Three-unit, full-contour ceramic bridge in one sitting

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In the following case, the CEREC 3D system and its one appointment capabilities played an essential part in the treatment. The patient suffered from facial myalgia and could not handle a repeat visit for a second try in/insert, owing to the potential stress it would cause. She had previously experienced involuntary facial episodes—the drill had been bitten on—causing more trauma.

The patient had broken tooth #31 at the gumline. The rest of the tooth had been removed some time ago, leaving a gap. All treatment options were explained to her. We offered her a same-day ceramic bridge and informed her that this would be entirely experimental, even though I have made many of these types of full contour bridges.

Dr Carl Boyko, Welcome Smile Dental (Calgary, Canada), and I created the bridge. Firstly, Dr Boyko measured the span of the area that needed to be bridged. Once measured, we discovered that the area could support an I-14 TriLuxe Forte (VITA), which would be used to manufacture the bridge.

Dr Boyko then prepared the tooth #41 and 32 abutments. Following, he created a temporary bridge that would be used by the CEREC system as a temporary reference. Simultaneously, we measured the shade of the surrounding teeth (Fig. 1).

The patient did not wish for her lower teeth to be straightened, and therefore our goal was to restore her original smile. She felt that this would be a more natural result and did not wish the aesthetics to be obvious when she smiled.

Once the temporary bridge had been put in place, the temporaries were coated with titanium-dioxide powder. This creates a reflective surface that allows the CEREC 3D Bluecam to capture the optical impressions of the preoperative (occlusion) images. Once the temporary reference images had been
captured, the temporary was removed and titanium dioxide was sprayed onto the abutments once again. We then used the CEREC Bluecam to capture the abutments (Fig. 2).

The bridge we wanted to copy virtually overlapped the prepared model. The gold colour model underneath was the original prepared image and the grey image on top was the correlation model. It was evident that the model matched from the speckled look to the grey model, as it perfectly overlaps the prepared model. We need this kind of speckled look to occur because there is a 20° pitch and roll of the camera in order to match up the images. Although the CEREC software merges the images this does not mean that the images will correlate 100%. The correlation may thus be reduced even though we have a virtual model (Fig. 3).

When using the correlation design technique, one can draw the margin starting with any one of the abutments. Simply start to draw the margin close to the interproximal. As one draws around the preparation, do not close the loop on the preparation on which you started. Continue to draw the margin out onto the tissue, thus creating a second margin on the imaginary pontic area. Continue on to the next abutment, draw around the next abutment, then continue back onto the tissue to continue the lingual margin of the pontic. Finally, join the rest of the margin to the original abutment to close the loop. Once the loop has been completed, one can carry on to the next window. In this way, we fool the CEREC software into thinking this pontic loop is one crown (Fig. 4).

Figure 5 shows our completed bridge that was milled using the VITA Forte block, which is not a plain monochromatic block. The final result will have a natural gradient built into it when completed, as it is has four colour steps to it (Fig. 5).

In order to achieve the proper shading for our ceramic, I used Quick Match (Hankins Laboratories), which can be used to mimic the stump shade value of the abutments (Fig. 6). Next, I used the Ivoclar Stump Shade Guide to match the shade tab to the appropriate colour on the Quick Match syringe. I injected the fireable stump shade material into the bridge abutments. Once the Quick Match had been injected, I started applying the glaze. The glaze turned the ceramic into a window showing us the internal core value. This makes staining the ceramics an easy process once firing is completed. The process can be repeated should more stain be required (Fig. 7).

I personally find that using the Quick Match product not only creates the right stump shade value, but is also great to use when firing small abutments that will not fit a peg (Fig. 8).

The final result is a bridge that is virtually indistinguishable from the original. This was all completed in a two-hour visit and the patient was very pleased with the final result. In this particular scenario, I was not worried about the bridge failing because of the size of the connectors. I know that using a feldspathic ceramic is not the number one choice; however, the amount of load on the anterior will not be such that the bridge will fail (Fig. 9).