Ultrasound – Musculoskeletal (MSK) of Tendon Rupture in the Emergency Department

PURPOSE:

To evaluate for; Achilles tendon tear; Quadriceps tendon tear; Biceps tendon tear; 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 Achilles or Quadriceps or Biceps tendon rupture

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:
    - Quadriceps tendon - place patient comfortably supine or sitting with knee extended or slightly flexed with towel underneath.
    - Achilles tendon - patient prone, with foot hanging off table end.
    - Biceps tendon - start with in sitting position.

EXAMINATION:

GENERAL GUIDELINES:

Prior to bringing patient to ultrasound department for scan, ensure order is appropriate for targeted emergent sonographic evaluation for presence of Achilles, Quadriceps or Biceps tendon rupture. 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.

- Right vs Left
- Transverse vs Longitudinal
- Specific body part e.g. Achilles tendon, Biceps tendon and associated joint, 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.
- Demonstrate distance from tendon rupture to bone attachment

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 Achilles, Quadriceps or Biceps tendons:**
    - Specify joint and laterality imaged.
    - Image entire tendon in transverse and longitudinal orientations.
    - For Biceps tendon, images should be labelled as; Distal (by elbow), Mid (muscle) or Proximal (by shoulder), depending on location of pain, per patient.
    - If a tear is detected, include images with measurements.
    - Show distance of tear from distal or proximal boney attachment.
    - Save panoramic image of the entire tendon.
        - For Achilles tendon or Quadriceps tendons, include calcaneal or patella attachment, respectively.
        - For Biceps tendon, include humeral head for proximal (shoulder joint), and radial head for distal abnormality.
    - Include image with color Doppler.
    - Save at least one TRV cine loop from above to below the abnormality including the abnormality in cine.

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, location of; tendon tear; 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 Oganes 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 Oganes MD	05/16/2022	Approved
	David T. Fetzer, MD	05/24/2022	Approved