

VARIATIONS IN THE SEQUENCE OF ERUPTION

The mandibular first permanent molars are often the first permanent teeth to erupt. They are quickly followed by the mandibular central incisor. The most common sequence of eruption of permanent teeth in the mandible is first molar, central incisor, lateral incisor, canine, first premolar, second premolar, and second molar.

The most common sequence for the eruption of the maxillary permanent teeth is first molar, central incisor, lateral incisor, first premolar, second premolar, canine, and second molar. These sequences in each arch to be favorable for maintaining the length of the arches during the transitional dentition.

It is desirable that the mandibular canine erupt before the first and second premolars. This sequence aids in:

1- maintaining adequate arch length.

2-preventing lingual tipping of the incisors. Which lead to loss of arch length and also allows the development of an increased overbite. An abnormal lip musculature or an oral habit that causes a greater force on the lower incisors than can be compensated by the tongue allows a collapse of the anterior segment.

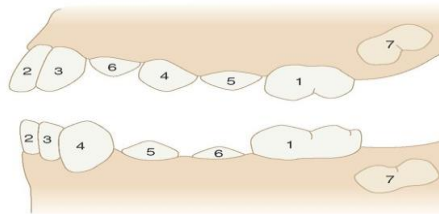
A deficiency in arch length can occur if the mandibular second permanent molar develops and erupts before the second premolar. Eruption of the second permanent molar first encourages mesial migration or tipping of the first permanent molar and encroachment on the space needed for the second premolar.

In the maxillary arch the first premolar ideally should erupt before the second premolar, and they should be followed by the canine. The untimely loss of primary molars in the maxillary arch, which allows the first permanent molar to drift and tip mesially, results in the permanent canine's being blocked out of the arch, usually to the labial side. The position of the developing second permanent molar in the maxillary arch and its relationship to the first permanent molar should be given



special attention. Its eruption before the premolars and canine can cause a loss of arch length, just as in the mandibular arch.

The eruption of the maxillary canine is often delayed because of an abnormal position or devious eruption path.



LINGUAL ERUPTION OF MANDIBULAR PERMANENT INCISORS

The eruption of mandibular permanent incisors lingual to retained primary incisors is often a source of concern for parents. The primary teeth may have undergone extensive root resorption and may be held only by soft tissues. In other instances the roots may not have undergone normal resorption and the teeth remain solidly in place. It is common for mandibular permanent incisors to erupt lingually and this pattern should be considered essentially normal. The tongue and continued alveolar growth seem to play an important role in influencing the permanent incisors into a more normal position with time. Although there may be insufficient room in the arch for the newly erupted permanent tooth, its position will improve over several months. Sometimes removal of the corresponding primary tooth is indicated.

Extraction of other primary teeth in the area is not recommended, because it will only temporarily relieve the crowding and may even contribute to the development of a more severe arch length inadequacy.



TEETHING AND DIFFICULT ERUPTION

In most children the eruption of primary teeth is preceded by increased salivation, and the child will want to put the hand and fingers into the mouth. These observations may be the only indication that the teeth will soon erupt. Some young children become restless and fretful during the time of eruption of the primary teeth. Many conditions, including croup, diarrhea, fever, convulsions, primary herpetic gingivostomatitis, and even death have been incorrectly attributed to eruption. While, because the eruption of teeth is a normal physiological process, the association with fever and systemic disturbance is not justified. A fever or respiratory tract infection during this time should be considered coincidental to the eruption process rather than related to it. Inflammation of the gingival tissues before complete emergence of the crown may cause a temporary painful condition that subsides within a few days. The surgical removal of the tissue covering the tooth to facilitate eruption is not indicated. If the child is having extreme difficulty, the application of a nonirritating topical anesthetic may bring temporary relief. The parent can apply the anesthetic to the affected tissue. Caution must be considered, because systemic absorption of the anesthetic agent is rapid, and toxic doses can occur if it is misused. The parent must clearly understand the importance of using the drug only as directed. The eruption process may be hastened if the child is allowed to chew on piece of toast or a clean teething object.

ERUPTION HEMATOMA (ERUPTION CYST)



A bluish purple, elevated area of tissue, commonly called an eruption hematoma, occasionally develops a few weeks before the eruption of a primary or permanent tooth. The blood-filled cyst is most frequently seen in the primary, second molar or the first permanent molar regions. This condition may develop as a result of trauma to the soft tissue during function. Usually within a few days the tooth breaks through the tissue, and the hematoma subsides. Because the condition is almost always self-limited, treatment of an eruption hematoma is rarely necessary.

However, surgically uncovering the crown may be occasionally indicated. When the parents discover an eruption hematoma, they may fear that the child has a serious disease such as a malignant tumor. The dentist must understand and sensitive to their anxiety while reassuring them that the lesion is not serious.

ERUPTION SEQUESTRUM



The eruption sequestrum is a tiny spicule of nonviable bone overlying the crown of an erupting permanent molar just before or immediately after the emergence of the tips of the cusps through the oral mucosa. Eruption sequestrum is composed of cementum-like material formed within the follicle.

Eruption sequestra are usually of little or no clinical significance. It is probable that some of these sequestra spontaneously resolve without noticeable symptoms. However, after an eruption sequestrum has surfaced through the mucosa, it may easily be removed if it is causing local irritation. The base of the sequestrum is often still well embedded in gingival tissue when it is discovered, and application of a topical anesthetic or infiltration of a few drops of a local anesthetic may be necessary to avoid discomfort during removal.

ECTOPIC ERUPTION

Arch length inadequacy, tooth mass redundancy, or a variety of local factors may influence a tooth to erupt or try to erupt in an abnormal position. Occasionally this condition may be so severe that actual transposition of teeth takes place. Examination of periapical and bite-wing radiographs is important before the eruption of the first permanent molars to detect ectopic eruption. A first permanent may be positioned too far mesially in its eruption, with resultant resorption of the distal root of the second primary molar. The permanent molar may become completely locked and may cause the premature exfoliation of the second primary molar. In some instances the ectopically erupting first permanent molar may correct itself and erupt into its normal position after causing only minor destruction of the primary molar. The ectopic eruption occasionally occurred in more than one quadrant in the same mouth but was most often observed in the maxilla.

There are two types of ectopic eruption- reversible and irreversible. In the reversible type, the molar frees itself from the ectopic position and erupts into normal alignment, with the second primary molar remaining in position while in the irreversible type, the maxillary first molar remains unerupted and in contact with the cervical root area of the second primary molar. By the ages of 7 and 8 years, any ectopic eruption of a permanent first molar should be considered irreversibly locked.

Irreversible ectopic molars that remain locked, if untreated, can lead to premature loss of the primary second molar with a resultant decrease in quadrant arch length and supraeruption of the opposing molar. Early assessment with intraoral or panoramic films approximating the timing of first permanent molar eruption is thus critical to identification of the problem and provides an opportunity to intercept potential sequelae. If the problem is detected at 5 to 6 years of age, an observation approach of "watchful waiting" with appropriate monitoring may be indicated, given the two-thirds potential for self-correction. With self-correction being unlikely as the child approaches 7 years of age, continued "locking" of the first molar with advanced resorption of the primary second molar usually warrants intervention. Another



timing clue is that when the opposing molar reaches the level of the lower occlusal plane, intervention is indicated to establish proper vertical control and prevent supraeruption.



NATAL AND NEONATAL TEETH

The prevalence of natal teeth (teeth present at birth) and neonatal teeth (teeth that erupt during the first 30 days), is low. Research found that about 85% of natal or neonatal teeth are mandibular primary incisors, and only small percentages are supernumerary teeth. It is common for natal and neonatal teeth to occur in pairs. Natal and neonatal molars are rare.

A radiograph should be made to determine the amount of root development and the relationship of prematurely erupted tooth to its adjacent teeth one of the parents can hold the x-ray film in the infant's mouth during the exposure.

Most prematurely erupted teeth are hypermobile because of the limited root development. Some teeth may be mobile to the extent that" there is danger of displacement of the tooth and possible aspiration; in this case the removal of the tooth is indicated.

In some cases, the sharp incisal edge of the tooth may cause laceration of the lingual surface of the tongue and the tooth may have to be removed. The preferable approach, is to leave the tooth in place and to explain to the parents the desirability of maintaining this tooth in the mouth because of its importance in the growth and uncomplicated eruption of the adjacent teeth. Within a relatively short time the prematurely erupted tooth will become stabilized; and the other teeth in

the arch will erupt. Eruption of teeth during the neonatal period presents less of a problem. These teeth can usually be maintained even though root development is limited.

A retained natal or neonatal tooth may cause difficulty for a mother who wishes to breast-feed her infant. If breast-feeding is too painful for the mother initially, the use of a breast pump and bottling of the milk are recommended. However, the infant may be conditioned not to "bite" during suckling in a relatively short time if the mother persists with breast-feeding. It seems that the infant senses the mother's discomfort and learns to avoid causing it.

