Zirconia esthetics

Creating two lifelike central crowns using GC Initial Zr zirconia veneering ceramic.

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When considering how to match a patient's shade, we as technicians should ask ourselves two questions: What does the patient want to change, if anything?; and, What does the patient want to see when looking in the mirror?

The patient in this case study knew that she wanted “nice” bright teeth. Also, she thought that her two central teeth appeared to be too wide. She had a facial composite on tooth #8 and a 10-year-old monochromatic crown on #9. She also had been bleaching to lighten her tooth color. The shape of her teeth was not difficult to mimic, but her shade was a different story.

During the custom shade appointment, checking the patient’s tooth surface texture ensured that the final restorations created would match adjacent teeth. The patient’s tooth texture was glossy but the value was low. These observations helped determine material selection and preparation design.

However, determining translucency was more difficult and definitely has an effect on the final color. From observation, it was clear her incisal one-third had more translucency.

One thing that I have learned: if the color can be described, it can be re-created. But if it can’t be described, it can’t be done.

Using GC Initial ZR™ low-fusing porcelain material to recreate nature, the translucency and chroma are predictable. Even after three or four build-ups, the color is still there, exactly how the technician applied it. This leads to shade matching predictability every time. We don’t have to ask ourselves how we can build-up our porcelain to achieve life-like color—it’s always dependable there.

Following are steps for using GC Initial ZR low-fusing porcelain and a multi-layer technique for creating zirconia-based crowns.

01 The pre-op view of the patient shows the boxy look of her two central incisors and their mismatched color in comparison adjacent dentition (Fig. A).

Fig. A Pre-op view of patient.

Fig. B Two centrals prepped for zirconia-based crowns.

Fig. C The first layer of GC initial porcelain BLD 3 is applied to the Aadv zirconia copings.

Fig. D First dentin is applied for proper contour.

Fig. E The white modified translucency is applied to the gingival one-third.

Fig. F A clear fluorescence is added to the mesial and distal corners.

Fig. G Cervical translucency layering.

Fig. H After the cervical translucency, enamel effective is added.

Fig. I Translucency neutral is applied with mamekon.

GC Initial ZR

Features
- Standardized build-up technique.
- Indicated for use with all zirconia substructures.
- Feldspar-based zirconia veneering ceramic.
- Stable and durable.

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The dentist prepared the two centrals for zirconia-based crowns and two Aadva™ zirconia copings were fabricated at the GC Milling Center in Costa Mesa, Calif. (Fig. B).

Apply the first layer of GC Initial™ Porcelain BLD 3 to the Aadva™ zirconia copings (Fig. C).

Apply the first dentin layer for proper contour (Fig. D).

Apply white modified translucency to the gingival one-third of the restoration (Fig. E).

Add a clear fluorescence to the mesial and distal corners of the crown (Fig. F).

Layer the cervical translucency (Fig. G).

Add an enamel effective layer to the buildup (Fig. H).

Apply translucency neutral with mamelon (Fig. I).

This is a side view of the enamel layering (Fig. J).

Apply Enamel 58 (Fig. K).

Now map the texture to be created by drawing lines on the crowns. Through an illusion of angularity, the teeth will appear to be narrower (Fig. L).

The final restorations (Fig. M).

Central tooth #3 is half-covered by a sectioned crown to check stump color and translucency for the readers’ benefit (Fig. N).

Final restorations in the mouth. Note the color, symmetry, and contour (Fig. O).

CONCLUSION

With the correct surface texture, value, hue, translucency, tooth morphology, stump shade, and material selection communication, we can approach a case correctly. I was able to produce restorations that made the patient happier with her appearance and confident in her smile.

Using a CAD/CAM outsource service gives you access to many different restorative possibilities.

For this case, I utilized the services of the GC Milling Center located in Costa Mesa, Calif. I sent them the working model, which they scanned, then CAD designed the case. The digital design data was sent to the milling machine for milling two zirconia copings. I received the copings back in 4 working days to complete the final buildup.