

### Purpose

Ankle fusions performed in the presence of Osteogenesis Imperfecta (OI) can present multiple challenges. We present a patient with OI that underwent multiple surgeries due to nonunion and subsequent osteomyelitis. We ultimately placed an intramedullary nail impregnated with antibiotic cement which allowed us to maintain position.

### Literature Review

There is limited discussion in the literature regarding the use of an antibiotic coated intramedullary nail for ankle fusion (1, 2). Also, due to the rarity of the disease, there is scant information in the literature in regards to foot and ankle surgery in patients with OI. As a result of osteomyelitis, this patient necessitated the removal of all previously placed hardware and application of antibiotic coated IM nail.

### Case Study

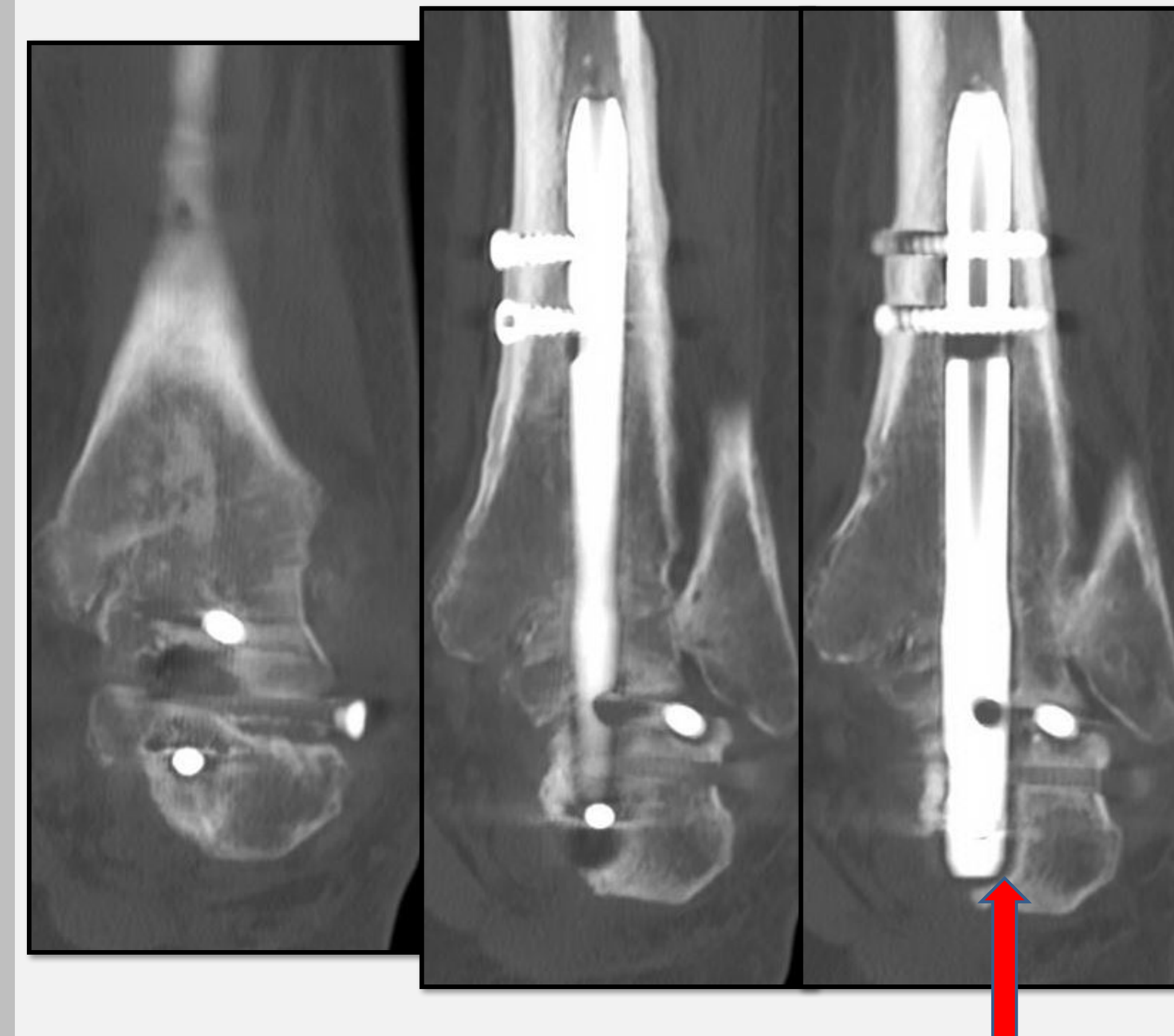
A 30-year-old obese female with history of Osteogenesis Imperfecta presented with persistent left ankle pain and discomfort due to severe degenerative joint disease. She was initially treated three years ago with attempted ankle fusion through anterior approach with tibial bone graft and anterior plate. She subsequently went on to a nonunion and revision surgery was carried out a year later. This consisted of tibio-talar-calcaneal fusion with intramedullary nail fixation. The patient became infected and dehiscence at the surgical site occurred five months after surgery. We then took the patient back to the operating room and removed all hardware obtained bone biopsies and placed antibiotic beads. Bone biopsies were positive for osteomyelitis for which she received six weeks of IV antibiotics followed by 6 weeks of oral antibiotics. The antibiotic beads were left intact for several months at which time we returned again to the OR and placed an antibiotic impregnated intramedullary nail. This has remained intact since that time which was approximately 16 months ago. She was non-weight bearing for 3 months following the surgery followed by several months of weight bearing in a high tide boot. Radiographic findings show pseudoarthrosis of the ankle and subtalar joints.

### Analysis/ Discussion

The patient is now 24 months post – op and is ambulating with minimal pain in accommodative shoes and insoles. The patient is very satisfied at this point due to her ability to ambulate and function with minimal pain. In the case of nonunion and osteomyelitis in the setting of OI, application of IM nail coated with antibiotic cement can be successful in maintaining position of the ankle and allow for fusion and non-painful pseudoarthrosis.



**Intra – op PMMA Rod**



**Pre-Op with Loose Infected Nail**



**24 months post - op**

### Previous Failed Ankle Fusion



### References

1. Staged Treatment of Infected Tibiotalar Fusion Using a Combination Antibiotic Spacer and Antibiotic-Coated Intramedullary Nail. Miller J, Hoang V, Yoon RS, Liporace FA. J Foot Ankle Surg. 2017 Sep - Oct;56(5):1099-1103. doi: 10.1053/j.jfas.2017.04.015. Epub 2017 Jun 20. PMID: 28645549
2. Tibiotalocalcaneal fusion with a cemented coated retrograde nail as a salvage procedure for infected ORIF of the ankle. Herrera-Pérez M, Boluda-Mengod J, Gutierrez-Morales MJ, Pais-Brito JL. Rev Esp Cir Ortop Traumatol. 2017 Jul 3. pii: S1888-4415(17)30068-1. doi: 10.1016/j.recot.2017.04.004. [Epub ahead of print] English, Spanish.