Radiology Case Series
LECOM PkNPk
March 2015

Radiology Case Series

The Shoulder
Plain Films

**Shoulder AP:** Glenohumeral joint space, DJD

True shoulder AP: **Glenohumeral joint space, DJD, and proximal migration of humerus**

AP in IR: **Hill Sachs lesion**

AP in ER: **Hill Sachs lesion**

Axillary: **Anterior and posterior dislocation.**

Scapular Y Lateral: **Allows classification of acromion**

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**MRI**

- **Overview**
  - MRI is best for evaluating soft tissue structures and evaluating bone contusions or trabecular microfractures
  - The stronger the magnet, the higher the intrinsic signal-to-noise ratio (e.g. a 3 Tesla MRI machine has 9x the proton energy of a 1.5 Tesla MRI machine)

- **T1-weighted sequence**
  - Uses a short repetition time (TR) and short echo time (TE)
    - Bright = fat
    - Dark = fluid, bone, ligament, bone marrow, and fibrocartilage
  - Often combined with MR arthrograms
  - Useful to visualize
    - Hill Sachs Lesion

- **T2-weighted sequence**
  - Uses a long TR and long TE
    - Bright = fluid (inflammation) and bone marrow
    - Dark = bone, ligament, muscle, and fibrocartilage
  - Useful to visualize
    - Rotator cuff pathology
    - Full thickness tear
Case 1 - HPI

- 55 year male with right shoulder pain for several years
- Felt a popping/cracking while reaching overhead, pain followed
- Has weakness and difficulty with ROM

Case 1 - PE

- No gross deformity
- AROM - FF - 170, ABD - 170, ER - 50, IR - T12; with pain throughout
- Mild TTP, diffusely
- - Drop arm test
- + hawkins/neer
- - Jobe’s
- - apprehension
- - lift off & belly press
- + cross body test
Case 2 - HPI

- 25 year old RHD male with intermittent pain in his left shoulder
- Reports multiple left shoulder dislocations
- Last dislocation 1 week ago
- Complaint of weakness and instability of left shoulder

Case 2 - PE

- No gross deformity
- AROM - FF -90, ABD- 80, ER-30, IR - L4
- Mild TTP anterior shoulder
- - Drop arm test
- + hawkins/neer
- weakness with Jobe’s test
- + apprehension test
- - lift off & belly press
Case 2
Case 3 - HPI

- 36 year old RHD laborer who fell onto an outstretched arm 3 months ago at work
- Had initial pain that mostly resolved
- Now has persistent pain in his right shoulder that is “deep”
- Reports weakness and difficulty working

Case 3 - PE

- No gross deformity
- AROM - FF - 110, ABD- 100, ER-40, IR - T12; limited by pain
- TTP, throughout
- - Drop arm test
- - Hawkins/Neer
- - apprehension
- - lift off & belly press
- + Obrien’s test
Case 3

[Images of X-rays and MRIs of the shoulder]

Case 3

[Images of X-rays and MRIs of the shoulder]
Case 3

![Labral Tear]

Case 4

- 58 year old LHD plumber who fell down 3 steps last week while at work
- Reports immediate pain in his left shoulder
- Reports inability to move his left shoulder since the injury
Case 4 - PE

- No gross deformity
- No active abduction or internal rotation
- PROM - FF - 120, ABD- 120, ER-30, IR - L3; limited by pain
- NTTP
- + Drop arm test
- - hawkins/neer
- + apprehension
- - lift off & belly press
Case 4
Case 5 - HPI

- 70 year old RHD male who tripped and fell while stepping off porch
- Immediate pain, swelling, ecchymosis and inability to move his arm
- Denies LOC or any other injuries

Case 5 - PE

- No gross deformity
- +ecchymosis and edema
- No active ROM, d/t pain
- SILT over Ax/R/M/U nerve dist
- Radial pulse palpable
- cap refill brisk
- compartments soft and compressible
Case 5
Case 6 - HPI

- 20 year old male with hx of shoulder dislocations. Reached for rebound while playing basketball and felt a clunk.
- Immediate pain and inability to move his arm

Case 6 - PE

- Gross deformity
- + sulcus sign
- Arm is adducted and internally rotated, supported by contralateral hand.
- Pain limited ROM
- SILT
- DNVI
Case 6

[Image of the upper body of a person]

Case 6

[Image of a radiograph of the shoulder and ribcage]

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Case 6

Radiology Case Series

The Knee
Case 1 - HPI

- 58 year old male with pain and mild swelling for 3 days since stepping off a ladder, felt a “pop”
- Has a hx of knee pain and arthritis

Case 1 - PE

- No gross deformity
- Mild edema, No ecchymosis or erythema
- TTP over the medial joint line
- No varus/valgus laxity @ 0 & 30
- Lachmans negative
- Negative McMurrays
- Positive patellar grind
- Negative aspirate
Case 1

MRI of DJD?
Case 2 - HPI

- 22 year old female runner
- Persistent right knee pain x 3 months, increasing
- Pain worse with climbing stairs and running inclines

Case 2 - PE

- No gross deformity
- No TTP over the joint lines
- Negative J sign
- Negative varus/valgus laxity @ 0 & 30
- A/P drawer and lachmans negative
- Negative McMurray’s
- Negative Thessalays
- Positive patellar grind
- Positive laxity with lateral patellar translation
Case 2
Case 3 - HPI

- 18 year old female soccer player felt a pop in her knee while pivoting in practice
- Immediate pain and swelling
- Unable to weight bear

Case 3 - PE

- Moderate edema
- No ecchymosis
- Painful ROM, with 5-10 degree flexion contracture
- Negative varus/valgus laxity @ 0 and 30
- Positive Lachman’s
- Pain with McMurray’s no palpable click
- Bloody aspirate, approx 100 cc’s
Case 3

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Case 3

Case 4 - HPI

- 42 year old female slipped and fell in the bath tub, twisting her knee. Knee began to swell several hours later. Presents to her PCP a few days later.
Case 4 - PE

- Mild edema, no erythema or ecchymosis
- Mild TTP over the medial joint line and popliteal fossa
- Pain with valgus stress, no laxity with varus or valgus at 0 and 30 degrees
- Positive click with McMurray’s on the medial joint line
- Negative A/P drawer, negative Lachmans
- DNVI

Case 4
Case 4

Case 5 - HPI

- 62 year old female has had pain and intermittent swelling for the past 2 years. Worse the last few months.
Case 5 - PE

- No obvious edema, No ecchymosis or erythema
- TTP over the medial and lateral joint line
- No varus/valgus laxity @ 0 & 30
- Lachmans negative
- Negative McMurrays
- Positive patellar grind

Case 5

- X-ray of the knee joint showing normal alignment and no signs of injury.
Case 5

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Case 6 - HPI

- 32 year old female was trail running when she tripped and fell onto a root.
- Experienced immediate pain and swelling and inability to extend her leg

Case 6 - PE

- Gross deformity of the knee
- Severe edema
- TTP
- Loss of extensor mechanism
- DNVI
- DP/PT palpable
- Cap refill brisk
- Compartments soft and compressible
Case 6
Case 1 - HPI

- Active 27 year old male complaining of several months of right hip pain. Denies trauma. Denies fever and chills.
- Positive hx of Factor 5 Leiden
- Hx of PE 6 months ago
Case 2 - HPI

- 85 year old female fell from standing height while transferring from bed to bathroom
- Experienced severe pain in her hip
- Denies LOC

Case 2 - PE

- Ecchymosis over the right hip and gluteus
- No skin lesions
- RLE is shortened and externally rotated
- Positive log roll
- Unable to range hip d/t pain
- DNVI
- SILT
Case 2

![Image of a foot]

http://www.bing.com/images/search?q=c+spine+lines&qs=n&form=QBIR&pq=c+spine+lines&sc=0-8&sp=-1&sk=#view=detail&id=BA5C5E79794EDE92F7F2DF43428059EC5B737F7A&selectedIndex=25

Case 2

![Image of an X-ray]

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Radiology Case Series

The Lumbar Spine

Red Flags - Neoplasm or Infection

- Age > 50 or < 20
- History of cancer
- Unexplained weight loss
- Risk factors for spinal infection
  - Recent infection (ie UTI)
  - IV drug abuse
  - Immunosuppression from steroids, transplant, or HIV.
- Pain that worsens when supine
- Severe nighttime pain.
Red Flags - fracture

- Trauma
- Strenuous or vigorous lifting
  - elderly or osteoporotic patient.
- Steroid use

Red Flags - Cauda Equina

- Saddle anesthesia
- Recent bladder dysfunction, specifically urinary retention
- Severe or progressive deficit of LE
- Loss of bulbocavernous reflex and loss of sphincter tone
- Perianal/perineal sensory loss
Case 1

- 21 year old female gymnast with worsening lower back pain x 3 months
- No apparent injury
- Unable to exercise due to pain

Case 1 - PE

- No obvious deformity
- Small step off noted
- Mild paraspinal tenderness
- Positive paraspinal muscle spasm
- Pain with extension, pain relief with flexion
- Mild pain with SB and rotation
- DTR’s +2/4 bl LE’s
- Muscle strength 5/5 bl LE’s
- SILT over L1-S1 nerve dist
Case 2

- 61 year old female complaining of low back pain that radiates down both legs R>L.
- Worse with standing or walking for extended periods

Case 2 - PE

- Minimal scoliotic curve
- No step off noted
- Mild paraspinal tenderness
- No paraspinal muscle spasm
- Increased pain with Ext, relieved with flexion
  - +kemp sign (unilat leg pain increases w/ ext)
- Valsalva does not increase pain/symptoms
- Negative SLR
- DTR’s +2/4 bl LE’s
- Muscle strength 5/5 bl LE’s
- SILT over L1-S1 nerve dist
Case 2
Case 3

- 45 year old man complaining of severe pain that radiates down his leg. He reports catching a falling motorcycle from the bed of a truck.
- Worse with standing, improved by sitting

Case 3 - PE

- No step off noted
- Positive paraspinal tenderness
- Positive paraspinal muscle spasm
- Valsalva does not increase pain/symptoms
- Diminished EHL, Ankle DF and PF muscle strength on the right
- Patellar Tendon and Achillies reflex diminished on the right
- +SLR on the right
Case 3
Radiology Case Series

The Cervical Spine

Motor

- C5 - Deltoid
  - Elbow flexion
- C6 - Wrist Extension
  - Elbow Flexion
- C7 - Wrist Flexion
  - Elbow Extension
  - Finger Extension
- C8 - Finger Flexers
- T1 - Intrinsics of the hand
Case

- 51 year old man, who is a dentist. Complaining of neck pain for the past several years. Occasional radicular symptoms. Denies weakness and loss of function.
Case - PE

- Paraspinal muscle tenderness
- Paraspinal muscle spasm
- Active FROM in all planes with pain at maximal range
- DTR’s +2/4 BL UE’s
- Muscle strength 5/5 BL
- CN II-XII grossly intact
- Negative spurlings
Case

Resources

- First Aid for the Orthopaedic Boards, Robert Laminzak, Mark Albritton, Trevor Pickering (Editors), McGraw Hill Medical, Copyright 2009
- Surgical Exposures in Orthopaedics: Stanley Hoppenfeld, Piet deBoer. Lippincott Williams & Wilkins, Philadelphia, Copyright 2009