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IN VIVO EVALUATION OF ORTHOPAEDIC METAL IMPLANT COATED WITH SILVER COMPOSITE: POTENTIAL TREATMENT MODALITY FOR IMPLANT RELATED INFECTION

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ABSTRACT

The aimed of this study is to evaluate the potential effect of orthopaedic metal implant (plate) coated with silver composite in *in vivo* experiment setting using rabbit as animal model. Our hypothesis was that orthopaedics implant coated with silver would exert both bacteriostatic and bactericidal effects against certain microorganisms. With the approval from the Institutional Animal Care and Use Committee, all rabbits were randomly divided into two groups and underwent surgical procedure. In Group 1 (n=6), the right tibia was implanted with a silver-coated metal plate. While in Group 2 (n=6), the left tibia was implanted with a non-coated metal plate. The plates were implanted after six hours of tibial bone exposure. No antibiotics were administered. Animals were sacrificed at three weeks and. The implanted tibia was excised *en bloc* and evaluated by means of microbial assessments, radiograph evaluation, gross inspection and histological analysis for any infection effects. After 3 weeks of implantation, microbial analysis revealed fewer colonies were noted at study group compared to control. By combining the radiograph, gross and histological data collected during the experimental follow up, there is no periosteal reaction noted at the surrounding on implanted area. The outcome of this study revealed positive response of the silver as antibacterial agent. This study indicated that silver has antibacterial properties. This result suggested that orthopaedic metal implant coated with silver composite may have the potential to prevent implant related infections.