Fig. 1: Initial situation: The insufficient restorations showed a midline displacement and functional disharmonies

Fig. 2: Two implants were inserted in the incisal region to functionally stabilize the restoration in the mandibular

Fig. 3: A custom-made tray was used in the mandibular for a mucodynamic fixation impression

Fig. 4: A simple bar construction was poured and fixed with synthetic material to the abutments

Fig. 5: The centric and temporomandibular movements were recorded with the gothic arch

Fig. 6: First, the aesthetic zone of the maxillary duplicate was reduced, then replaced with VITAPAN EXCELL, and finally tried in

Fig. 7: The final wax setup in the articulator with molded gingival anatomy before the try-in

Fig. 8: After the try-in, a mucodynamic impression with setup was taken in the maxilla

Fig. 9: The final occlusion-adjusted, mucodynamic impression in the duplicated denture base

Fig. 10: Based on the bite registration of the setups, the maxilla could be accurately rearticulated

Fig. 11: VITAPAN EXCELL and LINGOFORM were conditioned with VITACOLL to ensure good adhesion to the base

Fig. 12: The vestibular plate was customized with several synthetic material layers in different gingival shades

Fig. 13: The bridge and attachments were integrated by polymerization of the synthetic material base

Fig. 14: The finished restorations after elaboration and polishing in static occlusion

Fig. 15: Result: The patient was very happy with the naturalness of the new restoration

VITAPAN EXCELL: For predictable, aesthetic and functional results

By VITA Zahnfabrik

For predictable and functional aesthetic results in restorations, in addition to dental technology experience, we need a denture tooth designed on the basis of the aesthetic and functional standards set by nature. VITAPAN EXCELL (VITA Zahnfabrik, Bad Säckingen, Germany) is an example of this kind of anterior tooth, which is characterized by vibrant shapes with "golden proportions." Tooth axes, the length/width ratio and angle characteristics are consistently patterned after nature. In addition, its special layered structure enables a natural play of shade. In the following case report, Darius Northey, Dental Technician (Buderim, Australia) shows how he was able to successfully use the new denture tooth for an implant-supported restoration.
All-ceramics for every need

By Dentply Sirona

Zirconia and Zirconia-Reinforced Lithium Silicate (ZLS) complement each other when it comes to all-ceramic oral rehabilitation with excellent performance. The aesthetic appearance is further perfected either by using the staining technique or by using the copy denture technique, which was duplicated with putty and reproduced with a cold polymer for denture bases. For the mandible, a custom-made impression tray was made, a mucodynamic impression was taken in several steps and the impression cap was affixed. Using the model, a simple bar construction was fabricated and affixed with synthetic material to the attachments. A wax rim was created over the bar in the mandible, and plates for the imaging of the Gothic arch positioned on this and the maxillary duplicate. Laterotrusive, protrusive and centric were recorded and affixed. The duplicate was successively reduced in the setup area in order to first position and try in the VITAPAN EXCELL anterior tooth and then the VITAPAN LINGUOFORP posterior tooth.

Prostheses fabrication and finalisation

After a complete functional and aesthetic try-in, a mucodynamic impression with wax setup on a duplicate base was taken in the maxilla. The bite was registered with silicon. In the maxilla, a final master model was produced and articulated according to the vertical dimension. The maxilla and mandibular setups were embedded in cassettes, boiled out and pressed with heat-curing polymer into different gingival shades. After polymerisation, both works were rearticulated and an occlusion check was done. The prosthesis were processed with fine-cut carbide milling tools and rubber polishers. The final polishing was done with pumice and polishing paste, as well as a buffing wheel. The patient was very satisfied with the functional and aesthetic result. Thanks to the likewise shapes with ‘golden proportions,’ the three-dimensional anatomicly layered construction and the multifaceted surface texture, the prosthetic restoration with VITAPAN EXCELL appears very natural.

Fig. 1: The smart Celtra® laboratory workflows when using this material, along with the potential benefits to the dental laboratory in terms of added business opportunities. Zirconia and Zirconia-Reinforced Lithium Silicate (ZLS) are high-performance ceramics with complementarity — and sometimes overlapping — indications. This mainly applies to crowns and, in the case of pressable ZLS (Celtra® Press), three-unit anterior bridges whose distal abutment can be any tooth between the lateral incisor and the second premolar. The three clinical cases shown here present three examples of aesthetic restorative designs (Fig. 6).

Example 1: Extra-translucent zirconia, monolithic

The task is to reproduce an A2 shade on a monolithic crown made of the extra-translucent zirconia material Cercon® at (Fig. 3). The correct selection of the most suitable ingot is a good start. The framework material is available in all VITA® classical shades.

To achieve pleasing basic aesthetics, a final individualisation is performed with three universal stains and glaze. The crown body is first customised with a bit of Pink (Fig. 3). The enamel ridges are highlighted with facial Stain 1, while the incisal area and its mamelon structures is refined with a bit of Crème (Figs. 4 and 5). After the stain firing, a single glaze (Universal Stain & High Flu Glaze) is applied, covering the monolithic restoration (Fig. 6). The final shade check using shade tabs confirms the quick and easy shade reproduction and great aesthetics (Fig. 7).
Pressable ZLS can be individualised in a very similar manner. The light-optical properties of the framework material (Celtra® Press) already ensure a high level of aesthetics—close to that of veneering ceramics.

**Example 2: Extra-translucent zirconia, cut-back technique**

To reproduce an A2 shade on a crown framework made of extra-transparent zirconia, the most closely matching ingot is again chosen (as in the first example; Figs. 8 and 9). Mamelon structures are included at the time of designing the framework. The labial and palatal aspects of the enamel layer are built up with Celtra® Ceram Enamel E1 (Fig. 10) while at the same time giving the restoration its final shape in a finishing step that includes creating desired surface texture after ceramic firing (Fig. 11).

The restoration is finalised with stain and glaze in a single step. A fine line of Crème is painted onto the incisal edges (Fig. 12). The final step is the application of Universal Stain i1 in the incisal region (Fig. 13).

The desired shade has been achieved, and the restoration looks “live” with just one enamel material and some glaze thanks to the favourable light-optical properties of the pressable material.

**Example 3: ZLS, fully veneered**

For premium aesthetics without limitations, the framework is milled from pressable ZLS to a reduced anatomical contour (Figs. 15 and 16). The upper part of the crown is built up with Celtra® Ceram Dentin Da2, creating delicate mamelon structures in the process (Fig. 17). The incisal edge and the areas between the mamelons and on the incisal ridges strips are emphasised with Enamel Opal Transparent E14 (Figs. 18 and 19). Enamel E1 completes the build-up (Fig. 20).

After the ceramic firing, the restoration is finished and prepared for the second layer. The interdental spaces are closed both labially and palataly with Dentin Da2 (Fig. 21). A mixture of Effect Enamel Sunset E13 and Enamel Opal Transparent E14 is used on the cervical aspect (Fig. 22). The mesial and distal ridges are supported with Celtra® Ceram Enamel Effect Sky E13. A thin layer of the neutral Enamel Opal Extra Light E10 is added in the central labial area (Fig. 23). The incisal edges are finalised with Enamel Effect Ivory E6. After the ceramic firing, the shape is finalised and the desired surface texture is created. This is followed by applying the glaze (High Flu), with some Universal Stain Crème applied in the incisal area for the most delicate individual features (Figs. 26 and 27).

The target shade has been matched exactly, with the opalescence of the incisal edge supporting the natural appearance of the restoration. In addition, an excellent depth effect is achieved between the mamelons and on the incisal ridges, thanks to the Enamel Opal Transparent E14 used (Fig. 28). High-translucency zirconia frameworks can be veneered in a similar manner, yielding highly aesthetic restorations with a perfectly match-
Due to its higher strength, this framework material is also suitable for posterior bridges.

Outcomes for the dental laboratory ZLS frameworks and also zirconia frameworks (with different translucencies) can be aesthetically refined in several ways. One method includes finalisation by staining — achieving pleasing basic aesthetics safely and easily with a monolithic restoration.

At a higher level of aesthetic sophistication, the framework can be veneered with ceramics. The innovative Celtra® Ceram material presented here provides an aesthetic link between ZLS and zirconia. This veneering ceramic allows the dental technician to individualise frameworks made of both materials using the same standardised technique.

This is possible using the cut-back technique or by full veneering for premium aesthetics without limitations. This variability gives dental technicians a comprehensive all-ceramic treatment and performance concept.

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