

**Radiology Case Series
LECOM PkNPK
March 2015**

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Radiology Case Series

The Shoulder

2

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**

<http://www.orthobullets.com/spine/2015/shoulder-exam>

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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

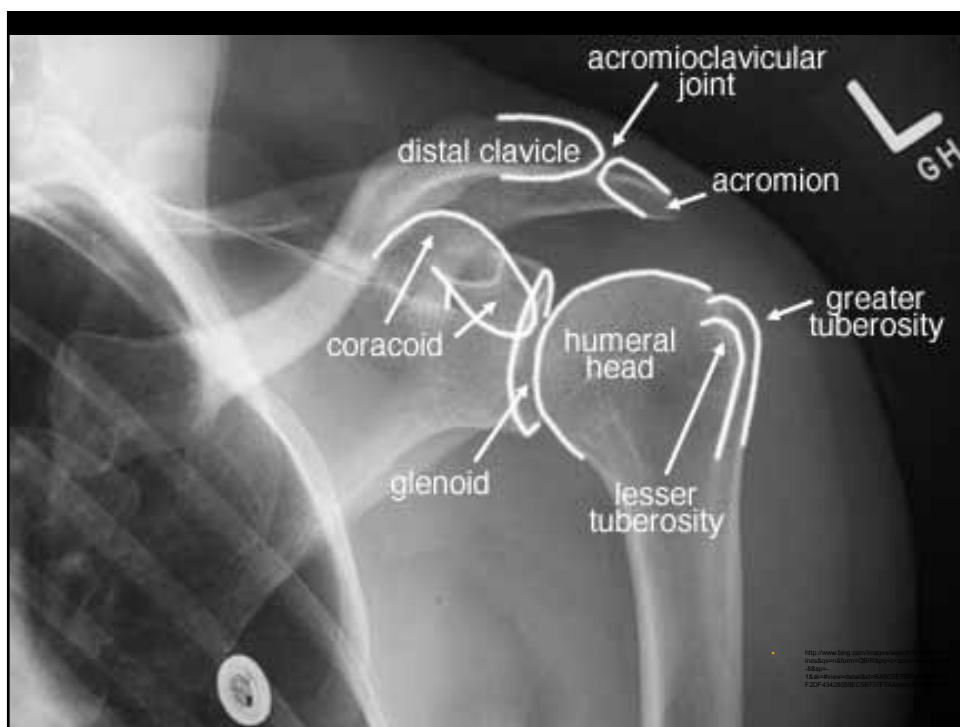
- Hill Sachs Lesion

•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

4



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

7

Case 1 - PE

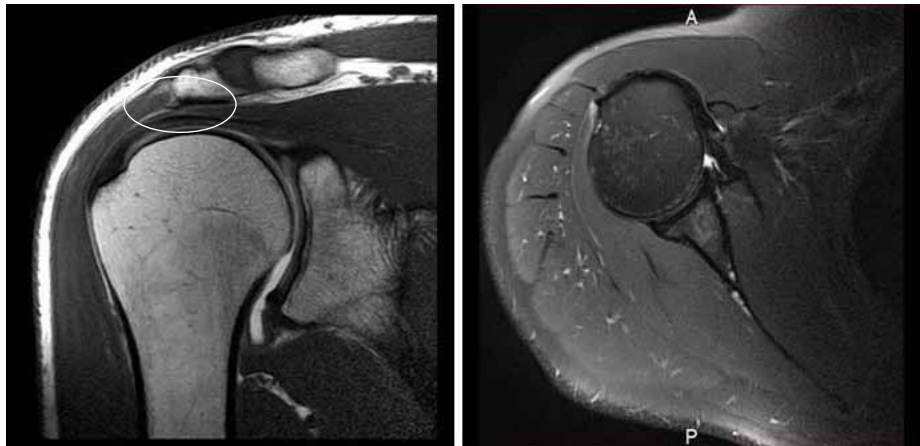
- No gross deformity
- AROM - FF - 170, ABD- 170, ER-50, IR - T12; with pain throughout
- Mild TTP, diffusely
- - Drop arm test
- + hawkins/neer
- - Jobe's
- - apprehension
- - lift off & belly press
- + cross body test

8

Case 1



Case 1



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

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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

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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

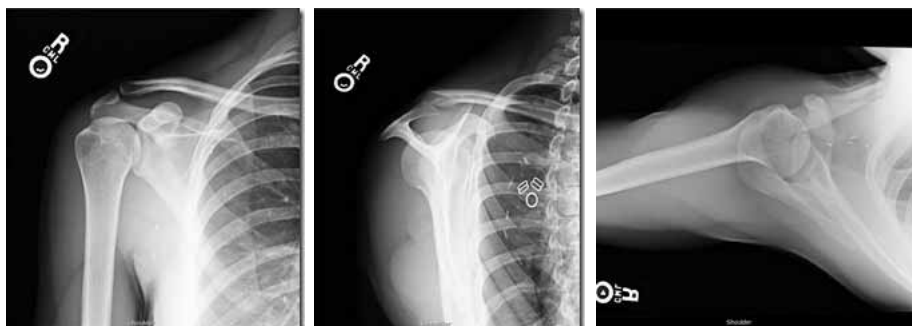
15

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
- + O'Brien's test

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Case 3



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Case 3



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18

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

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Case 4



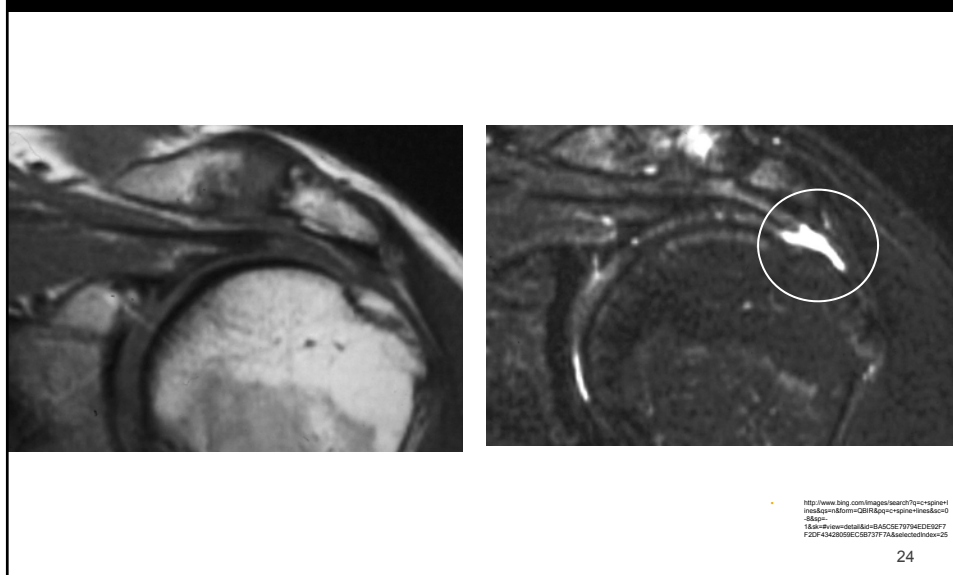
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Case 4



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

25

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

26

Case 5



<http://www.bing.com/images/search?q=+spine+1+med&rsfrom=QBIR&pc+spine+med&sc=0-8&rs=1&rs=detail&rs=BAC5E7D794E0D27F2CF4342B09EC8B737F7A&selectIndex=25>

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Case 5



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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

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Case 6 - PE

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

30

Case 6



<http://www.bing.com/images/search?ic=spine+med&qs=from=QBIR&qs=spine+med&qs=0&qs=1&qs=detail&BACSE70794EDESQ7F2CF4342859EC8B7377A&selectIndex=25>

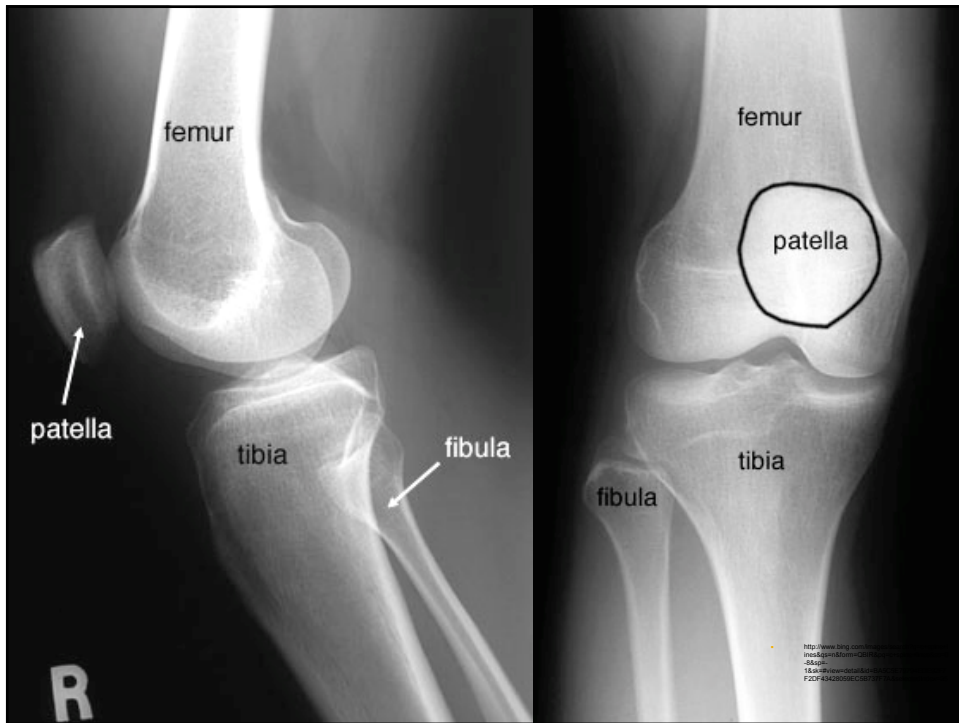
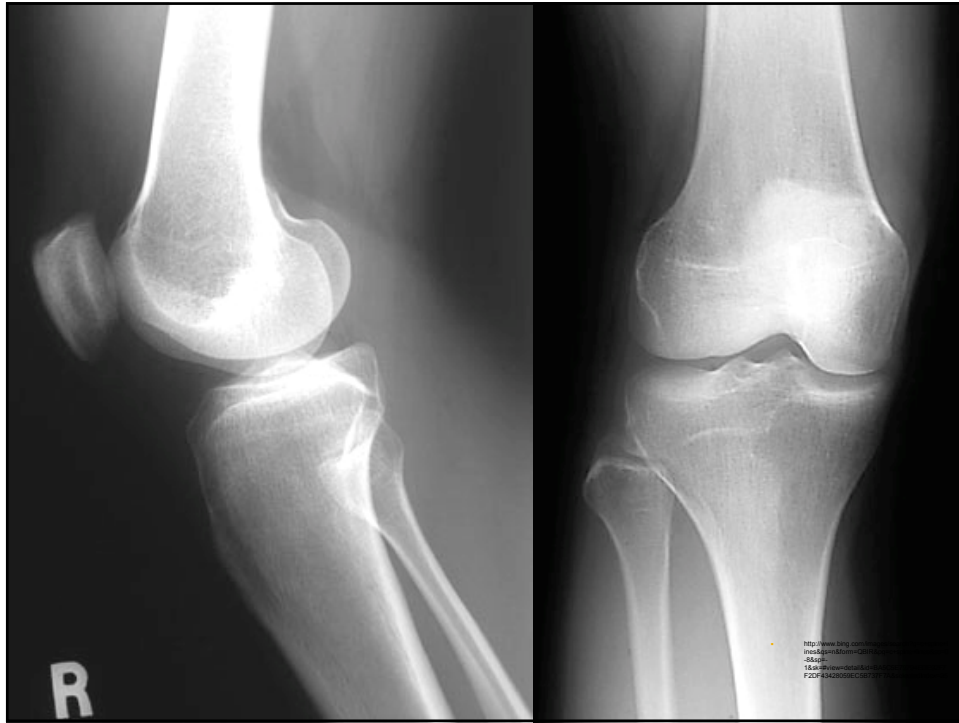
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Case 6



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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

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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

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Case 1



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- MRI of DJD?

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Case 2 - HPI

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

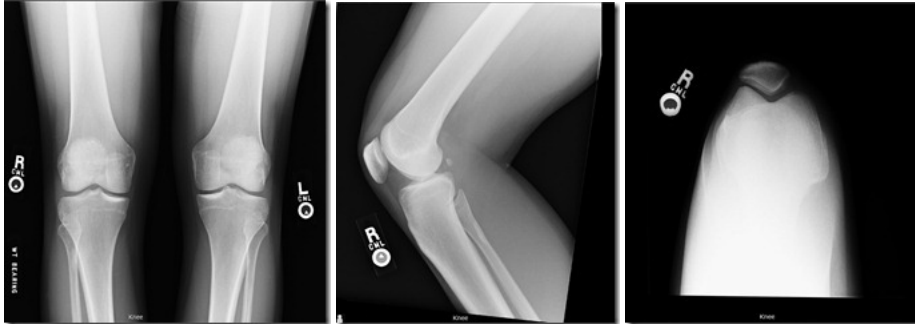
41

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

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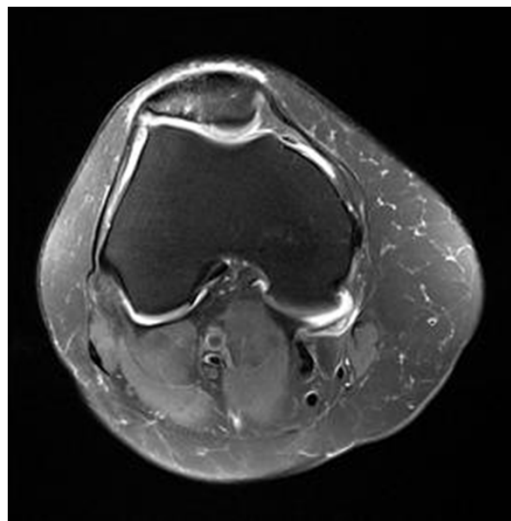
Case 2



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Case 2



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44

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

45

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

46

Case 3



<http://www.bing.com/images/search?pic=spine+muscle&form=QBIR&pc=spine+muscle&#view=detail&BACCSE7D794EDE027F2CF4342809EC8B7377A&selectIndex=25>

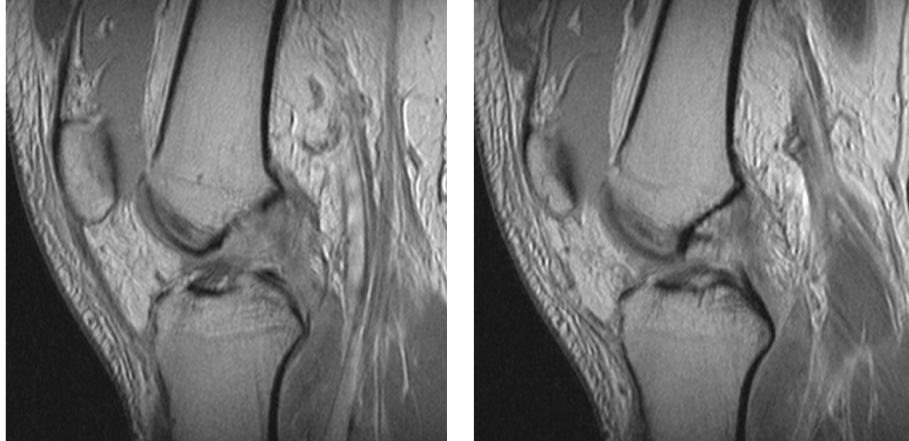
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Case 3



<http://www.bing.com/images/search?pic=spine+muscle&form=QBIR&pc=spine+muscle&#view=detail&BACCSE7D794EDE027F2CF4342809EC8B7377A&selectIndex=25>

Case 3



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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

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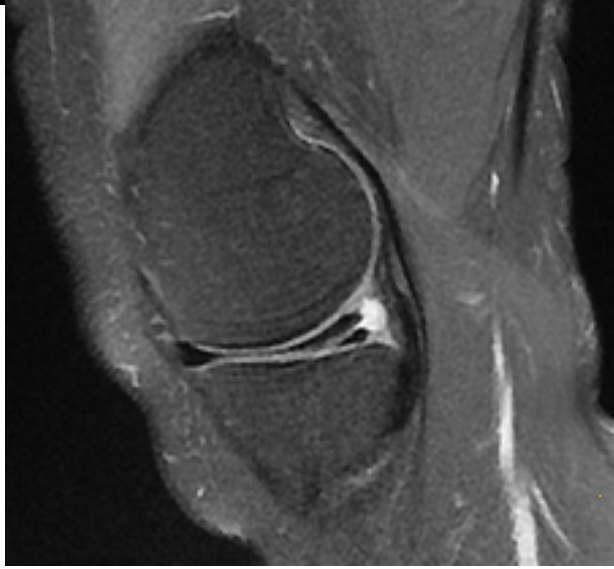
Case 4



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Case 4



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Case 5 - HPI

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

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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

55

Case 5



56

Case 5



Case 5



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

59

Case 6 - PE

- Gross deformity of the knee
- Severe edema
- TTP
- Loss of extensor mechanism
- DNV
- DP/PT palpable
- Cap refill brisk
- Compartments soft and compressible

60



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Case 6



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Radiology Case Series

The Hip

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Case 1 - HPI

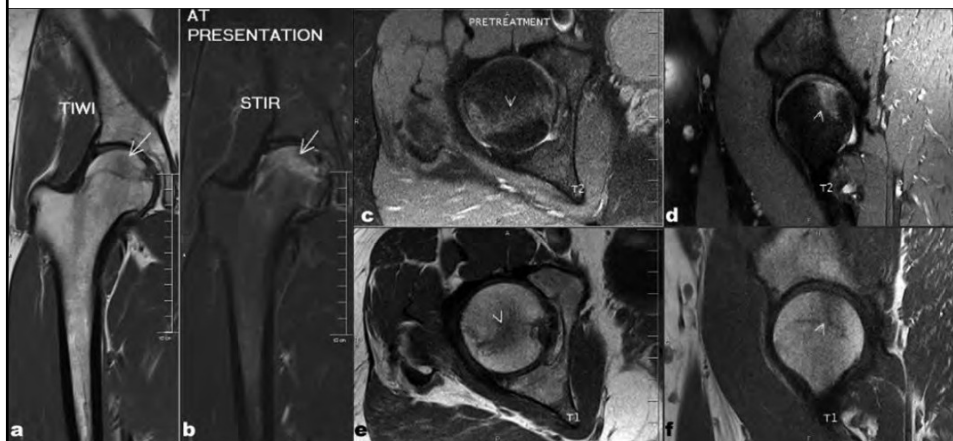
- Active 27 year old male complaining of several months of right hip pain. Denies trauma. Denies fever and chills.
- Positive hx of Factor 5 Leiden
- Hx of PE 6 months ago

64

Case 1



Case 1



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

67

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

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Case 2



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Case 2



<http://www.bing.com/images/search?qs=spine+head&form=QBIR&pc=spine+head&view=detail&id=8ACC5E7D794EDED77F2CF4342809ECC8E73777A&selectIndex=25>

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Radiology Case Series

The Lumbar Spine

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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.

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Red Flags - fracture

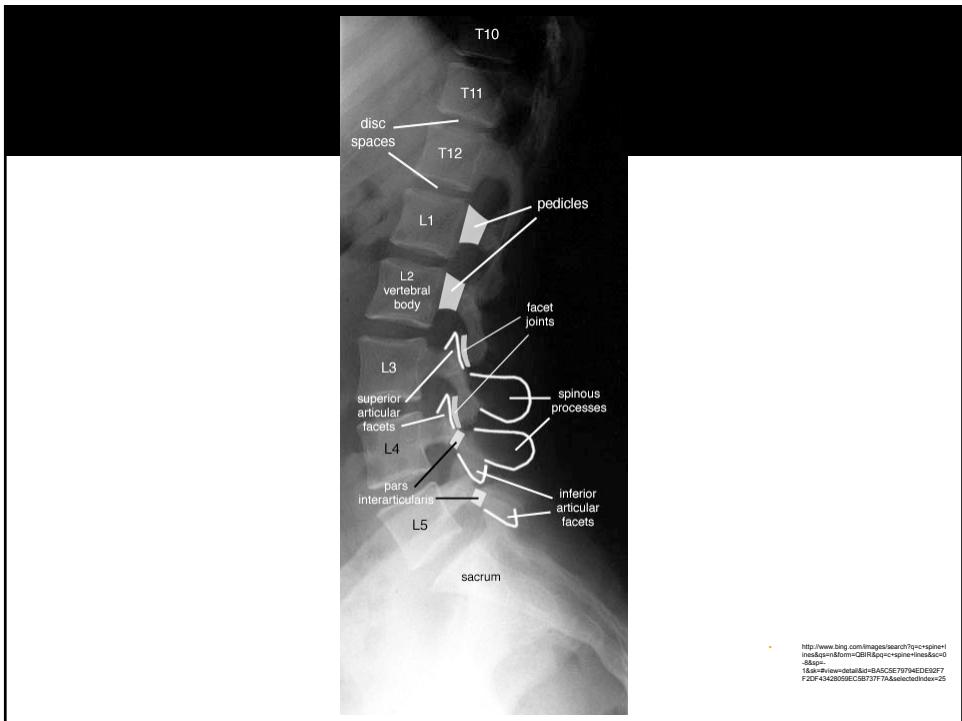
- Trauma
- Strenuous or vigorous lifting
 - elderly or osteoporotic patient.
- Steroid use

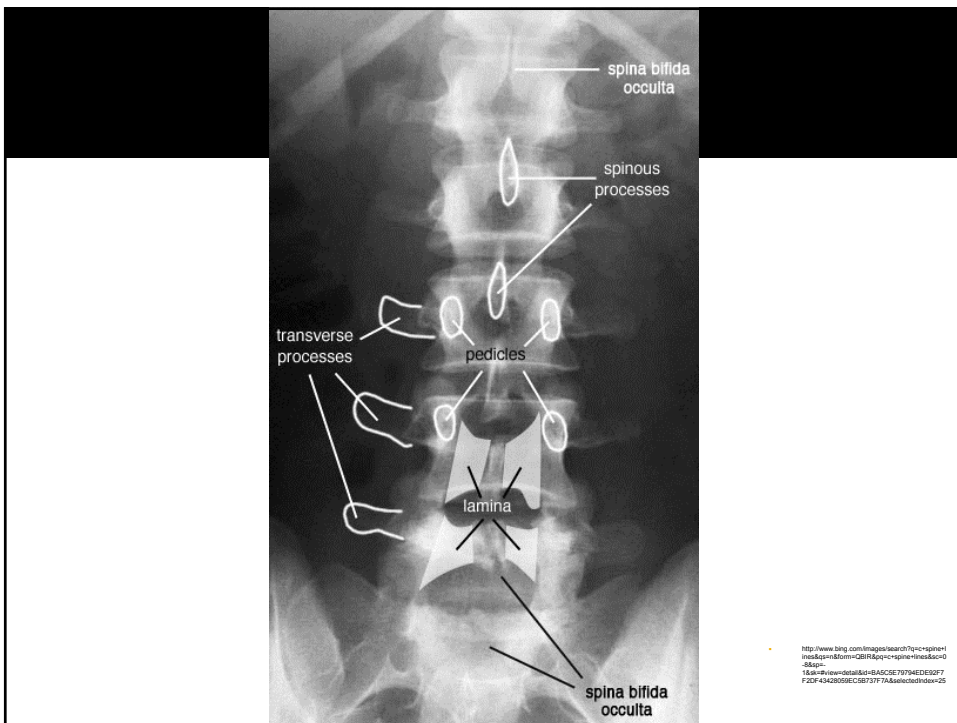
73

Red Flags - Cauda Equina

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

74





Case 1

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

79

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 bil LE's
- Muscle strength 5/5 bil LE's
- SILT over L1-S1 nerve dist

80

Case 1



Case 1



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

83

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 bil LE's
- Muscle strength 5/5 bil LE's
- SILT over L1-S1 nerve dist

84

Case 2



Case 2



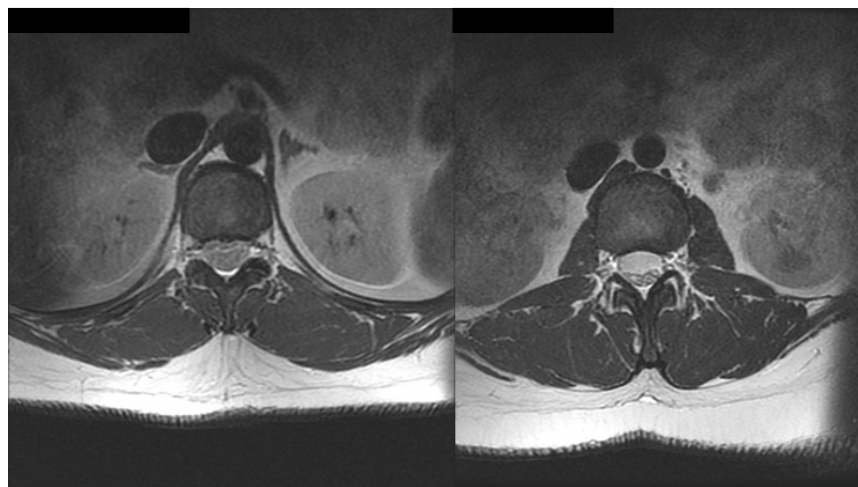
Case 2



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Case 2



<http://www.bing.com/images/search?pic=spine1&qs=1&form=QBIR&pc=spine+fracture&sc=0&sp=1&view=detail&h=8&sc=79794EED50F7F2DF43A2059EC8B7377A&selecthd=5>

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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

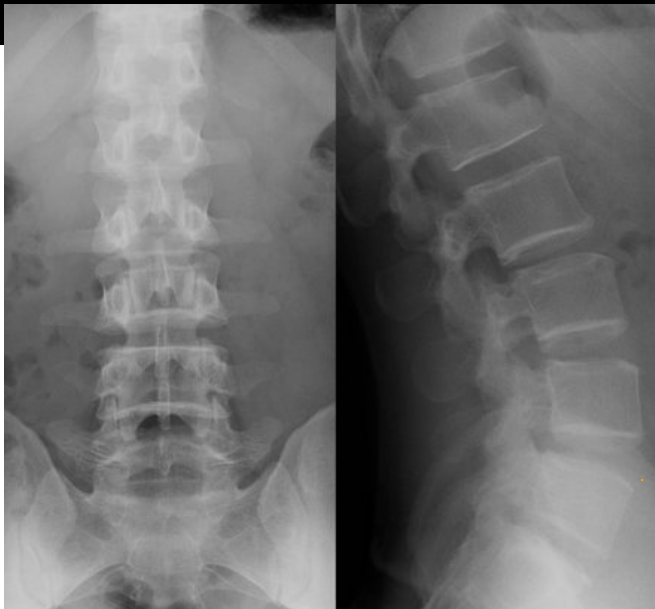
89

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

90

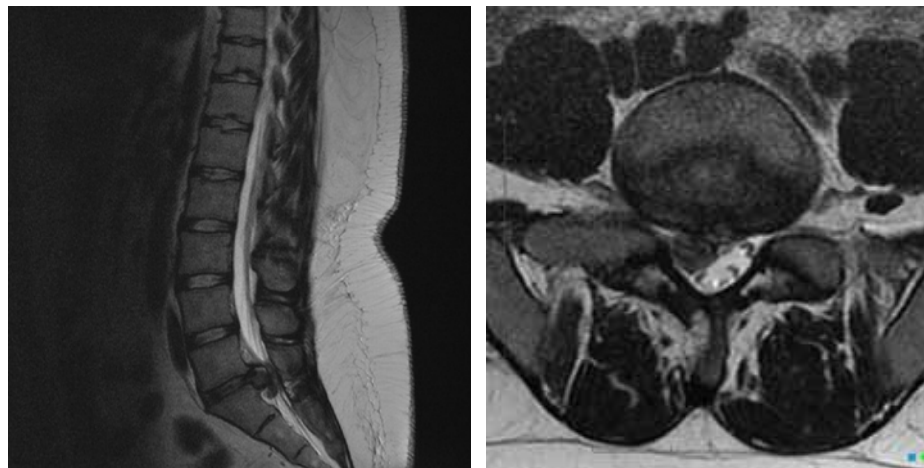
Case 3



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Case 3



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Radiology Case Series

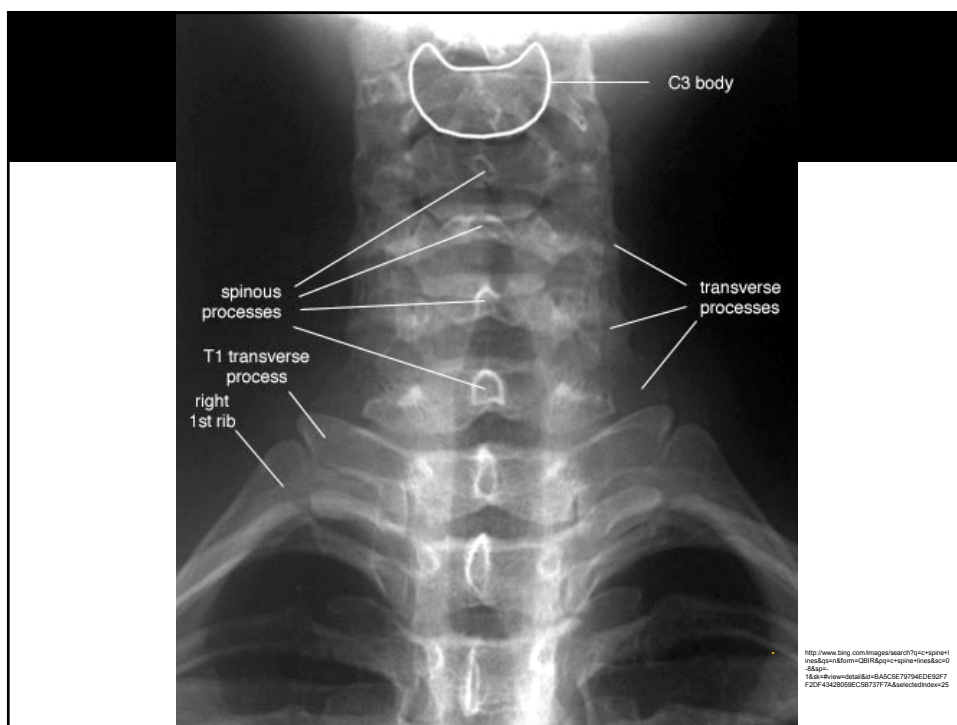
The Cervical Spine

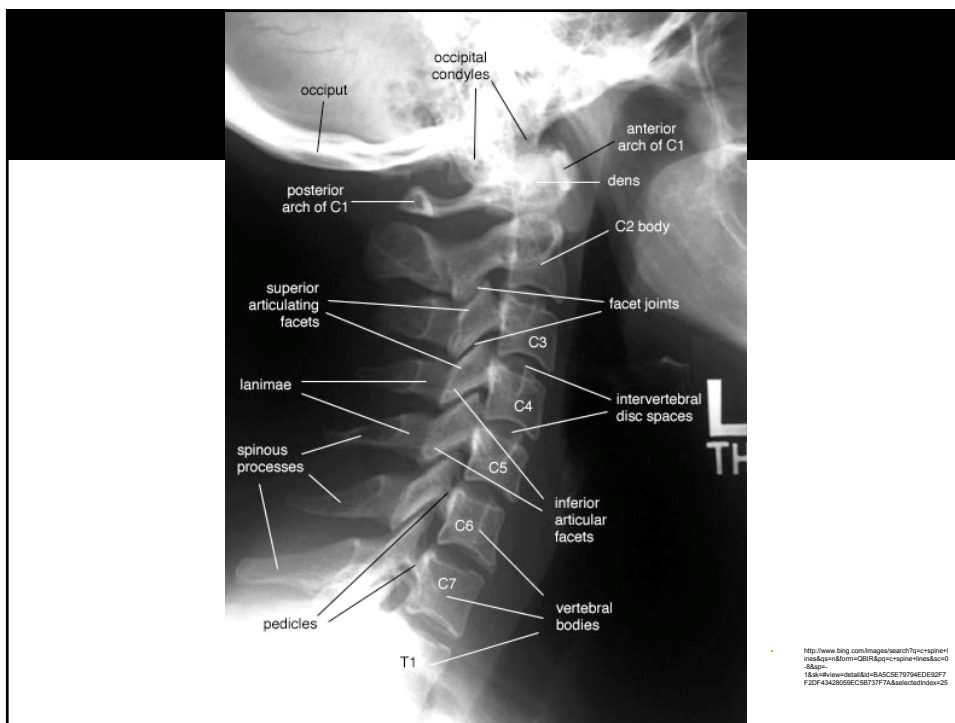
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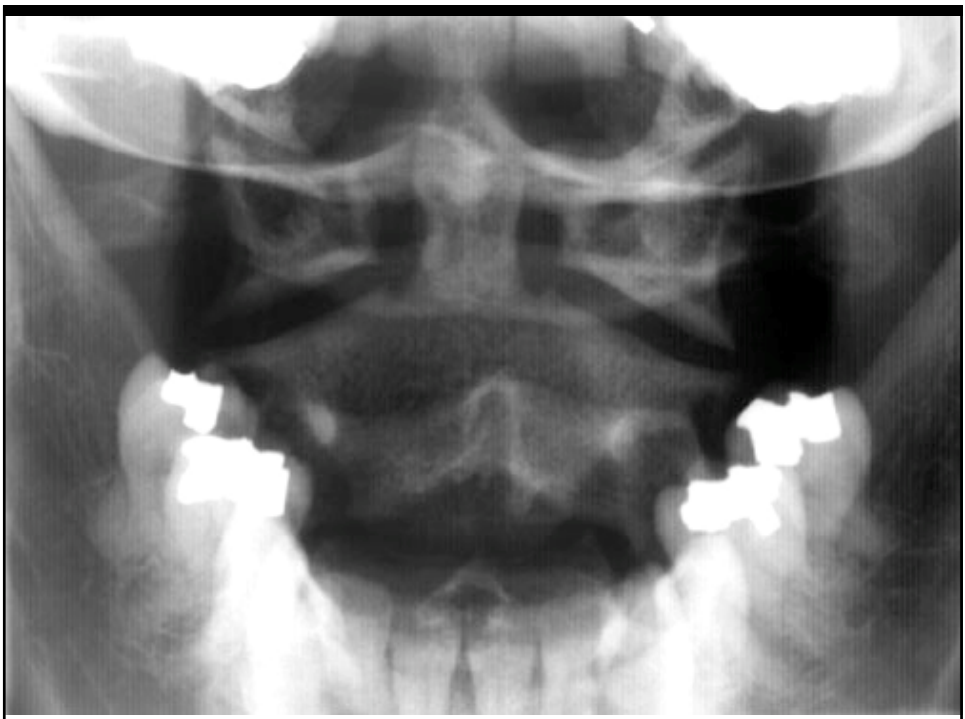
Motor

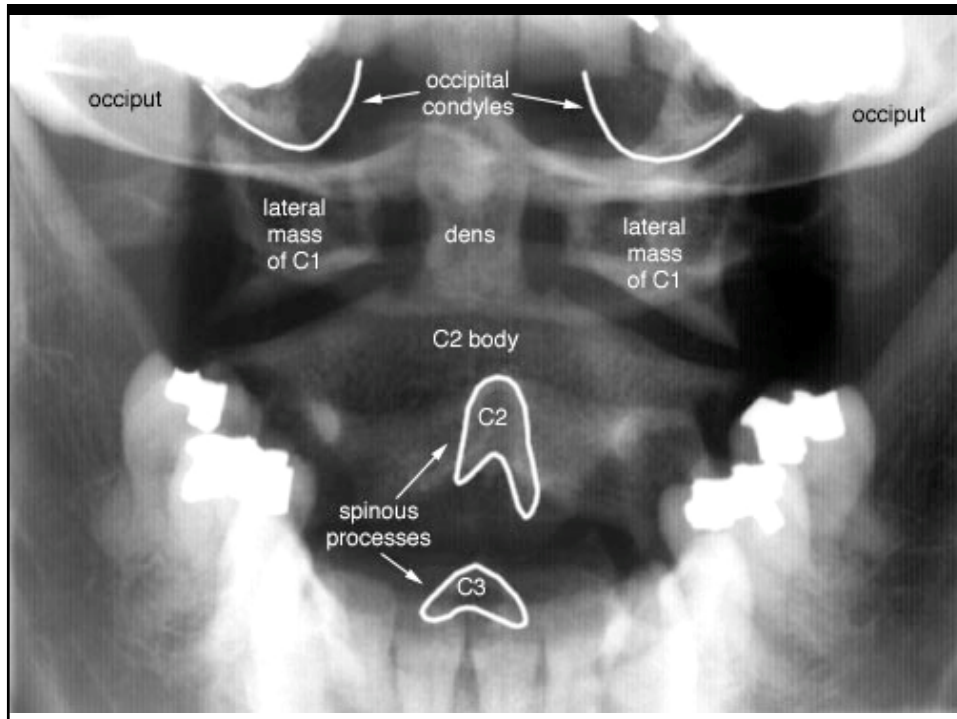
- C5 - Deltoid
 - Elbow flexion
- C6 - Wrist Extension
 - Elbow Flexion
- C7 - Wrist Flexion
 - Elbow Extension
 - Finger Extension
- C8 - Finger Flexers
- T1 - Intrinsic of the hand

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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

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Case



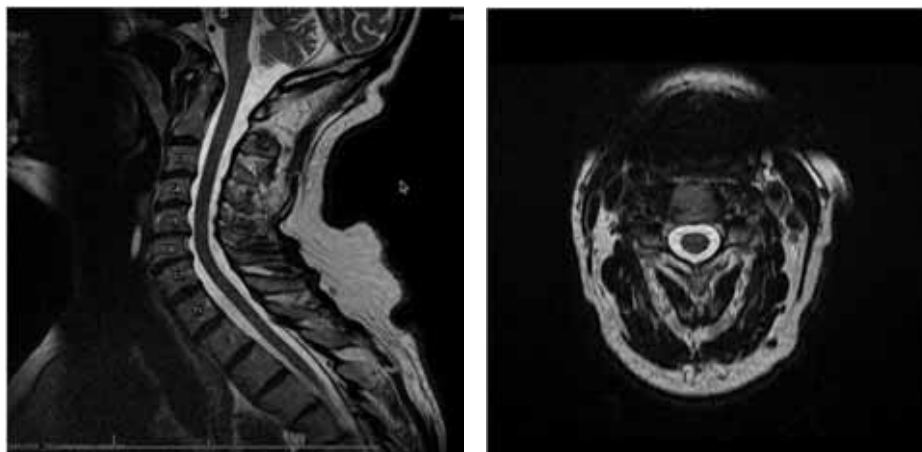
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Case



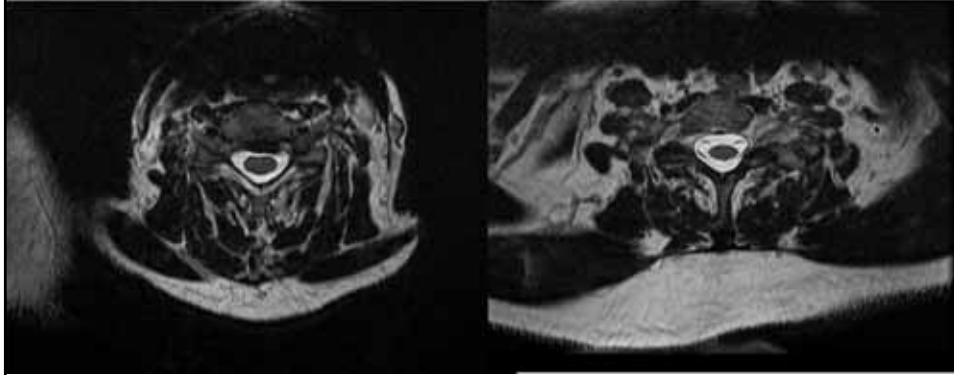
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Case



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Case



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Resources

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- AAOS Comprehensive Orthopaedic Review. Jay R. Leiberman, MD. American Academy of Orthopaedic Surgeons. Rosemont, IL Copyright 2009
- Orthopaedic Knowledge Update 10. John Flynn MD. American Academy of Orthopaedic Surgeons. Rosemont IL, 2011
- First Aid for the Orthopaedic Boards, Robert Laminzak, Mark Albritton, Trevor Pickering (Editors), McGraw Hill Medical, Copyright 2009
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