VITABLOCS® TriLuxe forte

Multichromatic feldspar ceramic as a highly esthetic recipe for success

Dr. Hu Guo Dong, ZOEN Dental Clinic, Shanghai, China

VITABLOCS blanks for single-tooth restorations in the digital workflow have been on the market for over 35 years, and have proven their clinical reliability[1,2] during this time. Since the polychrome material variant VITABLOCS TriLuxe forte launched in 2007, its integrated color gradient from the neck to the incisal edge, has made fast and economical reconstructions in the esthetic zone possible as well. After corresponding nesting in the virtual blank, the blocks matched to the VITA shade standards are often ready for full-adhesive bonding after a simple polish or with only minimal characterization. In the following case study, Dr. Hu Guo Dong (ZOEN Dental Clinic, Shanghai, China) shows how two crowns made of VITABLOCS TriLuxe forte were used to successfully restore two maxillary central incisors.

Initial situation vs. final result

The clinical situation at 11 and 21 before the fully adhesive integration.

The feldspar ceramic crowns perfectly harmonized with the lip line

[1] Morimoto S, Albanesi RB, Sesma N, Agra CM, Braga MM. Main Clinical Outcomes of Feldspathic Porcelain and Glass-Ceramic Laminate Veneers: A Systematic Review and Meta-Analysis of Survival and Complication Rates. Int J Prosthodont 2016 Jan – Feb; 29(1): 38-49.

[2] Wiedhahn K, CEREC Veneers: Esthetics and Longevity. In Mörmann WH (ed.) State of the Art of CAD/CAM Restorations, 20 Years of CEREC, Berlin: Quintessence, 2006: 101–112.

The clinical case

A 45-year-old female patient came to the dental practice because she was dissatisfied with the esthetic appearance of an old crown on tooth 11. An intraoral examination revealed a metal ceramic crown that did not match the shade of her natural residual dentition at all. The ceramic veneer appeared lifeless and the visible metallic crown margin extended directly into an exposed and darkly discolored root area. The marginal gingiva and the incisal edges of teeth 11 and 21 were at different heights, making the dental arch appear uneven and inharmonious. The incisal edge of 21 also exhibited a wedge-shaped defect. The patient wanted a new restoration for tooth 11 and the shaping of the dental arch to be harmonized. The gap between 11 and 21 was to be closed in the process. Since the patient was hoping for quick results, she declined a preliminary orthodontic treatment. The consensus was to quickly restore 11 and 21 with full crowns made of the polychromatic feldspar ceramic VITABLOCS TriLuxe forte.

Fig. 1: Initial situation with the esthetically unsatisfactory metal-ceramic crown on 11.

Wax-up and mock-up

Initial impressions were taken of the upper and lower jaw in order to create a wax-up of teeth 11 and 21 with the desired target situation after the situation models had been fabricated. A partial impression was taken from the wax-up using silicone. Afterwards, a scalpel was used to reduce the wax-up vestibularly into a collar shape following the course of the marginal gingiva. The silicone key was filled with dual-curing, temporary crown and bridge material in the incisal area and positioned intraorally. After the gel phase had been reached, the excess was peeled off along the marginal reduction, and the silicone key was then removed. The morphology of the wax-up remained on teeth 11 and 21, which was discussed with the patient. After slight modifications through the application of flowable composite and targeted reduction with a fine diamond, the desired actual situation was determined in consultation and then scanned. The data set was used to create an additive model for the final consultation.

Fig. 2: The morphological target situation was defined with a wax-up.

Fig. 3: A frontal view of the meticulous wax-up.

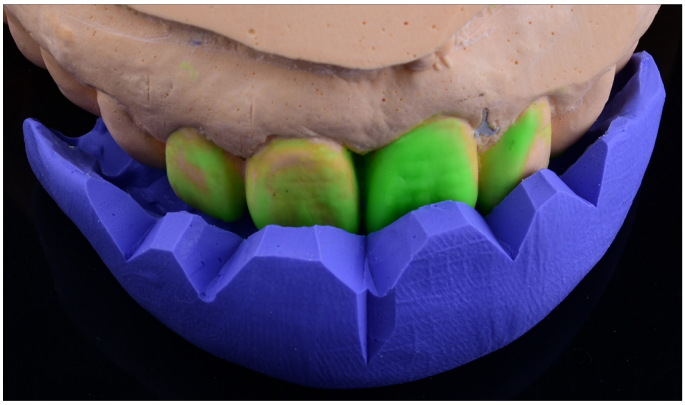

Fig. 4: A silicone key was fabricated on the wax-up to facilitate the transfer of the target situation intraorally.

Fig. 5: The final intraoral mock-up was scanned and used to create an additive model.

Preparation and digital workflow

Tooth shade A2 was determined using the VITA classical A1-D4 shade guide. Another silicone key was fabricated on the additive model and another intraoral mock-up was fabricated prior to preparation to allow for controlled removal of the substance with a guided preparation. In addition to preparing teeth 11 and 21 for full crowns under the microscope, a gingivectomy was also performed on 11 along the mock-up to align the marginal gingiva. This was followed by an intraoral scan of the alveolar ridges and the vestibular final bite situation with the 3Shape TRIOS 3 (Copenhagen, Denmark) and a facial scan with the 3D face scanner MetiSmile (SHINING 3D Dental, Hangzhou, China). The data sets were matched in the exocad software (exocad, Darmstadt, Germany) so that the morphological effect of the constructed crowns could be checked virtually. The constructions were then nested in the VITBLOCS TriLuxe forte block in the positioning module of the CEREC inLab CAD software. The vertical positioning and inclination of the virtual restorations in the block made it possible to adjust the shade gradient to suit the patient before applying it to the CEREC MC XL milling unit (both Dentsply Sirona, Bensheim, Germany).

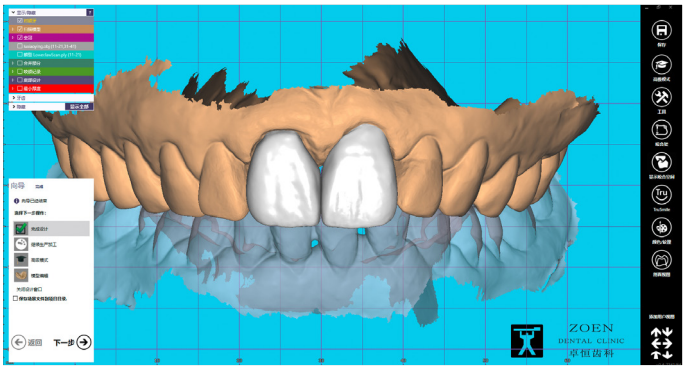

Fig. 6: The design of the crowns made of VITABLOCS TriLuxe forte on 11 and 21 in the CAD software.

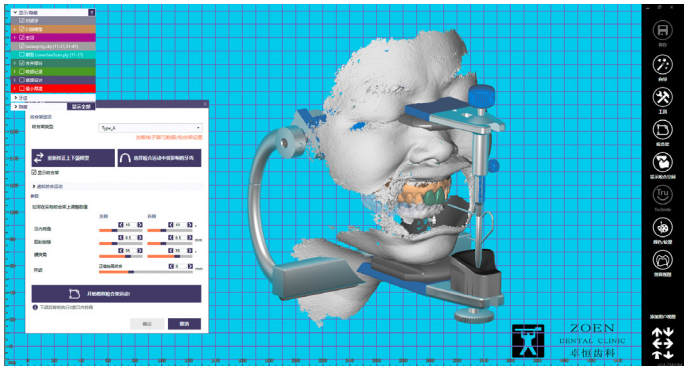

Fig. 7: The morphological effect of the crowns was checked virtually using a facial scan.

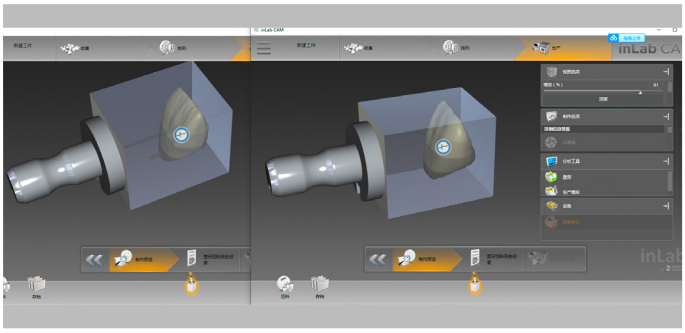

Fig. 8: During the nesting process, the shade gradient of the crown could be adjusted to suit the patient through its positioning.

Fig. 9: The polychromatic VITABLOCS TriLuxe forte blanks in shade A2 before grinding in the milling unit.

Integration and conclusion

After separating the two restorations from the grinding pins, they were finished with fine diamond grinders and smoothed with rubber polishers. Thanks to the integrated color gradient, the restorations appeared very natural. As a result, only minimal characterizations were carried out in the cervical area using VITA AKZENT Plus BODY STAINS 03 (orange) and EFFECT STAINS 06 (rust red) and 07 (khaki). Individual nuances were created on the flanks with EFFECT STAINS 12 (gray/blue) and 13 (gray). EFFECT STAINS 12 (gray/blue), 13 (gray) and 14 (black) were used on the incisal edge to create shade effects specific to the patient. Finally, the restoration was glazed using VITA AKZENT Plus GLAZE LT. After a successful clinical try-in, the two all-ceramic crowns were incorporated fully adhesively on teeth 11 and 21. A meticulous simulation of the target situation with wax-up and mock-up, the precise tooth shade determination and a shade-accurate block selection made it possible for the esthetic zone to be restored successfully and efficiently. The patient was clearly happy with her new smile and was completely satisfied with the quick restoration results.

Fig. 10: The two finished, characterized and glazed crowns on the model.

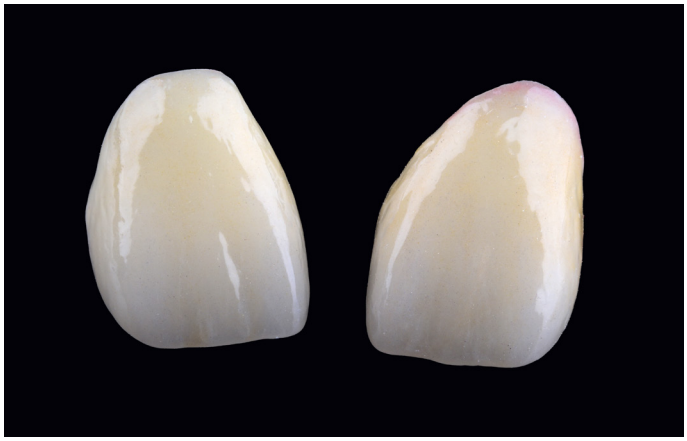

Fig. 11: The two feldspar ceramic crowns before conditioning and integration.

Fig. 12: The clinical situation at 11 and 21 before the fully adhesive integration.

Fig. 13: The feldspar ceramic crowns perfectly harmonized with the lip line.

Fig. 14 and 15: The patient in the before and after comparison was absolutely satisfied with the fast and highly esthetic restoration results.

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VITA Zahnfabrik H. Rauter GmbH & Co. KG

Spitalgasse 3
79713 Bad Säckingen
Germany

Phone: +49 7761 562-0
Hotline: +49 7761 562-222

info@vita-zahnfabrik.com
www.vita-zahnfabrik.com

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