Rehabilitation of the maxilla with implant-supported zirconia bars

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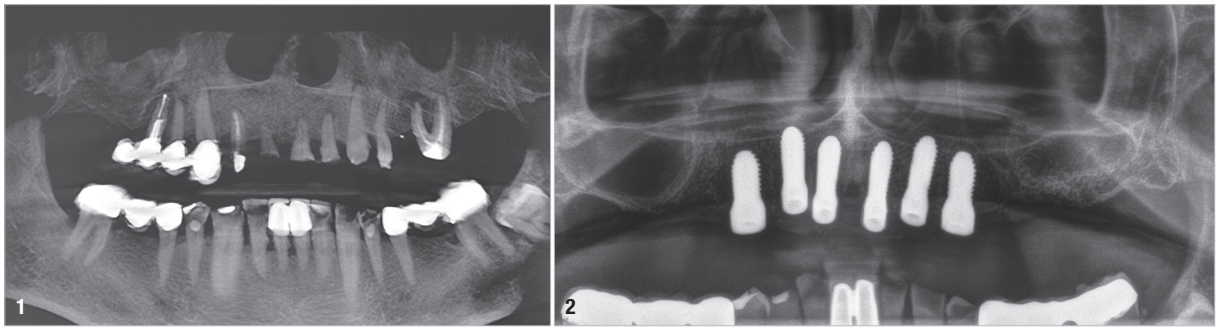


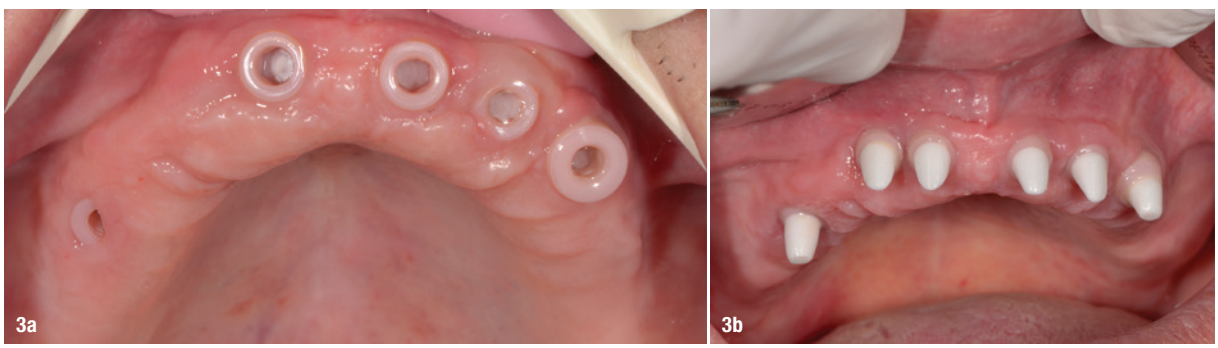
Fig. 1: Pre-op radiograph revealing severely pronounced atrophy in the maxilla. **Fig. 2:** Six zirconia implants were placed in the patient's maxilla.

The use of zirconia as a material for dental implants and prostheses, in conjunction with newly developed materials and CAD/CAM technology, undoubtedly represents a fascinating opportunity to restore the teeth of our patients. As with any new technology, increasingly precise manufacturing techniques are bringing about a change in indications. Today, it is possible to realise custom-fabricated CAD/CAM zirconia bars on zirconia implants. The use of the material zirconia for abutments, implants and bars is certainly recommended from a biological stance. Based on the vast number of past successful clinical restorations, one can be confident in choosing restoration with bar-supported hybrid prostheses. In the recent past, the employment of zirconia as a material for implants, abutments and bars in the context of surgery and hybrid prostheses has proved to be both a successful combination method and a successful stand-alone approach in clinical practice. In the following, a clinical case report is described which illustrates how even the smallest details matter when it comes to determining the optimal use of zirconia implants, abutments and bars in clinical practice.

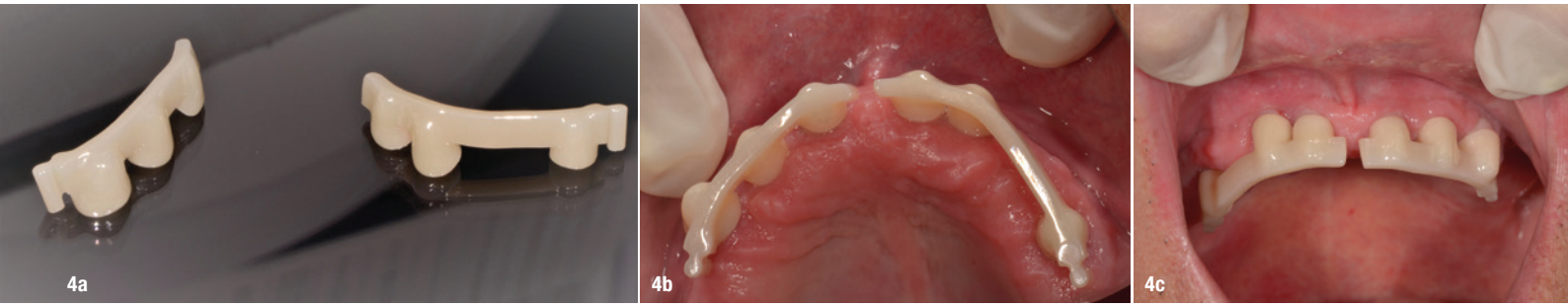
Clinical case

Owing to severely advanced atrophy in the maxilla, not only missing tooth structure but also missing jawbone and soft tissue had to be replaced in the patient (Fig. 1). Six zirconia implants (AWI, WITAR) were placed in the patient's maxilla (Fig. 2). A complete denture was fabricated for the healing phase and the base lined with a soft lining material. Six months later, after the surgical phase had been completed, the prosthetic restoration was carried out. The therapeutic decision was made in favour of a removable palate-free combination restoration.

In order to meet the aesthetic demands, it is imperative to perform an overall wax try-in before designing the bar so that the bar can be designed according to the tooth



Figs. 3a & b: The implant shoulders and zirconia abutments were positioned transgingivally.



Figs. 4a–c: The definitive bars were placed on the abutments and cemented.

position and not vice versa. The varying thickness of the mucosa was compensated for by the transgingival preparation of the implant shoulders and the zirconia abutments (AWI, WITAR; Fig. 3). Thereafter, a primary impression was taken over the abutments, and the secondary impression was taken in a silicone-based impression material (A-silicone, DMG Dental). The bar constructions were then milled from zirconia in a CAD/CAM procedure and clinically checked for a tension-free fit.

Outcome

Eighteen months after placement, the treating clinician and the patient were still satisfied not only with the overall aesthetic result of the restoration (Figs. 6a & b) but also with a stable implant-supported superstructure, which was installed without complications and which offers significant advantages from both a biological and technical point of view (Fig. 7).

Figs. 5a & b: The prosthesis for the mandible was fabricated with IPS e.max pressed ceramics. **Figs. 6a & b:** Eighteen months after placement, the restoration was considered satisfactory. **Fig. 7:** The prosthesis produced in the WITAR laboratory.

The superstructure, a sliding construction over the bars, was fabricated from solid PEEK material. The finishing was done with autopolymerising PMMA denture acrylic (Palapress vario, Kulzer) and fabricated denture teeth (Genios, Dentsply Sirona). During the fabrication of the combination prosthesis, aesthetic, phonetic and functional aspects were taken into consideration with a particular view to the acrylic material used. The try-in of the completed bars went smoothly and without complications. The definitive bars were placed on the abutments and cemented with glass ionomer cement (CX-Plus, SHOFU Dental) in a tension-free way (Fig. 4). The prosthetic restoration in the mandible was fabricated in a second step with lithium disilicate pressed ceramics (IPS e.max Press, Ivoclar Vivadent; Fig. 5).

Acknowledgement
The author wishes to thank dental technician Artur Wolf for the prostheses, which were produced in his WITAR laboratory.

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