

**Freehold**

George Sargiss, DDS

Sonalee Kapoor, DMD

Hightstown

Brad Elkin, DMD

Thomas Morgenstern, DMD

Manalapan

Joshua Epstein, DMD

Martin Epstein, DDS

Volume 1, Issue 2

April, 2006

Impacted Maxillary Canines

Impacted teeth by definition are considered to have a delayed or incomplete eruption time or may not erupt at all. This is usually based on clinical or radiographic assessment. Besides third molars, the maxillary canines are the teeth most likely to remain un-erupted or impacted. Maxillary canines are teeth that most commonly require surgical exposure and orthodontic guidance during eruption. Impacted maxillary canines occur in 1-2% of the population. This is most likely due to the extended developmental period of the canine and the long, tortuous path of eruption before it emerges into full occlusion.

Palatal displacements (85%) are more common than labial displacements (15%) and such problems occur more frequently in girls than in boys. Research has shown that up to 33% of patients with palatally impacted canines also have missing teeth, a frequency that is 4-9 times that of the general population. In addition, studies conclude that a significant percent of patients with impacted canines also have small, peg shaped or missing lateral incisors.

Cause For Concern

Impacted canines are a frequent concern for the family dentist and orthodontist and can lead to the following sequelae:

- Root damage to adjacent teeth: 12% of cases with impacted canines resulted in root damage to adjacent incisors. Although such damage is painless it may lead to loss of these incisors. (fig 1)
- Canine impaction: Correction involves lengthy and difficult orthodontic treatment.
- Follicle damage to the involved canine: This may lead to local bone loss and affect adjacent incisors.
- Severely impacted canines: These may require surgical removal of the impacted canine and subsequent orthodontic treatment to prepare for restorative treatment (implants).



Fig 1 : Root damage to lateral and central incisors. Although painless, it may lead to a loss of these incisors.

Visual Inspection

By the age of 12.3 for females and 13.1 for males, 80 percent of maxillary canines have erupted. Clinically, it is essential to observe the canine from dental ages of 8 or 9 years. This is to ensure early detection of an ectopic position, particularly if there is a family history or if maxillary lateral incisors are small or are missing. Canines are palpable from 1 to 1.5 years before they emerge, the absence of the canine bulge after the age of 10 is a good indication that the tooth is not in its normal position, impaction or ectopic position of the maxillary canine is possible. Asymmetries in the alveolar process are not considered significant in children younger than 10 years. However, in patients older than 10, an obvious palpable bilateral asymmetry could indicate that one of the permanent canines is impacted. If a maxillary lateral incisor is late erupting or is unusually proclined, an ectopic position of the permanent canine should be suspected.

Impacted maxillary canines occur in 1-2% of the population. Other than third molars, these teeth are most likely to remain unerupted or impacted.



Fig 2: Note the unusual position of lateral incisors and canine bulge on palate.



Fig 3: Note the unusual position of lateral incisors and ectopic position of permanent canine.

Radiographs

Radiographs are indicated when 1. The canine bulges are not present, 2. Right and left canine development is asymmetrical, 3. Occlusal development is advanced and there are no palpable bulges indicating the presence of canines in the alveolar process, and 4. The lateral incisor is delayed in eruption, malpositioned, or has an unusual inclination in relation to the adjacent central incisor. Accurate radiographs are critical for determining the position of impacted canines and their relation to adjacent teeth and for determining the prognosis and best mode for treatment.

A panoramic taken in conjunction with periapical views allows the impacted teeth to be located either palatally or buccally relative to the adjacent teeth.

Interceptive Treatment

In Class I occlusions without crowding where the permanent canine is impacted the preventive treatment of choice is extraction of the primary canines when the patient is 10-13 years old. The key in these situations is that there is no crowding and no incisor root resorption has occurred. It is best to extract the primary canines and fabricate a space maintainer to prevent loss of any potential canine space and prevent unwarranted incisor movement distal. In crowded cases, extraction of primary canines will not improve prognosis for the permanent canines. It is also necessary to relieve the crowding (may involve the use of palatal expansion). This may improve the prognosis for normal permanent canine eruption in mildly crowded cases, after extraction of the primary canine. Although extraction of primary canines can be beneficial in specific cases, inappropriate extraction of primary maxillary canines must be avoided, due to the increased potential for arch collapse and arch crowding. This could lead to buccal impaction. Abnormal eruption paths may result in impactions and compromise the longevity of the neighboring lateral incisors due to root resorption. The success of early interceptive treatment for impacted maxillary canines is influenced by the degree of impaction and age at diagnosis. As a gen-

Early detection of displaced canines, followed by interceptive procedures, can avoid impactions in many cases.

the degree of overlap between the permanent canine and lateral incisor exceeds half the width of the incisor root, the chances for complete recovery are poor. Clinical studies support resolution of palatal impaction in 91% of cases in which the crown of the canine is distal to midline of the lateral incisor when orthodontic treatment is initiated. The success rate drops to 64% if the canine crown is mesial to the midline of the lateral incisor before interceptive treatment

Fig 4 : Note the canine exceeds half the width of the incisor - therefore has a guarded prognosis.

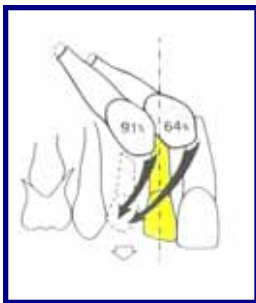


Fig 5 : Note the success rate drops to 64% if the canine crown is mesial to the midline of the lateral incisor.



Fig 6 and 7 : Surgical uncovering of an impacted maxillary canine and later orthodontic traction of the canine.

Comprehensive Orthodontic Treatment

Early detection of displaced canines, followed by interceptive procedures, can prevent impactions in many cases. However, the orthodontist is sometimes presented with cases that require full orthodontic treatment with fixed appliances. The maxillary arch must be developed, adequate space created for the canine and proper orthodontic anchorage established prior to referring the patient to an oral surgeon for surgical exposure of the canine crown. This involves raising a surgical flap to expose the canine crown, bonding an attachment with a gold chain, and then suturing the flap over the crown. (Fig 6) After the patient has properly healed, (1-2 weeks) orthodontic traction will commence to bring the canine into position. (Fig 7)

Conclusion

The permanent canines are the foundation of an esthetic smile and functional occlusion, and any factors that interfere with their development and eruption can have serious consequences. The prevalence of maxillary canine impaction is significant and the frequency increases with other genetically associated dental anomalies. The astute practitioner should be aware of dental anomalies that occur with impacted maxillary canines so that early recognition and interceptive treatment is possible. More important, if signs of ectopic eruption are detected early, every effort should be made to prevent impaction and its surgical consequences. The need for complex orthodontic therapy and surgical intervention may be avoided or minimized if primary canines are extracted appropriately with proper early orthodontic treatment. Early detection and referral can spare the patient :time, expense, complex treatment and injury to otherwise healthy teeth.

References

1. Richardson and Russell, Impacted Cuspid Diagnosis
2. Parisi et al, Impacted Cuspid Diagnosis
3. Bishara et al., Impacted Cuspids, AJO., 1992

*****Please note : all cases shown in this newsletter were treated by The Brace Place Doctors*****

What we should look for ?

- Crowding in the maxillary arch (v-shaped)
- Asymmetry exists in palpation of canines labially
- Small or missing maxillary laterals
- Flared maxillary laterals-or delayed lateral eruption.
- Lack of canine bulge

When should we start looking?

- Clinical evaluation should be done as early as 8 years old
- Absence of normal canine bulge through intra-oral palpation or asymmetry of canine bulge by age 11
- Delayed eruption or retention of primary canine beyond 13 years old is a strong clinical sign.

Answers From Our Last Newsletter Quiz:

1. T, 2. F, 3. T, 4. F, 5. T,

Orthodontic Update Continuing Education Credit

Orthodontic Update Continuing Education program is designed for the general dentist, dental specialist, and staff members. Readers can earn 2 hours of continuing education credit for each issue. Here’s how it works:

1. Read the issue of Orthodontic Update
2. Complete the quiz and return it to the Freehold office. Copies of the quiz will be accepted. **No fee is required.**
3. Upon receipt The Brace Place will process the quiz and issue a continuing education credit report. To facilitate learning through self-instruction, correct answers will be published in the following issue.

Two hours of credit will be awarded for completing this quiz. Continuing education requirements vary from state to state. According to the New Jersey State Board of dentistry, a limit exists on the number of eligible credit hours from a home study course:

Dentists: 10 Credits every 2 years
 RDA: 4 Credits every 2 years
 RDH: 4 Credits every 2 years
 CDA: Unlimited



234 Princeton-Hightstown Rd
 Hightstown, NJ 08520
 609-448-6600

509 Stillwells Corner Rd
 Freehold, NJ 07728
 732-462-7676

800 Tennent Rd
 Manalapan, NJ 07726
 732-536-4422



Q
U
I
Z

Our next issue will be on Posterior Crossbites in Children

1. T F	Impacted maxillary canines occur in 1 –2 % of the population.
2. T F	Root damage to adjacent teeth due to an impacted canine is not a concern.
3. T F	Early detection of displaced canines, followed by interceptive procedures, can prevent impactions of canines in many cases.
4. T F	The success of early interceptive treatment for impacted maxillary canines is influenced by the degree of impaction and the age of the patient at the time of diagnosis.
5. T F	Crowding in the maxillary arch, absence of a palpable canine labially, small or missing lateral incisors are a few signs to indicate the presence of an impacted canine.