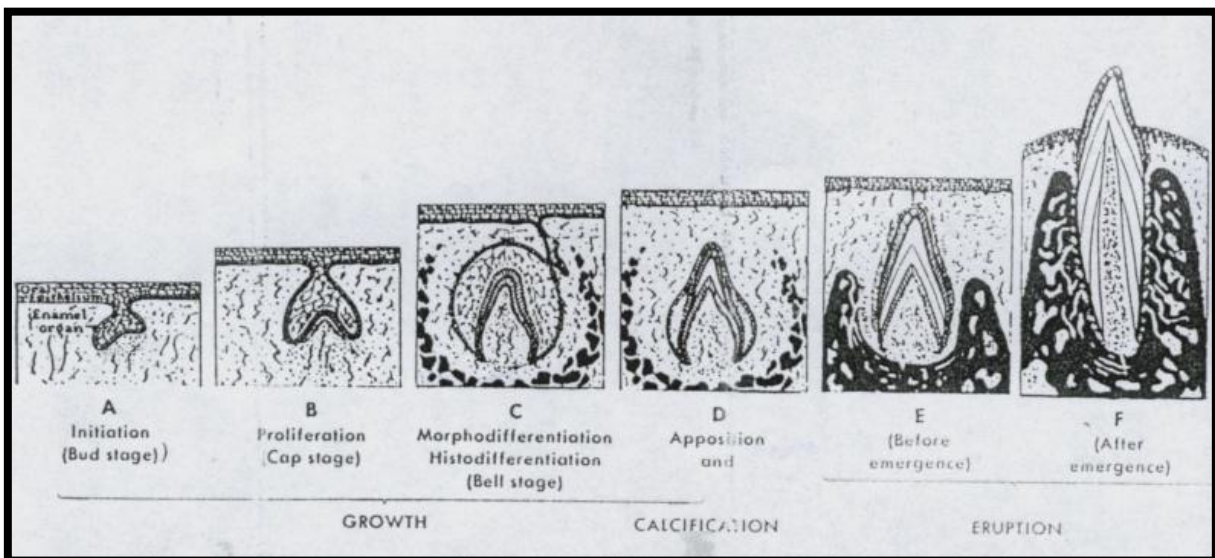


## Development of Teeth and Eruption

*The morphogenesis of teeth and the development of the dentition involve a number of closely related processes beginning with local changes leading to tooth formation and the growth of corresponding parts of the jaws. Calcification, root formation and eruption of the teeth are important indicators of dental age. Disturbances in these functions may lead to disturbances in the form and function of the teeth and in the development of occlusion.*

Although tooth development is a continuous process, the developmental history of a tooth is divided into several *morphologic "stages"* for description purposes. While the sizes and shapes of individual teeth are different, they pass through similar stages of development. These stages are named after the shape of the epithelial part of the tooth germ and are called *bud stage*, *cap stage*, and *bell stage*.



After the crown of the tooth is formed, the root portion is begun. At the cervical border of the enamel, at the cervix of the crown, cementum starts to form as a root covering of the dentin. The development of the crown and root takes place within a bony crypt in the jaw bone.

# Eruption:

After the crown and part of the root are formed, the tooth penetrates the mucous membrane and makes its entry into the mouth. *The occlusal movement of the tooth toward the oral cavity to penetrate the mucous membrane and emerge into the oral cavity is called eruption.* Further formation of the root is supposed to be an active factor in pushing the crown toward its final position in the mouth. Eruption of the tooth is said to be completed when most of the crown is in evidence and when it has made contact with its antagonist(s) in the opposing jaw. Even then it continues and the tooth may move farther occlusally to accommodate itself to new conditions e.g. compensation for wear (attrition) on its incisal or occlusal surface.

Formation of the root dentin and cementum continues after the tooth is in use. *The root formation is about half finished when the tooth emerges.* Formation of the tooth is said to be completed when the apex of the root is formed.

*The usual order of appearance of the deciduous teeth in the mouth is as follows:*

1	Mandibular Central Incisor	6 ½ months
2	Mandibular Lateral Incisor	7 months
3	Maxillary Central Incisor	7 ½ months
4	Maxillary Lateral Incisor	8 months
5	Mandibular First Molar	12-16 months
6	Maxillary First molar	12-16 months
7	Mandibular Canine	16-20 months
8	Maxillary Canine	16-20 months
9	Mandibular Second molar	20-30 months
10	Maxillary Second molar	20-30 months

*The usual order of appearance of the permanent teeth in the mouth is as follows:*

1	Mandibular First Molar	6-7 years
2	Maxillary First Molar	6-7 years
3	Mandibular Central Incisor	6-7 years
4	Mandibular Lateral Incisor	7-8 years
5	Maxillary Central Incisor	7-8 years
6	Maxillary Lateral Incisor	8-9 years
7	Mandibular Canine	9-10 years
8	Maxillary First premolar	10-11 years
9	Mandibular First premolar	10-12 years
10	Maxillary Second premolar	10-12 years
11	Mandibular Second premolar	11-12 years
12	Maxillary Canine	11-12 years
13	Mandibular Second molar	11-13 years
14	Maxillary Second molar	12-13 years
15	Mandibular third molar	17-21 years
16	Maxillary third molar	17-21 years

In general, mandibular teeth usually precede the maxillary teeth of the same type in the order of appearance, exceptions include the permanent premolars. And the teeth in both jaws erupt in pairs, one right and one left. Females' teeth emerge into the mouth a few months earlier than for males.

TOOTH		FIRST EVIDENCE OF CALCIFICATION (WEEKS IN UTERO)	CROWN COMPLETED (MONTHS)	ERUPTION (MEAN AGE) (MONTHS)	ROOT COMPLETED (YEARS)
<b>Upper</b>					
i1	E, F	14	1½	10	1½
i2	D, G	16	2½	11	2
C	C, H	17	9	19	3¼
m1	B, I	15	6	16	2½
m2	A, J	19	11	29	3
<b>Maxillary Teeth</b>					
<i>Right</i>		A B C D E	F G H I J	<i>Left</i>	
		T S R Q P	O N M L K		
<b>Mandibular Teeth</b>					
<b>Lower</b>					
i1	P, O	14	2½	8	1½
i2	Q, N	16	3	13	1½
C	R, M	17	9	20	3¼
m1	S, L	15½	5½	16	2¼
m2	T, K	18	10	27	3

TOOTH		FIRST EVIDENCE OF CALCIFICATION	CROWN COMPLETED (YEARS)	EMERGENCE (ERUPTION) (YEARS)	ROOT COMPLETED (YEARS)
CI	8, 9	3-4 mo	4-5	7-8	10
LI	7, 10	10-12 mo	4-5	8-9	11
C	6, 11	4-5 mo	6-7	11-12	13-15
P1	5, 12	1½-1¾ yr	5-6	10-11	12-13
P2	4, 13	2-2¼ yr	6-7	10-12	12-14
M1	3, 14	at birth	2½-3	6-7	9-10
M2	2, 15	2½-3 yr	7-8	12-13	14-16
M3	1, 16	7-9 yr	12-16	17-21	18-25
<b>Maxillary Teeth</b>					
<i>Right</i>		1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16	<i>Left</i>	
		32 31 30 29 28 27 26 25	24 23 22 21 20 19 18 17		
<b>Mandibular Teeth</b>					
CI	24, 25	3-4 mo	4-5	6-7	9
LI	23, 26	3-4 mo	4-5	7-8	10
C	22, 27	4-5 mo	6-7	9-10	12-14
P1	21, 28	1¼-2 yr	5-6	10-12	12-13
P2	20, 29	2¼-2½ yr	6-7	11-12	13-14
M1	19, 30	at birth	2½-3	6-7	9-10
M2	18, 31	2½-3 yr	7-8	11-13	14-15
M3	17, 32	8-10 yr	12-16	17-21	18-25

**END**