AN IN VITRO STUDY TO EVALUATE AND COMPARE THE EFFECT OF PHOTODYNAMIC THERAPY, LASER AND TETRACYCLINE SOLUTION ON DECONTAMINATION OF DENTAL IMPLANT SURFACES.

by

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ABSTRACT

Title: An in vitro study to evaluate and compare the effect of photodynamic therapy, laser and tetracycline solution on decontamination of dental implant surface

Background and Objectives: Peri-implantits is an inflammatory condition that affects soft and hard tissues surrounding the functional implant resulting in bone loss and implant loosening. However peri-implantits can be addressed by other modalities which includes use of antibiotics, antisepsis, LASERS, photodynamic therapy. The aim of this in vitro study is to evaluate and compare the effectiveness of LASERS, tetracycline solutions and photodynamic therapy in bacterial decontamination of dental implants.

Methodology: 30 dental implants were contaminated in *Staphylococcus aureus* suspension for 5 mins and then implants were divided into 3 groups(n=10). Group 1 (n=10) implants were surface treated using Laser. Group 2 (n=10) received treatment using PDT (Dye+Laser). Group 3(n=10) were treated using tetracycline. Decontaminated implants after saline irrigation were immediately transferred to 1ml of peptone water. The tubes were vortexed, broth was inoculated on Mac-conkey agar. For each implant three such inoculums were made. Plates were then incubated at 37^0c for overnight. Colony forming units were noted using digital colony counter.

Results: When two groups Laser and Photodynamic therapy were compared, it confirmed that photodynamic therapy was more effective than the laser (p value <0.05). When Laser and tetracycline groups were compared it showed tetracycline was more effective than laser (p value <0.05). When PDT and tetracycline groups were compared it indicated that there was no significant difference between the groups (p=0.85). Thus, it confirmed that both the groups showed effective reduction of colony forming units.

Conclusion: The present study suggests that use of PDT and tetracycline solutions provided satisfactory results in terms of reduction in colony forming units as compared to use of laser.

Keywords: Peri-implantitis; Laser; Photodynamic therapy; tetracycline