

Evidence Discussion (CH 22.1)

Radiography is usually the appropriate initial imaging study for both superficial and non-superficial soft tissue masses. Radiography can help identify calcifications, bone involvement, intrinsic fat and unsuspected skeletal abnormality or deformity. In general, radiographic findings related to a soft tissue mass can provide helpful insight in determining the next most appropriate imaging modality for further characterization.^{1, 2} Non-contrast enhanced ultrasound is also an excellent triage tool for evaluating superficial soft tissue masses like superficial lipomas.¹

MRI without and with IV contrast is usually appropriate as the next imaging study for a soft tissue mass following non-diagnostic radiographs or non-contrast enhanced ultrasound.^{1, 2}

MRI helps to define intrinsic tumor characterization, vascular structures, neurovascular involvement, hemorrhage, edema and tumor necrosis. MRI without IV contrast may be beneficial compared with CT but use of MR contrast improves the differentiation of benign from malignant soft tissue masses^{1, 2}. At least 20% to 25% of soft tissue masses can demonstrate features that allow for confident diagnosis based on MRI alone many of which are benign and thus would not warrant biopsy.¹

When MRI is contraindicated, CT with IV contrast is usually appropriate following non-diagnostic radiograph or ultrasound.

CT with IV contrast is useful in distinguishing vascularized from potentially necrotic regions of a tumor or calcification. CT without IV contrast is usually not beneficial.^{1, 2}

1. Expert Panel on Musculoskeletal Imaging, Garner HW, Wessell DE, et al. ACR Appropriateness Criteria^R Soft Tissue Masses: 2022 Update. *J Am Coll Radiol*. 2023; 20(5S):S234-S245. doi:10.1016/j.jacr.2023.02.009

2. Expert Panel on Musculoskeletal Imaging, Bestic JM, Wessell DE, et al. ACR Appropriateness Criteria^R Primary Bone Tumors. *J Am Coll Radiol*. 2020; 17(5S):S226-S238. doi:10.1016/j.jacr.2020.01.038