Saved by The Death Star: A Rare Case of A Multi-System Staph Aureus Infection

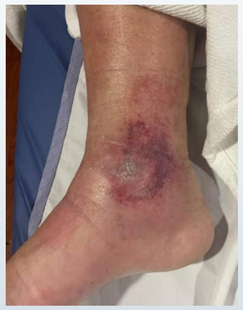
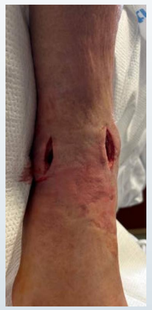
Kayla Curlis, DPM; Khase Wilkinson DPM, FACFAS
Mercy Health St. Vincent Medical Center- Toledo, Ohio

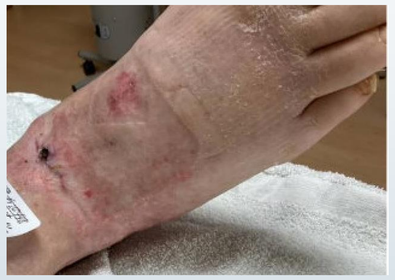
Statement of Purpose:

Staphylococcus aureus infections are a common cause of bacteremia and may result in metastatic and disseminated infections[1]. This case illustrates a multisystem infection due to methicillin-sensitive *Staphylococcus aureus* (MSSA), which ultimately progressed to septic arthritis of the ankle.

Literature Review:

Septic arthritis (SA) is a serious condition associated with significant morbidity and increased inpatient mortality. Prior literature reports mortality rates of up to 15% among hospitalized patients with SA[2]. Infection may spread to the joint through several pathways, including hematogenous dissemination, direct inoculation, or contiguous extension from adjacent infected tissues[3]. Septic arthritis is broadly classified as gonococcal or nongonococcal, with the latter most commonly caused by *Staphylococcus* and *Streptococcus* species. Nongonococcal SA is associated with a poorer response to antibiotic therapy and worse overall outcomes compared with gonococcal infections[1]. Patients diagnosed with SA frequently have underlying comorbidities, with rheumatoid arthritis (RA) demonstrating a particularly strong association. Additional risk factors include advanced age (>80 years), diabetes mellitus, RA, recent joint surgery within the past three months, the presence of a hip or knee prosthesis, and HIV infection[3]. The presence of RA may further complicate and delay diagnosis, as clinical symptoms of septic arthritis can be masked by underlying inflammatory joint disease[3]. Treatment for SA involves control of the infection, soft tissue coverage, and management of skeletal defects[4]. Final alternatives in these scenarios is arthrodesis to prevent amputation however; this can be difficult to achieve and maintain.

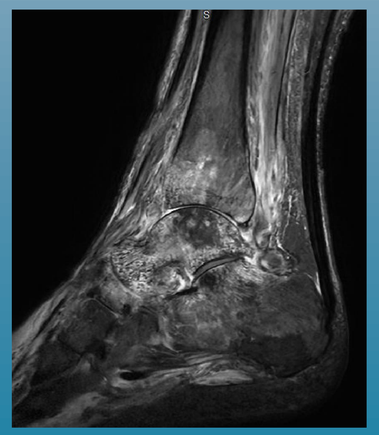
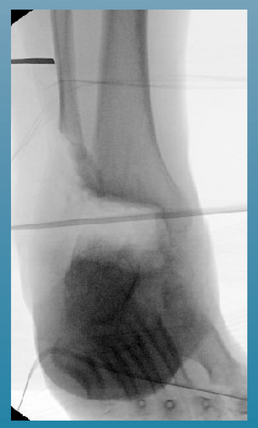
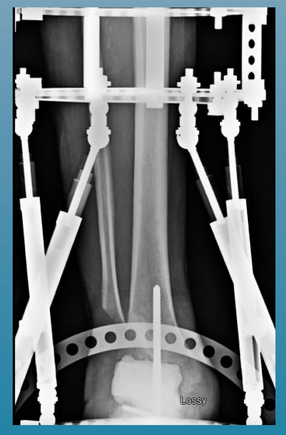



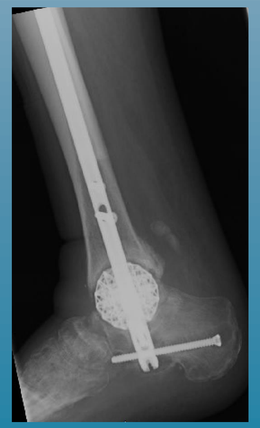


Case Study:

The patient is a 64-year-old male with a history of an ankle fracture in the 1980s treated with medial malleolar fixation, complicated by a chronic overlying medial ankle wound and poor compliance with medical follow-up. He experienced multiple falls following prior spine surgery, which were associated with fecal and urinary incontinence. He subsequently presented with fever and cough and underwent emergent revision spine surgery. During hospitalization, he developed upper extremity weakness. **Blood cultures (×2), urine culture, wound cultures** from both the back and ankle, and **ankle bone cultures** were positive for MSSA**.**

The patient remained hospitalized for six weeks and underwent extensive multidisciplinary evaluation and management. From a podiatric standpoint, treatment included ankle arthrotomy, multiple incision and drainage procedures (×4), bone biopsies, and talectomy with placement of an antibiotic spacer. After confirmation of negative biopsy results and completion of at least six weeks of intravenous antibiotic therapy, the patient underwent definitive reconstruction with tibiotalocalcaneal arthrodesis using an intramedullary nail and a 3D porous metal trabecular implant (Death Star).



Past Medical History:

- Coronary Artery Disease
- Cerebral artery occlusion with infarct
- COPD
- **Diabetes mellitus type 2**
- Hypertension
- Hyperlipidemia
- Lumbar stenosis with neurogenic dysfunction **(previous spine surgery)**
- MRSA history
- **Rheumatoid Arthritis**

Results:

The patient initiated protected weight bearing in a Charcot Restraint Orthotic Walker (CROW) boot at eight weeks postoperatively. Interval CT imaging demonstrated stable hardware with early osseous bridging to the implant. He continues to ambulate with a CROW boot and is almost one year out from definitive surgical fixation.

Discussion:

There are multiple surgical treatment options for managing septic ankle pathology, including internal fixation, external fixation, or a combination of both. In this case, a staged approach utilizing combined external and internal fixation was employed and yielded promising results. The patient's course was complicated by multisystem infection and prolonged hospitalization, which made definitive fixation challenging and raised concern for nonunion or recurrent infection. Close postoperative monitoring and prompt follow-up are essential, with the understanding that treatment failure may occur at any time.

References:

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