

UT Southwestern Department of Radiology

Ultrasound – Musculoskeletal (MSK) Joint and Periarticular Fluid Collection Evaluation in the Emergency Department

PURPOSE:

To evaluate joint effusion and for periarticular fluid in the emergency setting.

SCOPE:

Applies to MSK ultrasound studies performed in emergency and urgent care departments:

- UT Southwestern University Hospitals, Imaging Services (UTSW)
- Parkland Health and Hospital System, Department of Radiology (PHHS)

INDICATIONS:

- Suspected joint effusion
- Suspected periarticular fluid collection

CONTRAINDICATIONS:

• Unclear joint or soft tissue pathology that will require complete joint ultrasound scheduled on outpatient basis or outpatient MRI.

EQUIPMENT:

- High-resolution linear array transducer at high frequency settings. Using lower frequency, when appropriate, for increased penetration while maintaining adequate resolution, for larger habitus.
- Hockey Stick transducer when appropriate

PATIENT PREPARATION:

- None

EXAM INITIATION:

- Introduce yourself to the patient and explain test.
- Verify patient identity using patient name and DOB.
- Obtain patient history including symptoms. Enter and store data page.
- Place patient in appropriate position depending on examination to be conducted. Examples:
 - Knee - place patient comfortably supine or sitting with knee extended or slightly flexed with towel underneath
 - Ankle - start with knee flexed and foot flat on tabletop when possible
 - For upper extremity patient may remain sitting or lay supine for optimum imaging

EXAMINATION:

GENERAL GUIDELINES:

Prior to bringing patient to ultrasound department for scan, ensure order is appropriate for targeted emergent sonographic evaluation for presence of joint effusions. If necessary, direct ER/urgent care providers to call radiologist for guidance on appropriate ultrasound order, for acute care setting. Ensure provider understands that complete joint ultrasound imaging is available as routine, scheduled, outpatient exam and performed by Sonographers trained to execute such exams.

- Double check laterality (right vs left) at the beginning and end of exam.
- Ask patient to point to area of maximum discomfort.
- Review relevant prior imaging.

To ensure accurate communication of region being scanned, Sonographer must utilize appropriate annotations from below listed groups of descriptors on every image. Reading MSK Radiologists should be able to recreate location of ultrasound probe without looking at images. Example: “right dorsal wrist,” “left lateral proximal forearm,” “right anterior distal thigh,” “Right Achilles tendon,” “Left quadriceps tendon”, etc.

- Right vs Left
- Transverse vs Longitudinal
- Specific body part e.g. knee, ankle, shoulder, etc.
- Anterior, posterior, medial, lateral, dorsal, volar, plantar.
- Always save at least one, color Doppler image, of area of concern.
- Always save at least one cine loop from above to below the abnormality, including the abnormality in cine.
- Include panoramic image when appropriate, for large fluid collection, etc.

Call resident on call or MSK reading room to go over images with radiologist and save an Epic note of whom you spoke with.

TECHNICAL CONSIDERATIONS:

- **For joint effusion:**
 - Most joint effusions can be documented with 2-3 grey scale images in transverse and longitudinal orientations, and 1-2 Doppler images.
 - Specify joint and laterality imaged.
 - Specify probe placement, either: anterior, posterior; medial, lateral; dorsal, volar etc.
 - Do not routinely image contralateral joint unless directed by a radiologist.
 - For knee effusion, start with anterior approach superior to patella, if no fluid seen, check medial and lateral gutters.
 - Save at least one cine loop from above to below the abnormality, including the abnormality in cine.
- **For periarticular fluid collections:**
 - Specify probe placement, either: anterior, posterior; medial, lateral; dorsal, volar etc
 - Specify laterality.
 - Specify body part being imaged with detail. Examples: “right distal lower leg, above ankle” “left mid forearm, anterior.”
 - Fluid collection should be documented with size measurements in 3 orthogonal planes
 - With and without color Doppler
 - Save at least one cine loop from above to below the abnormality including the abnormality in cine.
 - Include panoramic image when appropriate, large fluid collection etc.

DOCUMENTATION:

- Designation of laterality, right or left.
- Specific anatomic location, body part.

- Transverse and longitudinal images.
- Color Doppler Images
- Save at least one cine loop from above to below the abnormality including the abnormality in cine.
- Panoramic view when appropriate.
- Size measurements of loculated fluid collection, if present.
- Data page(s), if applicable

PROCESSING:

- Review examination images and data
- Export all images to PACS
- Document relevant history and any study limitations

REFERENCES:

ACR-AIUM Practice Guideline (Revised 2007)
 European Society of MusculoSkeletal Radiology

CHANGE HISTORY

STATUS	NAME & TITLE	DATE	BRIEF SUMMARY
Submission	Ashikyan Oganer MD	04/08/2022	Submitted
Approval	Avneesh Chhabra Director	04/08/2022	Approved
Revisions	Surekha Patel MS RDMS RVT RT	05/04/2022	Edits for clarification
Approval	Ashikyan Oganer MD	05/16/2022	Approved
	David T. Fetzer, MD	05/24/2022	Approved