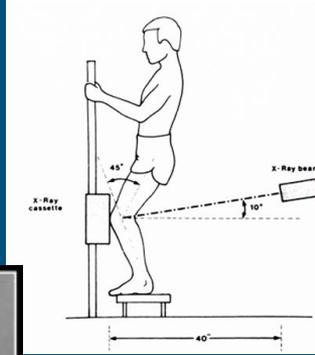
Case 1: Knee trauma

Ottawa Knee Rules - “A evidence rating”

- Determines if radiographs should be obtained
 1. Age > 55
 2. Isolated patellar tenderness*
 3. Fibular Head tenderness
 4. Inability to flex 90°
 5. Can't bear weight** immediately after injury or for >4 steps in ED.
- If 1+, then imaging is recommended

Case 1: Knee Trauma

Knee X-ray:



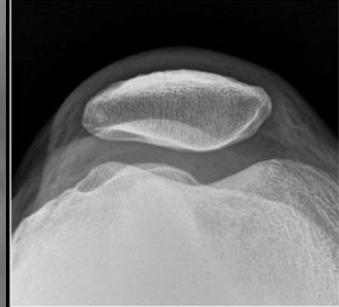
Weight bearing AP



Rosenberg



Weight bearing lateral



Skyline

Case 1:

X-ray shows no acute fracture.

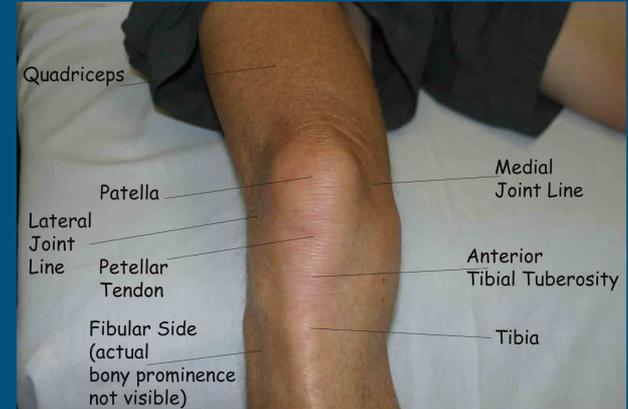
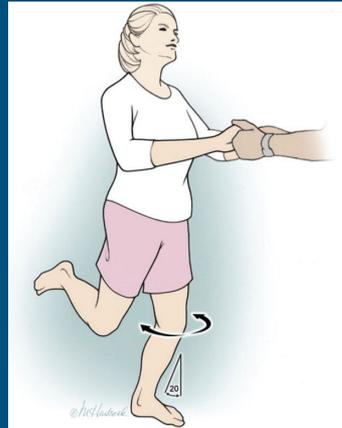
What would you do next? MRI or physical therapy?

American Medical Society for Sports Medicine:

“ Avoid ordering Knee MRI for a patient with anterior knee pain without mechanical symptoms or effusion unless the patient has not improved after completion of an appropriate functional rehabilitation program”

Review of the Case and obtaining imaging:

- 1) History: Knee Injury
 - a) Effusion? -> no, but if present, sign of bad injury
- 2) Physical Exam: Do the same every time
 - a) Inspect
 - b) Palpate
 - i) Joint line tenderness
 - c) ROM
 - d) Strength
 - e) Neurovascular
 - f) Special Tests
 - i) **Lachman**
 - ii) Anterior Drawer
 - iii) **Posterior Drawer**
 - iv) Posterior Sag Sign
 - v) Varus Stress
 - vi) Valgus Stress
 - vii) **Thessaly**
 - viii) McMurray - 95% sensitive



MRI is indicated

Case 2: Atraumatic Swollen Knee

You are the physician on a cruise ship for a 5 day cruise in the Caribbean. A 53 y/o gentleman with no significant past medical history presents with swelling to the left knee. It was present before the cruise, but has worsened since he's been doing activities on the excursions. He denies any trauma.

Case 2: Atraumatic Swollen Knee

- Exam:
 - Mild diffuse tenderness, + effusion, no erythema
- Rule Out:
 - Infection (hematogenous, post-op, septic, gonococcal)
 - Inflammation (RA, psoriasis, etc)
 - Reactive (meniscus, DJD)
- Plan:
 - X-ray: AP/Lateral/Merchant view
 - Labs: CBC w/ diff, ESR, CRP
 - ASPIRATE
 - Fluid Labs: gram stain, glucose, protein, bacterial culture, special tests (crystals)

Arthrocentesis

Case 2: Atraumatic Swollen Knee

Labs come back:

- CBC w/ Diff: WBC 10.4, Hgb 14.0, Plt 300
- ESR: nml
- CRP: nml

Fluid Analysis

- Color - Yellow
- WBC 1,000
- Gram stain negative

Case 2: Atraumatic Swollen Knee

<u>Diagnosis</u>	<u>Color</u>	<u>Clarity</u>	<u>Viscosity</u>	<u>WBC</u>	<u>PMN's</u>	<u>Culture</u>
Normal	Clear	Transparent	High	<200	<25%	Negative
Reactive	Yellow	Transparent	High	200-2k	<25%	Negative
Inflammatory	Yellow/green	Opaque	Low	2k - 150k	>50%	Negative
Infectious	Yellow	Opaque	Variable	15k-200k	>75%	Positive

*Don't forget to add crystals for gout/pseudogout

Case 3: Atraumatic knee pain without effusion

A 43 y/o female runner with no significant past medical history presents to the office for evaluation of right knee pain with running. She has a history of patellar tendonitis, which had improved with physical therapy. The exercises she does at home has not improved her pain this time. She is taking Ibuprofen for pain, but is hoping to figure out the problem so she can continue running.

Case 3:

- History: No trauma, no swelling
- “Point to the pain” -> Anterior Knee
- Exam:
 - No abnormal findings, but when palpating the patellar tendon, that’s where she experiences pain
 - Squatting with pain
- Xray?
- MRI?

Management of Common Conditions

Meniscus

Ligaments

Knee Overuse Injuries

Knee Cartilage Lesions



Key Recommendations

Rehabilitation is as effective as arthroscopy for atraumatic meniscal tears without mechanical symptoms

Glucosamine/chondroitin supplementation - limited effectiveness for osteoarthritis

NSAIDs are effective for short-term treatment of knee osteoarthritis and patellofemoral pain syndrome

Knee braces are reasonable, but shouldn't replace rehab

Exercise-based therapy is first line treatment for osteoarthritis and patellofemoral pain syndrome

Knee Osteoarthritis

Non-pharmacologic:

- Physical Therapy and Weight Loss
- Ice
- Patellar taping



Knee Osteoarthritis Treatment

Pharmacologic

- Extended Release Acetaminophen 1,300mg TID
- ?Glucosamine/chondroitin
- Corticosteroid Injection
- NSAIDs effective
- Opioids if conservative fails and not surgical candidate

Patellofemoral Syndrome

Non-pharmacologic:

Physical Therapy - Reduces pain and improves functionality

U/S and patellar taping - conflicting results

Pharmacotherapy:

NSAIDs

Braces - limited evidence for lateral patellar buttress brace

Tx Meniscal, Tendon, Ligament Pathology

Physical therapy - improves physical function and pain

Eccentric training

Pharmacology: NSAIDs work, but can affect tendon healing

Steroid Injections

Braces - Immobilizers decrease pain in major ligamentous tears at first

Specific Treatments

Modalities

Taping - widely employed, multiple trials have shown not significant benefit

McConnell Taping

Bracing - no good data to demonstrate benefit; Patella stabilizing brace (Palumbo knee brace)

Alternatives

Acupuncture - no better than placebo. Benefit at 4 weeks

Chiropractic patellar mobilization - no statistical improvement

Manipulation - decreased quadriceps inhibition

Thank you

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