

# Utilization of Zirconium Oxide in Fixed Restorations on Implants and Natural Teeth—a Case Report

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After the development of veneering ceramics, glass ceramics, and glass infiltration ceramics had, for the most part, decided what kind of veneering material would be used, eg for inlays or minor fixed restoration work, the discussion about dental ceramics has no doubt been revived by the introduction of zirconium oxide (Kappert 1999). As a result, there still are many open questions regarding zirconium oxide, among others those pertaining to its preparation, processing techniques and applicability for implant prosthetics.

The following documented case involves the restoration of a maxilla (teeth 17–25) with the listed variations in full ceramic. This detailed documentation regarding the work that was done allows the reader, on the one hand, to follow the planning and procedural process used but also to critically evaluate the dental and prosthetic implementation on the other. The materials, instruments and procedures used by the authors have been listed so that the reader can also use them for similar work.

## Case presentation

### Clinical Information

The documented case involves common baseline findings often encountered in everyday practice.

The 66-year-old female patient presented with the question if the aesthetic image of the crowns on her front teeth could not be improved. Irrespective of this esthetic concern, we also noticed, from

a clinical perspective, that some of the crowns has loosened, some of the ceramic veneers had chipped and that there were caries lesions at crown margins, so that the current condition had to be deemed insufficient (Fig. 1). We made photographs and constructed models in order to make a detailed analysis or modification recommendations, respectively.

### Laboratory Work—Wax-up /production of temporary restorations, braces and preparatory devices

The mounted models and photographs we provided, gave the dental technician the first opportunity to assess the situation, possible problems and feasible results. In the present case, we created a wax-up of the front teeth (Fig. 2) to produce a planning device by using a doubling and a flexible brace (Copyplast/Scheu-Dental), which was stabilized with a plaster key to be inserted in the palate (Fig. 3a/b).

At this point, the aesthetic challenges had become quite clear, especially due to the severely re-

**Fig. 1** Initial situation, aesthetically and functionally insufficient dental prosthesis..

**Fig. 2a/b** Wax-up on situational models to simulate possible future treatment results.

**Fig. 3a/b** Transfer of the wax-up into a vacuum-formed template to create temporary devices.



Fig. 1



Fig. 2



Fig. 3