Advanced Imaging Checklist: Upper Extremity

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.
- See Work-related CTS Diagnosis and Treatment Guideline: http://www.lni.wa.gov/ClaimsIns/Files/OMD/CTSGuidelineFINAL.pdf

☐ Severe acute wrist trauma with normal radiographs, but fracture or ligament/cartilage tear suspected (MRI with or without contrast)
  - 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 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 fracture¹,³,⁴.

☐ Suspected soft tissue mass (MRI without contrast)
☐ 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:
  - 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
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References


- 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


