Diagnosis and Management of Common Shoulder and Hip Complaints

At the end of this hour you will know

1. The differential diagnosis for patients with decreased AROM and PROM of shoulder.
2. The key difference between impingement syndrome and rotator cuff tear.
3. How to diagnose a shoulder labral tear.
4. The key exam finding in hip OA.
5. The 2 exam maneuvers to bring out hip impingement and/or labral tear.

Musculoskeletal work-up

- History
- Inspection
- Palpation
- Range of motion
- Other Tests

Shoulder Problems
Shoulder keys

- History
  - Hand dominance
  - Occupation
  - H/o dislocation
  - Pain that wakes patient from sleep
- Exam
  - Always perform neck exam with shoulder
  - Inspection: gown tied under arms or shirt off
  - Always examine unaffected side first

Shoulder examination

- Inspection
- Palpation
- ROM
  - Abduction
  - Forward flexion
  - ER
  - IR
- Strength
  - Supra
  - Infra and teres minor
  - Subscapularis
- Other tests

Shoulder: diagnosis driven exam

- Active ROM
- Decreased
- Normal
- Impingement
- RC tear
- Labral tear
- Biceps tendinitis
- AC joint OA
- Passive ROM
- Decreased
- Normal
- X-ray
- GH joint OA
- Frozen shoulder
- Normal
- Abnormal

Case #1

- 50 y/o RHD woman with DM2 and hypothyroidism presenting with R shoulder pain. No injury. Waking up at night during sleep. Shoulder feels very stiff, having trouble reaching behind and raising above head.
Range of motion

**Abduction**

**Flexion**

**Internal rotation**

**External rotation**

**Supine shoulder PROM**

Physical exam: AROM

Unable to lift the shoulder so uses entire shoulder girdle to abduct and FF.

Physical examination: PROM

Forward flexion
Abduction

http://www.youtube.com/watch?v=p52IdSVqjo

Shoulder: diagnosis driven exam

Active ROM
- Normal
- Decreased

Passive ROM
- Normal
- Decreased

Impingement
- RC tear
- Labral tear
- Biceps tendinitis
- AC joint OA

Frozen shoulder

Xray
- Normal
- Abnormal

GH joint OA

Shoulder xrays

- Evaluate etiology of decreased passive and active ROM

AP Glenohumeral joint
Scapular Y view

Weighted abduction: diagnose glenohumeral joint OA

1# weight
No weight

Xrays courtesy of Ben Ma.
Case #1: decreased AROM, PROM, but normal x-rays
A. Adhesive capsulitis
B. Rotator cuff tear
C. Impingement syndrome
D. Glenohumeral joint osteoarthritis

Shoulder: diagnosis driven exam

Adhesive capsulitis

Associated with
- Diabetes
- 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
- X-rays helpful to r/o GH joint OA

3 stages of adhesive capsulitis

- **Freezing**
  - 3-9 months
  - Pain
  - 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

Active ER key finding

Treatment for adhesive capsulitis

- **Pain control**: NSAIDs, oral or injected corticosteroids (either in GH joint or subacromial bursa)
  - Does not change disease course
- +/- physical therapy to help restore ROM
- Capsular distention injections
- Surgery
  - Manipulation under anesthesia
  - Arthroscopic release and repair

Case #2

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

Case #2 Exam

- I: no atrophy
- P: mild ttp deltoid, nontender biceps and AC joint
- ROM: Unable to actively abduct past 120 degrees 2/2 pain. Full PROM.

Shoulder: diagnosis driven exam

Rotator cuff anatomy

http://www.aafp.org/afp/20000515/3079.html
Rotator cuff anatomy

Supraspinatus = abduction

Infraspinatus and teres minor = external rotation

Subscapularis = internal rotation

Photos from Dr. Christina Allen
Subscapularis = internal rotation

Belly Press

Subscapularis

Impingement

- Inflammation of the subacromial space
  - The area under the acromion and above the glenohumeral joint
  - Structures in this space
    - Supraspinatus
    - Subacromial/subdeltoid bursa

Impingement signs

Hawkin’s
Neer’s

Case #2 exam, continued

- Other tests:
  - 4/5 supraspinatus strength due to pain.
  - 5/5 infra and teres minor with pain.
  - 4/5 subscapularis with pain.
  - (+) Neers, (+) Hawkins.
Diagnosis

A. Adhesive capsulitis
B. **Rotator cuff tear**
C. Impingement syndrome
D. Glenohumeral joint osteoarthritis

Rotator cuff tear more likely if...

- Older patient
- Traumatic mechanism
- Weak on exam

Treatment

A. **Order MRI, confirm tear, refer for arthroscopic RCT repair**
B. Repeat trial of physical therapy, f/u 3 months.
C. NSAIDs and activity modification, f/u 3 months
D. Subacromial injection, f/u 3 months

Rotator cuff disease spectrum

- Stage I: < 25 y/o. Bursitis
- Stage II: 25-40 y/o. Tendinitis and fibrosis of rotator cuff
- Stage III: > 40 y/o. Partial to complete tearing of rotator cuff
Rotator cuff tear algorithm

• If weak on testing of rotator cuff → order x-rays and MRI → if (+) rotator cuff tear → refer.
• Greater likelihood tear if >40 y/o
• Surgical outcomes better if cuff tears fixed earlier than later
  – Smaller tear
  – Less fatty infiltration
  – Less muscle atrophy
  – Less retraction

Case #3

• 30 y/o RHD man fell off bike 9 months ago, injured R shoulder
• Went to PT but continues to have pain
• Anterior shoulder
• Only feels pain if moves shoulder in certain directions quickly
• Does not wake him from sleep at night

Differential diagnosis
traumatic shoulder injury

• AC joint separation
• Labral tear
• Rotator cuff tear
• Shoulder dislocation
• Fracture
  – Humerus or clavicle

Reduced acromiohumeral interval

Physical examination

- No atrophy
- Tender biceps tendon, nontender AC joint
- AROM R shoulder
  - FF 0-170 with pain at top
  - Abd 0-170 with pain at top
  - ER 45, IR L1 (Same as L shoulder)
- Strength 5/5 rotator cuff
- (-) Neers and Hawkins
- (+) O’Brien’s test

O’Brien’s Test
To r/o Labral Tear

- Arm forward flexed to 90°
- Elbow fully extended
- Arm adducted 10° to 15° with thumb down
- Downward pressure
- Repeat with thumb up
- Suggestive of labral tear if more pain with thumb down
- Sens = 59-94%, Spec = 28-92%

Glenoid labrum

SLAP tears

- Superior Labrum Anterior to Posterior
  - Many different types, classifications
- Diagnosis: MR arthrogram
- Treatment: surgery
  - Debridement
  - Repair
- NOT a disease of older people (do not consider as etiology for shoulder pain in most >50 y/o as labrum degenerates naturally)
Hip Problems

Locate the hip pain

- Anterior groin = hip joint, hip flexor
- Buttock = SI joint, lumbar spine
- Lateral hip = greater trochanteric bursitis, gluteus tendinopathy
- Radiating to thigh = could be hip joint
- Radiating to the foot = lumbar spine


Hip inspection

- Ecchymosis: fracture, hematoma
- Leg shortened and externally rotated: fracture
- Gait- unable to weight bear or sig limp: fracture, inflammatory arthritis


Hip palpation

- Abdomen
- Pelvis
  - Iliac crest
  - ASIS
  - Inguinal canal
    - Lymph nodes
  - Pubic tubercles
- Hip
  - Greater trochanter
- Back: SI joints, LS

http://www.rush.edu/rumc/page-1098987346941.html
Hip passive range of motion

- **Flexion normal**: 120°
- **External rotation normal**: 40-60°
- **Internal rotation normal**: 30-40°

http://www.youtube.com/watch?v=5LNYdJIrWYo

Hip neurovascular exam

- **Strength**
  - Hip flexion (T12-L3)
  - Knee extension (L2-4)
  - Plantar flexion (S1)
  - Foot dorsiflexion (L4)
  - Great toe extension (L5)
- **Sensation to light touch**
- **Reflexes**: patellar (L4) and achilles (S1)

Netter online anatomy atlas, UCSF library.

Signs of intra-articular hip pathology

- **Pain with passive ROM**
- **Most pain with IR of affected hip**
  - Narrows joint space
- **Decreased IR of affected compared to unaffected side**

If pain with passive ROM be concerned about hip emergencies

- Septic arthritis
  - Xrays
  - Hip aspiration
    - Orthopaedics
    - Interventional radiology
    - Do not delay
      - Confirmed: to OR for washout
- Femoral neck fracture or stress fracture
  - Xrays
  - Make non weight bearing (crutches or wheelchair)

Non-emergent hip pathology

- Osteoarthritis (>50 y/o)
- Femoral acetabular impingement (< 50 y/o)
- Labral tear (< 50 y/o)
- Adductor strain (any age, active)

Case #1

69 y/o woman w/ L hip pain. Pain worse when trying to put shoes on, sitting, driving. Better if takes ibuprofen. Started a year ago, slowly getting worse. Has noticed that the left hip isn’t as flexible as the right hip in yoga.

Case #1 exam

- I: no ecchymosis
- P: mild tenderness L inguinal canal
- ROM
  - R hip flexion 130, IR 40, ER 60
  - L hip flexion 100 (limited 2/2 groin pain), ER 30 and IR 10 (limited 2/2 groin pain)
Xrays

Normal

Hip osteoarthritis

Hip OA treatment

• Pain control
  – Tylenol
  – NSAIDs

• Physical therapy
  – Gait training
  – Core strengthening

• Activity modification: avoid pain

Hip replacement

• 6-12 month recovery
• Excellent pain relief starting POD 1
• 10-20 year minimum duration

Case #2

• 29 y/o woman with R hip pain
• Localizes to R groin
• Started when running on sand
• Pain 2/10 sitting, 5/10 standing
• Aleve helps
• Groin pain can be sharp with certain movements
• Did PT but didn’t help

5 questions for every athlete with hip pain

1. Training: increased mileage?
2. Nutrition: Calories in versus calories out?
   History of eating d/o? Dietary restrictions?
3. History of stress fractures?
4. Family history of osteoporosis?
5. Menstrual history?

Case #2 exam

- I: no ecchymosis
- P: ttp R inguinal canal
- ROM: bilateral flexion 130, IR 40 and ER 60 but R groin pain with flexion and IR.
- OT:
  - FADIR and FABER R hip cause R groin pain
  - No pain with FADIR and FABER L hip

FADIR
- Flexion
- Adduction
- Internal
- Rotation

FABER
- Flexion
- Abduction
- External
- Rotation

http://kurumiyama.web.fc2.com/PT/orthopedic_test.htm
Case #2 differential diagnosis

1. Hip labral tear
2. Hip impingement
3. Labral tear and impingement
4. Femoral neck stress fracture

Femoroacetabular impingement (FAI)

FAI imaging

- Xrays to order
  - AP pelvis
  - Dunn view lateral
    - Hip flexed 90 and abducted 20 degrees
    - Lateral can miss impingement

Hip labral tear
Hip labral tear imaging

- Xrays: normal or impingement, r/o OA
- MR arthrogram
  - Contrast injected into hip joint
  - 92% sensitivity (DeLee and Drez's Orthopaedic Sports Medicine, 3rd ed)

[Image]

http://www.currentprotocols.com/WileyCDA/CPUnit/refId-mia2602.html

Treatment FAI/labral tear

- Physical therapy
  - Core strengthening
  - Hip muscle strengthening
- Activity modification
- Corticosteroid injection
  - Short term pain relief
  - Confirm that provides pain relief (right diagnosis)

Surgery for FAI/labral tear

- Indications
  - Pain with flexion and IR
  - Labral tear on MRI or MR arthrogram
  - Relief of pain after injection
  - Failed physical therapy
- Arthroscopy
  - Labral debridement or repair
  - Osteoplasty of femoral neck and/or acetabulum to restore normal bony alignment
  - Higher pt satisfaction if no co-existing hip cartilage damage (chondropathy)
  - Impact of FAI and FAI surgery on development of hip OA is unknown


At the end of this hour you will know

1. The differential diagnosis for patients with decreased AROM and PROM of shoulder.
  1. Adhesive capsulitis and Glenohumeral joint OA
2. The key difference between impingement syndrome and rotator cuff tear.
  1. RCT is weak
3. How to diagnose a shoulder labral tear.
  1. O’Brien’s test
4. The key exam finding in hip OA.
  1. Decreased hip PROM, particularly flexion and IR
5. The 2 exam maneuvers to bring out hip impingement and/or labral tear.
  1. FADIR and FABER cause groin pain
Thank you

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