

Editorial

## Precision and pitfalls in musculoskeletal infection imaging

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The diagnostic landscape of musculoskeletal infections (MSKI) is a complex terrain where time is the most critical variable. As radiologists, we are frequently the first to signal the alarm for life-threatening or life-altering pathologies. However, the inherent challenge of MSKI lies in its “chameleonic” nature – its ability to mimic malignancy, inflammation, and metabolic bone disease. This issue provides a comprehensive roadmap through these diagnostic dilemmas, emphasizing the synergy between advanced imaging, clinical context, and interventional precision.

### THE DIAGNOSTIC DILEMMA: MIMICKERS AND HIGH-STAKES COMPLEXITY

A recurring theme in this issue is the critical distinction between infection and its look-alikes. As highlighted in our review of osteomyelitis mimickers, conditions ranging from Ewing sarcoma and osteoid osteoma to chronic recurrent multifocal osteomyelitis can produce bone marrow edema and periosteal reactions that indistinguishably mirror infection.<sup>[1]</sup>

The stakes are equally high in the diabetic population; the review on Charcot neuroarthropathy (CN) explores the “diabetic foot” paradox – differentiating the inflammatory destruction of uncomplicated CN from the aggressive progression of diabetic foot osteomyelitis (DFO). Because the management for these two ranges from simple offloading to urgent surgical debridement, the imaging nuances discussed here are essential for preventing unnecessary amputations.<sup>[2]</sup>

### THE SPECTRUM OF INFLAMMATORY ARTHRITIS

Broadening our scope, this issue examines inflammatory arthritis, a diverse group of disorders where imaging serves as a “longitudinal witness” to disease biology.<sup>[3]</sup> Early detection of synovial thickening, power Doppler hyperemia, and bone marrow edema through ultrasound and magnetic resonance imaging (MRI) allows for intervention before irreversible structural damage occurs.

From the symmetric marginal erosions of rheumatoid arthritis to the unique “pencil-in-cup” deformities of psoriatic arthritis and the “bamboo spine” of ankylosing spondylitis, we review the radiographic hallmarks that refine subclassification. Furthermore, we highlight the revolutionary role of dual-energy computed tomography (DECT) in identifying urate crystals in gout and the “double contour” sign on ultrasound, allowing clinicians to confidently distinguish crystal-

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induced arthropathies from their inflammatory and infective mimics.

### SPINAL INFECTIONS AND THE BURDEN OF EMPIRICISM

Spinal tuberculosis (TB) (Potts's disease) remains a global health challenge, particularly in endemic regions. Two articles in this issue tackle this from different angles. One provides a deep dive into advanced imaging modalities, moving beyond plain radiographs to the "gold standard" of MRI and emerging techniques such as DECT for iodine density analysis and diffusion-weighted magnetic resonance imaging with background suppression.<sup>[4]</sup>

Conversely, a second review warns against the dangers of empirical anti-tubercular therapy. By examining the "mimickers" of spinal TB – including pyogenic spondylodiscitis, brucellosis, and neoplastic processes – the authors emphasize that while imaging is powerful, it has limitations. The consensus remains clear: Computed tomography (CT)-guided biopsy is often the final arbiter to avoid the rising tide of multidrug-resistant strains.<sup>[5]</sup>

### THE TEMPORAL EVOLUTION OF POST-SURGICAL COMPLICATIONS

The modern radiologist must also be a "temporal detective," particularly concerning total hip arthroplasty (THA). Our review on THA complications categorizes failures by time, from early surgical site infections and dislocations to late-stage aseptic loosening and adverse reactions to metal debris.<sup>[6]</sup> Understanding this timeline allows the radiologist to provide a more tailored differential, recognizing that a periprosthetic joint infection can strike at any moment, regardless of the implant's age.

### TEMPORAL EVOLUTION AND SPECIALIZED TISSUES

This issue further explores the breadth of MSKI through focused reviews on:

- Osteomyelitis pathophysiology: Analyzing how age and mode of spread (hematogenous vs. direct) dictate specific imaging findings.<sup>[7]</sup>
- Infective arthritis: Addressing the rapid joint destruction associated with septic arthritis and the "void" in current literature regarding its interventional diagnostic strategies.<sup>[8]</sup>
- Fasciitis: A comprehensive look at the fascial layers, contrasting common ailments such as plantar fasciitis with the surgical emergency of necrotizing fasciitis.<sup>[9]</sup>

### THE CRUCIAL ROLE OF IMAGE-GUIDED INTERVENTION

While advanced modalities such as MRI and CT are indispensable for identifying the presence of a lesion, they often reach a limit when determining a specific pathogen or distinguishing infection from malignancy. This issue features a compelling case series on image-guided biopsy and aspiration, illustrating how minimally invasive sampling of bone and soft tissue under CT, ultrasound, or C-arm guidance can radically shift clinical perspectives.<sup>[10]</sup> These interventions are particularly vital in atypical infections or when empiric treatment fails, providing the definitive microbiological and histopathological diagnosis necessary to steer management protocols away from broad-spectrum guesswork toward targeted therapy.

Collectively, these articles underscore that while multi-modality imaging is the cornerstone of diagnosis, its efficacy depends on selecting the right tool for the specific clinical scenario. MRI remains the undisputed gold standard for the early detection of marrow edema in DFO, the visualization of neural involvement in spinal TB, and the staging of life-threatening necrotizing fasciitis. However, the literature presented here also elevates the role of advanced CT techniques for bone characterization and serial radiography as the essential baseline for arthroplasty monitoring. Ultimately, the synthesis of these findings suggests that when imaging reaches the limit of its specificity – particularly when distinguishing infection from malignancy or complex inflammatory states – image-guided intervention (US/CT/C-arm) remains the definitive gold standard for obtaining the microbiological and histopathological confirmation necessary to guide targeted therapy and optimize patient outcomes.

### REFERENCES

1. Sahu AK, Abrahams SN. Decoding the challenging mimickers of osteomyelitis. *Indian J Musculoskelet Radiol* 2026;5:4-15.
2. Chandra AA, Choudhury SR, Chandra A, Mehta CP, Botchu R, Agarwal A. Imaging challenges in Charcot's neuroarthropathy and diabetic foot: Distinguishing infective and noninfective conditions. *Indian J Musculoskelet Radiol* 2026;5:16-29.
3. Sahu AK, Agrawal I, Aggarwal B. Guiding the diagnosis of inflammatory arthritis. *Indian J Musculoskelet Radiol* 2026;5:30-42.
4. Velicheti S, Hanumanthu M, Godaba PP, Vanjavakam S, Madala PV, Sadineni R. Imaging in spinal tuberculosis: A comprehensive radiologic review. *Indian J Musculoskelet Radiol* 2026;5:43-58.
5. Narwani A, Nischal N, Sreenivasan R, Boruah T, Singh J, Bugata S, *et al.* Unraveling the masquerade: Decoding

- mimics of spinal tuberculosis. *Indian J Musculoskelet Radiol* 2026;5:59-72.
6. Balasubramanian S, Bhari Thippeswamy P, Shanmuganathan R. Post-total hip arthroplasty imaging optimization through clinical scenarios in practice. *Indian J Musculoskelet Radiol* 2026;5:73-84.
  7. Gupta NA, Tyagi V, Saxena S, Katyal A, Shah AB. Imaging in osteomyelitis: Unveiling the secrets of bone infections. *Indian J Musculoskelet Radiol* 2026;5:85-96.
  8. Singh J, Rege S. Imaging in infective arthritis: A comprehensive review. *Indian J Musculoskelet Radiol* 2026;5:97-104.
  9. Venati U, Patel A, Iyengar KP, Susmitha NS, Botchu R. Uncovering the depths of myofascial infection: A clinicoradiological approach. *Indian J Musculoskelet Radiol* 2026;5:105-18.
  10. Sreenivasan R, Kumar R, Walia SK, Singh D. Image-guided intervention for targeted management of musculoskeletal infections: A case series. *Indian J Musculoskelet Radiol* 2026;5:124-6.

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