

Clinical Considerations

INITIATION PHASE

Anodontia

The absence of one or more primary or permanent teeth which can lead to malocclusion and aesthetic disturbances. This can occur as a result of an inadequate initiation process.

Supernumerary Teeth

The development of one or more extra teeth. It leads to crowding, and malocclusion, and occurs as a result of extra tooth germs.

BELL STAGE

Microdontia or Macrodontia

Micro = small, Macro = large teeth which can lead to aesthetic and spacing complications. This can occur due to hereditary factors or endocrine dysfunction.

CAP STAGE

Dens in Dente

Invagination of the enamel organ within the dental papilla. Endodontic therapy may be necessary due to a deep lingual pit present on the tooth.

Gemination

Hereditary factors cause the tooth germ to try to divide but instead result in one large tooth with one root and one pulp cavity.

Fusion

Two tooth germs fuse together to create one large tooth with two pulp cavities.

Tubercle

A small extension of enamel forms an extra cusp on the occlusal surface of the tooth. This usually occurs due to trauma, pressure, and metabolic conditions affecting the enamel.

APPOSITION & MATURATION STAGE

Enamel Dysplasia

A defective formation of enamel that can lead to enamel hypoplasia and enamel hypocalcification. This can result from nutritional deficiency, fluorosis, infection, or traumatic birth.

Concrescence

Teeth are joined by cementum that will give rise to a traumatic injury or crowding of teeth. It also leads to a loss of gingival structure and cause plaque accumulation.

Enamel Pearl

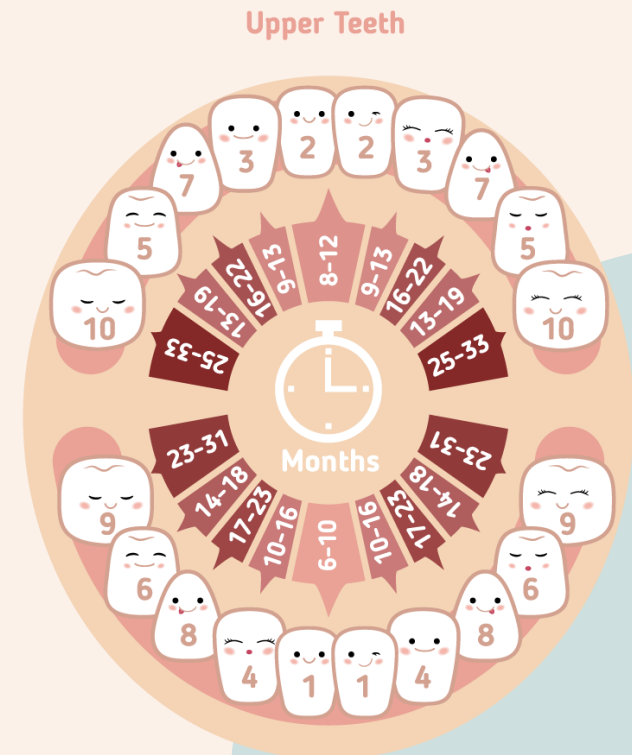
An ectopic accumulation of enamel that is firmly adherent to the tooth root surface. This may cause delayed exfoliation of primary teeth because of slower process of enamel resorption.

References

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DEVELOPMENT OF THE PRIMARY DENTITION



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Introduction

The development of primary teeth occurs during the prenatal period. The phases of development of primary teeth are outlined below.

Initiation Phase (6th & 7th week)

A thick band of epithelium forms and rests on the ectomesenchyme which is separated by a basement membrane. As the epithelium grows, it enters the ectomesenchyme to form the dental lamina and dental placodes which signal the initiation of tooth formation.

Bud Stage (8th week)

The dental placodes multiply into 20 tooth buds for the future maxillary and mandibular arches (10 buds per arch).

Cap Stage (9th & 10th week)

A 3-D cap shape forms over the tooth bud. An enamel knot will form the tooth and cusp of future teeth. The dental papilla will form the dentin and pulp. The dental sac will form the periodontal tissues of the tooth. The dental papilla, dental sac, and enamel organ make up the tooth germ.

Bell Stage (11th & 12th week)

The cells continue to multiply and go through differentiation and morphogenesis. Four cell types are present which include outer enamel epithelium, stellate reticulum, stratum intermedium, and inner enamel epithelium.

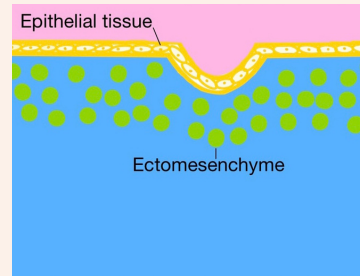
Apposition Stage

Enamel, dentin, and cementum begin to form as a matrix. Complete mineralization of these tissues will continue depending on the expected level for each tissue type.

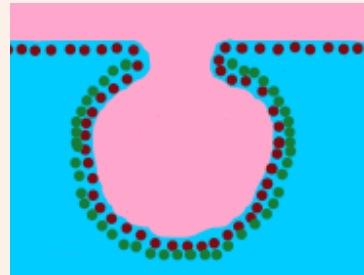
Maturation Stage

Each tissue type (enamel, dentin, and cementum) have reached complete mineralization and eruption begins.

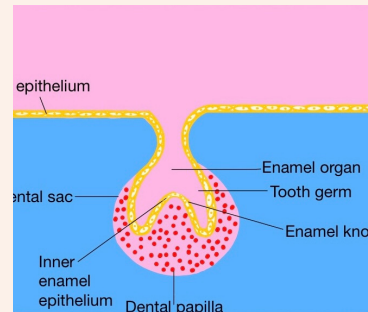
Stages of Development



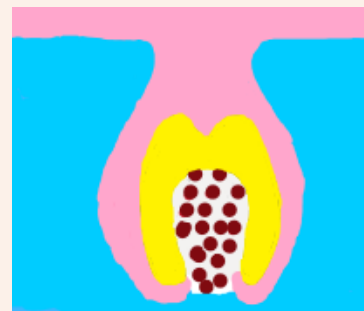
Initiation stage



Bud Stage



Cap stage



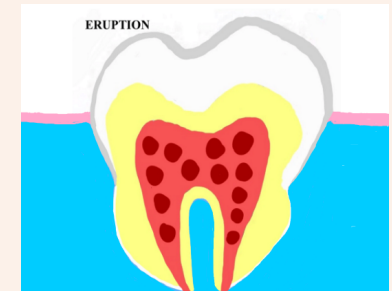
Bell Stage



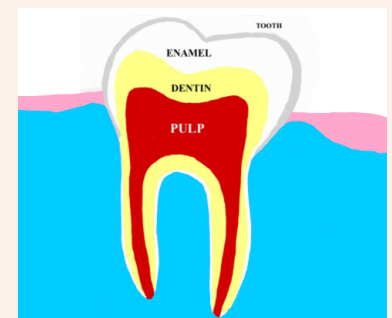
Apposition Stage



Beginning to erupt



Eruption



Fully Erupted