

# Simplified Anterior Crossbite Correction Using a Bonded Compomer Biteplane

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**V**arious methods of correcting anterior dental crossbite in the primary or permanent dentition have been proposed.<sup>1,2</sup> One of the easiest, the cemented reverse stainless steel crown form, has drawbacks including the unattractiveness of the crown and the limitations of working with a preformed inclined slope that cannot be adjusted.

A resin-based composite material can be used to fabricate a bonded appliance that overcomes these problems.<sup>3</sup> Besides having the advantages of custom fabrication and adjustability, the bonded biteplane is also tooth-colored.

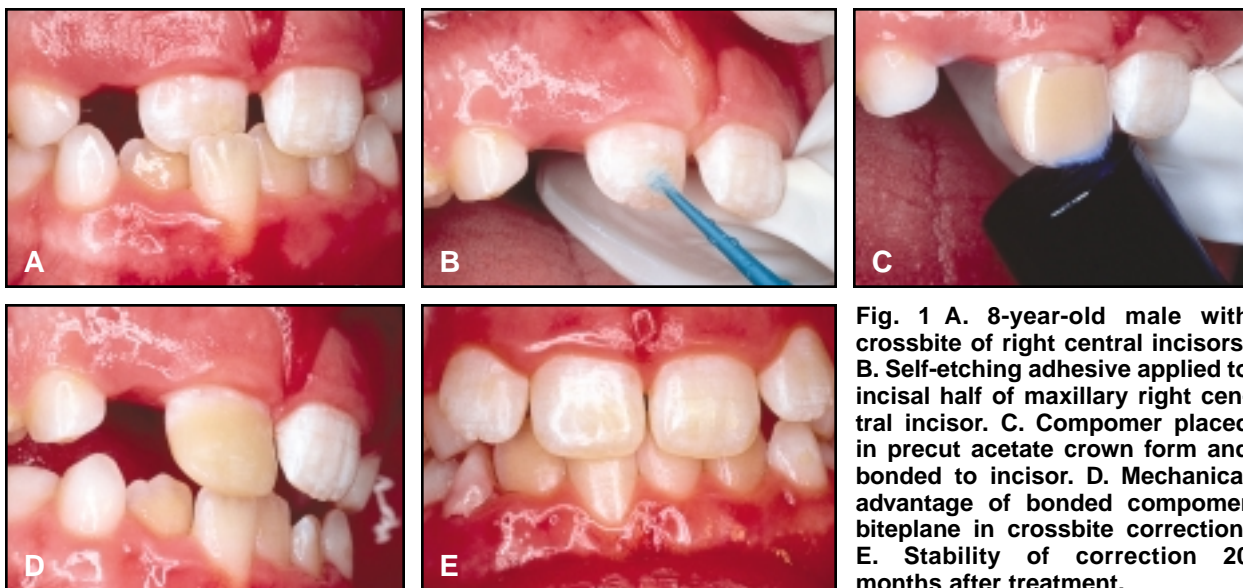
Compomers are polyacid-modified resin-based composites that are made with glass filler particles and polyacid components, as in glass-ionomer adhesives.<sup>4</sup> Compomers can be bonded reliably to enamel and have enough durability to withstand the forces of occlusion. In addition, they are much easier to cut off after treatment

than conventional resin-based composites. This article describes a technique for anterior crossbite correction using a compomer in combination with a self-etching adhesive, which simplifies the bonding technique.

## Case 1

An 8-year-old male presented with crossbite of the permanent right central incisors (Fig. 1A). The patient had Class I molar and canine relationships with some anterior crowding in the early transitional dentition. The goal of treatment was to correct the crossbite, after which the patient would be followed for consideration of future orthodontic treatment.

A slightly oversize clear acetate crown form was trimmed to fit the maxillary right central incisor in reverse orientation. The incisor



**Fig. 1** A. 8-year-old male with crossbite of right central incisors. B. Self-etching adhesive applied to incisal half of maxillary right central incisor. C. Compomer placed in pre-cut acetate crown form and bonded to incisor. D. Mechanical advantage of bonded compomer biteplane in crossbite correction. E. Stability of correction 20 months after treatment.

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was cleaned with prophylactic paste, rinsed, and dried. Prompt L-Pop self-etching adhesive\* was rubbed over the incisal half of the crown for 15 seconds (Fig. 1B), thinned with a gentle air spray, and then light-cured.

The crown form was filled with compomer restorative material (Hytac\* or any similar compomer will work), placed on the incisor in the reversed position, and light-cured (Fig. 1C). The crown form was then slit and removed. After the margins were trimmed, the bonded compomer biteplane was checked to ensure that it produced the overjet and overbite required to move the maxillary incisor labially under the influence of normal incisal forces (Fig. 1D).

Crossbite correction was completed in about 10 days, and the compomer material was cut from the central incisor two months later. The stability of the crossbite correction was confirmed 20 months after treatment (Fig. 1E).

\*3M ESPE Dental Products, P.O. Box 33275, St. Paul, MN 55133.

## Case 2

A 13-year-old male was due to be transferred within four or five weeks, and his prospects for subsequent dental care were unknown. All the patient's primary teeth had exfoliated, and all the permanent teeth had erupted except for the developing third molars. There was a maxillary central incisor diastema of about 2mm, perhaps influenced by high papillary insertion of the labial frenum.

In centric occlusion, the right first molars and canines were in Class I relationships, but the left molars and canines were slightly Class III. The maxillary central and left lateral incisors were in crossbite with their antagonists (Fig. 2A). When the mandible was retruded into centric relation, however, the left central incisors were edge to edge, and the other incisors did not contact (Fig. 2B).

A compomer biteplane was bonded to the maxillary left central incisor as described above, creating an overbite of about 3mm (Fig. 2C). The



**Fig. 2** A. 13-year-old male with crossbite of central and left lateral incisors. B. Edge-to-edge relationship of left central incisors with mandible retruded. C. Bonded compomer biteplane used to establish overbite. D. Biteplane removed five weeks after placement, with crossbite corrected and overbite established.

patient was seen for two subsequent visits, during which the dental hygienist provided a prophylaxis, topical fluoride application, and oral hygiene instructions.

Crossbite relationships of all the involved incisors were corrected in 14 days, and the compomer was removed five weeks after placement, just days before the patient was relocated (Fig. 2D).

### Discussion

Bonded biteplanes are suitable for correction of crossbite related to simple tipping of teeth, but cannot be used in cases where crowding precludes their placement and effectiveness. They are also generally contraindicated in patients with skeletal crossbite related to Class III malocclusion.

Use of a self-etching adhesive facilitates the bonding procedure in that no separate etching or rinsing step is required, and the bond achieved is durable and reliable.<sup>5</sup> The shade of the compomer material should be slightly different from that of the tooth to make it readily distinguishable. Because of their inferior physical properties compared to traditional restorative resin-based composites, compomers are easier to cut away from the teeth. Most of the biteplane can be removed with a high-speed, water-cooled finishing bur, but we advise finishing the removal with a sharp carbide bur at slow speed. Aluminum oxide finishing discs can be used to polish the enamel surface after the resin is removed.

Our first patient's treatment is representative of most compomer biteplane crossbite corrections. If the biteplane is placed to achieve proper mechanical advantage between the maxillary incisor and its antagonist, the crossbite is usually corrected within two weeks. We have not observed a relapse in any patient, and we have been unable to find any report of pulpal or periodontal damage related to anterior bonded biteplanes. Although the treated teeth become slightly mobile during the correction, they stabilize rapidly after the biteplane is removed.

We were not optimistic about correcting the second patient's multiple-incisor crossbite in the short time available. Nevertheless, the compomer biteplane on the left central incisor was able to reposition that tooth far enough forward to establish an acceptable overbite. Not only did the maxillary left central incisor tip anteriorly, but reciprocal forces appeared to deflect the mandible distally. This allowed centric occlusion to eventually coincide with centric relation, taking the other incisors out of crossbite.

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