

Septic Arthritis of the Ankle Joint: A Case Report

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INTRODUCTION

We present a case study consisting of septic arthritis of the ankle joint that was initially overlooked on the patient's first presentation to the emergency department. The patient was diagnosed by the podiatry team during the patient's return visit and ultimately underwent a below the knee amputation.

CASE REPORT

The patient is a 75-year-old male, who presented to the emergency department and was evaluated by the emergency room physician. The patient had a medical history that was significant for diabetes mellitus, hypertension, chronic obstructive pulmonary disease, atrial fibrillation, congestive heart failure, hyperlipidemia, and gout. The patient had previously had bilateral ankle fractures and had an open reduction internal fixation of the left ankle at that institution in 2015. The right ankle was casted.

The patient presented accompanied by his daughter, and he reported increased pain and swelling to his left ankle for 5 days. The patient stated he walked more than usual the previous weekend and since then he had been experiencing increased pain. He also reported pain to touch. He was evaluated and radiographs were obtained. The radiologist read the images (Figure 1) as soft tissue swelling over the medial and lateral aspects of the ankle with severe chronic degenerative changes over the ankle joint with some collapse. At this time, no laboratory tests were obtained and no podiatry consult was requested. The assessment

after evaluation was left ankle pain and the plan was to ice, elevate, and apply a compressive dressing. The patient was instructed to follow up with the original physician who performed his ankle surgery and to return to the emergency department if his lower extremity symptoms progressed.

Two days after the patient's original presentation, he returned to the emergency department with reports of increased left lower extremity swelling and pain, along with a new onset of redness. The patient also complained of shortness of breath. The patient's daughter noticed he was showing abnormal behavior at the house and he was unable to bear weight to the left leg. He did describe subjective fevers and chills. With the increased symptoms and abnormal behavior, the daughter called emergency medical services. Upon arrival, the emergency medical personnel stated the patient's oxygen saturation was 88% on room air, so CPAP was initiated. Vital signs were within normal limits. Upon physical examination in the emergency room, the patient's left lower extremity was extremely edematous with erythema extending from the dorsal foot up to the distal one-third of the leg (Figure 2).

Increased temperature was apparent when compared to the contralateral limb. Well healed surgical scars were noted to the medial and lateral aspects of the ankle. No open wounds were visualized. The patient was able to perform digit range of motion, but was unable to perform ankle range of motion due to severe pain. Passive range of motion of the left ankle was also extremely painful and was unable to be adequately performed. Painful palpation was noted to

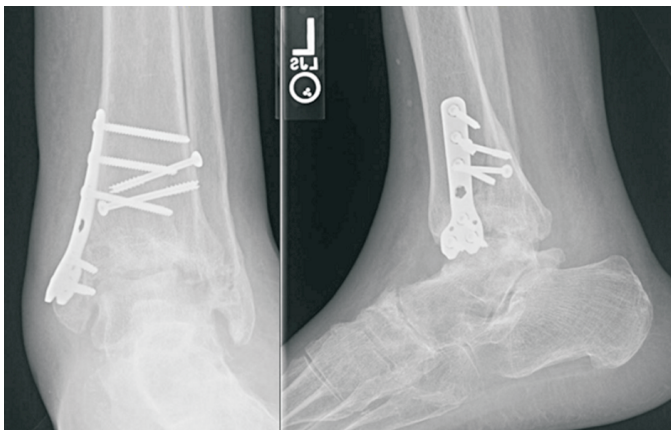


Figure 1. Sclerosis of ankle joint with retained ankle hardware.

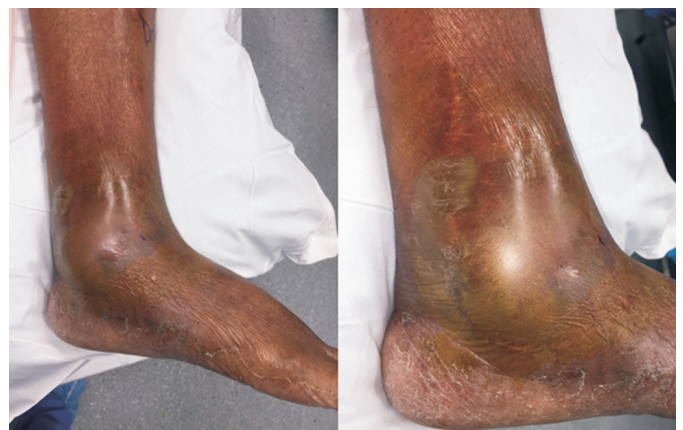


Figure 2. Severe edema, erythema, and obvious fluid collection noted at the medial ankle.

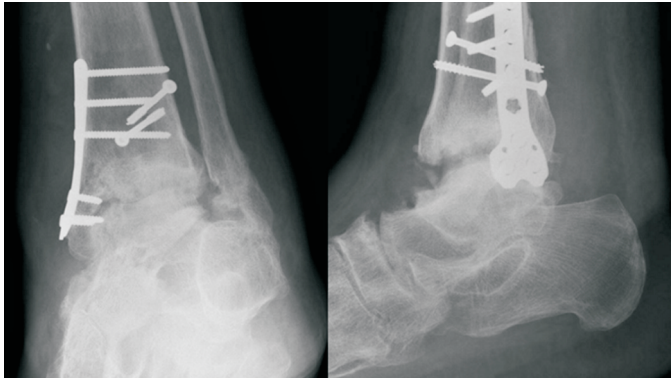


Figure 3. Further joint destruction appreciated at the ankle joint.

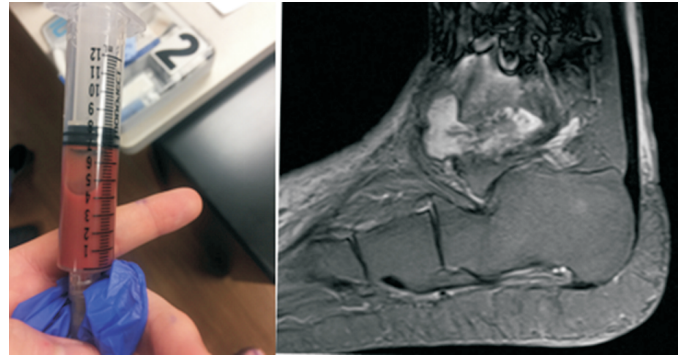


Figure 4. Purulent fluid drained from the ankle joint and magnetic resonance image showing fluid collection and ankle joint destruction.

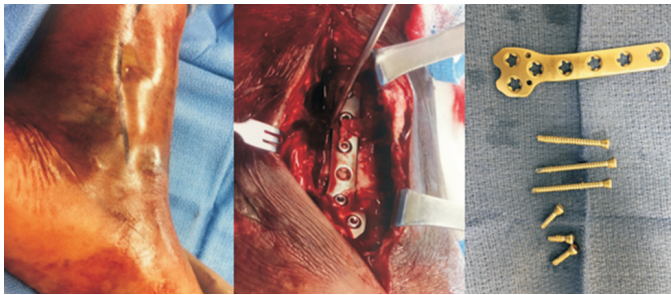


Figure 5. Incisional approach for hardware removal and drainage.

the medial, lateral, and anterior ankle. Fluctuance was noted to the anterior medial ankle region. The dorsalis pedis and posterior tibial arteries were non-palpable at this time, but were audible and documented to be biphasic with a hand-held Doppler.

Plain films were ordered and laboratory results were obtained on the patient. Notable results were the white blood cell count (11.9), C-reactive protein (46.2), and procalcitonin (30.5), BUN (91), creatinine (4.9), and potassium (7.4). Plain films showed severe sclerosis deformity with subchondral cyst formation of the tibiotalar joint and deformity of the distal fibula. Joint space narrowing and bony erosion were also seen (Figure 3).

A lower extremity ultrasound was performed bilaterally and was negative for a deep venous thrombosis. The podiatry team was consulted and tapped the ankle joint. Approximately 10 cc of purulence was obtained (Figure 4). The fluid was sent to the microbiology laboratory for analysis. Due to the patient's hyperkalemia and refusal of urgent dialysis, this case became a life versus limb situation. The anesthesia team felt it would be best to wait until the hyperkalemia resolved due to increased risk of cardiac arrest. A magnetic resonance image (MRI) was then ordered by the podiatry team for further imaging. Ankle joint effusion was seen on the MRI along with associated osteomyelitis of the talus and tibia (Figure 4).

The patient was admitted to the hospitalist team and podiatry followed as a consultant. Empiric antibiotics were

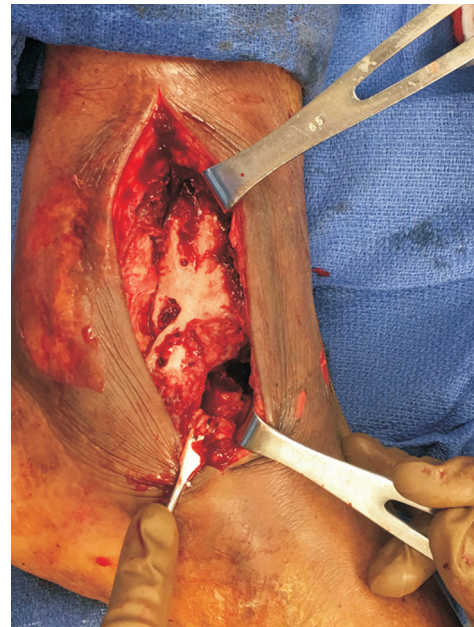


Figure 6. Severe joint destruction noted within the ankle joint.

started, but were ultimately changed to Ancef after the wound culture and intraoperative cultures grew Methicillin-Sensitive *Staphylococcus aureus*. The following day the patient's potassium level was within normal limits and he was taken to the operating room for an extensive incision and drainage along with removal of hardware (Figure 5).

Intraoperatively, approximately 40 cc of purulence was expelled. The talus and tibia clinically had osteomyelitis and there was relatively minimal cartilage intact at the ankle joint (Figure 6). The ankle incisions were packed open and vascular was consulted the following day.

The patient's ankle brachial indices showed inadequate perfusion for local healing to digits 1 and 2 on the left foot. He then underwent an arterial ultrasound, which showed moderate stenosis of the common femoral artery as well as mild stenosis of the femoral artery, posterior tibial artery, peroneal artery, and anterior tibial artery. After further assessment and multiple discussions with the patient,

patient's family, and physician providers, it was decided a below the knee amputation would most likely be the best procedure for the patient. Due to the extensive osteomyelitis, the patient's age, and multiple co-morbidities, and his refusal for any form of dialysis, major reconstruction with multiple surgeries was not a viable option for him at this time. The patient ultimately underwent a below the knee amputation performed by our vascular team.

Septic arthritis, although relatively rare, can be a severely debilitating condition. If left untreated, the affected joint can undergo irreversible cartilage destruction with associated osteomyelitis and ultimately lead to high morbidity (1,2). Clinical suspicion is of utmost importance when evaluating a patient presenting with monoarticular pain, erythema, edema, and increased temperature. Joint aspiration is the best

method of diagnosing a septic joint. Septic arthritis involves the ankle in approximately 7% of the cases and *Staphylococcus aureus* is the most common pathogen isolated from septic joints. Timely diagnosis with incision and drainage is critical to patient outcomes. There is limited literature on septic arthritis of the ankle and further investigation into this diagnosis and treatment protocols is warranted.

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