

The Use of Original or Compatible Abutments in Implant Dentistry

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Most dental implant systems consist of two components: the implant that is placed during the first surgical phase, and the abutment that is later screwed onto the implant to support the prosthetic restoration.

Marginal bone level around fixture's neck in implant therapy is a challenging process and maintaining it over time can be an equally demanding task. Marginal bone preservation is subject to both mechanical and microbiological aspects of the implant abutment connection. Assessment of leakage in vitro is one of the characteristics that may be correlated to clinical performance of the implant system, and it is one of the factors that should be taken into consideration when selecting components for an implant system.

Reducing overheads in the dental office or in the dental laboratory may lead to adopting alternative solutions involving the use of non-original or compatible abutments (i.e., abutments produced by different manufacturers). However, the design of abutment joints is hence carefully matched with implant connection because biomechanical properties depend on factors such as materials, tolerance, connection design, and preload.

Implant manufacturers' aim to reduce the mobility of this connection by engineering of a physically tight connection with a high degree of precision at the sub-micrometer level. Nevertheless, high costs of such components lead dentists to use compatible and less expensive components.

Lang et al. [1] showed an in vitro study that CAD/CAM generated non-original abutments; the original screw heads did not fit into the abutment heads. Alves et al. [2] observed an *in vitro* test that the degree of misfit between original abutments and original implants was approximately 50% of that observed with compatible abutments. Gigandet et al. [3] proved that the rotational misfit of a non-original abutment was higher compared to the original abutments, also, they revealed that the combination of grooves and surfaces was completely different between original and non-original abutments. Berberi et al. [4] demonstrated that the use of compatible abutment components with original implants showed significant leakage when compared to the use of abutment and implant from same manufacturer.

In daily practice, dental technicians and practitioners often select compatible abutments for financial reasons. Compatible components differ in the design of connecting surfaces, shape, dimensions, and material. The differences in design are possibly related to patent issues that don't allow exact replication of components and/or related to the precision level and the quality control of materials used during the manufacturing process.

The use of compatible abutment components with original implants showed significant variables and we can conclude that mixing original and compatible components should be avoided.

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