

Ultrasound – Extremity Nonvascular/Superficial Soft Tissue Evaluation

PURPOSE:

To evaluate palpable/superficial soft tissue abnormalities

SCOPE:

Applies to all US soft tissue studies performed in:

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

INDICATIONS:

- Signs or symptoms associated with superficial soft tissue mass, fluid collection, or foreign body
- Signs of symptoms of localized soft tissue infection
- Abnormal findings on other imaging studies
- Follow up known superficial soft tissue mass

CONTRAINDICATIONS:

- No absolute contraindications

EQUIPMENT:

Linear array transducers with a frequency range of 7-20 MHz. Sector or curvilinear transducers with a frequency range of 1-9 MHz may be required for appropriate penetration and resolution depending on patient's body habitus and overall depth of the pathology.

PATIENT PREPARATION:

- None

EXAMINATION:

GENERAL GUIDELINES:

A complete examination includes evaluation of the superficial soft tissue region corresponding to the patient's signs or symptoms. Comparison images of adjacent or contralateral soft tissue are required for comparison.

EXAM INITIATION:

- Introduce yourself to the patient
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms. Enter and store data page.
- Place patient in position that affords best imaging of the mass while minimizing patient discomfort.

TECHNICAL CONSIDERATIONS:

- Review any prior imaging, making note of abnormalities requiring further evaluation.
- Document characteristics of mass, collection, or foreign body including echogenicity, shape, margins, vascularity, size, tenderness, and relationship to adjacent structures. Label images clearly in regard to body part and location (proximal/mid/distal, medial/lateral, posterior/anterior, etc). Use body marker annotation guide as needed.

- Extended field-of-view, dual screen, or panoramic imaging may be used to display large abnormalities that do not fit in one US image.
- Panoramic imaging is also used to show abnormality in relation to, and in comparison to, adjacent structures.
- Most foreign bodies are associated with acoustic shadow, comet tail artifact, or twinkling artifact on color Doppler.
- Cine loops while holding the transducer stationary are useful in showing mobile echogenic debris within fluid collections.
- Compression is also useful to distinguish fluid collections from soft tissue masses.
- Scanning normal adjacent soft tissue and/or the contralateral side helps with distinguishing normal from abnormal findings (eg. Edema; thickness; subtle masses; etc).
- Soft Tissue Exam Ordered for MSK – Do not require contralateral imaging for comparison

DOCUMENTATION:

- Grayscale
 - Longitudinal and transverse images at the site(s) of concern
 - For focal abnormalities, images without and with measurements in 3 orthogonal planes.
- Color Doppler to document peripheral and/or internal vascularity, or the lack thereof.
 - Micro-Doppler/Slow-Flow techniques as needed.
 - Spectral waveform as needed to distinguish arteries from veins for suspected vascular structures/abnormalities.
- Cine loops
 - Sweeps, longitudinal and transverse, in the region of concern.
 - Stationary cine loops without and with comparison as needed to show compressibility and/or demonstrate fluid/mobile debris.
- Panorama images for ill-defined findings, or structures that do not fit within one image.
- Comparison images of normal soft tissue.
 - For pathologies off midline (eg. one side of the body wall; one limb), imaging of the same area on the contralateral side is required for comparison.
 - If there is no relevant contralateral comparison (eg. midline pathologies; prior contralateral amputation; etc), comparison imaging of soft tissues above and below the area of concern is required."
 - Soft Tissue Exam Ordered for MSK – Do not require contralateral imaging for comparison
 - Color Doppler of normal adjacent or contralateral soft tissues.

PROCESSING:

- Export all images to PACS
- Review examination images and data have completely sent to PACS
- Document relevant history, visual skin findings, patient signs/symptoms (including tenderness), and any study limitations

REFERENCES:

ACR-AIUM Practice Guideline (Revised 2007)

REVISION HISTORY:

Status	Name & Title	Date	Brief Summary
SUBMISSION	David T. Fetzer, MD, Director	11-15-2015	
APPROVAL	David T. Fetzer, MD, Director	11-15-2015	
REVIEW	Kanupriya Vijay, MD	10-25-2018	
REVISIONS	David Fetzer, MD, Director	04-24-2024	Removed “as needed” for contralateral imaging. Contralateral imaging required for body imaging, not for soft tissue ordered for MSK. Clarified use of cine loops and panorama images