Approach to Knee/Hip Pain in the Adult and the Treatment of OA

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Disclosures

Consultant for Smith & Nephew
Outline

- DDX Atraumatic Knee Pain in the Adult
- Evaluating Knee Pain
- Knee OA and Treatment options
- DDX Atraumatic Hip Pain in the Adult
- Hip: How We Sort Out
- Hip OA and Treatment Options
- Differential Diagnosis for Knee and Hip Pain
- When Should Patients Be Referred to Ortho?
A patient presents to your office for knee pain........Where do you start?
DDX Atraumatic Knee Pain in the Adult

- Soft tissue (bursitis/ IT band, PFPS, meniscal, old injury, DVT)
- Gout, pseudo gout
- Infection
- Inflammatory
- OA
- Referred hip pain
# Knee Pain Assessment

## History
- Age
- Recent injury
- Rapid vs gradual
- Joint effusion
- Exacerbating factors
- Mechanical symptoms
- Medications
- History of Arthroplasty

## Exam
- Inspection
- Observation
- Palpation
- Focus of pain
- Range of motion
- Strength
- Focused exam

## Imaging
- Plain film is first imaging of choice
- WB view
- 30 degree flexed WB
- Advanced imaging if indicated
Knee OA

- Usually gradual onset
- Usually exacerbated by WB activity
- Primary symptoms:
  - pain localized to the knee, stiffness, locomotor restriction
- Exam findings:
  - may have effusion, crepitus, NSAIDS may help, absence of symptoms with hip motion
- WB X-ray findings indicate joint space loss
- Use KOOS to assess patient-reported measures in patients with knee OA
Healthy joint  Osteoarthritis  Rheumatoid Arthritis

http://positivemed.com/2015/06/10/common-knee-cartilage-problems/
Degenerative osteoarthritis

https://www.ossurwebshop.co.uk/blog/the-classification-of-cartilage-lesions

http://www.houstonmethodist.org/or-thopedics/where-does-it-hurt/knee/glucosamine-chondroitin-sulfate-for-osteoarthritis/
Knee OA X-rays
WB X-ray
30 Degree Flexed Xray
Special cases when MRI is helpful for OA of knee
Knee: Treatment Options of OA

- Conservative measures:
  - PT
  - NSAIDS
  - Bracing ($ +/- help)
  - Activity modification (i.e. avoid walking on uneven ground, new shoes etc.)
  - Strengthening/ stretching exercises


Knee: Treatment Options of OA

- Types of injections:
  - Steroids
  - Viscosupplementation
  - Stem cells

Knee: Treatment Options of OA

- Surgical intervention
  - Arthroscopy
  - UNI
  - TKA

Total Joint Replacement Surgeries are becoming more popular
Before Talking TKA: Special Case of OA with Symptomatic Meniscal Pathology

- Most OA have Meniscal pathology
  - Result of the cartilage degeneration process
    - Mechanical symptoms = only role for scope in knee OA
    - Guarded expectations
Total Knee Arthroplasty

- Who is a candidate/considerations
  - Symptoms (treat patient, not x-ray)
  - BMI
  - Metabolic Syndrome Alc < 8
  - Age
  - History of DVT
  - Metal contact issues
Total Knee Arthroplasty

- Risks
- What do they feel like?
- How long they last
- Recovery
Hip Pain Differential Diagnosis

- Inflammatory
- Infection
- Gout
- AVN
- OA
- FAI and labral tears
  - Hip scopes specialized
  - Some role for reshaping head
## Hip Pain Assessment

<table>
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<th>History</th>
<th>Exam - localizing of complaint, deformity, reproducible</th>
<th>Imaging</th>
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<tr>
<td>Age</td>
<td>Inspection</td>
<td>Perform plain radiography</td>
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<tr>
<td>Recent injury</td>
<td>Observation</td>
<td>Include AP pelvis</td>
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<tr>
<td>Rapid vs gradual</td>
<td>Palpation</td>
<td>Advanced imaging if indicated</td>
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<td>Character and location of pain</td>
<td>Focus of pain</td>
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<td>Exacerbating factors/ improvement with rest</td>
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<td>Focused exam (note impairments)</td>
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<tr>
<td>History of Arthroplasty</td>
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</tr>
</tbody>
</table>
Where is hip pain localized?


http://www.arthritisresearchuk.org/arthritsis-information/conditions/hip-pain/causes.aspx

http://prgmobileapps.com/AppUpdates/oarsi2015/Abstracts/abs538.html
Back Pain vs Hip pain

- Often it is hard to differentiate pain source
  - Lumbar radiculopathy
  - SI
  - Hip pain
- Physical exam key!
  - Internal rotation, flexed position

Back and Hip Problems Simultaneously

Role for injection in differentiating source

Hip often helps back because of gait pathology
Hip OA

http://eorthopod.com/hip-arthritis/

Femoral Head OA

http://slideplayer.com/slide/11134570/40/images/9/Eburnation+of+joint+surface.jpg


eburnation  articular cartilage
Hip OA

- Decreased range of motion
- Pain exacerbates with activity, subsides with rest
- Stiffness experienced with inactivity
- Use HOOS to assess patient-reported measures in patients with hip OA
- Same methods used to diagnose knee OA
  - Slightly more complicated to diagnose since hip pain is more diffuse
Hip OA
Treatment Options

- Conservative measures:
  - PT
  - NSAIDS
  - Bracing
  - Activity modification
  - Strengthening/ stretching exercises
Hip OA Treatment Options

- **Types of Injections**
  - primarily steroids
  - need fluoroscopy to insure proper placement

- **Surgical Intervention**
  - THA

http://orthoinfo.aaos.org/topic.cfm?topic=a00377
Total Hip Arthroplasty

- Very similar to knees
  - Who is a candidate
  - What to expect
  - How long do they last
  - Risks
X-rays Hip OA
Different types of Implants
Hip Fracture

- InterTan nailing for intertrochanteric fracture in geriatric patient
THA for fracture in younger, active female with traumatic fall
Hip fracture

Hemi-arthroplasty for fracture in geriatric patient
Atraumatic Back Pain

- First image taken during SI injection
- Second image 11 days post SI injection
- Always check for “corner shots” on x-ray
Hip pain without obvious OA Evaluation

- Normal x-rays
  - Labs, CRP and ESR
  - MRI may be needed
- Aspiration (gout, inflammatory etc.)
- Cell count, polys
- Culture
- Gram stain
- Crystals

→ Depending on results, PT/ Rheum/ ortho for scope
Bursitis

- Inflammation of the bursa
- Caused by repetitive, minor impact, serious injury or overuse due to aging
- Reproduced with pressure on bones
- Affects elbow, shoulder, hip and knee

Treatment:
- PT (range of motion exercises, splinting)
- NSAIDS
- Shots (steroids)
- Usually not treated surgically
Bursitis


http://orthoinfo.aaos.org/topic.cfm?topic=a00409
Greater Trochanteric Bursitis Xray

**Symptoms:**

- Pain with palpation over the GTB
- Hurts to lay on side
- Sometimes Abductor weakness

**Treatment options:**

- Injection
- Physical therapy
- NSAIDS
Avascular Necrosis (AVN)

- Loss of circulation to a portion of the bone
- Most common body parts affected:
  - Hip, knee, spine, shoulder, wrist
- Normal labs
- Very painful hip (often, not always)
- Normal x-rays until advanced
  - MRI shows clearly
- Some role for early intervention, though mixed results
AVN: MRI

Hip

Knee

https://radiopaedia.org/images/1865471

https://radiopaedia.org/images/904
AVN Xray and MRI

- 60 yo male with persistent severe pain
- Mild OA changes on xrays, MRI shows AVN of WB surface
- Symptoms improving with activity modification
- No surgical intervention
AVN case

- 58 yo female, HX of RA with long-term methotrexate and steroid use
- AVN to proximal and distal femur with peri-articular involvement
- Staged THA and TKA and now sx resolved
Congenital hip dysplasia
Perthes’ (Childhood AVN)

- 17 yo female, wasn’t able to attend school secondary to pain
- Treatment: staged bilateral THA
- Post-op able to complete school and enter the workforce
Transient Osteoporosis

- Sudden onset of pain that intensifies with walking/WB activities
  - Mostly hip joint
- Rare/uncommon condition
  - Most significant bone marrow edema
- Male: 30-60
- Female: late stages of pregnancy or early post partum period
- Risk of fracture → Partial WB
- Visually gets better (6-12 months)
Transient Osteoporosis

Bone Marrow Edema

Comparisons

http://orthoinfo.aaos.org/topic.cfm?topic=A00205

https://www.slideshare.net/naneria/transient-osteoporosis-of-hip
Transient Osteoporosis

- 26 year old female with atraumatic WB hip pain, postpartum
  - Normal x-rays, MRI Transient OP
  - Treatment: Limited weight bearing
AVN secondary to sickle cell disease

- 17 year old male, near confined to WC pre-op
  - Treatment: THA
  - Post-op he was able to walk and pain was much improved
Painful Artificial Joints

Possible causes:
• Infection (timing is critical)
• Aseptic loosening
• Soft tissue
Painful Prosthetic Joints: Variety of Causes

- TIMING is important!!
- Exam- swollen, unstable, stiff
- History-was the joint better then started hurting again?
- Labs- CRP, ESR
- Synovasure
  - Alpha Defensin testing achieves 97% sensitivity and 96% specificity
  - Alpha defensin is an antimicrobial peptide released by neutrophils in response to pathogens
- XR- fracture, loosening, sizing, alignment
- Bone Scan - loosening and infection (2 years post-op)
- Metal allergy (increasing awareness)
  - One lab, skin test not so great
  - HX of contact, nickel
Peri-prosthetic fractures

- 36 year old NWB female had Intertan for fracture
- 4 days post-op fell resulting in peri-prosthetic fx
  - Treatment: Long Intertan for fixation
Peri-prosthetic fracture
Peri-prosthetic fractures

Greater Troch Fractures
Not all Fractures require surgical fixation
Aseptic Loosening

- Normal aspiration, all cultures negative
- Pain with weight-bearing activity
- Due to symptoms, age and co-morbidities he chose not to do any surgical intervention
Septic TKA

- 11/2015 Primary TKA
- 5/2016 First visit, CRP 78, WBC 13.3, ESR 35, Aspiration: CC: 36692; 95% poly
- Treatment: TKA resection, IV ABX, oral ABX, 9/2106 re-implantation
- 5/2017 CRP <0.5, SR 17, symptoms resolved however does have dislocation issues
Septic Hemi

- 2014 hemi for fracture, saw 3 or 4 physicians for continued hip and thigh pain since surgery
- 11/2016 First visit, had WBC 8.4, CRP 5.6, ESR 127, Purulent drainage from incision
- Treatment: THA resection, IV abx, oral abx, NWB; 6/2017 CRP <0.5, symptoms improved
- 7/2017 Re-implantation and is now walking independently, pain resolved
67 year old male with severe hip pain, sudden onset. Had hip injection as well as epidural injections without any relief over the course of a month. Presented to ER for inability to ambulate secondary to pain, motion reproduced sx’s. CRP 9.7 ESR 56. MRI showed fluid collection. Aspirated and cultures positive. Underwent I&D with wound vac placement. 6 weeks later doing well and off ABX with normal labs.
Gout Can Happen Anywhere

“If you haven’t been fooled by gout, you haven’t practiced long enough!”
Really Unusual Cases: Osteosarcoma

- Can develop in any bone (most commonly around the knee)
- Causes pain and swelling, may be worse at night
- Account for 2% of childhood cancer, smaller percentage of adult cancers
- Imaging tests, biopsies, and/or lab tests may be performed

https://www.healthtalk.umn.edu/2013/06/03/new-research-identifies-genetic-variants-associated-with-osteosarcoma/
When Should Patients Be Referred to Ortho?

- Patients with chronic arthritis that does not improve and that shows significant degenerative changes (x-rays)
- Patients with acute flare-ups of chronic arthritic problems should be rechecked after initial visit within 10-14 days, refer when conditions did not improve
- Knee injuries: any history of immediate, rapid swelling
- Advanced imaging (WB) should be performed prior to ortho visit
- TKA/THA pain (timing is very important)
Indications for consulting Internal Medicine on Ortho inpatients according to Orthopaedics:

· More than one drug allergy or one drug allergy that’s hard to spell
· More than one active medication or one med that’s hard to spell
· Chest pain ever in their life even after getting punched in the chest
· Any arrhythmia except for asystole, orthopods can handle asystole
· Multiple medical problems, i.e. more than 1
· Sometimes for surgical management
· Potentially complicated discharge
· Any bodily discharge
· Lab abnormality, literally any lab abnormality including MCV
· Old patient, like even kinda old
· Small biceps
· Chart missing a history and physical

Take Home

- Mostly OA
- BUT stay vigilant!
- We have pretty good surgical answers for most of these patients.
  - Surgery still is not without risks
  - Second best component to native joints

Thank-you

Shout out to Laura, Vanessa, and Jamie ;}