





TRAUMA TO THE ELBOW and HAND

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1

ELBOW

New 2024

American College of Radiology
ACR Appropriateness Criteria®
Acute Elbow and Forearm Pain

Variant 1: Adult. Acute elbow or forearm pain. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography area of interest	Usually Appropriate	Varies
US area of interest	Usually Not Appropriate	○
MRI area of interest without and with IV contrast	Usually Not Appropriate	○
MRI area of interest without IV contrast	Usually Not Appropriate	○
Bone scan area of interest	Usually Not Appropriate	☻☻☻
CT area of interest with IV contrast	Usually Not Appropriate	Varies
CT area of interest without and with IV contrast	Usually Not Appropriate	Varies
CT area of interest without IV contrast	Usually Not Appropriate	Varies

2

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ACR Appropriateness Criteria®
Acute Elbow and Forearm Pain

Variant 2: Adult. Acute elbow or forearm pain. Suspect fracture. Radiographs normal or indeterminate. Next imaging study.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography area of interest repeat in 10-14 days	Usually Appropriate	Varies
CT area of interest without IV contrast	Usually Appropriate	Varies
US area of interest	Usually Not Appropriate	○
MRI area of interest without and with IV contrast	Usually Not Appropriate	○
MRI area of interest without IV contrast	Usually Not Appropriate	○
Bone scan area of interest	Usually Not Appropriate	☻☻☻
CT area of interest with IV contrast	Usually Not Appropriate	Varies
CT area of interest without and with IV contrast	Usually Not Appropriate	Varies

3

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ACR Appropriateness Criteria®
Acute Elbow and Forearm Pain

Variant 3: Adult. Acute elbow or forearm pain. Suspect tendon or ligament or muscle injury. Radiographs normal or indeterminate. Next imaging study.

Procedure	Appropriateness Category	Relative Radiation Level
US area of interest	Usually Appropriate	○
MRI area of interest without IV contrast	Usually Appropriate	○
MRI area of interest without and with IV contrast	Usually Not Appropriate	○
Bone scan area of interest	Usually Not Appropriate	☻☻☻
CT area of interest with IV contrast	Usually Not Appropriate	Varies
CT area of interest without and with IV contrast	Usually Not Appropriate	Varies
CT area of interest without IV contrast	Usually Not Appropriate	Varies

ACR Appropriateness Criteria® 1 Acute Elbow and Forearm Pain

4

ELBOW

- STANDARD VIEWS
 - » AP, lateral and both 45° oblique views, some institutions use 45° radial head-capitulum view instead of obliques oe in addition to thm
- FREQUENT SITE OF INJURIES
 - » Radial head, olecranon
- COLLATERAL LIGAMENTS
- DISTAL BICEPS TENDON

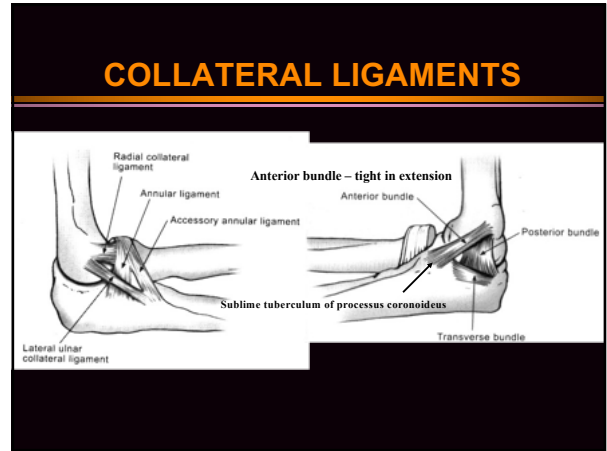
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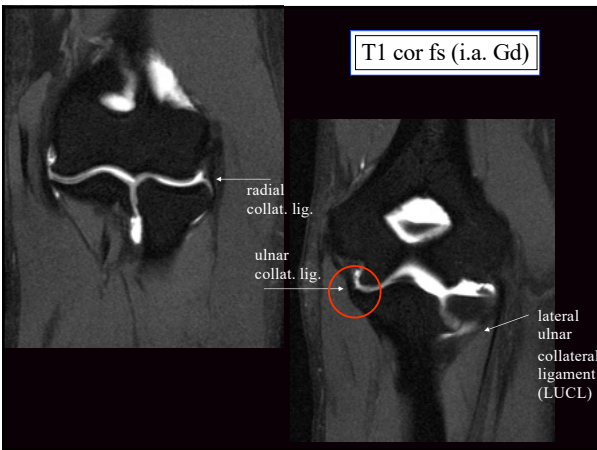
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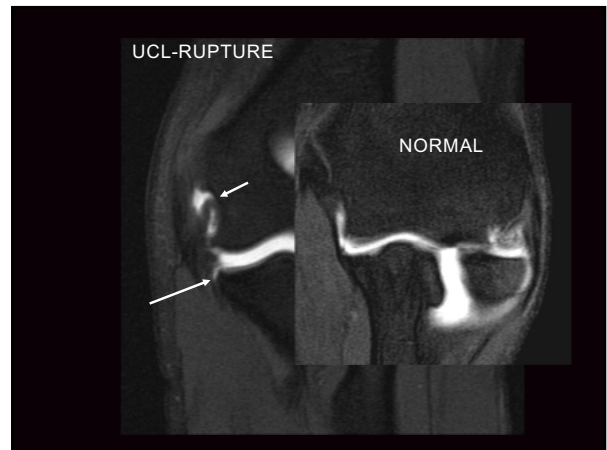
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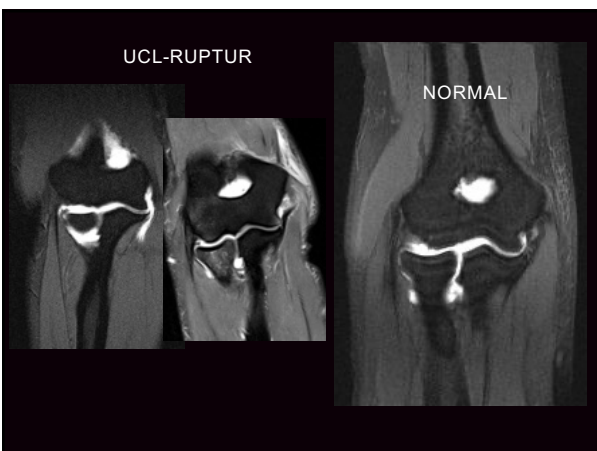
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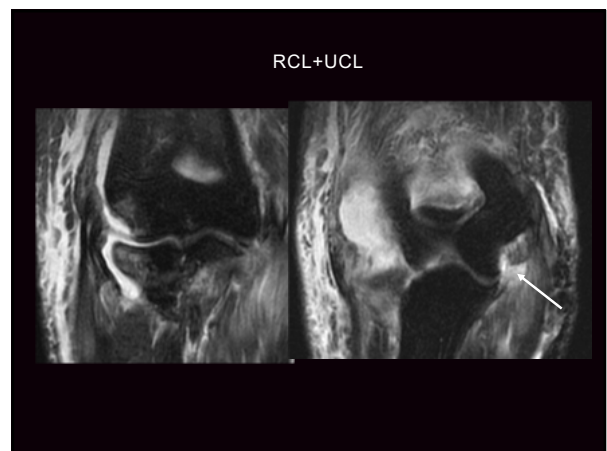
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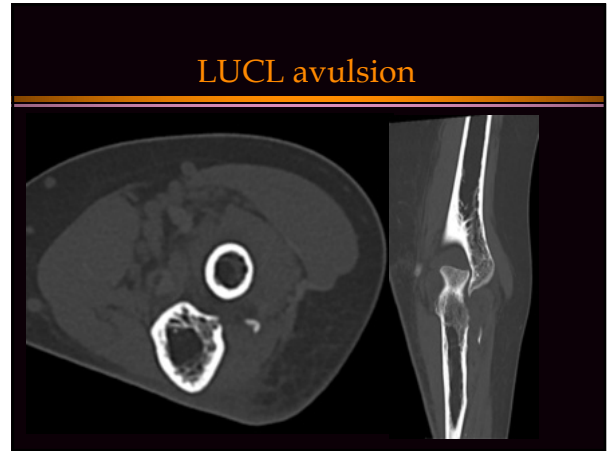
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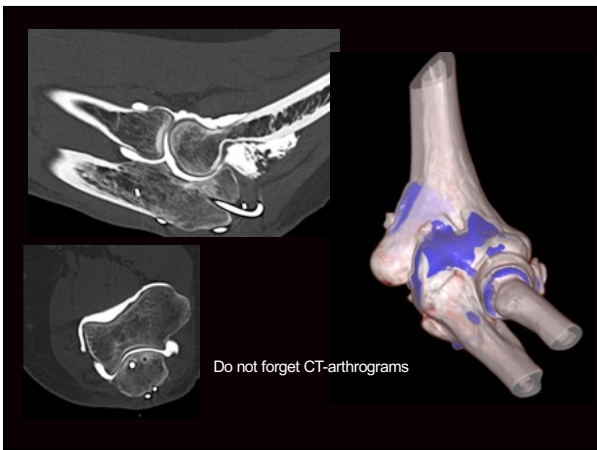
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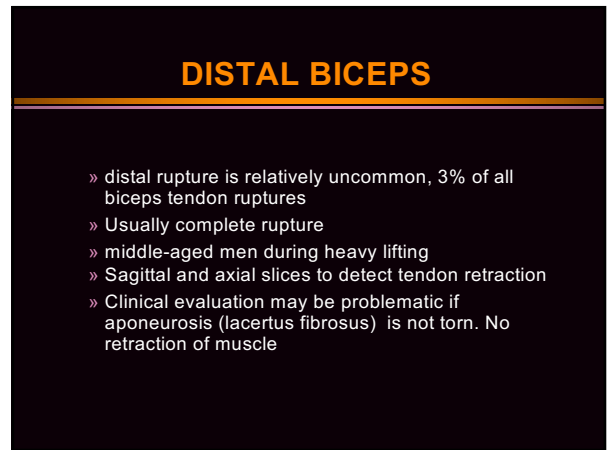
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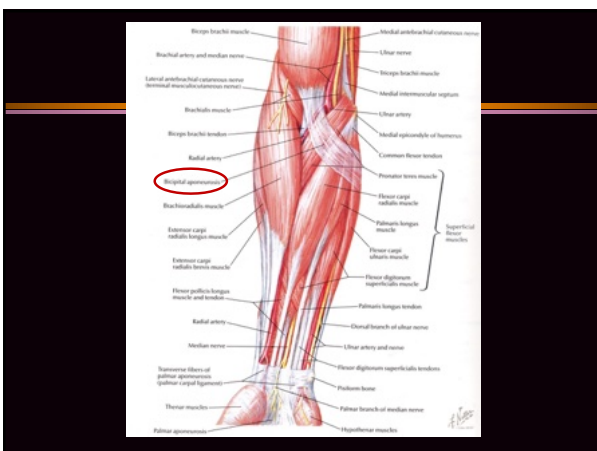
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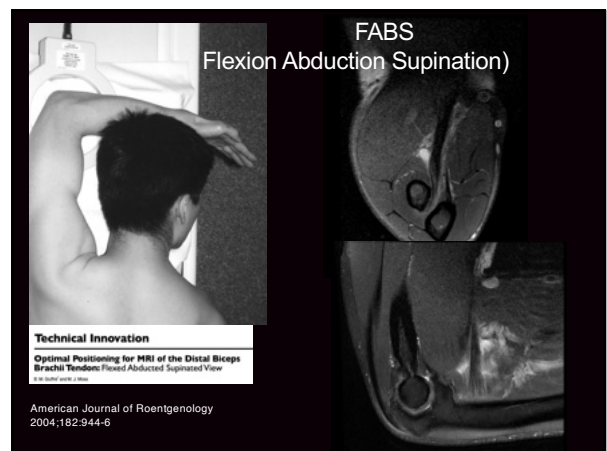
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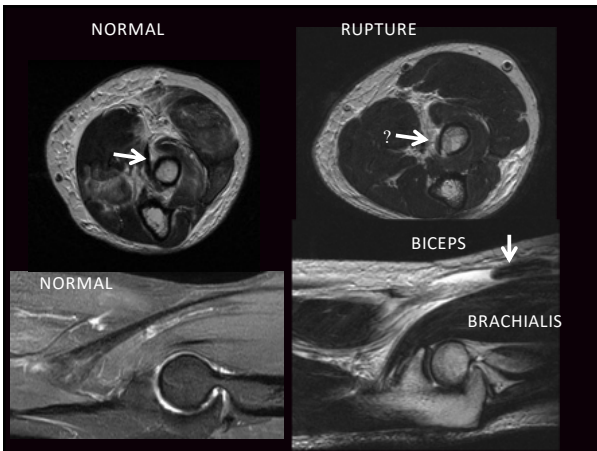
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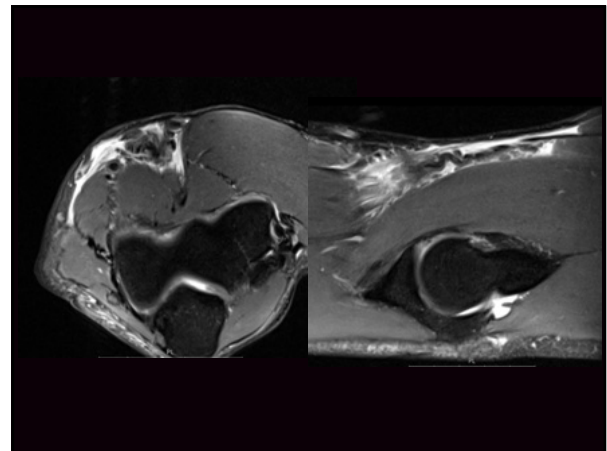
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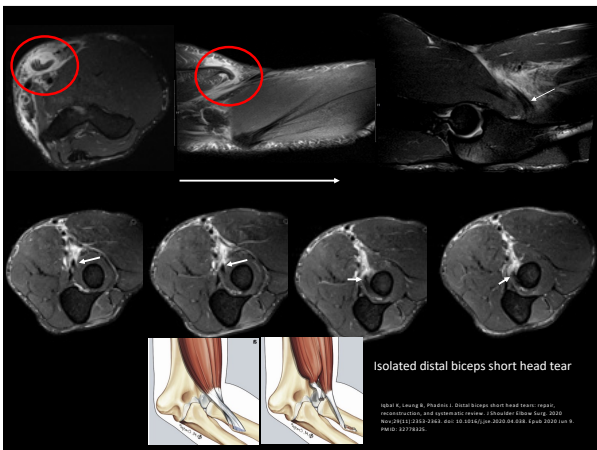
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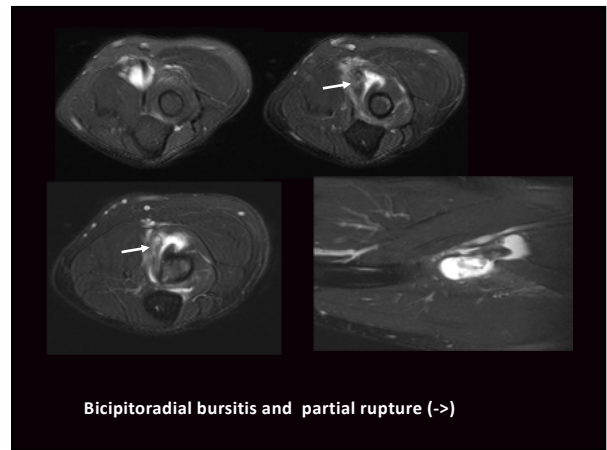
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22

HAND

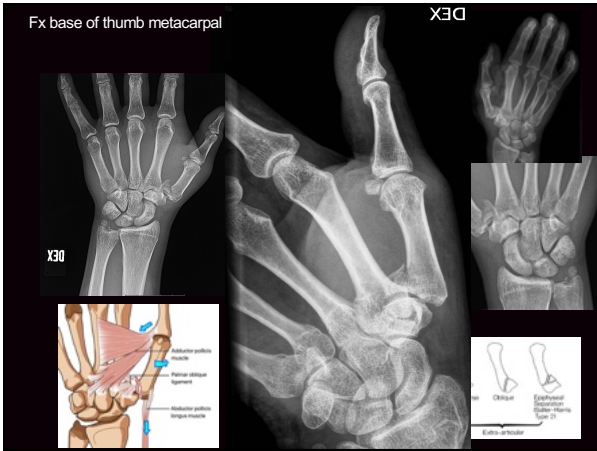
Phenomenon	Appropriateness Category	Relative Radiation Level
Hand radiograph view of interest	Usually Appropriate	Varies
CT scan of forearm without IV contrast	Usually Not Appropriate	Varies
CT scan of forearm without and with IV contrast	Usually Not Appropriate	Varies
MR scan of forearm	Usually Not Appropriate	Varies
MR scan of forearm without IV contrast	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast and with DWI	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast and with DWI and T2* GRE	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast and with DWI and T2* GRE and MRSA	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast and with DWI and T2* GRE and MRSA and MRSA	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast and with DWI and T2* GRE and MRSA and MRSA and MRSA	Usually Not Appropriate	Varies
MR scan of forearm with IV contrast and with DWI and T2* GRE and MRSA and MRSA and MRSA and MRSA	Usually Not Appropriate	Varies

23

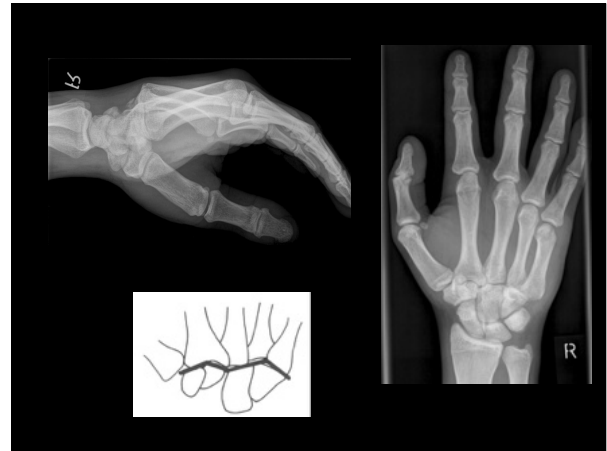
HAND

- STANDARD VIEWS
 - HAND: PA, lateral, internal oblique
 - THUMB: AP, lateral, oblique
 - FINGERS: PA, lateral, oblique
- FREQUENT SITE OF INJURIES
 - Phalanges
 - Base of thumb metacarpal
- RELEVANT NORMAL ANATOMY
 - Volar plate: dense fibrous band forms the volar aspect of the thumb's MCP and fingers' proximal IP joints
 - Sesamoid: two constant sesamoids at the MCP I
- FRACTURE MIMICS
 - Nutrient artery canals: oblique lucent line located near middle third of shafts of the phalanges and MC bones – should not be mistaken for fractures

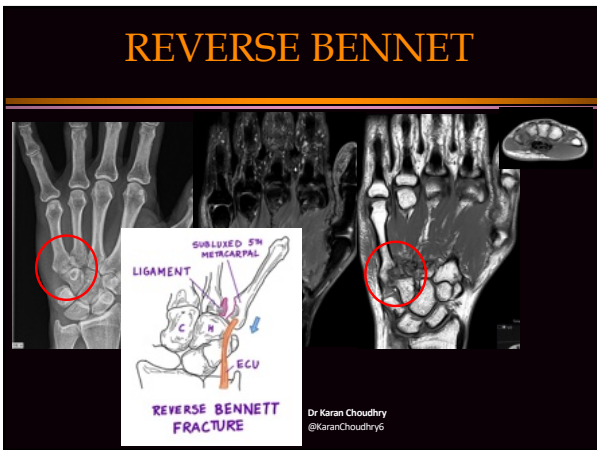
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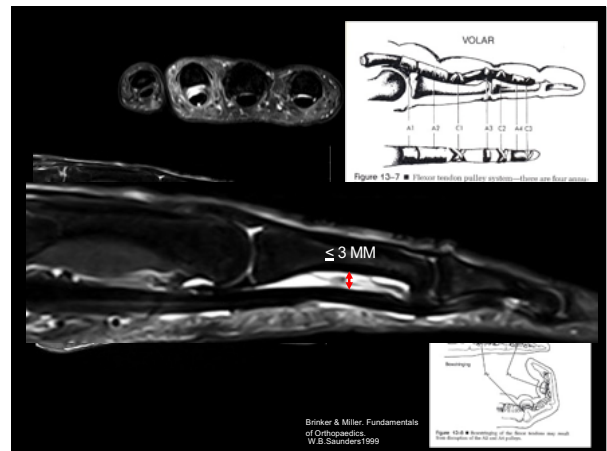
27



28





29



30


Volar plate -injury

- Volar plate forms floor of PIP joint and separates the joint space from the flexor tendons
 - Ligamentous at its origin on the proximal phalanx
 - Cartilaginous in its insertion onto the middle phalanx
- hyperextension of PIP-joint
- fusiform swelling of the PIP-joint, with point tenderness on the volar plate
- small avulsion fracture at the base of the middle phalanx, usually less than 10% of joint surface
- closed management

31

Mallet finger

- DIP hyperflexion
- extensor tendon tear (w or w/o bony fragment)
- surgery, if fracture fragment
 - greater than 30% of the joint surface
 - displaced more than 1(2)mm
- rotation more than 30 degrees
- or distal phalanx has a volar subluxation

32

Jersey finger injury





Avulsion of the flexor digitorum profundus (FDP) from the volar aspect of the distal phalanx base dig. IV or V. It classically occurs during certain sports resulting from sudden hyperextension of an actively flexed finger (e.g. **grabbing an opponent's jersey** during rugby or American football.)

33

Gamekeeper (Skier's) Thumb





34

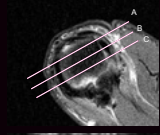
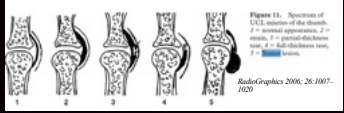
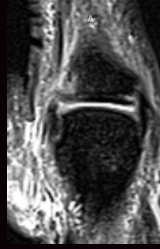
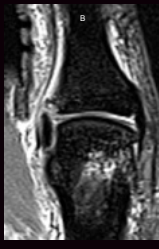
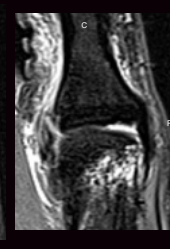






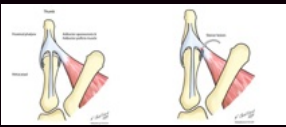

Figure 15. Spectrums of UCL lesions of the thumb. 1 = normal appearance, 2 = partial UCL tear, 3 = partial UCL tear with Stener lesion, 4 = full UCL tear, 5 = full UCL tear with Stener lesion.

RadioGraphics 2006, 26:1007-1020

35

Gamekeeper (Skier's) Thumb

- MCP I hyperabduction
- UCL tear
- w or w/o bony avulsion fragment
- MRI to detect Stener lesion
- Stener lesion:
 - aponeurosis of the adductor pollicis muscle becomes interposed between the ruptured UCL of the thumb and its site of insertion at the base of the proximal phalanx.
 - No longer in contact with its insertion site, the UCL cannot spontaneously heal

36

In summary

Be careful out there!



37