

Evidence Discussion (Avascular Necrosis [AVN]/Osteonecrosis MS-4)

Multiple articles report that obtaining plain radiographs is fundamental in the work-up and follow-up of patients presenting with symptoms suspicious for osteonecrosis/avascular necrosis (AVN). [2-7] The American College of Radiology Appropriateness Criteria for Osteonecrosis (revised 2022) also supports radiography as the initial imaging study for clinically suspected osteonecrosis. [1] Also noted was that although radiographs are less sensitive for detection of early osteonecrosis, they help to exclude other causes of extremity pain such as fracture, primary arthritis, or tumor. In late stage osteonecrosis, x-rays will also show findings of secondary osteoarthritis.

Plain x-rays are also valuable as initial imaging as they can determine the necessity of advanced imaging, what specific advanced imaging study is warranted and if contrast is needed. As x-rays often have a larger field of view than MRI or CT, they have the potential to identify more proximal or distal pathology in an extremity. It is also noteworthy that when MRI is necessary, radiographs are considered an essential, initial complementary study for the reading of musculoskeletal MRIs. [8]

The literature and the American College of Radiology Appropriateness Criteria for Osteonecrosis (revised 2022) support advanced imaging when initial x-rays are negative or equivocal and osteonecrosis is still suspected [1-6]. MRI has been shown to be the most sensitive and specific imaging modality for the diagnosis of osteonecrosis, with a sensitivity and specificity nearing 100%. [10, 11] Advanced imaging for AVN is also supported for treatment planning when AVN is confirmed by plain x-ray. [1-7]

It should be noted, however, that advanced imaging can often demonstrate abnormalities that have no relevance to the patient's symptoms. [12-15] Advanced imaging incidental findings can possibly lead to overtreatment with referral to specialists and possibly unnecessary surgery. [14, 15] Ganguli et. al. reported incidental findings on screening and diagnostic tests are common and may trigger cascades of further testing and treatment. [16] Also reported was that such cascades of care come with substantial potential for harm (including patient anxiety and additional treatment risks) in addition to monetary costs and inconvenience. [16] Risks of advanced imaging also include but are not limited to radiation exposure, implanted device complications, metallic foreign body complications and contrast complications. [9]

Although the use of any coverage criteria includes the possible risk of delayed care, EviCore firmly believes the benefits of our evidence based criteria best ensure patient safety and highly outweigh any clinical harm from perhaps briefly delaying advanced imaging if needed.

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