

# Treatment of delayed union secondary to post traumatic osteomyelitis tibia using anti-biofilm coated intra-medullary interlocking nail

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## INTRODUCTION:

Implant related Infection has been the most common reason for implant failure accounting for about 2-5% of all orthopedic surgeries. Commonly the infection of implants is due to the biofilm formation, hence new research focused on coated implants that can prevent formation of biofilm. The type of coatings can be divided into anti-adhesive and bactericidal coatings. In recent years Noble metal nanoparticles has been used as an alternative for the antibiotic coating. It is considered bioinert, anti-corrosive and biocompatible. Gold and silver coating gives an osteointegrative and anti-inflammatory effect. Combination Silver, Gold and palladium group metals has a synergistic effect hence can be used as a biocompatible matrix. The coating produces a galvanic effect preventing adherence of bacteria onto the implant surface hence reducing the formation of biofilm.

## REPORT:

A 16-year-old boy presented with closed comminuted fracture of proximal 1/3 right tibia and fibula following a motor vehicle accident. We proceeded with antegrade interlocking nailing (ILN) of tibia. This was complicated with surgical site infection, culture *Pseudomonas Aeruginosa* hence culture sensitive antibiotics was given after wound debridement.

He presented at 6 months post op with septic nonunion with discharge from the surgical site. The ILN was removed, and external fixation was applied. Intraoperatively noted a sinus communicating with the fracture suggestive of osteomyelitis of right tibia and antibiotics was given accordingly. After 8 weeks, the external fixator was removed, and an antibiofilm coated ILN (Orthosyn, Bactiguard, Malaysia) was inserted.



**Figure:** Radiograph of right Tibia/Fibula AP view, A: Postoperative Orthosyn ILN nail insertion, B: 3 months post-surgery, C: 2 years post-surgery,

The reamed material was sent for culture and came bac on 3<sup>rd</sup> post operative day as positive with *Methicillin Resistance Staphylococcus Aureus* (MRSA) growth, and he was then started on 6 weeks of MRSA sensitive antibiotics.

We decided not to remove the ILN and closely monitor his blood parameters and signs of infection. Union was duly achieved as about 3 months after Orthosyn ILN insertion. At 2 years follow up he was ambulating independently with no signs of infection.

## CONCLUSION:

Antibiofilm coated implant is a good option in treating delayed union secondary to osteomyelitis with good clinical outcome.

## REFERENCES:

1. Basova et al. (2021). The use of noble metal coatings and nanoparticles for the modification of medical implant materials. *Materials & Design*, 204