

Evidence Discussion (MS 9)

Radiographs should be used for the initial evaluation of musculoskeletal infections, including osteomyelitis, septic arthritis, and soft tissue infection.³ Obtaining the initial radiograph provides an excellent overview of the anatomic area of interest and can exclude fractures and tumors as the cause of swelling or pain.³

Radiographs also help with the interpretation of future imaging studies such as CT, MRI, ultrasound (US), and nuclear medicine scans.^{3,4}

The clinical presentation of a hot swollen joint is common and has wide differential diagnosis.¹ Septic arthritis is traditionally a clinical diagnosis based on physical examination and prompt arthrocentesis.²

In many cases, imaging cannot distinguish infected from non-infected joints or fluid collections, and aspiration and culture are needed for diagnosis.^{3,5,6}

US, MRI, or CT is usually appropriate as the next imaging study for suspected septic arthritis, soft tissue infection, or osteomyelitis following normal radiographs.³ They may also be helpful to evaluate the adjacent soft tissues for infection.³ These procedures are equivalent alternatives (i.e., only one procedure will be ordered to provide the clinical information to effectively manage the patient's care).³

References:

1. Coakley G, Mathews C, Field M, et al. BSR & BHPR, BOA, RCGP and BSAC guidelines for management of the hot swollen joints in adults. *Rheumatology*. 2006;45(8):1039-1041. doi:10.1093/rheumatology/kei163a.
2. Karchevsky M, Schweitzer ME, Morrison WB, et al. MRI findings of septic arthritis and associated osteomyelitis in adults. (*AJR*) *Am J Roentgenol*. 2004;182(1):119-122. doi:10.2214/ajr.182.1.1820119.
3. Beaman FD, von Herrmann PF, Kransdorf MJ, et. al. Expert Panel on Musculoskeletal Imaging. ACR Appropriateness Criteria® Suspected osteomyelitis, septic arthritis, or soft tissue infection (excluding spine and diabetic foot). *Am Coll Radiol (ACR)*; Date of Origin: 2016. Revised: 2022. <https://acsearch.acr.org/docs/3094201/Narrative/>.
4. Simpfendorfer CS. Radiologic Approach to Musculoskeletal Infections. *Infect Dis Clin North Am* 2017;31:299-324.
5. Chan BY, Crawford AM, Kobes PH, et al. Septic Arthritis: An Evidence-Based Review of Diagnosis and Image-Guided Aspiration. *AJR Am J Roentgenol* 2020;215:568-81.
6. Porrino J, Richardson ML, Flaherty E, et al. Septic Arthritis and Joint Aspiration: The Radiologist's Role in Image-Guided Aspiration for Suspected Septic Arthritis. *Semin Roentgenol* 2019;54:177-89.