VITABLOCS® TriLuxe forte

The center of the esthetic zone made of VITABLOCS TriLuxe forte

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The central incisors in the upper jaw are the dominant stars of the esthetic zone. In a smile, the remaining teeth are only like useful extras, making the central incisors appear even more beautiful.1 The central symmetrical positioning[2] with the correct proportions[3] according to the esthetic rules[4], determines whether these two teeth can develop to their full potential. Of course, the shade and shape have to harmonize with the natural adjacent teeth as well. In particular, treating the central incisors in the maxilla places high demands on practitioners and dental technicians, and the type of restoration materials selected. In the following, Dentist and Assistant Professor Dr. Julian Conejo (University of Pennsylvania, School of Dental Medicine, Philadelphia, USA) shows how the polychromatic feldspar ceramic is the first CAD/CAM material in the world, and the gold standard[5] to meet this esthetic challenge.

Initial situation vs. final result

The initial situation with the unattractive crowns on teeth 11 and 21.

Treatment result with the new crowns made of VITABLOCS TriLuxe forte on 11 and 21.

[1] Löw J. Der reine Zahnsinn – Fundiertes zahnmedizinisches Wissen, packend erzählt. Verlag Neuer Merkur, Planegg, 2022: 140.

[2] Saga AY, Maruo IT, Maruo H, Guariza Filho O, Tanaka OM. Clinical challenges in treating a patient with deviated dental midlines and delayed root development of the mandibular left second premolar. Am J Orthod Dentofacial Orthop 2009 Apr; 135(4 Suppl): S103-12.

[3] Wolfart S, Thormann H, Freitag S, Kern M. Assessment of dental appearance following changes in incisor proportions. Eur J Oral Sci 2005 Apr;113(2): 159-65.

[4] Prokopakis EP, Vlastos IM, Picavet VA, Nolst Trenite G, Thomas R, Cingi C, Hellings PW. The golden ratio in facial symmetry. Rhinology. 2013 Mar;51(1):18-21.

[5] Labban N, Al Amri M, Alhijji S, Alnafaiy S, Alfouzan A, Iskandar M, Feitosa S. Influence of toothbrush abrasion and surface treatments on the color and translucency of resin infiltrated hybrid ceramics. J Adv Prosthodont. 2021 Feb; 13(1): 1-11.

Case study

A 25-year-old patient visited the dentist's office because she was dissatisfied with the esthetics of her crown restorations on 11 and 21. During the clinical examination, a deficient all-ceramic crown was observed on tooth 11 and a VMK crown on 21. From a morphological perspective, both crowns appeared too square and too massive. The incisal edges did not harmonize with each other, or with tooth 21 and the course of the lower lip. The all-ceramic crown on 11 was far too opaque compared to the natural dentition and therefore appeared lifeless. The shade of the VMK crown on 21 did not match the restoration of the adjacent tooth or the remaining natural tooth structure. The decision was made to provide the two teeth 11 and 21 with new crowns using the digital workflow. VITABLOCS TriLuxe forte was selected as the restoration material because the blanks have a natural appearance,[6] are true to the VITA shade standard[7] and have a natural shade gradient.[8] The successful use of feldspar ceramics in the anterior region has also been proven several times in clinical studies.[9 10]

Fig. 1: The initial situation with the unattractive crowns on teeth 11 and 21.

Fig. 2: The two crowns on 11 and 21 did not harmonize morphologically with the dental arch.

Fig. 3: The restorations looked lifeless. The shade effect on tooth 21 in particular did not match.

Fig. 4: The tooth shade was determined using the VITA classical A1 - D4.

[6] Masek R. Reproducing natural color effects on milled ceramic restorations. Int J Comput Dent 1999 Jul; 2(3): 209-17.

[7] Aldosari LI, Alshadidi AA, Porwal A, Al Ahmari NM, Al Moaleem MM, Suhluli AM, Shariff M, Shami AO. Surface roughness and color measurements of glazed or polished hybrid, feldspathic, and Zirconia CAD/CAM restorative materials after hot and cold coffee immersion. BMC Oral Health 2021 Aug 30; 21(1): 422.

[8] Kurbad A. Three-dimensionally layered ceramic blocks. Int J Comput Dent 2010; 13(4): 351-65. English, German. Erratum in: Int J Comput Dent 2011;14(1): 54.

[9] 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.

[10] 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.

Preparation and CAD/CAM

The crowns were slit and removed from the stumps following local anesthesia. After careful subsequent preparations and cleaning of the stumps, retraction cords were placed. Tooth shade determination followed with VITA classical A1 – D4. The shade B1 was chosen and was documented in photographs in the laboratory using the corresponding shade tabs for orientation. An intraoral scan with Primescan was used to create a virtual model in the CEREC Software 5.1, which could be used to design the crowns made of VITABLOCS TriLuxe forte. After the preparation limits had been defined, the biogeneric proposal of the software was modified. Monolithic fabrication enabled a slimmer crown design that complied with the esthetic requirements and harmonized with the morphology of the adjacent teeth. After the two restorations had been nested the crowns could be fabricated simultaneously with CAD/CAM support in the VITA SYSTEM 3D-MASTER shade 1M1 in the CEREC MC XL milling unit.

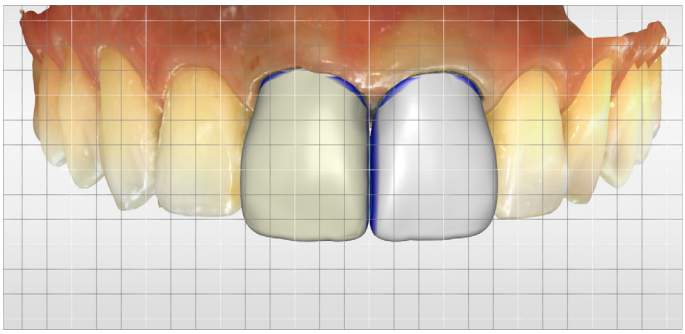

Fig. 5: The design of both crowns in the CEREC 5.1 software.

Finishing and placement

After the crowns had been separated from their attachments, they were ground back and the micromorphology was worked out with fine diamonds. Rubber polishers were used for smoothing. Minimal characterizations and the glaze were then applied using the VITA AKZENT Plus stain system. This was followed by an intraoral fit check with blue silicone. Finally, the restorations were conditioned on the lumen side with hydrofluoric acid and silane. Fully adhesive cementation was carried out using the universal bonding system PANAVIA V5 (Kurary Noritake, Tokyo, Japan). The final images show that the VITABLOCS TriLuxe forte blanks selected for the patient resulted in restorations that absolutely resembled natural teeth. The monolithic restorations blended harmoniously into the center of the maxillary front. Consideration of the esthetic rules and the natural morphology in combination with the right choice of material were decisive factors in the success of the treatment.

Fig. 6: After finishing, the two crowns were clinically tried in.

Fig. 7: A blue silicone was used to check the fit on the lumen side.

Fig. 8: A highly esthetic result was achieved after fully adhesive cementation.

Fig. 9: The shade effect, morphology and texture harmonized with the natural teeth and lip contour.

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