Monolithic brothers

Fabricating individualized monolithic restorations using IPS e.max CAD LS2 and Zenostar ZrO2

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Patients who visit the dentist with the wish to have their smile enhanced would like this to happen in a fast, efficient and complication-free manner.

Esthetic and functional rehabilitations of the anterior dental arch and occlusal height CAD lithium disilicate ceramics (LS2) and occlusal height CAD lithium disilicate ceramics (LS2) in combination with CAD/CAM technology (the CEREC system by Sirona, Germany, was used here). We use T-Scan® technology (Telscan, USA) to assess the articulation.

This method has enabled us to achieve excellent results.

Until recently, closing lateral gaps in patients refusing to undergo implant treatment posed a problem with timescales for us. Zirconia bridges have become the solution for these cases. To be able to treat our patients within a few hours, but at the longest within 48 hours, we were looking for possibilities of speeding up, or simplifying, this treatment modality. After considering the results of scientific studies investigating the surface properties and wear of various polished monolithic ZrO2 restorations, we decided that the Zenostar® CAD/CAM system from Wieland would be appropriate for this purpose. This system allows us to mill even extensive bridges from zirconia.

Case presentation

The patient in this case was a 60-year-old lady whose dentition had been restored with metal ceramic crowns in the anterior and crowns in the posterior region. Her main complaint was the colour and length of the teeth. Her teeth were completely invisible during both speaking and smiling (Figs. 1 to 3). She wished to have a bright smile that was at the colour of “Hollywood white”. She refused to have any implant therapy to close the gaps in the posterior region. For this reason, we chose to use all-ceramic bridges. The plan was to manufacture a bridge spanning from tooth 23 to 26, a cantilever bridge from tooth 35 to 35 with a pontic at 36 and a bridge from tooth 41 to 41.

The gingival tissues were in poor condition and this was mainly attributed to the impact of the metal ceramic restorations. Figure 4 shows the need for increasing the vertical dimension.

Material selection

On the basis of a bleaching shade guide, the patient decided in favour of the BL2 bleaching shade and did not want this shade to be tuned down with materials of a darker hue. We therefore decided to use the unaltered, or pure, shade variant for the fabrication of the Zenostar® bridges and IPS e.max CAD LT blocks in the BL2 bleaching shade (Fig. 5).

Usually, we use IPS e.max CAD for the fabrication of three-unit bridges up to the second premolar. The preparation showed the required four-unit bridges and a cantilever bridge in the posterior region; IPS e.max CAD does not cover these indications.

Clinical procedure

After the existing restorations had been removed, FRC Postest glass-fibre reinforced composite root canal posts were inserted into teeth 21, 25, 35, 44 and 45, followed by the placement of Multilink® Automix composite. Next, we replaced all existing single restorations with Multilink® Automix composite (yellow shade). After the luting composite was immediately available and could be quickly and predictably adjusted. The restorations were milled, sintered in a Pro- gnar® SF furnace and customized applying stains from the Zenostar® Art Module in the staining technique. Finally, the occlusal contact points were polished (Fig. 9).

Final seating

On the second day, the temporary Telio® CAD bridges were removed and the teeth were cleaned with chlorhexidine-containing Cervitec® Liquid mouth rinse. Try-in was carried out without any problems; additional adjustments were not required. The restorations were cleaned with Iovelclean® and silanized with Monobond® Plus.

The preparations were pretreated with MultiLink® Automix Primer A + B and then seated using MultiLink® Automix luting composite (yellow shade). After the luting composite was pre-cured with a Bluephase® curing light and excess material removed, the restorations were permanently cemented in place activating the Turbo mode of the curing light a number of times.

Articulation and occlusal contact points were assessed with a T-Scan device and then the occlusal surfaces were polished using (Fig. 10 and 11).

Conclusion

A slight difference in brightness between the porcelain restorations, bridges and the IPS e.max CAD crowns can be noted. With hindsight, we would adjust the shade of the Zenostar® bridges to favour the BL2 bleach shade material.

For the patient, her new bright smile was simply a wish fulfilled (Figs. 12 and 13). From our point of view, the 3Shape software enabled us to complete this rehabilitation in an efficient manner. The tooth shades were easy to copy. An initial proposal for the design of the occlusal surface of the posterior teeth was immediately available and could be quickly and predictably adjusted. The restorations showed a smooth surface. The contours of the molar were from the beginning very clear and detailed. There was no need for additional manual fissure filling. The restorations were milled, sintered in a Pro- gnar® SF furnace and customized applying stains from the Zenostar® Art Module in the staining technique. Finally, the occlusal contact points were polished (Figs. 10 and 11).

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Fig. 1. Before view of the lips
Fig. 2. OptraGate
Fig. 3. Before lateral view with OptraGate
Fig. 4. Clinical situation after removal of maxillary crown
Fig. 5. Wieland work station and ZrO2 block
Fig. 6. Design of the bridge 23 to 26 in the 3Shape software
Fig. 7. Design of the cantilever bridge from tooth 35 to 35 with a pontic at 36 and a bridge from tooth 41 to 41
Fig. 8. Virtual articulation to establish the functional characteristics
Fig. 9. After the existing restorations had been removed, FRC Postest glass-fibre reinforced composite root canal posts were inserted into teeth 21, 25, 35, 44 and 45, followed by the placement of Multilink® Automix composite (yellow shade). After the luting composite was immediately available and could be quickly and predictably adjusted. The restorations were milled, sintered in a Prognar® SF furnace and customized applying stains from the Zenostar® Art Module in the staining technique. Finally, the occlusal contact points were polished (Fig. 9).
Fig. 10. Monolithic restorations after eleven months: IPS e.max CAD restorations and Zenostar ZrO2
Fig. 11. Anterior view of the rehabilitation
Fig. 12. View of the lips. The patient is pleased with the outcome. Her wish has been fulfilled.
Fig. 13. Close-up of the monolithic IPS e.max CAD crowns fabricated using the staining technique

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