**Zirconia Implant Abutments for Posterior Single-Crown Replacement – 36 Months Results**

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**Introduction and Objectives**

The aim of the present prospective study was to assess the clinical performance of a prefabricated zirconium dioxide (Y-TZP) implant abutment for single-tooth replacement in the posterior region over an investigation period of 5 years. Here, the results after 36 months in function are reported. The following hypotheses were investigated: a) The use of this all-ceramic abutment for the above-mentioned indication is feasible and is associated with an increased risk of fracture; b) the use of the abutment is associated with healthy periimplant tissue conditions.

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**Material and Methods**

Forty implants of the XIVE® Plus screw type implant system (DENTSPLY Friadent, Mannheim, Germany) were inserted in the posterior region of 24 patients. After the healing period the implants were provided with all-ceramic abutments made of zirconium dioxide Y-TZP (FRIADENT® CERCON® Abutment, DENTSPLY Friadent). All-ceramic crowns (CERCON® smart ceramics, DENTSPLY DeguDent, Hanau-Wolfgang, Germany) were used as superstructures and cemented by the conventional method. The following parameters were used to document the state of soft tissue: modified plaque index (mPI), modified sulcus bleeding index (mSBI), and pocket depth (ST). Mesial and distal bone levels were determined on radiographs during the prosthetic treatment and at the 12-months, 24-months and 36-months recall. The Periotest® (Medizintechnik Guten, Bensheim, Germany) was used to determine implant stability.

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**Results**

38 implants could be followed up after 36 months in function. Two abutments exhibited a screw loosening and rotational misfit and had to be removed. In the remaining 36 implants the parameter mSBI (0.8) was indicative of a low inflammatory status of the mainly healthy soft tissue in the presence of good oral hygiene (mPI<0.3). ST generally was at a low level. Compared to the baseline situation, the mean proximal bone level remained stable in the maxilla. In the mandible a partly significant bone apposition could be observed during the 36-month period of functioning. Mean Periotest® values were -1.6 in the maxilla and -4.0 in the mandible. Neither implant loss nor crown fractures occurred. Chipping of parts of the veneering ceramic was registered in 8 of 36 implant restorations (22%).

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**Conclusions**

The hypotheses of the study could be confirmed after an observation period of 36 months. Under largely healthy and non-inflammatory periimplant conditions in hard and soft tissues, no fracture was noted in the all-ceramic abutments. The chipping and rotational misfit events must be critically monitored during the further course of the study.