Hand and Wrist

MRI Protocols of the ESSR Arthritis Subcommittee

Acronyms

Ax = axial
Cor = coronal
FOV = field of view
FS = fat suppressed
PD = proton density
Sag = sagittal
STIR = short tau inversion recovery
TE = echo time (ms)
TIRM = turbo inversion recovery magnitude
TR = repetition time (ms)
MRI scan

- Patient head first, prone with arm up (e.g., *Superman* position)
- Wrist/hand at the centre of the bore to ensure field homogeneity
- Coils: dedicated wrist/hand coil
- Immobilisation: tape hand to maintain position
Localizer wrist

Axial plane: from 3-4 cm proximal to the radiocarpal joint to 2 cm distal to the carpometacarpal joint

Coronal plane: skin to skin traversing the joint anteriorly to posteriorly to include the same field of view as the axial images

Sagittal plane: skin to skin perpendicular to the coronal
Localizer hand

*Axial plane:* from 2 cm proximal to the most proximal joint to 2 cm distally to the most distal joint of interest

*Coronal plane:* skin to skin traversing the joint anteriorly to posteriorly to include the same field of view as the axial images

*Sagittal plane:* skin to skin perpendicular to the coronal plane, to include the same field of view as the axial images
Recommended sequences - wrist

Cor STIR
(or TIRM or T2 FS)

Cor T1w

Ax T1w

Ax PD FS
(or STIR/TIRM or T2 FS)

CE T1 FS Ax
Recommended sequences - hand

- Cor STIR (or TIRM or T2 FS)
- Cor T1w
- CE T1 FS Cor
- Sag STIR (or TIRM or T2 FS)
- Ax T1w
- CE T1 FS Ax
## MRI protocols

<table>
<thead>
<tr>
<th>Recommended Sequences</th>
<th>FOV (cm)</th>
<th>Slice thickness (mm)</th>
<th>TR (ms)</th>
<th>TE (ms)</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cor STIR or T2 FS</td>
<td>8-10</td>
<td>3/3D#</td>
<td>1800</td>
<td>25</td>
<td>320x240</td>
</tr>
<tr>
<td>Cor T1</td>
<td>8-10</td>
<td>3/3D#</td>
<td>400</td>
<td>15</td>
<td>320x240</td>
</tr>
<tr>
<td>Ax PD FS or STIR or T2FS</td>
<td>8-10</td>
<td>3/3D#</td>
<td>3500</td>
<td>40</td>
<td>320x240/320x450</td>
</tr>
<tr>
<td>Ax T1</td>
<td>8-10</td>
<td>3/3D#</td>
<td>400</td>
<td>15</td>
<td>320x240/320x450</td>
</tr>
<tr>
<td>Sag PD FS</td>
<td>8-10</td>
<td>3/3D#</td>
<td>3500</td>
<td>40</td>
<td>320x240/320x450</td>
</tr>
<tr>
<td>CE T1 FS*</td>
<td>8-10</td>
<td>3/3D#</td>
<td>400</td>
<td>15</td>
<td>320x240/320x450</td>
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</tbody>
</table>

*3D sequences are performed to allow the evaluation of small (< 3mm) and/or oblique structures

*if optimal assessment of synovitis/osteitis is needed
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