Case Report

Winged Maxillary Central Incisors with Unusual Morphology: A Unique Presentation and Early Treatment

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Abstract: Winged incisors are a well-recognized clinical finding. In this report, the disorder is briefly reviewed and a unique case of winging of the two maxillary central incisors having unusual morphology in an eight-year six-month-old boy is presented. The two winged maxillary central incisors were derotated using an anterior sectional wire inserted into a pair of twin brackets, one bonded to each of the two central incisors, and reciprocal anchorage. (*Angle Orthod* 2005;75:478–482.)

Key Words: Winged maxillary central incisors; Unusual morphology; Early derotation; Anterior sectional twin bracket appliance

INTRODUCTION

Maxillary central incisors typically are situated in their sockets in such a way that their occlusal contour follows the normal arc of the maxillary dentition.[1] However, in some reported cases of American Indians, the distal margins of the incisors are rotated in a labial or lingual direction. Lingual rotation has been termed counterwinging by Dahlberg,[2] whereas labial rotation is simply winging. Rotation may be observed on one or both incisors and are indicated by use of adjectives unilateral and bilateral in conjunction with the counterwinging or winging designations. On occasion, incisor rotation is an obvious function of anterior tooth crowding, especially in cases of counterwinging. However, instances are also seen of unilateral and bilateral counterwinging and winging, which clearly are not functions of tooth crowding.

Unilateral and bilateral counterwinging and unilateral winging have been found to be very rare as compared with bilateral winging (6.8% in Pima Indians).[1] Bilateral winging has been reported to be fairly common among the American Indians, with a prevalence of 41.5% in the Makiritare Indians,[3] 49% in the Zunis,[2] and 52.75% in the Yanomama Indians[3]; the South American groups such as the Pewenche, the Diaguitas, and the Jivars exhibit a prevalence of winging of 55.5%,[4] 66.2%,[5] and 50–70%,[6] respectively.

The maxillary central incisor may show a wide range of variability,[7] particularly with regard to the:

1. labial outline—it may be tapering, square, or ovoid or there may be many combinations of the three basic types;
2. labial lobe grooves—are highly variable with regard to the degree of expression;
3. labial profile curvature—varies in the degree of convexity;
4. mamelons—may vary with regard to number and regularity;
5. cingulum—its incisal portion may be completely smooth or, not uncommonly, it may be marked by single or multiple grooves and pits with one or more distinct tubercles. Occasionally, the cingulum may be accentuated and connected with the incisal edge by a ridge resulting in a T- or Y-form of the maxillary incisor;[8]
6. root size—the root may be extremely long or short in length. The following is an orthodontic case report of severe winging of the maxillary central incisors, coupled with unusual incisor crown morphology.

Case presentation

A seven-year six-month-old North Indian (Asian) boy reported to the unit of Pedodontics and Preventive Dentistry at our center in August 1999 complaining of rotated upper

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FIGURE 1. Intraoral periapical radiograph: no midline pathology (August 1999, seven years six months).

FIGURE 2. Mesiopalatal rotation of 11 and 21 (July 2000, eight years six months).

front tooth. On examination, 11 was found to be erupting in a rotated position and 61 presented with a yellowish discoloration and grade 3 mobility. There was a moderate degree of crowding in upper anterior region.

There was an alleged history of trauma by fall from a staircase, when the child was about four years six months old, after which 51 was discolored. In June 1999, the parents noticed 11 was erupting in a rotated manner buccal to 51. Therefore, 51 was extracted in a private dental clinic in the city, and the patient referred to our center for further management.

An intraoral periapical radiograph of the maxillary anterior region (Figure 1) revealed no midline pathology. It was decided to extract 61 as well as 62 and 52 to relieve anterior crowding, and the patient was asked to report after six months for review.

At the next review appointment, about a year later, both 11 and 21 were found rotated identically (22–28° mesio-

FIGURE 3. Unusual crown morphology of 11 and 21 (July 2000, eight years six months).

FIGURE 4. Intraoral periapical radiograph: convergent roots of 11 and 21 (July 2000, eight years six months).

palatally) and winged (Figure 2) with unusual crown morphology (Figure 3). The distal outlines of the labial surfaces of the two teeth were, contrary to the norm,[9] only slightly convex with the crest of curvature (representing the contact area) approaching the distoincisal angle. The mesial outlines were more convex than the distal outlines with the crest of curvature being higher toward the cervical line. In addition, in this case, the distoincisal angles were sharper than the mesioincisal angles. Furthermore, the distoincisal angle was farther from the cingulum as compared with the mesioincisal angle, as measured from the study casts, in both the incisors. An intraoral periapical radiograph of the region revealed the two central incisors to be at Nolla's stage 8 with the roots somewhat convergent (Figure 4). An orthopantomogram taken at this stage showed no other ab-

FIGURE 5. Orthopantomogram: no other abnormality (July 2000, eight years six months).

FIGURE 6. 0.018-inch NiTi wire (July 2000, eight years six months).

FIGURE 7. 0.018-inch rectangular wire (August 2000, eight years six months).

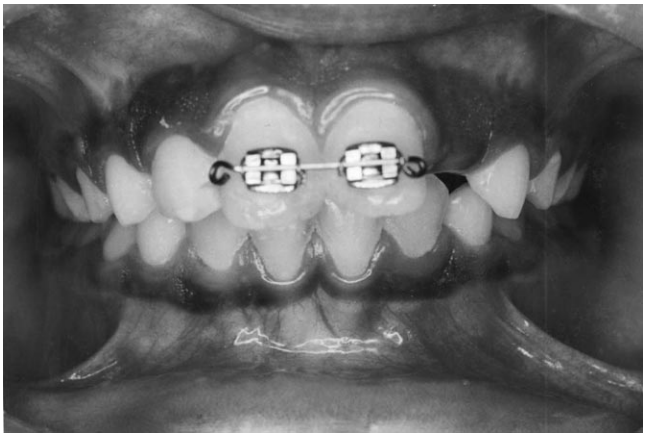

FIGURE 8. Complete derotation (November 2000, eight years nine months).

normality (Figure 5). A diagnosis of bilateral winging of maxillary central incisors with unusual morphology was made.

Treatment

The two central incisors were derotated using only an anterior sectional wire inserted into the twin brackets bonded to each of the central incisors (0 × 2 twin bracket appliance[10]). A 0.018-inch NiTi wire was used for the initial correction (Figure 6). Diastema closure and partial derotation were achieved in four weeks, when the NiTi wire was replaced with a 0.0175 × 0.025–inch stainless steel wire (Figure 7). Complete derotation was achieved after another

FIGURE 9. Normal development and divergence of roots of 11 and 21 (February 2001, nine years).

FIGURE 10. Stability after 12 months (February 2002, 10 years).

10 weeks (Figure 8), and the appliance was removed after 12 weeks of the retention phase. A posttreatment intraoral periapical radiograph showed normal development and divergence of the roots of 11 and 21 (Figure 9). There has been no relapse during the 12 months of follow-up period (Figure 10).

DISCUSSION

Although various cases of rotated or winged and atypically formed teeth have been reported,[1,3,7,8,11–13] a case of winging of atypically formed maxillary central incisors such that the two teeth appear to have erupted in each other's positions has, to the best of our knowledge, not been described previously in the literature. In addition, this patient did not have any orofacial deformities such as cleft lip and palate, where such variations may be expected. Winged or rotated and malformed teeth have often been found to be accompanied by other dental anomalies such as malpositions of adjacent teeth, retained deciduous teeth, dilacerations, supernumeraries, and malformation of several teeth in the same patient.[1,12] In the present case, the only relevant finding was a failure of the normal exfoliation of 51 and 61.

Although winging could be attributed to the mild crowding present in the anterior region, no definite explanation was present for the atypical morphology of the central incisors because there was no evidence of any other associated dental anomaly. In addition, clinical examination of the parents and that of a younger female sibling did not reveal any malformed teeth. However, reliable information regarding occurrence of the condition in the family tree, at large, could not be obtained.

On the other hand, there was a history of trauma to the primary central incisors. However, this trauma had occurred at four years six months of age, when the crowns of the permanent successors would have already been formed.[9] Therefore, the proposed association between trauma to the primary incisors and disturbed morphology of the permanent successors cannot be confirmed in this case. Moreover, the proposition that trauma to the primary incisors resulted in so symmetrical a displacement of the two central incisors that the teeth appear to have exchanged positions or transposed cannot be substantiated. Although we were tempted to diagnose the condition as transposition of maxillary central incisors (Mx.I1.I1), we could not put forward enough convincing explanation to prove this hypothesis.

Although rotations can be and have been treated at various stages of root development, an early correction of rotated teeth before root completion is conducive to better retention. Early derotation of the central incisors and closure of the midline diastema was planned and achieved to reduce any possible psychological trauma. The effect of the disturbed crown morphology of the two central incisors on esthetics was, as expected, minimal, thus requiring no extensive treatment.

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