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Introduction

The Function of Canine

- Fighting with enemies or rivals.
- In modern human
 - Support the facial muscle
 - Mastication
 - Guide the mandible into centric position

Congenital Missing

- Consideration:
 - The number of missing teeth
 - Overall alignment and occlusion
 - Patient's and parents' preference
- Option:
 - Extraction
 - Orthodontic alignment
 - Retain the primary canine and
 - Replace with prosthesis

Impaction

- Delay eruption time
- Not expected to erupt complete based on clinical and radiographic assessments.
- Maxillary canine is the most frequently impacted tooth in childhood.
 - Surgical approach to remove or perform orthodontic movement

Etiology of Impaction

- Generalized
 - Hypopituitarism
 - Hypothyroidism
 - Cleidocranial dysostosis
 - Down syndrome
 - Achondroplasia
 - Hypovitaminosis (A or D)
 - Amelogenesis imperfect
 - Osteoporosis
- Localized
 - Tooth size/ arch length discrepancy.
 - Prolonged retention or early loss
 - Abnormal tooth bud position
 - Long path of eruption
 - Alveolar cleft
 - Ankylosis
 - Follicular Disturbance
 - Cyst or neoplasm

- Dilaceration
- Trauma
- Crowding

Path of Eruption

- 4-12 months
 - Calcification
- 2.5 years
 - Lying above the first premolar tooth germ
- 6-7 years
 - Crown complete
- 5-15 years
 - Travel almost 22 mm
 - Move down the distal aspect of the lateral incisor.
 - Displacement from the normal path cause impaction
 - Crowding cause buccal impaction
 - A number of causes attributed the palatal impaction
 - Guidance theory
 - Genetic theory

Guidance Theory

- Miller and Bass:
Congenitally missing lateral incisors associated with palatally impacted canines
- Becker et al.
Two phase of development of canine displacement.
 1. Canine deviates from the physiologic eruption path in the palatal direction.
 2. Corrective movements
- Palatally displacement canines are found adjacent to normally development lateral incisors

Genetic Theory

Palatal displacement rarely occurs as an isolated symptom

1. Autosomal gene ex: MSX1/MSX2 homeodomain gene
 - Bilateral occurrence
 - Gender related
 - Families history
2. Disturbance in an ontogenetically critical zone

Sequential Hypothesis

4-5 months old

- The tooth germ of the maxillary permanent canine starts to develop
- High in the anterior wall of the maxillary sinus, under the floor of the orbit

3 years old

- Inferior to the orbit, superior to the floor of the nasal cavity, and between the nasal cavity and the maxillary sinus.
- The crown of the tooth is directed mesially and lingually with respect to the primary canine and to the developing first premolar
- With the development of the first premolar, the developing permanent canine and first premolar and the first primary molar are all positioned one above each other
- Meanwhile, the developmental position of the lateral incisor is palatal in relation to both the permanent central incisor and the permanent canine.

5 years old

- The disto-incisal corner of the maxillary central permanent incisor is in

contact with the mesial surface of the roots of the adjacent primary lateral incisor.

- The maxillary canine begins to lose its potential to move in the vertical plane and would eventually become impacted
- Normally erupting canine would travel approximately 22 mm, a canine that would eventually remain impacted would travel less than 3.5 mm in the next 7 years of its development
- Lateral incisors would be positioned away from the permanent canine at this age, could substantially influence the eruption of the permanent canine
- Genetic factors regulate the ectopic position of the canine.

6 years old

- Canine crown tip is at the level of the nasal floor, palatal to the primary canine root and directed mesially.
- Both buccally and palatally impacted canines, microdontia was exhibited by the lateral incisors almost twice and thrice times respectively of that reported
- Corrective movements may occur after this stage and the canine may move into a more favorable position in the arch. In patients with microdontia of the lateral incisor, this self-correcting movement will be prevented by the meanwhile completely developed roots of the maxillary lateral incisors.

8 to 9 years old

- The maxillary canine gains guidance from the developing root of the adjacent lateral incisor and begins to change from a mesial inclination to a more vertical direction
- The increased risk of palatal canine displacement with aplasia, or impaction of other teeth

Conclusions

- Impaction of a maxillary canine is a frequent occurrence and requires a multidisciplinary approach for proper management
- Awareness of the eruption patterns and etiology of impaction allow for early recognition and implementation of interceptive treatment

	題目
1	The most frequently impact teeth are mandibular 3 rd molar, and the followed are? (A) Maxillary central incisor (B) Maxillary 2 nd premolar (C) Mandibular canine (D) Maxillary 3 rd molar and maxillary canine
答案(D)	出處：Oral and Maxillofacial PATHOLOGY,3rd edition , Neville, <i>et al.</i> P.74
	題目
2	Which is not the strategy of treatment for impaction? (A) Long-term observation (B) Orthodontically assisted eruption (C) Surgical remove (D) None of the above
答案(D)	出處：Oral and Maxillofacial PATHOLOGY,3rd edition , Neville, <i>et al.</i> P.74