

Late Presentation of Hardware Related Osteomyelitis of the Radius

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Introduction

While internal fixation related osteomyelitis is common, it is usually diagnosed within the first few years after implant insertion.¹ We report our experience with a rare case of a late presentation of hardware related osteomyelitis of the radius 8 years after bony fixation, as well as successful treatment with irrigation, debridement, removal of hardware and antibiotics. This case represents the latest initial presentation of osteomyelitis after its hardware insertion that has been reported in the literature. Full and informed consent for publication of this case and associated images was obtained from the patient.

The Case

A 53-year-old male and otherwise healthy patient underwent open reduction and internal fixation of his left scaphoid and radius with no complications (see Figure 1). Eight years later, he developed open wound with intermittent drainage near his proximal incision site. He denied new trauma. Otherwise, he had no infectious symptoms including no fevers or chills nor elevation in white blood cell count or other inflammatory markers. Other than the inconvenience of intermittent drainage, he had no functional limitations and his range of motion in the affected wrist was unchanged.

T2 weighted contrast MRI demonstrated healed radius with no evidence of osteomyelitis, with no periosteal reactions and no sequestrum.

As clinical suspicion was high and symptoms were persistent, we proceeded with surgical exploration. He underwent a surgical excision of the draining sinus as well as removal of the deep buried hardware (see Figure 2). The draining sinus, upon exploration, demonstrated obvious penetration to the radius fixation plate. Intraoperative cultures demonstrated scant growth of *Staphylococcus aureus*. The Infectious Disease service arranged oral levofloxacin and rifampin for a total duration of 6 weeks. The patient healed uneventfully with no further complications.

Discussion

Subacute and chronic osteomyelitis results when an inflammatory reaction creates locally collected exudates, leading to blood vessel constriction. In turn, this leads to focal bone necrosis, creating a sequestrum of avascular bone fragments and often harbouring infection. This process usually takes 3 weeks to occur but can be subclinical for years.² Biofilms at retained hardware remain a significant risk factor.³



Figure 1. Original patient x rays upon presentation, demonstrating hardware location.

Risk factors for osteomyelitis include penetrating trauma and recent surgery, hematologic or untreated systemic infection, neurologic disorders such as paraplegia leading to pressure ulcers and adjacent soft tissue infections, immunocompromised state, uncontrolled diabetes, and vascular insufficiency (particularly in adults).^{2,4,5} Specific relative risk ratios for these factors has not been studied. *Staphylococcus aureus* is the most common etiologic agent.^{2,5}

For patients with postoperative osteomyelitis, the condition is often recognized early due to symptomatology. Implants are usually removed, with placement of an external fixation device for stability. Some surgeons may allow temporary implant retention to allow bone healing prior to infection treatment. Other early revision strategies, such as irrigation and debridement with temporary hardware maintenance, have also been described for the more common presentation of relatively early osteomyelitis treatment shortly after initial hardware placement.³ Clinical outcomes tend to be better for acute rather than chronic osteomyelitis treatment.⁶

Chronic osteomyelitis can lead to pain and lesser ability to participate in activities of daily living, even after eradication of infection and fracture union. Other complications may in-

clude sepsis, relapses, and the risk of malignant transformation. While the optimal duration of antibiotic therapy is not well studied, most physicians treat patients with antibiotics for 6 weeks. Despite this, there is no consensus on the best agents, routes of delivery, and duration.⁶

This late first presentation of a hardware-related osteomyelitis highlights the importance of recognizing remote causative factors, even in otherwise healthy patients demonstrating seemingly minimal symptoms.

References

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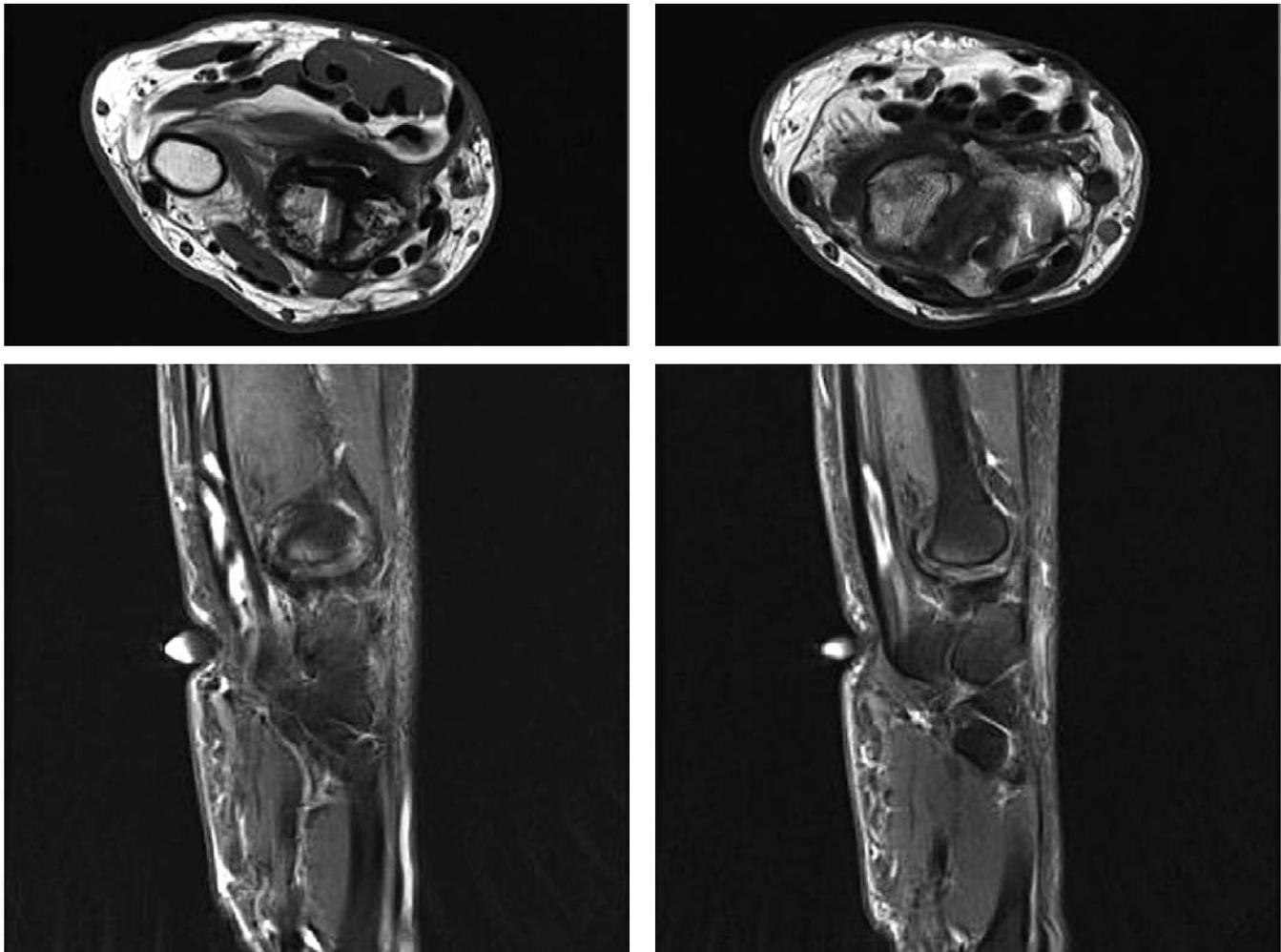


Figure 2. Postoperative MRI Images.