Correction of anterior tooth crossbite with bonded resin-composite slopes

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Abstract

Chief disadvantages of the reversed stainless steel crown method for crossbite correction are the difficulty in adapting a preformed crown to fit the tooth in crossbite and the metallic appearance of the steel crown form. An inclined plane with ideal mechanical advantage for correction of individual anterior tooth crossbite can often be custom sculpted of resin composite and bonded in position. Treatment is rapid and inexpensive and requires little cooperation from the patient. The report describes and documents two cases that used bonded resin-composite slopes for anterior tooth crossbite correction. (Quintessence Int 1996;27:7-10.)

Introduction

One well-known method for correcting individual anterior tooth crossbite is cementation of a preformed stainless steel crown form in a reversed position (Figs 1a to 1c). Cementation of the crown with its lingual metallic surface facing labially creates an elongated inclined plane which, when struck by the incisal edge of the mandibular incisor deflects the maxillary tooth facially and the opposing tooth lingually. Reversed stainless steel crown crossbite correction can also be used successfully in the primary dentition. This treatment has even been used for a 10-month-old who had only four erupted primary incisors, two of which were in crossbite relationship.

The chief disadvantage of using a steel crown form for correction of crossbite is that the prefabricated crowns are sometimes difficult to adapt in such a way that the desired mechanical advantage for appropriate tooth movement can be obtained. Other disadvantages are the metallic appearance of the cemented crown form and the possibility that the cement bond will fail, resulting in loss of the crown form. The dangerous, albeit unlikely, potential of a patient swallowing or aspirating the crown form must also be considered.

This report describes custom formation of resin composite inclined planes, bonded to maxillary teeth to correct crossbite of permanent anterior teeth (Figs 2 and 3). The chief advantage of this method is the dentist’s ability to design the inclined plane into any configuration that would create the required mechanical advantage for desired tooth movement. In addition, resin-composite has a more attractive appearance in the cosmetically prominent anterior region of the mouth and may have less potential for detaching from the treated teeth than does a reversed stainless steel crown form.

Bonded resin-composite slopes have not been used to treat primary anterior tooth crossbite. Such cases have been commonly treated with acrylic resin inclined bite ramps cemented to the mandibular incisors and canine teeth.
A 7-year-old child has dental crossbite of the right central incisor. A reversed stainless steel crown can be used to correct such crossbite.

Fig 1b  An oversized stainless steel crown form is cemented in reversed position.

The crossbite was corrected permanently within 3 weeks. Overbite and overjet are acceptable, as seen in this 13-month postoperative view.

Fig 2b  An oversized acetate crown form is cut to cover the incisal third of the crown.

Fig 2c  Forty percent phosphoric acid is applied for 15 seconds.

An 8-year-old boy has crossbite of the right central incisor associated with palatal tipping of the tooth.
Fig 2d. After the etchant is rinsed and the tooth is dried, liquid resin bonding agent is painted on the etched enamel.

Fig 2e. Resin composite is placed in the crown form and pressed into position. The new clinical crown of resin composite must be longer than the tooth and inclined labially.

Fig 2f. The resin composite is photopolymerized.

Fig 2g. Suitable mechanical advantage is confirmed.

Fig 2h. Three weeks later, posterior occlusion is reestablished and the maxillary central incisor has been moved anteriorly. The resin composite is retained on the tooth for 6 weeks more to ensure against relapse and is eventually cut away with burs and disks. Extraordinary care is taken to avoid damaging the enamel surface.

Fig 2i. Three months later, the overbite relationship prevents relapse.
Fig 2. Thirteen months after the resin-composite inclined plane was removed, the corrected occlusal relationship remains stable.

Fig 3a. Palatal tipping of the maxillary central incisors and labial tipping of the mandibular central incisors have resulted in crossbite in this 9-year-old.

Fig 3b. Resin composite has been sculpted with hand instruments to create the necessary slope for crossbite correction. Crown forms were not used in this case.

Fig 3c. Four weeks after placement of the resin-composite slopes, the crossbite is corrected.

Fig 3d. Seven weeks after removal of the resin composite, overbite is sufficient to prevent relapse.

References

