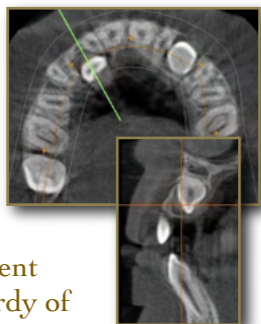


SURGICAL PLANNING AND UNCOVERING

If a palatally displaced maxillary canine has been deemed to need surgical exposure, determining the location of the tooth is important in achieving the least invasive and most predictable means of exposure. Two main types of radiographs are available.

Currently, a CT scan is the gold standard for obtaining the most precise information, particularly in more complicated impactions where adjacent tooth roots are in jeopardy of damage.



Otherwise, if CT scan is not available or if the patient is not capable of holding still for a CT scan, a pair of periapical films taken at slightly different angles will suffice by applying the SLOB rule (Same Lingual Opposite Buccal).

After surgery, auto eruption is used to greatly reduce the potential damage to adjacent tooth roots by allowing the tooth to find its own path of least resistance into the mouth, rather than being mistakenly guided across adjacent tooth roots. Excessive force or aberrant traction angles could lead to root resorption, bone loss, mobility, and long term periodontal and esthetic defects not only on the impacted tooth, but also on the adjacent teeth. This procedure is ideally performed pre-orthodontically, which shortens the total time in orthodontic brackets. The Vol 4, No 3 newsletter on the website reviews this in greater detail.

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TOOTH IMPACTION CAUSES AND TYPES

Teeth may remain impacted in the mouth for several reasons, the most common of which is genetics. The teeth most likely to be impacted in order of predilection are mandibular third molars, followed by maxillary canines. Maxillary canines can be positioned either facially (33%) or palatally (66%) in the alveolus.

Palatally impacted maxillary canines occur in about 2% of the population. These are dealt with in a different manner from facially or centrally impacted canines in that rather than attaching a chain to the tooth immediately, when the tooth is accessed subgingivally, a bracket is placed to allow for auto-eruption as shown in the image.

Eruption can take 3-9 months, depending on the depth of the impaction. Once far enough into the mouth, then orthodontic force is used to move the tooth into the arch. This is generally a predictable method for younger patients in particular. However, in older patients age 30 or more, the risk of tooth ankylosis is greater and the predictability of success is diminished.



But prior to surgical treatment for palatally positioned canines, evaluation of the position of the canines may indicate use of other pre-surgical treatments which can sometimes eliminate the need for surgical uncovering altogether!

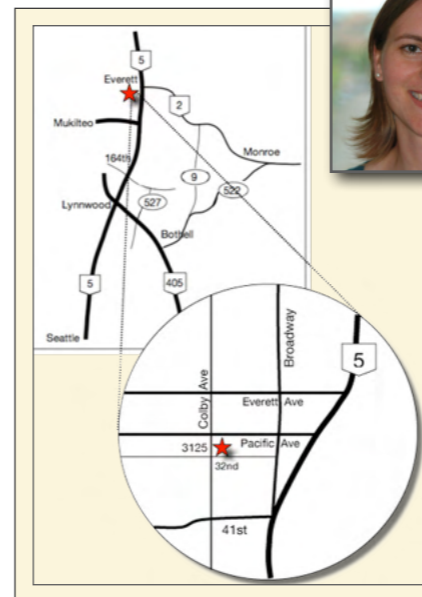
This issue of **ProbeTips** will explore methods to determine even years in advance which teeth may need surgery and which may be coaxed into position with alternative means.

Pamela A Nicoara DDS MSD PLLC

PERIODONTOLOGY IMPLANTOLOGY ORAL MEDICINE

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She is driven to achieve esthetic and predictable outcomes, particularly for anterior implant cases, and is always looking to improve processes and results. You can email her directly below with questions, comments, or suggestions for future newsletters.



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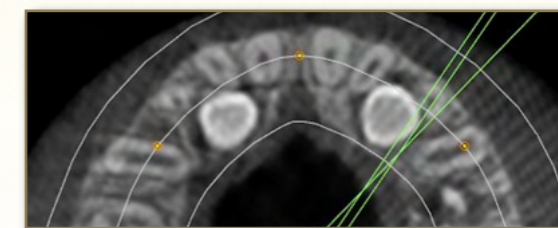
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PROBE TIPS

A QUARTERLY PERIODONTAL
NEWSLETTER

BY PAMELA NICOARA DDS MSD

Pre-Surgical Treatment of Palatally Impacted Canines



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Pre-Surgical Treatment of Palatally Impacted Canines

GENERAL CONSIDERATIONS

One of the more well known pre-surgical treatments to offer children with palatally impacted canines is to remove primary canines. This has been shown in some instances to stimulate the impacted canine to move in the appropriate direction, but not always. The position of the canine may be such that removal of the primary canines will have no benefit at all and surgery should be pursued rather than waiting for teeth to move on their own. This is explored in great detail by focusing on a particular paper from 2018 in the European Journal of Orthodontics by making the lateral incisor the guide against which the canine is compared.

Additional treatments for potentially improving the eruption of palatally impacted maxillary canines include use of a maxillary expansion device, as well as orthodontically separating the adjacent premolar and lateral incisor to create space for the impacted canine to move coronally. Use of a maxillary headgear has also been suggested to control movement of the maxillary first molars to maintain space for the canines to erupt.

ALPHA ANGLE, DISTANCE AND SECTOR LOCATION

First described by Ericson and Kuroi in 1988, there are 3 measurements that can be made on a panoramic film to aid in determining the outcome of non-surgical treatments for palatally impacted canines as explained on the next panels.

Alpha Angle: Angle formed by the long axis of the canine and the midline;

Distance: Distance in mm from the canine cusp tip to the occlusal plane (OP);

Sector: Mesiodistal crown position in sector 1-5.

In their study of 67 patients without maxillary space deficiency and a mean age of 11.4 years, the following guidelines were proposed:

Type 1: Alpha angle less than 20°, cusp tip in sector 1-2 (distal to midline of lateral):

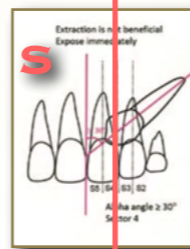
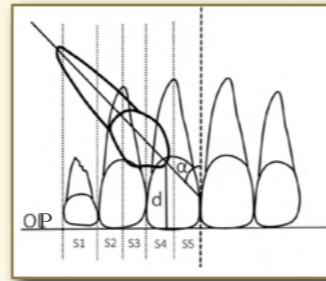
Wait with extraction and observe.

Type 2: Alpha angle between 20-30°, located in sector 2-3 (distal to contact of central):

Extraction of primary canine is beneficial.

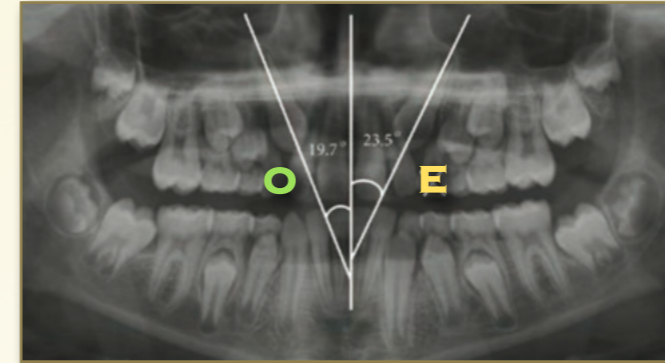
Type 3: Alpha angle greater than 30°, positioned in sector 4-5 (mesial to contact of central or beyond):

Extraction is not beneficial, expose immediately.



SAMPLE CASES

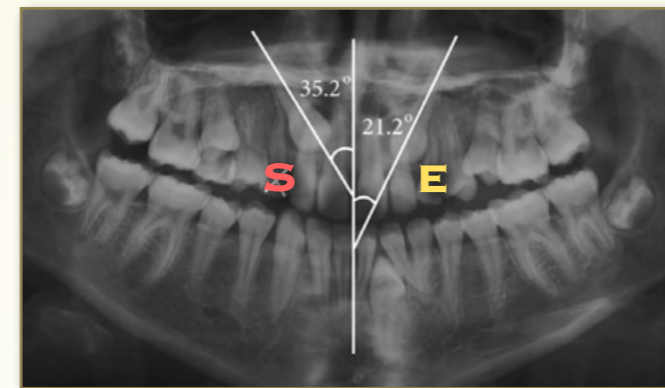
Case 1: Combination Observe and Extraction



-In this case, the canine on the right has an alpha angle less than 20°, and is positioned in sector 1-2. It can be **OBSERVED** and should spontaneously erupt on its own.

-The canine on the left, however, has an alpha angle between 20-30°, located in sector 2-3, and **EXTRACTION** of the primary canine is indicated. (To aid in symmetry here, extraction of the right primary canine can also be performed.)

Case 2: Combination Expose and Extraction



-Here, the canine on the right has an alpha angle greater than 30°, and is positioned in sector 4-5. **SURGICAL** exposure is warranted.

-Similar to the case above, the canine on the left has an alpha angle between 20-30°, located in sector 2-3, and **EXTRACTION** of the primary canine will increase the probability of spontaneous eruption.

FINAL THOUGHTS

Essentially, if the canine crown is half way past the lateral, extracting primary canines is useful. If it is fully past the lateral, surgery is needed.

The more crowding there is, and the older a patient is, the less likely spontaneous eruption will occur even in situations where primary tooth removal would normally be beneficial, and surgical intervention is recommended.

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Complete References Available on Request.

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