

Temporary Bite-Raising Crowns

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Patients with crossbites often need temporary bite opening to prevent brackets from being sheared off and to allow unobstructed tooth movements.¹ Restorative materials bonded to the occlusal surfaces of posterior teeth cannot always withstand the forces of mastication.² Lingual brackets can be bonded to the maxillary central incisors to act as biteplanes, but Fine recommended limiting this technique to Class I and Class II, division 2 cases with minimal overjet.³ Furthermore, the lingual brackets can be as frag-

ile as the labial mandibular brackets.^{4,5}

Removable posterior biteplanes are often used in cases of anterior crossbite, but these must be worn nearly full-time, and patients do not always cooperate fully. Such devices are subject to breakage while out of the mouth, and an ill-fitting removable appliance can produce mucosal trauma.

We have designed a more precise, less bulky, and more economical temporary bite raiser that can be easily fabricated.



Fig. 1 A. Wax patterns of temporary bite-raising crowns, about 1.5mm thick, fabricated on cast. B. Molar tubes embedded in wax patterns.



Fig. 2 A. Silicone putty index extended to cover one additional tooth mesially and distally from bite-raising crowns. B. Putty index removed.

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Fabrication

The appliance is fabricated indirectly as described below.

1. Take good, well-extended impressions of both arches, and pour working casts in dental stone.
2. Wet the posterior portions of the cast on which the bite-raising crowns are to be prepared.
3. Make a wax pattern of each bite-raising crown with an occlusal thickness of about 1.5mm, taking into account the opposing functional tooth contacts (Fig. 1). Keep the labial and lingual extensions of the wax 1mm away from the gingival margins.
4. If needed, embed the base of a molar tube or lingual button in each wax pattern. A Begg molar tube allows the lower arch to be bonded simultaneously with the upper arch, using flexible round wires for initial alignment. The Begg tube can be replaced with a preadjusted molar tube when the molar is banded.
5. Prepare a putty index as a negative replica of the bite-raising crowns in each quadrant (Fig. 2). This index, made of polyvinyl silicone material, should be extended one tooth mesially and distally from the crowns. It will then act as a guide for accurate repositioning.
6. Block the lumens of the molar tubes with wax,



Fig. 3 Molar tubes blocked with wax and positioned in putty.

and position the tubes in the putty indices (Fig. 3).

7. Fill the putty index in the area of each bite-raising crown with clear, self-curing acrylic resin of the proper consistency (Fig. 4).
8. After applying a cold-mold sealant to the cast over the teeth to be crowned, place the putty indices back on the cast.
9. Allow the acrylic resin to cure in moderately warm water to improve setting strength.
10. Remove the putty index, and trim and polish the bite-raising crowns (Fig. 5).



Fig. 4 Putty index filled with clear, self-curing acrylic resin in area of bite-raising crown.

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11. Check the crowns on both sides intraorally to ensure that proper bilateral occlusal contacts are achieved.

12. Affix the bite-raising crowns to the teeth with a glass-ionomer cement.

Case 1

A 21-year-old female presented with a Class I molar relationship and the upper right lateral incisor in a deeply locking crossbite (Fig. 6). The four first premolars were extracted to resolve crowding and proclination. Once enough space had been created for the upper right lateral incisor, temporary bite-raising crowns were cemented to the lower second molars (Fig. 7). The incisor was bonded, and the crossbite was resolved in five weeks (Fig. 8).



Fig. 5 A. Putty index removed. B. Bite-raising crowns polished and ready for cementation.



Fig. 6 Case 1. 21-year-old female patient with Class I molar relationship and upper right lateral incisor in deeply locking crossbite before treatment.

Case 2

A 16-year-old female presented with a Class I malocclusion and the upper right canine in crossbite (Fig. 9). Bite-raising crowns with buccal tubes were cemented to the lower first molars, so that the bite was opened during fixed appliance treatment of the lower arch (Fig. 10). The crossbite was corrected within one month (Fig. 11).

Case 3

A 14-year-old female presented with a Class I malocclusion and the upper lateral incisors in crossbite (Fig. 12). Strong intercuspation prevented the lateral incisors from being tipped to correct the crossbite. Temporary bite-raising crowns with buccal tubes were placed on the lower first molars (Fig. 13), freeing the occlu-



Fig. 7 Case 1. Bite-raising crowns in place.



Fig. 8 Case 1. Patient after five weeks of crossbite correction.



Fig. 9 Case 2. 16-year-old female patient with Class I malocclusion and upper right canine in crossbite before treatment.



Fig. 10 Case 2. Bite-raising crowns in place; initial alignment of lower arch started simultaneously with that of upper arch.



Fig. 11 Case 2. Patient after one month of crossbite correction.

sion, and the problem was resolved within one month (Fig. 14).

Conclusion

These temporary bite-raising crowns have the following advantages:

- Are worn full-time.
- Require only minor speech adjustment.
- Provide adequate bite opening in the anterior region without discomfort.
- Improve mastication more than removable



Fig. 13 Case 3. Bite-raising crowns with embedded molar tubes.



Fig. 12 Case 3. 14-year-old female patient with Class I malocclusion and upper lateral incisors in crossbite before treatment.



Fig. 14 Case 3. Patient after one month of crossbite correction.

biteplanes.

- Promote patient compliance with fixed mechanotherapy.
- Allow the incorporation of molar tubes and lingual buttons.
- Are less bulky and more economical than removable appliances.

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