

# IMPACTED MAXILLARY CANINES : A REVIEW

DR.VIJAY EBENEZER

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Dr. Vijay Ebenezer, Dr. Balakrishnan Ramalingam

Correspondance to - Dr. Vijay Ebenezer

*Professor and Head of Department*

*Name of the Department – Oral and Maxillofacial surgery*

*Sree balaji dental college and hospital*

*Pallikaranai , Chennai – 100*

*Ph no : 9840136328*

***Abstract : Maxillary canine impactions are the second most common impactions following mandibular third molar impaction . There is always a confusion for the the clinician regarding the management of canine impactions, hence they need to be familiar with the differences in the surgical management of the labially and palatally impacted canines, the best method of attachment to the canine for orthodontic force application, the advantages of one-arch versus two-arch treatment, and the implications of canine extraction. The following review focusses on the various factors that influence all these decisions .***

***Keywords : Canine impaction , maxillary canines , impaction , oral and maxillofacial surgery .***

## 1. INTRODUCTION :

An impacted tooth can be defined as a tooth that fails to develop after the normal development is complete. The most common teeth to be impacted are mandibular third molars , following which are the maxillary canines .

Dachi and Howell et al. reported the incidence of maxillary canine impaction to be 0.92%<sup>1</sup>. Dewel et al. quoted that maxillary canines have the longest period of development<sup>2</sup>. It was also stated that they have the longest and most tortuous course from the point of formation which lies lateral to the piriform fossa. The crowns of the permanent canines lie in close proximity to the roots of the adjacent lateral incisor .

The early detection and management, aided by the required surgical and orthodontic intervention will help in obtaining esthetically and functionally good outcomes. An interdisciplinary approach is carried out . The team usually comprises of orthodontists, pediatric dentists, periodontists, oral surgeons and general dentists. Proper positioning and alignment of canines is essential in order to establish an acceptable facial contour, esthetic smile line, and occlusion especially for canine guidance or group function occlusion. The presence of an impacted canine sometimes results in root resorption of adjacent teeth.

## **ETIOLOGY OF CANINE IMPACTION :**

Some of the local factors which play a role in canine impaction include tooth size – arch discrepancies , failure of the primary canine root to resorb , prolonged retention or early loss of the primary canine , ankylosis of the permanent canine , cyst or neoplasm , dilacerations of the root , absence of the maxillary lateral incisor, peg lateral incisors , variation in the time of formation of lateral incisor root . A few other conditons can also cause canine impaction, such as , endocrine disorders , febrile conditions , radiation therapy etc<sup>3</sup>.

## **DIAGNOSIS OF CANINE IMPACTION:**

Maxillary canine impactions can be assessed both clinically and radiographically. Clinical evaluation involves a detailed examination of the periodontium . The signs of a canine impaction include retention of primary canines , absence of buccal and palatal bulges , when compared to the contra lateral side<sup>4</sup> . Some other clinical signs include tipping or irregular positioning of adjacent teeth .

Radiographic evaluation is carried out using occlusal films , panoramic views , lateral cephalograms , can help in evaluating the position of the canines. Peri apical films are uniquely reliable for this purpose.

A single periapical film provides the operating surgeon with a two-dimensional view of the required area , thereby helping in connecting the canine with the neighboring teeth ,mesiodistally and superoinferiorly<sup>5</sup>. In order to evaluate the buccolingual position of the canine, a second periapical film should be obtained by one of the following methods :

Tube-shift technique or Clark's rule , in which 2 periapical films are taken of the same area, with the horizontal angulation of the cone changed when the second film is taken. If the tooth of concern , moves in the same direction as the cone, it is lingually positioned. If it moves in the opposite direction, it is situated closer to the source of radiation and is therefore buccally<sup>5,6</sup>.

Buccal-object rule is another technique . Here , the vertical angulation of the cone is changed by approximately 20 ° in two successive periapical films, thereby leading to the movement of the object in the direction opposite the source of radiation<sup>5,6</sup> .

Extraoral films are also used . Frontal and lateral cephalograms , aid in the determination of the position of the impacted canine, and help to identify its relationship to other facial structures such as the maxillary sinus and the floor of the nose<sup>7</sup>. Panoramic films are also used to localize impacted teeth in all three planes of space .

## **EXTRACTION OF A MAXILLARY IMPACTED CANINE :**

The extraction of a maxillary canine is carried out if the tooth is ankylosed and cannot be transplanted, if it is undergoing external or internal root resorption, if its root is severely dilacerated, if the impaction is severe , if the occlusion is good, with the first premolar in the position of the canine , if there are pathologic changes (e.g., cystic formation, infection), and if the patient does not desire orthodontic treatment .

## **PALATAL AND LABIAL IMPACTIONS :**

Authors have quoted that the prevalence of palatal impactions are much more than labial impactions<sup>8</sup>. Ectopic labially positioned canines quite often erupt by themselves without surgical or orthodontic treatment. Palatally placed canines require surgical intervention. The reason for this is the thickness of the palatal cortical bone, and the dense, thick, and resistant palatal mucosa.

Palatally impacted canines are inclined in a horizontal or oblique direction and labially impacted canines are usually vertically angulated.

Two of the most commonly used methods for the management of these are surgical exposure, allowing natural eruption, and surgical exposure with placement of an auxiliary attachment. Orthodontic forces are to be applied following this procedure to move the impacted tooth. This is applicable when the canine has a correct axial inclination and does not require any procedure to upright it during its eruption.

Clark et al. in his study stated that a polycarbonate crown may be placed over the impacted tooth after its surgical exposure<sup>9</sup>. The crown should be made long enough to extend through a window cut in the palatal tissue. Following this, the crown is cemented with a surgical paste or regular cement.

## **DISADVANTAGES :**

The disadvantages of this approach include the slow eruption of the canine, increased time, and the inability to influence the path of eruption of the impacted canine.

## **MANAGEMENT OF LABIALLY IMPACTED CANINES :**

Labial impaction of the maxillary canine is rarely seen, when compared to palatal impaction and is caused by insufficient arch length. The canine is located high in the alveolar bone and erupts through the alveolar mucosa<sup>10</sup>. Fournier et al. stated that labially impacted teeth should be treated initially by surgical exposure, without the application of a traction force<sup>11</sup>.

## **2. CONCLUSION :**

Impaction of any tooth affects the esthetics and function. The combined effects of surgical exposure and orthodontic movements and forces contribute to good periodontal health of the tooth since they minimize the loss of alveolar bone support and potential injury to the tooth during traction. During the surgical exposure of an impacted tooth, the required amount of bone only should be removed to allow for the placement of a bracket and the CEJ should not be intentionally exposed.

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