

## I. Wrist/Hand

Note: Plain radiographs of the wrist are recommended as the best initial study following wrist trauma or as the initial study for chronic wrist pain. (ACR-Acute Hand and wrist, chronic wrist pain). MRI is indicated for the following:

- Carpal Tunnel Syndrome (CTS): no indication for routine use of MRI.
- Note: Clinical history and electrodiagnostic studies are considered the gold standard for the diagnosis of CTS.

Severe acute wrist trauma with normal radiographs, but fracture or ligament/cartilage tear suspected (*MRI with or without contrast*)<sup>1</sup>

- Note: Suspected fracture, e.g., evaluation of scaphoid fracture when degree of displacement is not well characterized or age of fracture is not known.
- CT is indicated in general for occult fracture when plain radiographs are normal; may be useful for surgical planning for complex, intra-articular fractures of the first metacarpal base.
- For suspected distal radioulnar joint subluxation, CT is indicated in addition to radiographs of the affected side (ACR Acute HAND and Wrist Trauma).
- For suspected hook of hamate fracture following initial normal or equivocal radiographs, CT is recommended (ACR Acute Hand and Wrist Trauma).
- Suspected ligament/cartilage tear, e.g., triangular cartilage ligament tears, particularly when done in association with an arthrogram.
- Note: Where Kienbock's disease (avascular necrosis) is present on radiographs or not present and suspected, CT only needed to assess degree of collapse and associated fracture<sup>1,3,4</sup>.

Suspected soft tissue mass (*MRI without contrast*)<sup>1</sup>

Suspected soft tissue mass, if routine (non-contrast) MRI does not answer question (*MRI with contrast*)

Note: Ultrasound of the wrist "is often helpful in evaluating wrist masses as the very common fluid filled ganglion may be easily distinguished from a solid mass." (ACR Chronic wrist pain)

## II. Elbow

Note: X-ray is recommended for the initial evaluation for chronic elbow pain. MRI is rarely indicated as a preferred diagnostic modality for any elbow condition except the following (*MRI without contrast unless otherwise specified*):

Severe acute elbow trauma with normal radiographs, but fracture or ligament tear suspected. MR arthrogram OR MRI without contrast). \*Ultrasound is next appropriate alternative if neither is available.

Suspected biceps tendon rupture.

Suspected mass (*MRI with or without contrast*). \*Ultrasound is appropriate alternative if MRI is not available.

Suspected avascular necrosis

Suspect intra-articular loose bodies, heterotopic calcifications, or suspected cartilaginous defects; radiographs nondiagnostic (MRI without contrast OR MR arthrography depending on availability).

### III. Shoulder

#### Acute/traumatic shoulder pain

- Acute pain following shoulder trauma not responsive to conservative measures for 4 weeks
- Clinical signs and symptoms suspicious for rotator cuff tear/impingement, age  $\geq 35$  years
- Suspected instability/labral tear, age  $< 35$  years
  - Recurrent dislocation
  - Suspected intra-articular loose bodies
  - Suspected avascular necrosis

- Note: Shoulder symptoms and physical assessment indicating the need for MRI after 4 weeks of treatment should include at least two of the following<sup>5</sup>:
  - Anterior or posterior shoulder instability
  - External rotation pain or weakness
  - Impingement signs
  - Loss of abduction
  - Persistent pain with activity
- MR or MR arthrogram may be performed for either of the first 2 criteria

#### Subacute/chronic shoulder pain

- Subacute shoulder pain and suspect instability/labral tear (MR arthrography is recommended, MRI with high resolution is next alternative).
- Surgical planning and no MRI within 6 months
- Previous surgery and substantial increase in objective signs of impingement or instability/labral tear
- Evaluate abnormality, 'red flags'
  - Palpable mass
  - Suspect fracture
  - Suspect infection
  - Imaging abnormality on radiograph
  - Suspect neoplasm
  - Hemarthrosis

**References**

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- Washington State Department of Labor and Industries' Work-Related Carpal Tunnel Syndrome Diagnosis and Treatment Guideline. Available at:  
<http://www.lni.wa.gov/ClaimsIns/Files/OMD/CTSGuidelineFINAL.pdf>
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