DO TEETH WANT TO BE STRAIGHT?
A NONSURGICAL APPROACH TO UNERUPTED TEETH

Although some orthodontists believe that ectopic labially positioned canines may erupt without surgical exposure, many articles emphasize the surgical management of the nonpalatally impacted canine. In this article, the author discusses the treatment and results of 3 cases, with a total of 4 impacted maxillary canines. All cases were treated with a conservative approach and without surgical intervention. This nontraumatic, nonsurgical approach demonstrates the viability of conservative options for the management of unerupted teeth in carefully selected cases. World J Orthod 2005;6:248–257.

CASE 1

This female patient, 9 years 10 months of age, had a Class III malocclusion, with two unerupted maxillary canines and two unerupted mandibular second premolars (Fig 1). Upon examination, it was observed that there was no eruption space for 4 teeth.

The 4 first premolars were extracted to provide enough space for the unerupted teeth to erupt. The canine, originally horizontally impacted,

yet, many reports have emphasized surgical management of nonpalatal impacted canines.9,10

In this article, the author shows 3 cases with 4 impacted maxillary canines. All have been treated via a conservative approach, without surgical intervention. This nontraumatic, nonsurgical approach demonstrates the viability of conservative options for the management of unerupted teeth in carefully selected cases.

If enough space is provided in the dental arch, the author believes that most impacted teeth will erupt by themselves without surgical intervention. The maxillary canine is second only to the mandibular third molar in frequency of impaction. The reported frequency varies from less than 0.8% to 2.8%.1,2 This condition is more than twice as common in girls (1.2%) than in boys (0.5%).3 Canine impaction is palatal in 85% of cases and labial/buccal in the remaining 15%.4–6 Palatally impacted canines seldom erupt without intervention.7 It is believed that this impeded eruption is caused by the thickness of the palatal cortical bone, as well as the dense, thick, and resistant palatal mucosa.

Palatal impaction can be diagnosed via lateral cephalogram or direct palpation over the palatal mucosa, or by observing whether there is a bulging mass over intervening palatal mucosa. Opinion is mixed on labial ectopic eruption. Some clinicians believe labially positioned ectopic canines may erupt on their own, without surgical exposure.8

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improved significantly (Fig 2a). Four months after extraction, all 4 unerupted teeth continued to erupt toward the occlusal surface (Fig 2b).

At 1 year 1 month after extraction, all 4 unerupted teeth had erupted, without any surgical exposure, and have natural, healthy gingival tissue (Fig 3). The Class III malocclusion was corrected when 1 mandibular incisor was removed (Fig 4). Postorthodontic treatment will include provisional crown restoration for the peg lateral incisors.
**Fig 2** Case 1. (a) At 10 years 1 month of age, the 4 first premolars were removed to provide enough space for the unerupted teeth to erupt. (b) At 10 years 6 months of age, all 4 unerupted teeth continue to erupt toward the occlusal surface.

**Fig 3** Case 1. The patient is 11 years 2 months of age. All 4 unerupted teeth have erupted, without any surgical exposure, and have natural, healthy gingival tissue.
CASE 2

This patient, a male, 11 years 7 months of age at the start of treatment, had an unerupted maxillary left canine, even though the maxillary right canine had already partially erupted (Fig 5). There was a malalignment of the maxillary right central incisor. The maxillary left canine was impacted, high up in the apical area of the maxillary left lateral incisor and first premolar. The occlusal view shows no bulging of the palatal mucosa; this means that the impacted canine is not on the palatal side.

Figure 6 shows the minor orthodontic alignment of the maxillary incisors, when the patient was 11 years 8 months of age. Upon further examination, when the patient was 12 years of age (Fig 7), there was still no observation of a bulging mass on the palatal side. This indicated that the maxillary left canine was probably not palatally impacted. The impacted canine was still high up in the alveolar bone.

Nearly 1.5 years later, when the patient was 13 years 5 months of age, the maxillary right central incisor had relapsed to a higher gingival position. The impacted maxillary left canine had erupted to a good position with healthy gingival tissue (Fig 8). Figure 9 shows the posttreatment result at 14 years of age, following short-term orthodontic treatment.

CASE 3

A female patient, 17 years 5 months of age, had a Class II malocclusion, with crowded maxillary anterior teeth but a good profile (Fig 10). The maxillary right canine was impacted and the maxillary left canine was blocked out labially. In addition, the mandibular second molars were mesially angulated due to the premature loss of the mandibular first molars. The apical foramen of the maxillary left canine was already closed.
Fig 5  Case 2. Pretreatment; patient is 11 years 7 months of age. There is malalignment of the maxillary right central incisor, and the maxillary right canine has already partially erupted. The maxillary left canine is impacted high up in the apical area of maxillary left lateral incisor and first premolar. There is no bulging of the palatal mucosa, which means that the impacted canine is not on the palatal side.

Fig 6  Case 2. Minor orthodontic alignment of maxillary central incisors at 11 years 8 months of age.

Fig 7  Case 2. At 12 years of age, the palatal side still shows no bulging mass. The impacted canine is high up in the alveolar bone.
At 3 months into treatment, the maxillary first premolars were removed for alignment of the blocked-out maxillary left canine, creating space for the impacted maxillary right canine to erupt (Fig 11). Figures 12 and 13 show that the impacted maxillary right canine continued to self-erupt.

This patient was treated successfully with a nonsurgical approach, in which the maxillary right canine erupted on its own. The original mesially inclined mandibular second molars were uprighted. The final records are shown in Fig 14.

DISCUSSION

In all cases, the patient should be apprised of the prognosis at the beginning of treatment about the possibility of surgical exposure if the unerupted tooth does not erupt by itself. This is particularly important in a case with a horizontally impacted maxillary right canine. In Case 1, the patient was fortunate to have a favorable outcome. If the crown tip of the impacted maxillary canine is inclined upward, then the prognosis is not as good as in the horizontal malposition,
Fig 10  Case 3. Pretreatment; patient is 17 years 5 months of age, with a Class II malocclusion, with maxillary right canine impaction and mandibular first molar loss. Note the malposed maxillary left canine.
Fig 11  Case 3. Three months into treatment, the maxillary first premolars are removed.

Fig 12  Case 3. Radiographic view at 18 years 1 month of age.

Fig 13  Case 3. At 18 years 7 months of age, the impacted maxillary right canine has partially erupted.
and a surgical exposure or removal is probably indicated.

The length of time needed for an unerupted tooth to erupt varies. In case 1, it took only about 6 to 8 months for both impacted maxillary canines to erupt. In case 2, it took almost 2 years for the impacted canine to erupt, following the natural shedding of the primary canine and self-eruption of the permanent canine. If the primary canine had been removed earlier, the permanent canine may have erupted normally, as with the other side. In case 3, it took about 1 year for the impacted maxillary canine to erupt.

As was seen in case 3, the closure of the apical foramen does not mean that the unerupted tooth will not self-erupt. In this case, even though the opposing canine apex had already closed and the patient was 17 years 5 months of age, the impacted canine still self-erupted without surgical exposure.

The location of the impacted teeth, whether in the alveolar bone or impacted labially, should be clearly diagnosed at the beginning of treatment. All 3 cases illustrated in this article did not have palatally impacted teeth. If the impacted maxillary canine was on the palatal side, this would have been diagnosed by the bulging of palatal mucosa and confirmed by lateral cephalogram. Due to thick palatal mucosa, a palatally impacted canine seldom erupts by itself; most palatally impacted maxillary canines have to be assisted by surgical exposure.8,11

Fig 14  Case 3. Final views of the patient at 19 years of age. This case was successfully treated with a nonsurgical approach.
CONCLUSIONS

The following conclusions can be made:

1. The most common reason for impacted teeth is lack of space. After creating enough space, nonpalatally impacted maxillary canines usually erupt by themselves, as in these 3 cases.

2. If the patient is not time compulsive or asking for a short treatment time, management of nonpalatally impacted canines, using a nonsurgical conservative approach, should be an important treatment option. Surgical exposure may be needed later if this option does not succeed; the patient must be informed of this possibility.

3. The traditional thinking about the closed root apex and self-eruption should be reevaluated. In case 3, even with the opposing canine apex closed, the maxillary right canine erupted by itself when the patient was 17 years 6 months of age.

REFERENCES


