# ACR Appropriateness Criteria® Soft-Tissue Masses

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## Abstract

Imaging is an integral component of the evaluation of patients with a suspected soft-tissue mass. Imaging can not only confirm the presence of a mass but can provide essential information necessary for diagnosis, local staging, and biopsy planning. Although the objectives of the evaluation have not changed, the choices available for imaging of musculoskeletal masses have evolved dramatically in recent years. The purpose of this document is to identify the most common clinical scenarios and the most appropriate imaging for their assessment on the basis of the current literature and to provide general guidance for those scenarios that are not specifically addressed.

The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

**Key Words:** Appropriateness Criteria, Appropriate Use Criteria, AUC, Imaging, Mass, Neoplasm, Soft tissue, Tumor

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The American College of Radiology seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document.
Reprint requests to: publications@acr.org.
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Disclaimer: The ACR Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the FDA have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

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**Variant 1.** Soft-tissue mass. Superficial or palpable. Initial imaging study.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| X-ray area of interest | Usually Appropriate | Varies |
| US area of interest | Usually Appropriate | 0 |
| MRI area of interest without IV contrast | May Be Appropriate (Disagreement) | 0 |
| CT area of interest with IV contrast | Usually Not Appropriate | Varies |
| CT area of interest without and with IV contrast | Usually Not Appropriate | Varies |
| CT area of interest without IV contrast | Usually Not Appropriate | Varies |
| FDG-PET/CT area of interest | Usually Not Appropriate | ☢☢☢☢ |
| MRI area of interest without and with IV contrast | Usually Not Appropriate | 0 |

FDG = fluorine-18-2-fluoro-2-deoxy-D-glucose; IV = intravenous; US = ultrasound.

**Variant 2.** Soft-tissue mass. Nonsuperficial (deep) or nonspecific clinical assessment or located in an area difficult to adequately evaluate with radiographs (flank, paraspinal region, groin, or deep soft tissues of the hands and feet). Initial imaging study.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| X-ray area of interest | Usually Appropriate | Varies |
| CT area of interest without and with IV contrast | May Be Appropriate (Disagreement) | Varies |
| CT area of interest without IV contrast | May Be Appropriate (Disagreement) | Varies |
| MRI area of interest without and with IV contrast | May Be Appropriate (Disagreement) | 0 |
| MRI area of interest without IV contrast | May Be Appropriate (Disagreement) | 0 |
| US area of interest | May Be Appropriate | 0 |
| CT area of interest with IV contrast | Usually Not Appropriate | Varies |
| FDG-PET/CT area of interest | Usually Not Appropriate | ☢☢☢☢ |

FDG = fluorine-18-2-fluoro-2-deoxy-D-glucose; IV = intravenous; US = ultrasound.

**Variant 3.** Soft-tissue mass. Nondiagnostic initial evaluation (ultrasound and/or radiograph). Next imaging study.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| MRI area of interest without and with IV contrast | Usually Appropriate | 0 |
| MRI area of interest without IV contrast | Usually Appropriate | 0 |
| CT area of interest with IV contrast | May Be Appropriate (Disagreement) | Varies |
| CT area of interest without IV contrast | May Be Appropriate | Varies |
| CT area of interest without and with IV contrast | Usually Not Appropriate | Varies |
| FDG-PET/CT area of interest | Usually Not Appropriate | ☢☢☢☢ |

FDG = fluorine-18-2-fluoro-2-deoxy-D-glucose; IV = intravenous.

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