ROTATIONAL TOLERANCES IN ABUTMENT-IMPLANT CONNECTION FOR ORIGINAL AND COMPATIBLE ABUTMENTS

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Aim: the importance of rotational tolerance on the stability of the screw joint has been proven. Nowadays, several non-original abutments are available, often lacking experimental background. The aim of this study is to investigate the rotational freedom in a conical abutment-implant connection of original and compatible abutments in as-received condition and after several screw tightenings.

Methods: thirty titanium abutments and AnyRidge implants were selected. Ten were original EZ Post abutments (Group 1) and twenty were compatible abutments of two different manufacturers (Group 2 and Group 3). The rotational tolerance of the connection was measured using a tridimensional optics system in as-received condition (Time 0), after tightening the screw at 35 Ncm (Time 1), after tightening 4 times at 35 Ncm (Time 2), after tightening one more time at 45 Ncm (Time 3), and after tightening 4 more times at 45 Ncm (Time 4).

Results: original abutments showed the lowest values of rotational tolerances (min 0.2°, max 1,48°), while the Group 3 showed the highest values, reaching 3° in Time 4 experiment. After screw tightenings, the difference in results between original and non-original abutments become significant ($p < 0.05$) for each experimental condition.

Conclusions: non-original compatible abutments may cause increased rotational tolerance, expecially after multiple screw tightenings, undermining connection stability.

DENTAL 3D DIGITAL WORKFLOW USING AN OPEN-SOURCE 3D SOFTWARE PROGRAM

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Aim: digital field applied to dentistry is characterized by rapid growth. Dental practitioners and technicians intervention in terms of a correct drafting of the operations to achieve the project and then the product is fundamental both from a qualitative and quantitative point of view. There are several ways to obtain good results, but the right sequence in the use of suitable tools and selection of "simple" steps can significantly reduce computational effort. In fact, an incorrect operational sequence often returns incorrect results that fail or otherwise generate altered files. The purpose is to provide a more schematic and practical guide to the use of open-source software.

Methods: the Autodesk Meshmixer open-source software program was used. After examining and comparing several procedures available in literature and/or scientific websites, we outlined the workflows by illustrating the most suitable tools that require less effort from the computer. They permit to create temporary pre-milled crowns, gnathological night guards, rather than an individual tray or a diagnostic wax-up.

Results: after an accurate analysis of methods, time and tools used, we reached a new operational sequence that is certainly more schematic and contains advantages such as simplicity, speed, and less computational effort.

Conclusions: this work outlined a procedural and instrumental work-flow that allows clinicians to start and finish a 3d design using simple steps with time spare and good results.