

Advantages of Biodegradable composite in management of Chronic Osteomyelitis

Author : Dr Avinash Kumar Co-Author : Dr Rajesh Pareek
Department of Orthopedics
Dr D Y PATIL MEDICAL COLLEGE

INTRODUCTION

Chronic osteomyelitis is a condition where there is sequestrum formation which is surrounded by newer bone formation creating an envelope which renders systematic antibiotic ineffective^{1,2}; therefore, it requires surgical debridement which creates dead space in the involved bone. Traditionally this dead space is filled with antibiotic coated PMMA substitute which needs to be removed at a later stage³. The use of biodegradable implants reduces the requirement of secondary surgeries at the same time promoting bone healing due to penetration of host tissue as it is slowly absorbed.



Figure 1 : Xray and MRI showing sclerosis and sequestrum of the right distal tibia which is suggestive of chronic osteomyelitis.

MATERIAL AND METHOD

Osteomyelitis of the lower limb was lower limb was thoroughly debrided and vancomycin coated calcium sulphate pellets were used to fill the dead space. Patient was followed up every 2 weeks for first 3 months and then every month for the next 6 months. A check x-ray was done at every follow up.



Figure 2. Follow up Xray done at 2 weeks and 8 weeks post debridement

RESULT

Infection was eradicated in a single surgery procedure and the pellets started dissolving by 2 weeks and were completely resorbed by 8 weeks with new bone formation seen on Xray by 3 months.

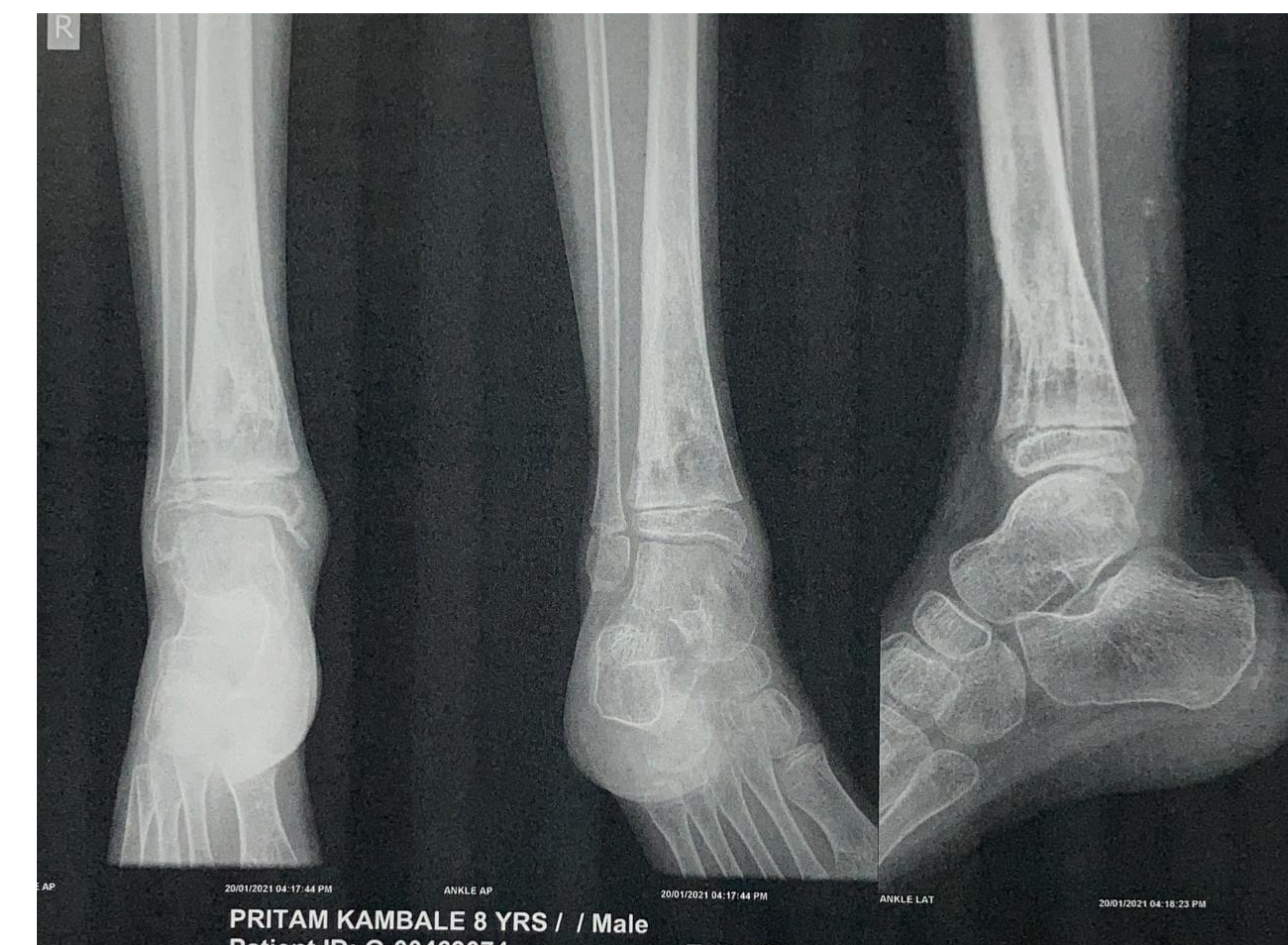


Figure 3. Final Post OP follow up Xray at 6 months

DISCUSSION

Use of local antibiotics in the treatment and prevention of osteomyelitis is safe and effective. It's advantages over systemic therapy include tremendously higher concentrations of antibiotics at the desired sites⁴. The majority of current treatment modalities require a second procedure for removal of the antibiotic delivery device. Biodegradable composite holds promise in their ability to customize antibiotic treatment with lesser morbidity compared to PMMA.

References

1. Trampuz A, Zimmerli DW. Antimicrobial agents in orthopaedic surgery. *Drugs*. 2006;66(8):1089–106.
2. Brady RA, Leid JG, Calhoun JH, Costerton JW, Shirtliff ME. Osteomyelitis and the role of biofilms in chronic infection. *Federation of European Microbiological Societies Immunology & Medical Microbiology*. 2008;52(1):13–22.
3. Cierny G, Mader JT, Penninck JJ. The classic: A clinical staging system for adult osteomyelitis. *Clinical Orthopaedics & Related Research*. 2003;414:7–24.
4. Mayberry-Carson KJ, Tober-Meyer B, Smith JK, Lambe DW, Costerton JW. Bacterial adherence and glycocalyx formation in osteomyelitis experimentally induced with staphylococcus aureus. *Infection and Immunity*. 1984;43(3):825–33.