VITAPAN EXCELL® for fixed implant bridges on edentulous jaws

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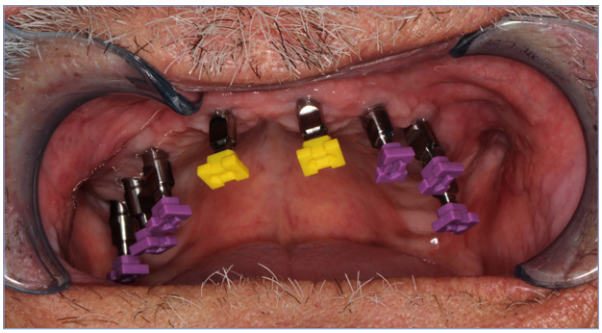
Fixed implant bridges on edentulous jaws are a real challenge, even for denture teeth. The force-absorbing characteristics of the periodontium are missing in the case of implants, which are rigidly anchored in the bone. As a result, they are subject to considerably greater forces. Due to the underlying substructure, the denture teeth must often be milled to a significant degree, yet still remain stable and maintain shade fidelity. The VITAPAN EXCELL anterior tooth set and all other VITA premium teeth are fabricated from highly cross-linked VITA MRP (Micro-filler Reinforced Polymer Matrix) composite, which allows for a high level of abrasion stability, given the strong forces acting on implant restorations[1]. In the following case study, master dental technician Maximilian Götsch (Ravensburg, Germany) shows how robust and highly esthetic implant-retained dentures can be achieved using VITAPAN EXCELL.

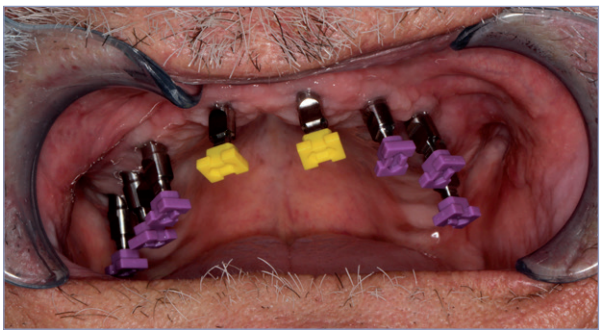
Initial situation vs. final result



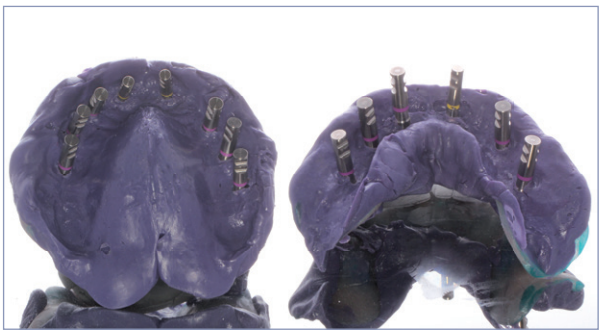
[1]University of Regensburg, Prof. Dr. M. Rosentritt, Test Report No. 280_2, Report 11/15; Published in technical scientific documentation on VITA denture teeth, available at www.vita-zahnfabrik.com/prosthetics

The clinical case

A 68-year-old male patient had been provided with temporary dentures. After a year had passed, he wanted a fixed, light and palateless implant-retained restoration. The two temporary dentures could be used as the basis for the new implant-retained dentures, as the patient was able to function properly with them. Only the functional margins and the covered palate bothered him. For the purposes of DVT, the temporary restorations were modified to act as X-ray templates. During backward planning using this 3D diagnostic tool, it was possible to position the implants virtually in the bone and create a drill template on this basis. Once the implants had been inserted and healing was complete, fixation impressions were taken and master models fabricated that were articulated appropriately for the patient using the registered temporary dentures.



Analogs were screwed on to the healed implants and impression caps positioned on the analogs.



The fixation impressions were taken in the upper and lower jaw with a closed tray.

The natural setup

In consultation with the patient, the appropriate VITAPAN EXCELL mould was selected in the shade A2. Morphology that follows esthetic guidelines, a natural surface texture and anatomical layering provide these denture teeth with a lifelike appearance. For the posterior region, VITA PHYSIODENS was selected in A2 in order to quickly achieve unique centric occlusion. The patient wanted custom anterior positioning instead of straight positioning. Final verification of occlusion, phonetics and esthetics could then be performed during clinical try-in.

The wax setup was achieved using VITAPAN EXCELL Anterior …

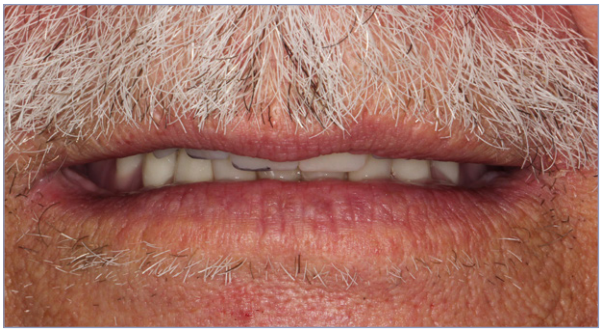
… and VITA PHYSIODENS Posterior.

In the posterior area, VITA PHYSIODENS enabled efficient setup.

The nested VITAPAN EXCELL setup reflects its natural surface texture and morphology.

The wax setup during clinical try-in in the patient's mouth.

Function, facial expression, phonetics, and esthetics, were carefully verified on the patient.

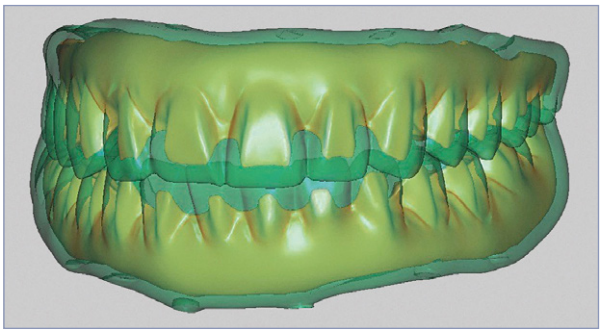


In the occlusal rest position, an unbalanced incisal edge gradient became obvious.

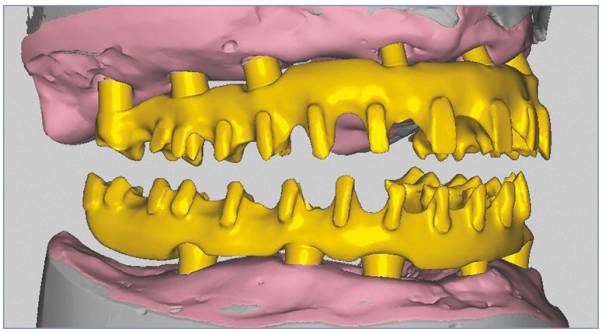
The incisal excess at 12 and 22 was marked so that corresponding changes could be made.

Substructure in the digital workflow

The optimized setup and the master models were then scanned individually and in articulation (IScan D104i, Imetric, Courgenay, Switzerland). In the CAD software (Exocad, Darmstadt, Germany), full virtual shrinkage of the setups was performed as part of a first step in order to achieve an anatomically supported, dimensionally accurate structure from which the substructure could gradually be constructed. The substructure was fabricated from a non-precious metal blank using CAD/CAM technology (Millhouse, Wallau, Germany). Using a silicone key, it was possible to transfer the denture teeth in wax to the substructures. During wax modelling, the teeth were extended morphologically in the cervical area and the alveolar process was shaped. The situation was duplicated using dental putty.



The setup was shrunk in the CAD software so that an anatomically reduced substructure could be constructed.



The substructures (after controlled shrinkage) harmonized from a denture perspective with the setup.

The substructures (before clinical try-in) were seated without tension on the master models.

Adapted range of materials

Following wax extraction, cleaning and conditioning, the denture teeth were fixed in the duplicating key using superglue, and VITACOLL bonding agent was applied in the basal-cervical area. The silicone matrix was then repositioned on the master model. It was then possible to inject the tooth-colored cold-curing polymer resin VITA VM CC A2 via a posterior opening. Following removal of the key, the shade fidelity could be seen between the homogeneously shaped cold-curing polymer resin and the denture teeth. Once finishing had been completed, the gingival appearance of the patient was replicated in the vestibular area using the flowable light-curing veneering composite VITA VM LC *flow*. Finishing was performed using a fine diamond instrument and fine pumice, followed by diamond polishing paste.

Using a silicone key, the setup was transferred to the substructures and the base modeled in full using wax.

The tooth-colored VITACOLL CC cold-curing polymer resin was injected into the silicone matrix via a posterior access.

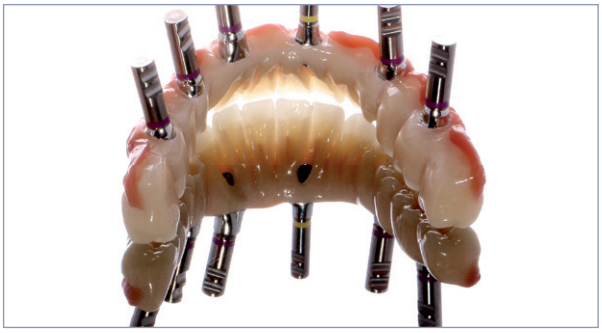
It was possible to then finish the polymerized base.

In the vestibular region, the mucogingival areas were individualized using VITA VM LC *flow* veneering composite.

The natural morphology and surface texture of the upper incisors in reflected light.

The lifelike setup and the custom gingival gradient provide for a natural appearance.

The finalized restoration with screwed-on implant analogs was very light.



The slight basal supporting surface ensures effective cleaning around the implants.

Controlled premium esthetics

Since the patient was already familiar with the setup, he immediately felt comfortable with his new appearance. The correct teeth had been chosen from among the wide range of shades and moulds available with VITAPAN EXCELL, making it possible to restore the patient's age-appropriate and natural smile. Despite adaptation to the substructures, the denture teeth retained full shade fidelity. The chemically and shade-coordinated material mix of prefabricated teeth, cold-curing polymer and veneering composite was controlled during manual fabrication, which led to a highly esthetic result.

Finally, when opened slightly, it was possible to see a harmonious incisal edge gradient.

In the occlusal rest position, an optimum interplay was also visible between the lip line and incisal edges.

You can also find the case report in QZ ZT 1/18:
https://www.quintessence-publishing.com

More information and case reports on:
https://www.vita-zahnfabrik.com/VITAPAN_EXCELL

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