Discussion

Analysis of the broken zirconia implant abutment gave insight about the cause of fracture.

For Procera abutments with the metallic nut, the friction fit system lost adequate retention after a short service time in the mouth leading to loosening of the inserted restorations. According to complaints of the treating dentists, it is not recommended to reassemble the metallic nut and tighten the fixation screw as this will not result in reliable retention of the restoration. In such case, it is recommended to insert a new abutment from the manufacturer using patient’s records. Moreover, over-tightening the fixation screw beyond the recommended torque could lead to generation of wedging forces inside the zirconia abutment.

The screw head could exert pressure on the metallic nut leading to spreading of its vertical walls. Using a confirmatory X-ray before tightening the fixation screw and keeping to the recommended torque could prevent such problem. For cases with marked angle correction, it is recommended to use a metallic abutment in order to avoid over-reduction of the axial walls.

On the other hand, using single component zirconia implant superstructure, which is composed of zirconia abutment and the framework as one component, could facilitate easier handling and simplify the insertion procedure due to reduction of the components used.

Moreover, careful design consideration of the requirements of both the abutment and the zirconia framework is mandatory to ensure good function of each element. Lack of adequate support beneath the veneer ceramic or over-reduction of the axial walls of the zirconia abutment could lead to unexpected fracture.

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