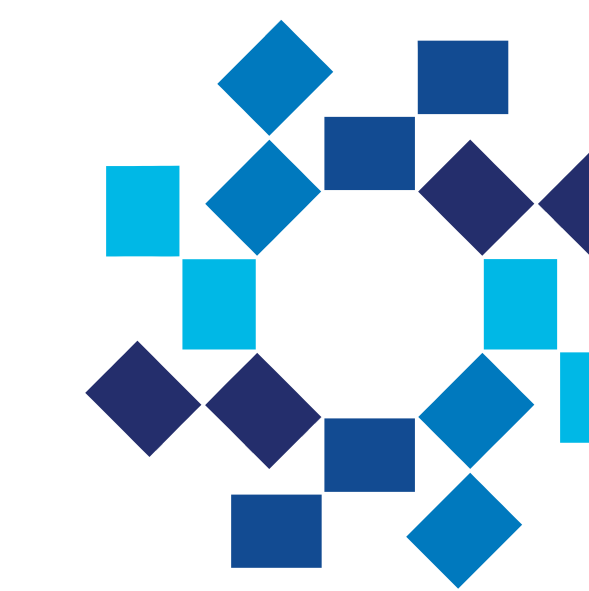


Antibiotic Impregnated Bone Cement Spacer for Treatment of Navicular Osteomyelitis after Naviculectomy



Hackensack
Meridian Health

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LEARNING OBJECTIVE

To present a case of limb salvage using an antibiotic impregnated bone cement spacer in a diabetic foot infection complicated by midfoot osteomyelitis.

LITERATURE REVIEW

Few case reports exist that address navicular osteomyelitis, an uncommon phenomenon. Osteomyelitis is frequently treated with surgical excision; however, this often results in compromised skeletal integrity and biomechanical instability causing a cycle of increased pressure, skin breakdown, and recurrent infection (1). Treatment modalities aimed at retaining the structural integrity of the foot may halt this cycle (2). We present clinical evidence of retained bone cement spacers as a viable option in reconstruction of the diabetic foot after bony resection.

CASE STUDY

Male in his 50s with a known history of IDDM and peripheral neuropathy presented to the hospital with diarrhea, vomiting, and a UTI. He also presented with a chronic, stable right hallux ulceration. He reported left ankle pain and redness without open wounds. An MRI was obtained and revealed fluid collection of the anterior ankle. As a result, the patient was taken to the OR for an exploratory incision and drainage (I&D) which revealed significant purulent drainage from the talo-

Figure 1a – Clinical Picture



navicular joint. Cultures grew MSSA and the patient received 4 weeks of IV antibiotics. Once antibiotics were stopped the left foot and ankle became cellulitic. A repeat MRI was consistent with navicular osteomyelitis with suspicious bone marrow edema of the talus. A repeat I&D was performed and bone biopsies of the navicular, talus, and calcaneus were obtained. The biopsy from the navicular was positive for osteomyelitis. After a discussion of surgical options, the patient returned to the OR for excision of navicular and placement of a bone cement, antibiotic spacer – impregnated with Tobramycin and Vancomycin – under fluoroscopic guidance. Patient was discharged with IV antibiotics for 6 weeks and placed into a Charcot Resistant Orthotic Walker. Presently, he is ambulating in diabetic shoe gear, pain free 16-months post-operatively with retention of the bone cement spacer.

Figure 2a and 2b – Radiograph and MRI



Lateral x-ray, sagittal T2 MRI exhibiting signs of infection in the area of the navicular.

ANALYSIS/DISCUSSION

Antibiosis with or without bony debridement has shown good results with early diagnosis and initiation of treatment. Bone cement spacers act to retain the structure and function of the foot. Complete removal of infected bone as well as ensuring appropriate size, shape, and fit of the spacer are fundamental in successful reconstruction. Bone cement is often combined with heat stable antibiotics to create antibiotic eluding cement, locally administering antibiotics and alleviating the bacterial load (3). Long-term retention of antibiotic spacers is not considered standard protocol but recent literature proposes acceptable limb function and infection control without necessarily needing further surgical intervention.

Figure 3a and 3b – Final Postoperative Radiographs



Post operative AP and Lateral x-rays; showing excision of infected navicular and replacement with antibiotic impregnated bone cement spacer

SUMMARY

Osteomyelitis of the hindfoot bones can be a devastating, limb threatening diagnosis. Foot amputations proximal to the Lisfranc complex are associated with compromised skeletal integrity and biomechanical instability. Given that the bones surrounding the navicular showed no signs of infection, a salvage attempt with a bone cement spacer was performed. Antibiotic impregnated cement spacers are a viable option in reconstruction of the diabetic foot after bony resection.

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