ORIGINAL ARTICLE

An *in vitro* evaluation of microleakage in platform-switched implants at implant–abutment interface by contamination assessment of implant wells and respective abutment surfaces

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ABSTRACT

Background and Objectives: In contemporary implant dentistry, the success of implant treatment is assessed by measuring the crestal bone level apart from osseointegration. Peri-implant bone plays a vital role in the esthetics of implant restorations. With loss of peri-implant bone, soft tissue loss happens which eventually compromises the esthetics and mechanical properties of restorations. To prevent marginal bone loss, many inventions are made by modifying the implant designs, implant–abutment connections, and techniques. Platform-switched concept is one such invention evolved to prevent peri-implant bone loss. This beneficial effect of platform-switched implants was studied by many researchers. However, few studies were reported in the literature on microleakage in platform-switched implants. Thus, the purpose of this study is to evaluate microleakage at implant–abutment interface in platform-switched implants.

Materials and Methods: Fifteen in-built platform-switched implants and corresponding abutments with internal hexagonal design were connected using screws. After the confirmation of the sterility of the implants and abutments, the assemblies were incubated in brain–heart infusion broth inoculated with *Staphylococcus aureus* for 14 days at 37°C. After 14 days, the implants and abutments were disassembled. Samples were collected from three different sites, i.e., walls of the wells of the implants, the deepest portion of the wells of the implants, and the surface of the abutments with help of paper points. Using the samples, colony counting and Gram staining were done to evaluate the microleakage at the implant–abutment interface.

Results: Microbial contamination was found to be present at all the sites from which samples were collected. $P < 0.05$ was found when the different sites were compared with each other. The abutment surface found to have the least contamination, and the walls of the implant wells found to have the highest contamination.

Conclusion: Within the limitations of this study, it was concluded that microleakage is present in the platform-switched implants with screw-retained internal hexagonal connections at the implant–abutment interface.

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