

The Use of Antibiotic Infused Bone Cement to Maintain Correction following Minimally Invasive Bunionectomy Infection

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Statement of Purpose:

Minimally invasive surgical (MIS) techniques are becoming increasingly popular in foot and ankle surgery. Recent literature suggests similar patient outcomes when compared to open approaches for mild to moderate hallux valgus correction¹. However, some studies report high rates of complications². We present a case report of a 66 year old male who developed a postoperative infection following a MIS bunionectomy and was successfully treated with a novel technique.

Literature Review:

Traditionally, surgeons have utilized open procedures for the correction of hallux valgus deformities. Recently, however, there has been growing interest in the use of MIS techniques to address mild to moderate hallux valgus deformities.

MIS approach for the treatment of hallux valgus was first described by Bosch in 2000 as a percutaneous, extra-articular transverse distal first metatarsal osteotomy maintained with an axial k-wire³. The advantages with this approach are reduced surgery time and surgical trauma while preserving blood supply to the metatarsal head and healing soft tissues. This has the theoretical benefits of reduced recovery time, leading to decreased morbidity^{2,3,4,5}.

Despite encouraging preliminary results, the majority of studies are case series without comparison or control groups and there is currently not enough evidence to favor MIS over open techniques^{1,6}. There is conflicting evidence and disadvantages include limited visualization of the different tissue layers, increased fluoroscopy time, and concerns over long-term stability. Some studies reported high complication rates, such as increased pin track infections^{1,2,7}. Studies of higher levels of evidence, including randomized controlled trials, are needed before advocating MIS over open techniques.

Case Study:

The patient is a 66 year old male with past medical history of hypertension who presented with a painful hallux valgus deformity (Fig 1). He underwent a percutaneous, transverse distal metatarsal osteotomy with K-wire fixation (Bosch technique) (Fig 2). Four weeks postoperatively, the patient developed a surgical site infection requiring admission for IV antibiotics and further work-up. An MRI revealed findings suggestive of osteomyelitis of the first metatarsal head. The patient underwent surgical debridement with hardware removal, followed by insertion of vancomycin infused polymethylmethacrylate bone cement (Fig 3). The antibiotic cement was placed within the intramedullary canal as a buttress to the first metatarsal osteotomy site in order to maintain correction. Cultures were obtained but negative for a specific organism. Postoperatively, he completed a six week course of empiric IV antibiotic therapy and healed without complication. The patient returned to unrestricted activity by 10 weeks postoperatively, and is currently pain free without signs of infection or loss of correction with the antibiotic cement still in place (Fig 4).



Fig 1 Pre-op Fig 2 Bosch technique Fig 3 7 weeks post-op Fig 4 5 months post-op

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Analysis & Discussion:

Recent literature suggests that MIS bunionectomy procedures may serve as an alternative procedure for mild to moderate symptomatic hallux valgus deformities with similar patient outcomes to traditional open techniques⁵. Regarding complications, there have been overall low reported rates of pin track infections. In a case series of 126 patients (146 feet) by Scala and Vendettuoli, there was a skin infection in one foot (0.7%) that resolved with local wound care⁸. Ianno et al reported no infections in their case series of 72 patients (85 feet)⁹. Bauer et al had similar results with no infections in 168 patients (189 feet)¹⁰.

Our case report highlights a novel technique in the management of postoperative infection following the Bosch minimally invasive bunionectomy technique. The report demonstrates that antibiotic infused bone cement can be used to successfully treat local infection while maintaining surgical correction.

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