Esthetic Long-Span Bridge Using BruxZir

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By Mark McMinnie, DMD

O ne of the challenges that we face in dentistry today is how to build a long-span bridge with maximum esthetics in mind. In the age of implants, we can usually shorten the span by adding in a few implants or eliminate the need for a bridge all together by using implants to replace those missing teeth. However, what about those cases where we don't have the quality or quantity of bone that we need, a medical history that won't allow implant surgery such as free bleeding, a high risk host such as a poorly controlled diabetic, smoker, etc.? Often times a patient's desire for a long-span bridge is the complex surgery of a sinus lift or bone graft to make an acceptable site for implants.

Patients should be given the options and risks associated with each approach and allowed to make an informed decision with the dentist's guidance. For a missing tooth there could be five or more options presented to the patient as ways to restore the space.

A case history

In 1998, a 30 year-old female presented with an abnormally loose tooth #12. Upon radiographic and clinical examination, it was noted that she was little to no root left on teeth #10–13. Teeth #8 and #9 appeared normal as did tooth #14. Her gingival health was optimal and her medical history was unremarkable, and she was taking no medications at the time.

The patient recalled that when she was 14 years old she was hit in the face right above these teeth with a gold club during a friend's backyard, which probably lead to the resorption of the roots of the teeth in question. All options and risks were explained to the patient.

The sinus floor was 3 to 4 mm from the crestal bone. Implants with a sinus lift to allow room for placement were discussed. The patient did not like the idea of surgery and the healing time that would be required for a permanent bridge.

A partial was discussed; however, the young patient did not want to have a partial and was worried her esthetic demands would not be met. More options for less permanent treatment were offered, but the patient did not desire them.

The patient chose to do a long-span bridge, double abutting on teeth #8 and #9 with pontics to replace teeth #10–13 and using tooth #14 as a distal abutment. This would meet the patient's demands for esthetics and be a non-removable restoration. She would have the permanent restoration in place and it would take to undergo implant therapy.

Porcelain-fused-to-metal was used on the original bridge work done in 1998. The highest noble metal content available that could span a four-pontic length was used. The porcelain work was done with a layered porcelain technique to provide a life-like appearance.

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Fig. 1: Full face with the old bridge. (Photos/Provided by Dr. Mark McMinnie)

Fig. 2: Full face with the new BruxZir bridge and IPS e.max veneer on tooth #7.

Fig. 3: Lingual of old bridge with mesial lingual and occlusal surfaces on the abutments.

Fig. 4: Lingual of new bridge with mesial lingual and occlusal surfaces on the abutments.

Fig. 5: Fracture the porcelain repairs on the old bridge. #14 on the old bridge.

Fig. 6: Block at the gingiva is gone on the new bridge, and the gingival color is more uniform.
are complete, the fill is “nested” or positioned on the zirconia disk (Figs. 10, 11) and milled to a full contour approximately 30 percent larger than the BruxZir, thus allowing more visibility of the cement and tooth that is prepared.

The cement chosen for the bridge was Panavia SA Cement, a self-adhesive resin. I choose a self-adhesive resin cement for the bridge because it has ease of use in that it can be light cured, but if the light doesn’t penetrate the zirconia completely it will auto cure. This gives strength but also keeps the cementing process simple; it also would work on a full crown made of IPS e.max. The cement for the veneer was Clearfil Esthetic Cement EX, a resin cement.

Veneer preps do not have a retentive or resistant form. The veneer needs to have the maximum strength that resin bonding can give. I can get light though the veneer to fully cure the cement so an auto-cure option is unnecessary. Clearfil Esthetic Cement EX is one of the strongest bonds available and will work excellently on this veneer or a full crown made from IPS e.max.

Both restorations, the veneer and bridge, were tried in and contacts and occlusion checked. The colors were very close to exact between the two restorations. Clearfil Esthetic Cement EX comes with try-in paste, so we used the try-in paste and found that Universal colored try-in paste on both the bridge and veneer made a perfect match.

K-etchant gel was used to clean both restorations, the abutments were cleaned using a proply cup and simple flour pumice with no fluoresce.Panavia SA Cement was placed in the bridge abutments and the bridge was placed on the teeth. There is no need for a silinating agent on BruxZir because Panavia SA Cement will bond to the zirconia. Then it was light cured in place and the excess cement cleaned off.

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An advantage to this type of cement is that it gives the benefits of resin bonding, and if you can’t get the curing light to the cement through the material it will auto cure in five minutes on its own, thus giving the benefit of a resin cement but the ease of use of a glass ionomer. The veneer was treated with ceramic primer before resin bonding using Clearfil Esthetic cement in the Universal shade and light cured, then the excess cement was cleaned up.

The authors and critiques published herein have been checked carefully and represent authoritative opinions about the questions concerned.

References is available from the author.