

# Methods Of Surgical Exposure Of Impacted Canine – A Review

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## **ABSTRACT**

*Impacted tooth is the one which fails to erupt and will not attain its anatomical position beyond the chronological eruption date even after its root completion. Canines play an important role in functional occlusion and for the foundation of an esthetic smile. As such, any factors that interfere with the normal development of canines and their eruption can have serious complications. This review article discusses about the techniques that can be used in guiding the direction or altering the direction of impacted canines to bring them into occlusion.*

**KEYWORDS :** *Canine , impaction, impacted canine*

## **INTRODUCTION**

Impaction of maxillary and mandibular canines is a frequently encountered clinical problem. Maxillary canines are the most commonly impacted teeth, second only to the third molars. Their position in the arch can be diagnosed by periapical radiographs, orthopantomogram or CBCTs. Their path of eruption can be guided or redirected by using various techniques and bringing them into their arch.

## **Etiology And Prevalence**

Maxillary canine impactions occur in approximately 2% of the population<sup>1</sup> and it has a preponderance for females. The incidence of canine impaction in the maxilla is more than twice in the mandible. The impacted maxillary canines have 8% chances for being impacted bilaterally. The occurrence of palatal impaction is more common than labial impactions. Unlike buccal displacement of maxillary canines, palatal displacement of maxillary canines occurs more often in cases which have adequate arch perimeter.

## **Classification:**

They can be impacted due to localized, systemic or genetic reasons. Localized factors include arch length tooth size discrepancies, failure in the resorption of primary canine, prolonged retention or early loss of primary canine, ankylosis of permanent canine, cysts or neoplasm, dilacerations of root, absence of maxillary lateral incisor, variation in the timing of lateral incisor

root formation, iatrogenic factors and idiopathic factors. Systemic factors include endocrine disorders, radiations, febrile diseases, etc. Impaction can also be due to hereditary reasons.

**Clinical Evaluation :**

On palpation, there might be a presence of canine bulge either buccally or palatally. This is matched with the age of the patient to determine the approximate time when the tooth might erupt. If a tooth fails to erupt beyond its chronological age, they can be identified as a potential source for impaction. Radiographically, there might be resorption of adjacent teeth if the impacted tooth has been left untreated for long. Model analysis can be done to check for the availability of space in the dental arch. The prognosis depends on age of the patient, availability of space, favourable position of the canine, presence of adequate width of attached gingiva. The position of canine can be determined by its relation to the midline. The vertical position is determined in relation to the lateral incisor's root as said by peck and peck.

**Management :**

It can be done as an interceptive treatment, with varying strategy for labial impaction, palatal impaction and variation in the application of traction with importance to be given in planning the retention phase.

**Interceptive Treatment :**

This can be attempted when early detection of signs of ectopic eruption and a selective extraction of the deciduous canine as early as 7 to 8 years (Suggested by Williams). Ericson and Kuroi<sup>2</sup> suggested that removal of the deciduous canine before the age of 11 years will normalize the position of the ectopically erupting permanent canines in 91% of the cases if the canine crown is distal to the midline of the lateral incisor.

**Surgical Exposure :**

It is indicated when the tooth doesn't erupt spontaneously after creating space in the arch and it is attempted after root formation. The flap should be designed to preserve a band of attached gingival to guide the eruption of tooth through its natural path of eruption.

**Open Technique:**

This can be done as an excisional approach when the canine is coronal to the mucogingival junction and an apically positioned flap is done when the canine is apical to the mucogingival junction.

**Closed Eruption Method :**

This technique is performed when the tooth is impacted in the centre of the alveolus. The flap is elevated and the attachment is placed on the impacted tooth ( can be begg brackets, master bracket, button) and they are attached to the main archwire through a ligature or chain placed over the attachment after a week. The raised flap is then repositioned to its original position. This indirect technique also favors eruption of impacted canine into its normal direction.

**Palatally Impacted Canine :**

Closed eruption is done as mentioned above and an open window technique is done wherein a flap is raised, the bone covering the crown is removed and a small window or fenestration is made and the orthodontic attachment is bonded and the flap is sutured back into place.

**Techniques For Application Of Traction:**

The force elements can be in the form of ligature wire, rubber bands, elastomeric chains and elastic threads. Few other techniques are the ballista spring ( mouse trap spring), magnetic forces, eyelet attachment, TMA sectional archwire.

According to Parkin et al<sup>3</sup>, a study on open versus closed surgical exposure of canine teeth that are displaced in the roof of the mouth, a systematic review, suggests that there is no differences in outcomes when performing an open or closed technique for unerupted palatally displaced

maxillary canine. According to Hussain et Al<sup>4</sup>, The maxillary canine is second only to the mandibular third molar in its frequency of impaction with a prevalence of about 1.5%. Ectopic canines occur palatally with twice the frequency that they do buccally. 1 General dental practitioners and orthodontists will commonly encounter this problem and need to be fully aware of managing this situation. Failure to diagnose and manage the ectopic upper canine efficiently can result in more complex remedial treatment becoming necessary.

#### **CONCLUSION :**

Management of impacted canines is necessary for maintenance of esthetics and function. Simple interceptive procedures can be used to prevent impaction of the permanent canines by extraction of the deciduous canine. Various surgical and orthodontic techniques are used to recover impacted maxillary canines. A proper management must be planned and adequate force must be applied for efficient eruption without damaging the adjacent teeth.

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