

Factors causes differences in time of eruption

1. Genetic factor : teeth eruption is a localized , genetically programmed event . genes play a definite role in tooth eruption so that eruption failure is often attributed to genetic factors.
2. Sex: It is observed that the teeth of girls erupt slightly earlier than those of boys. Initially during the formation stage, there was no sex difference up to the stage of calcification, and the difference begins only the crown completion stage.
3. Socioeconomic conditions: Retard eruption of anterior teeth and accelerated emergences of the posterior dentition has been linked to low socioeconomic status in all racial groups. In another hand, children from good socioeconomic level erupt their teeth earlier because of their good nourishment and health
4. Birth weight: low birth weight has been associated with delayed emergence of permanent teeth conversely early eruption has been associated with increased birth weight
5. Systemic disorders: Precocious (earlier) eruption is rare and is observed less commonly than retarded (delayed) eruption. Delay in permanent tooth eruption is associated with some syndromes like Down's syndrome, cleidocranial dysostosis, hypothyroidism, hypopituitarism and hemifacial atrophy. While precocious eruption is seen in precocious puberty, hyperthyroidism, hemifacial hypertrophy, Sturge-Weber syndrome and hyperpituitarism.
6. Hormones and vitamins: Disturbance of the endocrine glands usually has a profound effect on the entire body, including the dentition. Thyroid, pituitary [growth hormone], and parathyroid hormones are essential for normal eruption of teeth. Vitamins like vitamin B complex, A, C and D aid either directly or indirectly for tooth eruption.
7. Local causes: Ankylosis of primary teeth delays the eruption permanent tooth. Dental caries and periapical infection of primary teeth resulted in early eruption of the corresponding permanent tooth. Very early extraction of a primary molar delays the eruption of the successor.
8. Race: Negro teeth erupted earlier than white people did.
9. Environment: industrialized countries children erupt their teeth later than rural area because industrialized countries children eat ready food than developing countries who eat raw food.
10. Nutrition and growth: good nutrition lead to good growth, which lead to early eruption of teeth. A positive correlation between body height and weight and teeth emergence has been found. The taller and heavier children are slightly advanced dentally while it is

apparent that stunting (retarded linear growth) is more strongly associated with delayed tooth eruption

Local Factors influence time of eruption

1. Infection around the tooth:

- ✚ If near the eruption time it will cause tearing of tissues and sometimes resorption in the area resulting in early eruption.
- ✚ If the infection occur before long period of time it will result in late eruption because infection for long period will healed with fibrosis in the area which aid in late eruption.

2. Supernumerary tooth: May be of importance in retarded the eruption.

3. Trauma: Any trauma may cause early shedding of primary teeth which lead to delay eruption of permanent successor teeth.

4. Gingival fibromatosis: Hereditary gingival fibromatosis (HGF) is characterized by a slow, progressive, benign enlargement of the gingivae, which is the most common genetic form of gingival enlargement, usually has an autosomal dominant mode of inheritance. It is also referred to as **elephantiasis gingiva** or **hereditary hyperplasia of the gum**. The dense fibrous tissue often causes displacement of the teeth and malocclusion, also it may is prevent eruption of teeth and treatment usually gingivectomy.

Note: gingival hyperplasia is an overgrowth of gum tissue around the teeth. There are a number of causes for this condition, but it's often a symptom of poor oral hygiene or a side effect of certain medications .

5. Ankylosed teeth: It is aberration of tooth eruption in which the continuity of the periodontal ligament has been compromised (absence of the periodontal membrane in a small area or the whole of the root surface) and the tooth is fused to the underlying bone.

Application of the term **submerged molar** to this condition is inaccurate, even though the tooth may appear to be submerging into the mandible or maxilla. This misconception results from the fact that the ankylosed tooth is in a state of static retention, whereas in the adjacent areas eruption and alveolar growth continue. Ankylosis should be considered an interruption in the rhythm of eruption and that a patient who has one or two ankylosed teeth is more likely to have other teeth become ankylosed. **The mandibular primary molars** are the teeth most often observed to be ankylosed. In unusual cases, all the primary molars may become firmly attached to the alveolar bone before their normal exfoliation time. **Ankylosis of the anterior primary teeth** does not occur unless there has been a trauma. The cause of ankylosis in the primary molar areas is unknown. It may follow a familial pattern. There is a relationship between

the congenital absence of permanent teeth and ankylosed primary teeth. Normal resorption of the primary molar begins on the inner or lingual surfaces of the roots. The resorption process is not continuous but is interrupted by periods of inactivity or rest. A reparative process follows periods of resorption. In the course of this reparative phase, a solid union often develops between the bone and the primary tooth. This intermittent resorption and repair may explain the various degrees of firmness of the primary teeth before their exfoliation. Extensive bony ankylosis of the primary tooth may prevent normal exfoliation and the eruption of the permanent successor. If ankylosis occurs early, eruption of the adjacent teeth may progress enough tooth is far below the normal plane of occlusion and may even be partially covered with soft tissue. An epithelium-lined track, however, will extend from the oral cavity to the tooth. Ankylosis may occasionally occur even before the eruption and complete root formation of the primary tooth. Ankylosis can also occur late in the resorption of the primary roots and even then can interfere with the eruption of the underlying permanent tooth

The diagnosis of an ankylosed tooth

It is not difficult to make. Because:

1. No contact with opposing molar.
2. The ankylosed tooth is not mobile, even in cases of advanced root resorption.
3. Ankylosis can be partially confirmed by tapping the suspected tooth and an adjacent normal tooth with a blunt instrument and comparing the sounds. The ankylosed tooth will have a solid sound, whereas the normal tooth will have a cushioned sound
4. The radiograph is often a valuable diagnostic A break in the continuity of the periodontal membrane, indicating area of ankylosis, is often evident radiographically.

The management of an ankylosed tooth

Early recognition and diagnosis are extremely important

1. The eventual treatment may involve surgical removal. However, unless a caries problem is usual or loss of arch length is evident, the dentist may choose to keep the tooth under observation
2. A tooth that is definitely ankylosed may at some future time undergo root resorption and normally exfoliated. When patient cooperation is good and recall periods are regular, a watchful waiting approach is best.
3. **For primary teeth:** In situations in which permanent successors of ankylosed primary molars are missing, attempts have been made to establish functional occlusion using stainless steel crowns, overlays, or bonded composite resins on the affected primary molars. This treatment is successful only if the eruption of permanent teeth are still in state of active eruption they will be seen by pass the ankylosed tooth.
4. **For permanent teeth:** The incomplete eruption of a permanent molar may be related to a small area of root ankylosis. The removal of soft tissue and bone covering the occlusal aspect of the crown should be attempted first, and the area should be packed with surgical cement to provide a pathway for the developing permanent tooth. Unerupted permanent teeth may become ankylosed by inostosis of enamel. This process follows the irritation of the follicular or periodontal tissue resulting from chronic infection. The close association of an infected apex with an unerupted tooth may give rise to the process. In the unerupted tooth, enamel is protected by enamel epithelium. The enamel epithelium may disintegrate because infection (or trauma), the enamel may subsequently be resorbed, and bone. Or coronal cementum may be deposited in its place. The result is solid fixation of the tooth in its unerupted position.