

Subchondral Synovial Cyst of the First Metatarsal Treated by Excision and Calcium Phosphate Bone Substitute Along With 1st MPJ Hemi-Implant and Application of Mini-Rail External Fixator.

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Purpose & Literature Review

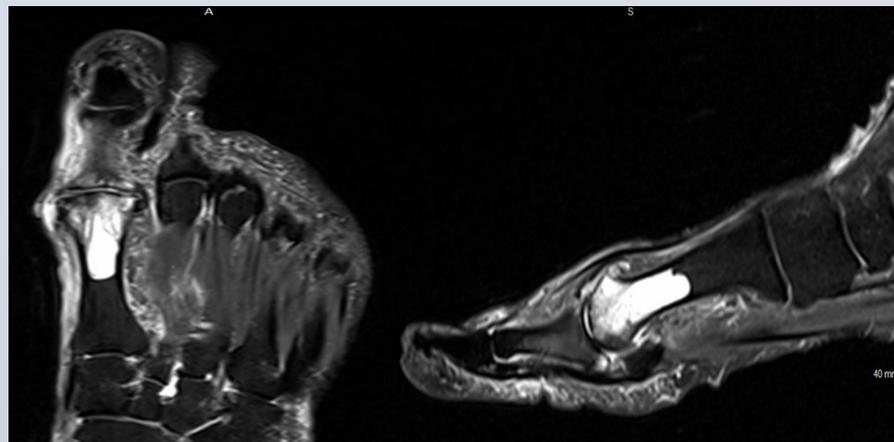
Intraosseous cysts of the first metatarsal are not well defined in the literature for patients with 1st MPJ arthritis. Our aim is to present a unique surgical treatment for removal of the cyst along with repair of 1st MPJ.

Subchondral synovial cysts, also referred to as intraosseous ganglia, are benign cystic bone lesions that are similar to those found in soft tissue. They are reported in the 4th and 5th decade of life and mostly occur in long bones. They can however occur in other areas such as the ileus and talus. In a study by Sakamoto et al, a population of 17 patients were all found to have intraosseous ganglia at the epiphysis or near the joint. In addition to this, osteoarthritis was only found in 12% of this population. These patients were treated with curettage and bone graft or arthroplasty but not both.

Wakabayashi et al reported one case of an intraosseous ganglion of the first metatarsal head however only commented on MRI findings. Rubenstein et al reported an intraosseous ganglion in the third cuneiform which was treated via curettage.

Methodology/Case Presentation

A 57 year old non-diabetic female presented with a chief complaint of a left foot chronic non-healing wound of the dorsal medial 1st metatarsal head with 1st MPJ pain. Radiograph only revealed decreased joint space at the 1st MPJ. Continued pain with ambulation despite conservative modalities warranted further imaging. An MRI study showed a large degenerative cyst along the 1st metatarsal head extending to the distal diaphysis consistent with an interosseous cyst. The patient opted for surgical intervention.



MRI, Left Foot, Axial View, May 2017

MRI, Lateral View, Left Foot May 2017

Procedures

The intraosseous cyst was excised using a burr hole on the dorsal aspect of the metatarsal head. Gross intraoperative findings revealed a jelly-like material within the lesion. The remaining defect was filled with silicate substituted calcium phosphate bone graft. The first metatarsal head was remodeled and a hemi-implant was applied to the proximal phalanx to restore joint mobility. Application of a mini-rail external fixator was applied to help distract the 1st MPJ and stabilize the joint to allow the bone graft to solidify and remodel.



Excision of Cyst



Application of Mini-Rail Ex-Fix



Intraoperative Fluoroscopy with Implant and Mini-Rail



4 Weeks after Surgery

Results

External fixator was removed in office at 3 weeks and patient was allowed to fully weight-bear in a surgical shoe. A 6 weeks the patient was transitioned into regular shoes and returned to regular activity. Pain at the 1st MPJ was greatly resolved and range of motion was greatly improved compared to the pre-operative examination.

Discussions

Subchondral synovial cysts are common in larger joints such as the knee but are rarely reported in the foot. They have been known to develop longitudinally in areas of bone marrow-like lesions in patients with or at risk for osteoarthritis. Although many osseous cysts the foot occur in the distal or proximal phalanges, they are often treated via amputation.

Given that our patient was a healthy and regularly active patient, limb salvage was our priority. Through our procedure we accomplished not only excising the cyst and substituting the defect with synthetic bone graft, but also restored function to the 1st MPJ.

Resources

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No Disclosures