

# Dental anatomy

## Introduction

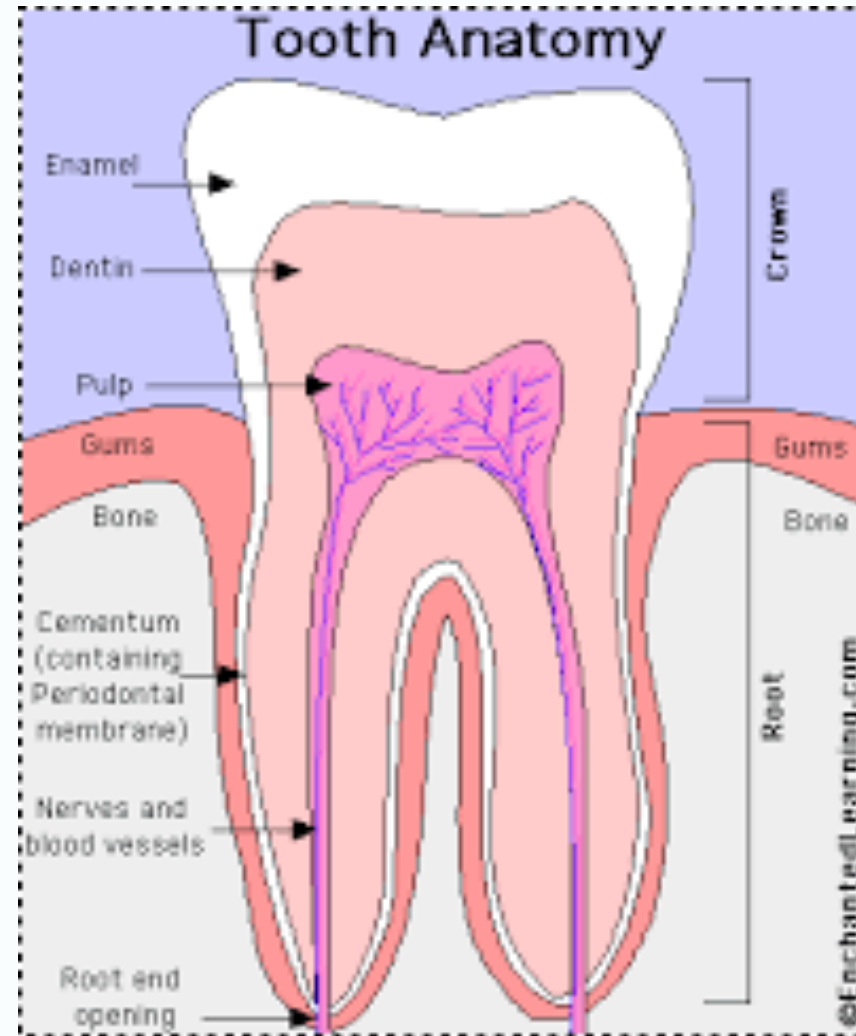


**AHMAD  
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- **Dental anatomy** : is a field of anatomy dedicated to the study of human tooth structures.



# The Deciduous Teeth

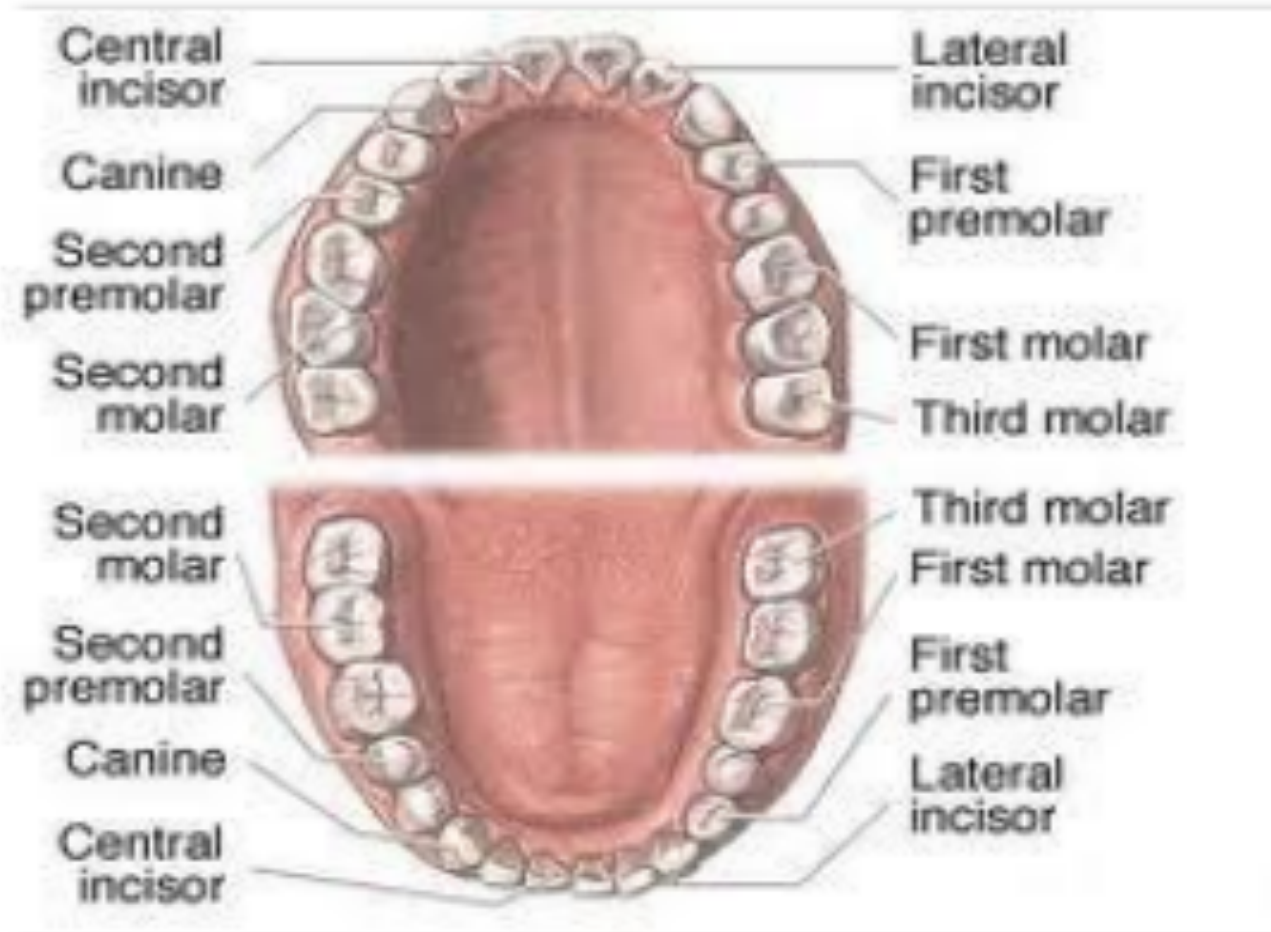
- At birth there are no teeth present in the mouth, but many teeth in various stages of development are found in the jaws.
- After birth (post natal period) the eruption of deciduous teeth starts at six months and lasts until two and half years ( $28 \pm 4$  months).
- The deciduous teeth stay until the permanent teeth erupt at about six years of age when the transition to the permanent dentition begins.
- The deciduous teeth are 20 in number. They have the following formula:
- $I2 \setminus 2 \quad C1 \setminus 1 \quad M2 \setminus 2 = 10$  (For each side)
- I=Incisors (central and lateral).
- C=Canine.
- M=Molars (first and second).



**Figure (1):** Deciduous dentition

# The permanent teeth

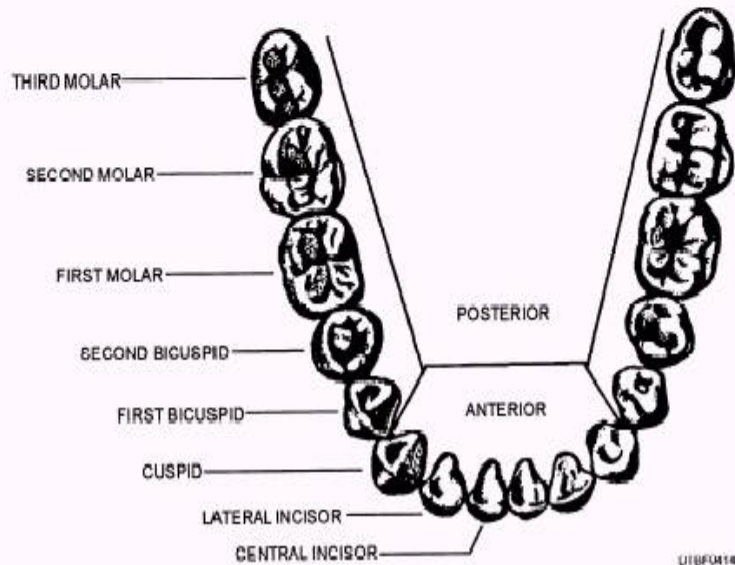
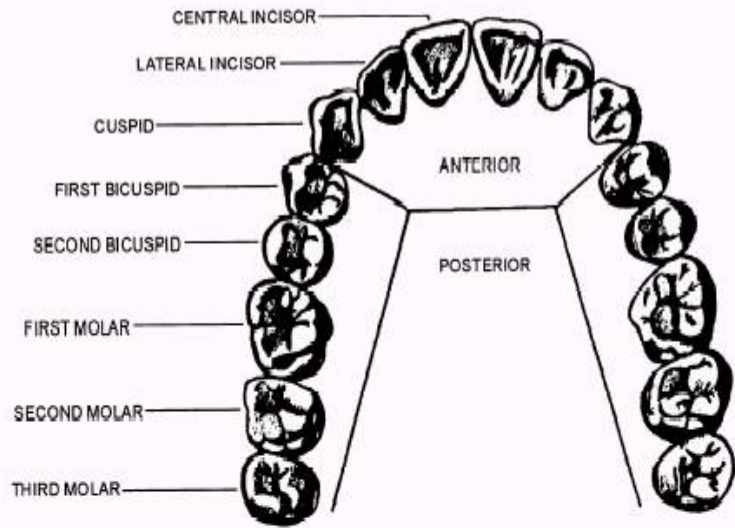
- The transition to permanent dentition begins with the emergence and eruption of the first permanent molars at the age of six years, followed by shedding of the deciduous teeth, emergence and eruption of the remaining permanent teeth.
- This process requires about 20 years to be completed.
- The number of permanent teeth including third molars when present is 32.
- $I\ 2\backslash\ 2\quad C\ 1\backslash\ 1\quad P\ 2\backslash\ 2\quad M\ 3\backslash\ 3=16$  (For each side)
- I=Incisors (central and lateral).
- C=Canine.
- P=Premolars (first and second).
- M=Molars (first, second and third).



**Figure (2):**Permanent dentition

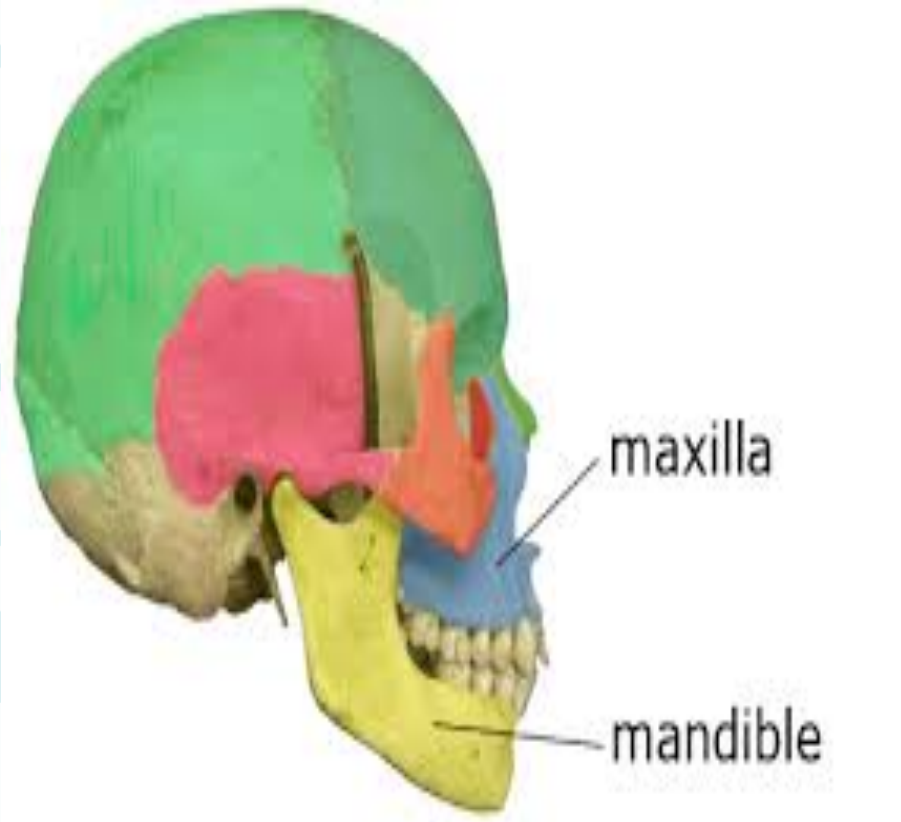


# Anterior and posterior teeth



- Teeth are grouped into:
  1. Anterior teeth which include the incisors and the canines.
  2. Posterior teeth which include the premolars and molars.

# The jaw

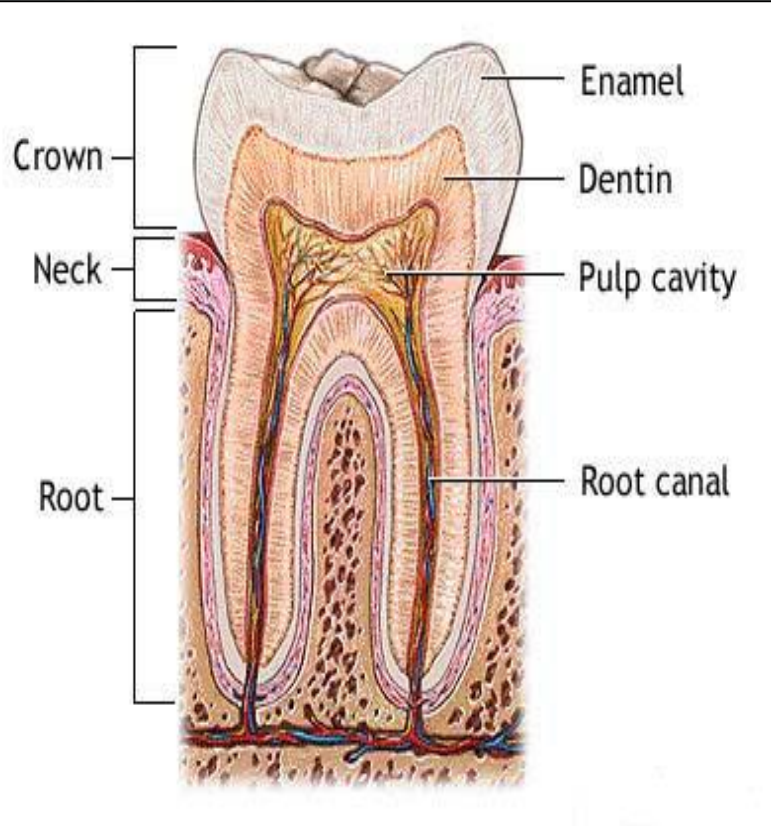


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- The jaw is the bone which carries the teeth. There are two jaws:
    1. The upper jaw which is fixed, and is called Maxilla.
    2. The lower jaw which is movable and is called Mandible.



# Crown and Roots





- Each tooth has a crown and root.
- The crown is covered with enamel. The root is covered with cementum and they join at the cemento-enamel junction (CEJ) or cervical line.
- The four tooth tissues are *enamel, dentin, cementum and pulp*. The first three are known as hard tissues, the last as soft tissues. The major bulk of the tooth is dentin.

**Dental pulp:** is the soft tissue of the tooth and present in the pulp chamber and pulp canal.

**Pulp chamber:** is the part of dental pulp in the crown

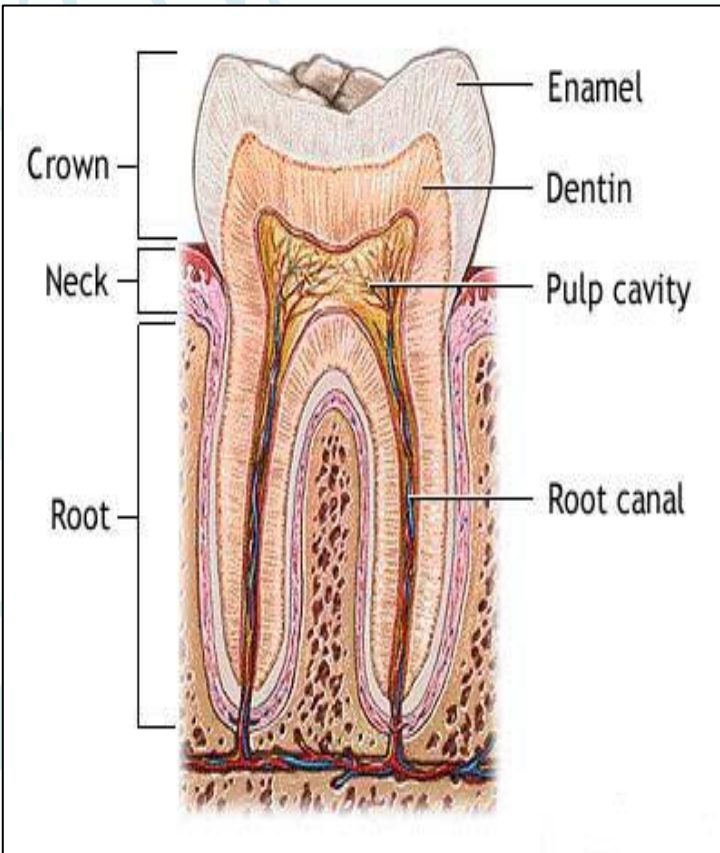
**Pulp canal:** is the part of dental pulp in the root.

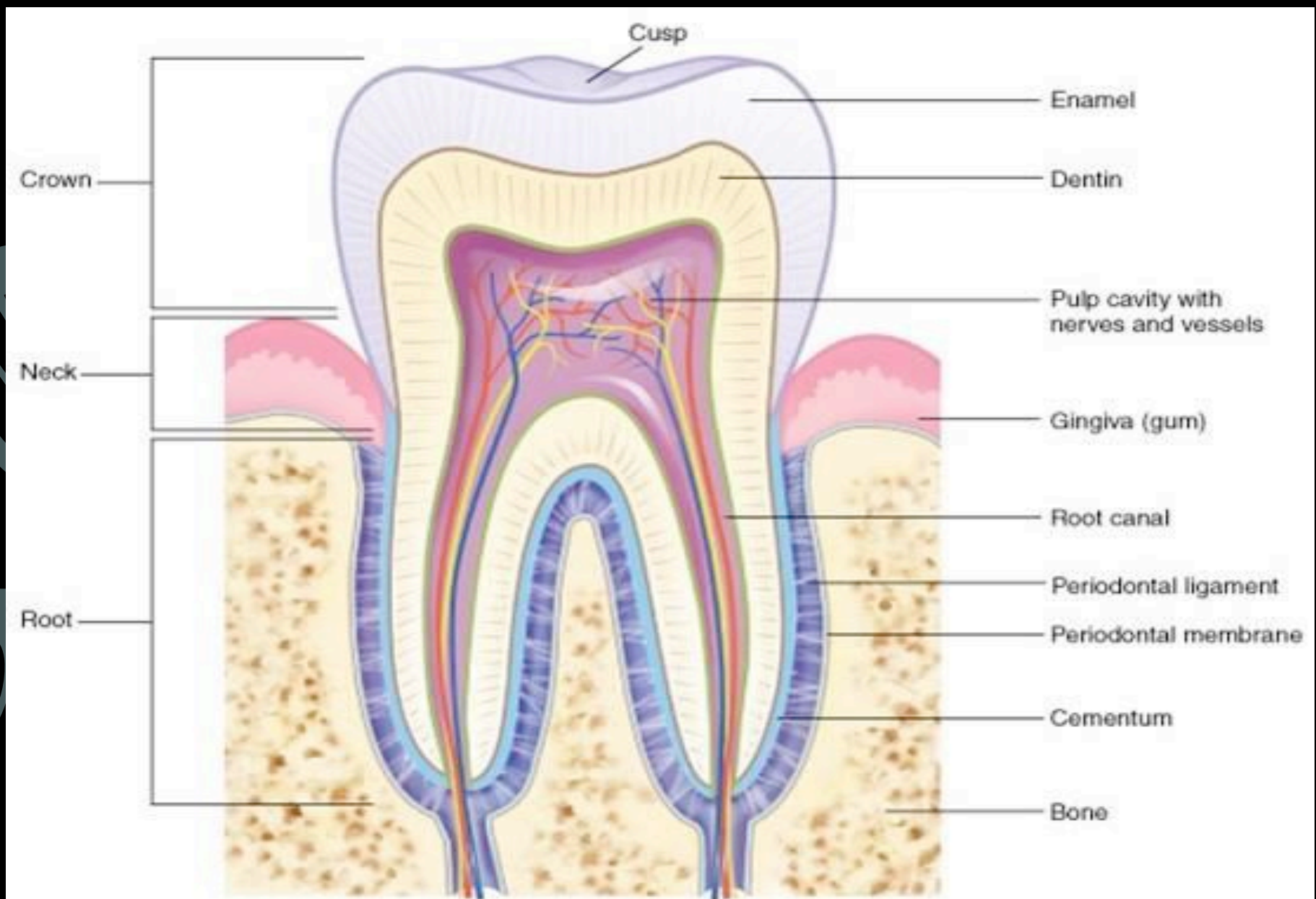
**The pulp chamber is continuous with the pulp canal and collectively called as the "pulp cavity".**

**Anatomical crown:** is the portion of the tooth that covered by enamel.

**Clinical crown:** is the portion of the tooth which is visible in the mouth.

- In a healthy person the anatomical crown is larger than the clinical crown.





# The number of roots

1. **Single root**: in all anterior teeth, mandibular premolars and maxillary second premolar.
2. **Two roots with bifurcation**: in mandibular molars and maxillary first premolar. Division of the tooth root is known as furcation.
3. **Three roots with trifurcation**: in maxillary molars.

# Surfaces and ridges

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- The crowns of incisors and canines have four surfaces and ridge, while the crowns of premolars and molars have five surfaces



The surfaces are:

**1. Labial surface:** is the surface which is toward the lip in incisors and canines (in anterior teeth).

**2. Buccal surface:** is the surface which is toward the cheek in premolars and molars (posterior teeth).

The labial and buccal surfaces could be termed as the "**facial surfaces**".

**3. Lingual surface:** is the surface which is facing the tongue (all teeth).

**4. Occlusal surface:** is the surface of the posterior teeth coming in contact with the teeth in the opposite jaw during closing the mouth.

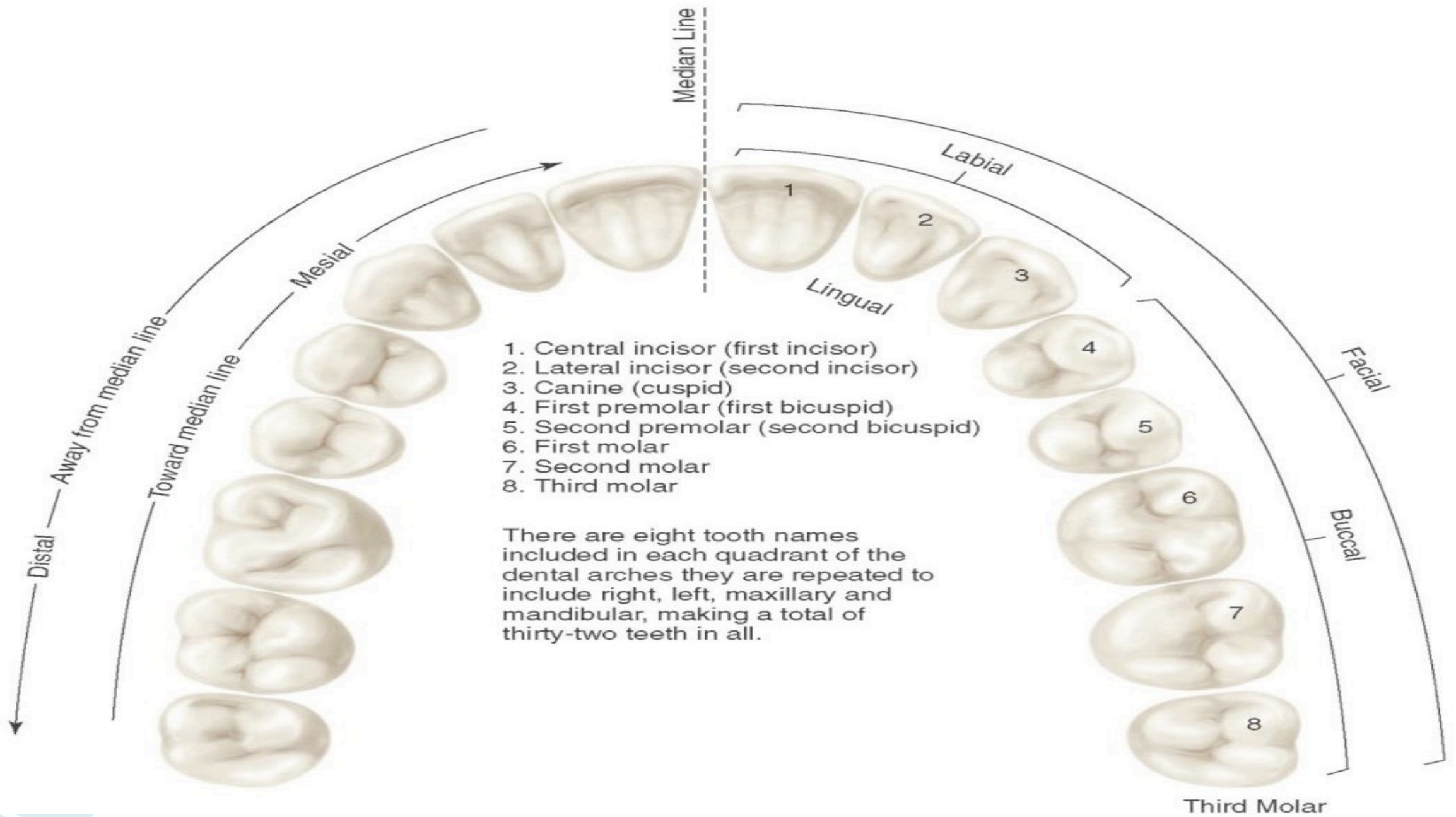
In anterior teeth, this surface is called "**incisal ridge**".

**5. Proximal surface:** is the surface of the tooth facing toward adjacent teeth in the same dental arch.

**a. Mesial surface:** is the surface which is facing toward the median line.

**b. Distal surface:** is the surface which is facing away from the median line.

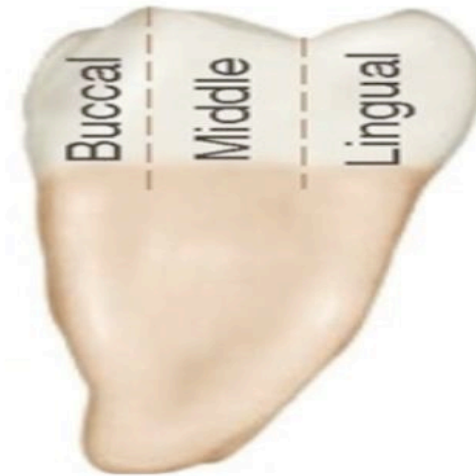
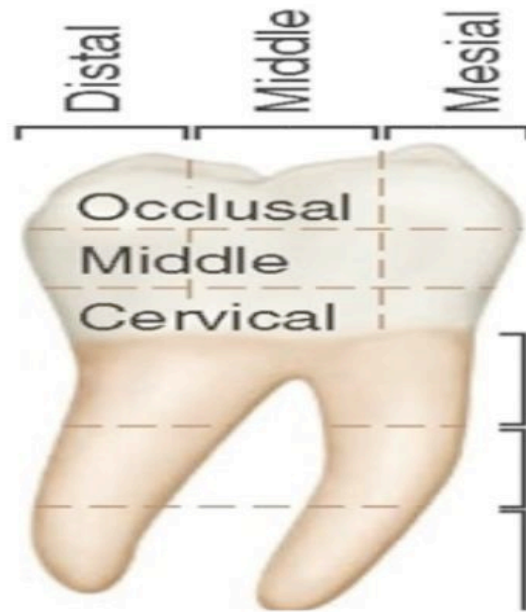
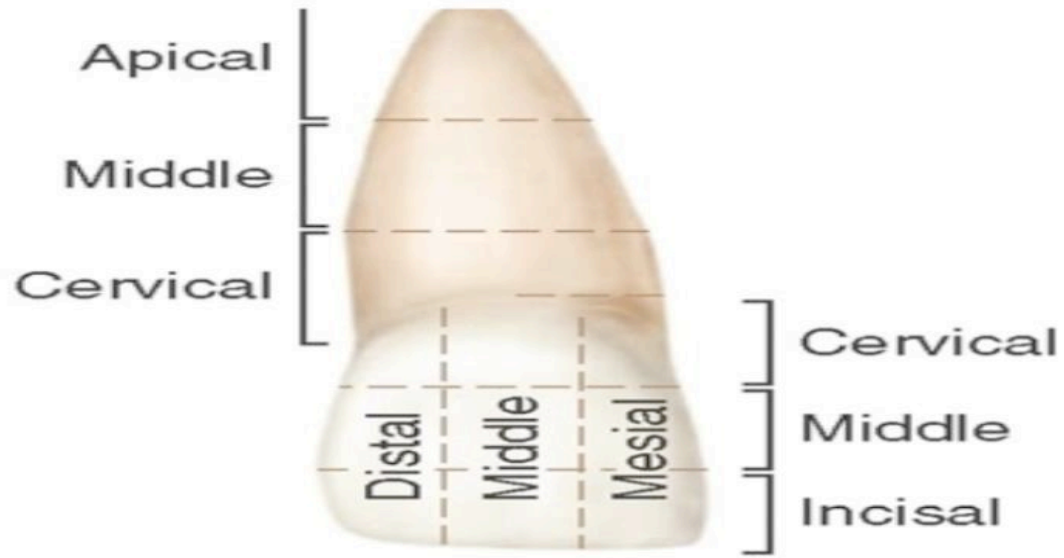
- All teeth have their mesial surfaces touching the distal surfaces of the adjacent tooth except the maxillary and mandibular central incisor (both permanent and deciduous). The area of the mesial and distal surface that touch its neighbor in the arch is called the "**contact area**".



# Division of the crown into thirds

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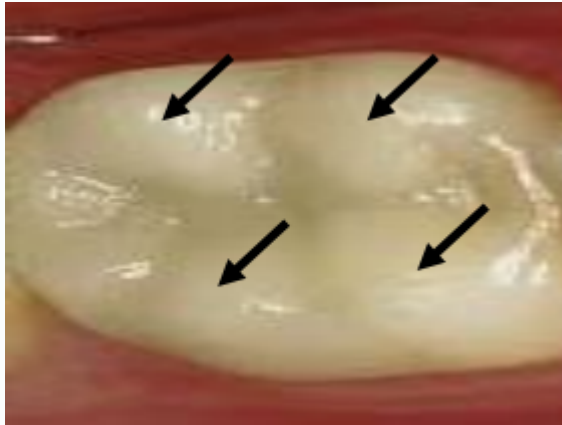
- For description, the crown and the root are divided into thirds according to the position of the surface.
- **Line angle:** it is formed by the junction of two surfaces and gets its name from these surfaces. Example: mesio-labial line angle.
- **Point angle:** it is formed by junction of three surfaces and get its name from these surfaces. Example: mesiolinguo-incisal point angle



# Anatomical landmarks

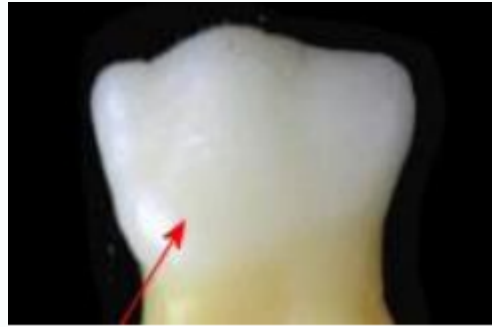
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- In order to study an individual tooth intelligently, we must be able to recognize all landmarks of importance by name, these include:
- **1. Cusp**: it is an elevation or mound on the crown portion of a tooth making up a divisional part of the occlusal surface. It contributes to a significant portion of the
- tooth's surface.





**2. Tubercle**: it is a smaller elevation on some portion of the crown produced by an extra formation of enamel. These are deviations from the typical form.



**3. Cingulum (Latin word for girdle)**: it's the lingual lobe of the anterior teeth. It makes up the bulk of the cervical third of the lingual surface. Its convexity mesiodistally resembles a girdle encircling the lingual surface at the cervical third. It is frequently identifiable as an inverted V-shaped ridge.



**4. Ridge:** it is any linear elevation on the surface of a tooth and is named according to its location ( e.g. buccal ridge, incisal ridge, marginal ridge).

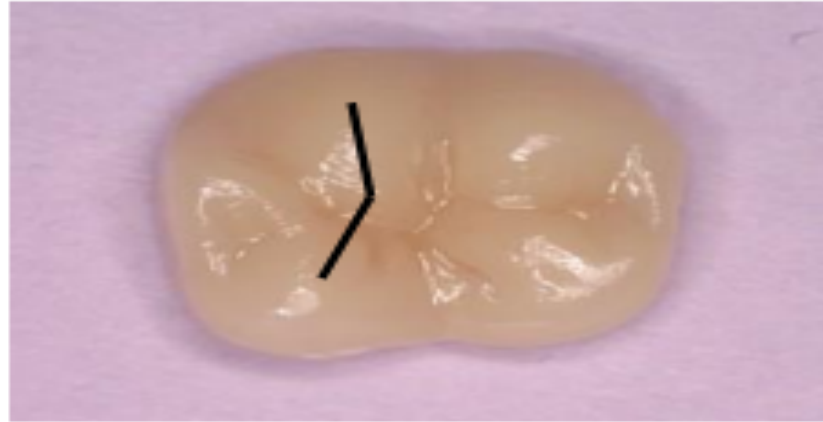
**a. Marginal ridge:** these are rounded borders of enamel that formed the mesial and distal margins of the occlusal surfaces of premolars and molars and the mesial and distal margins of the lingual surfaces of the incisors and canines.



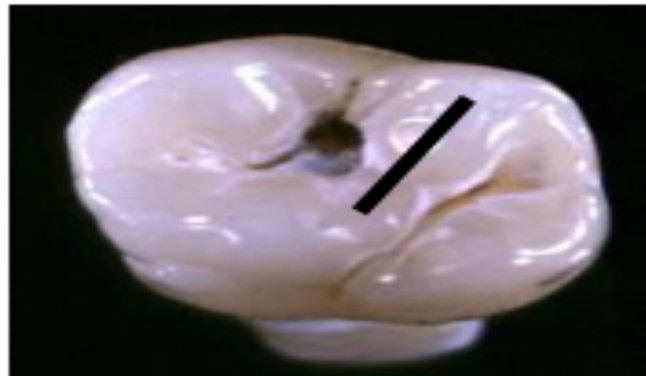
**b. Triangular ridge:** these descend from the tips of the cusps of molars and premolars toward the central part of the occlusal surfaces. They are so named because the slopes of each side of the ridge are inclined to resemble two sides of a triangle. They are named after the cusps, to which they belong, e.g. the triangular ridge of the buccal cusp of the maxillary first premolar.



**c. Transverse ridge:** it is the union of two triangular ridges crossing transversely the surface of a posterior tooth.



**d. Oblique ridge:** it is a ridge crossing obliquely the occlusal surfaces of maxillary molars. It is formed by the union of the triangular ridge of the disto-buccal cusp and the distal cusp ridge of the mesio-lingual cusp.

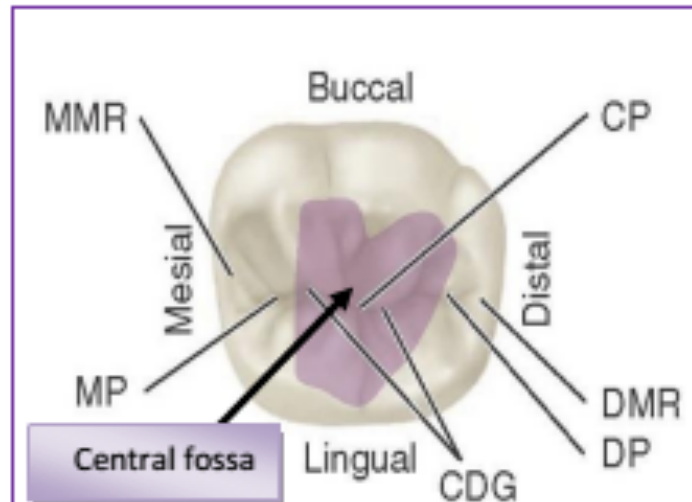


**5. Fossa** : it is an irregular depression or concavity.

**a. Lingual fossa:** it is located on the lingual surface of anterior teeth

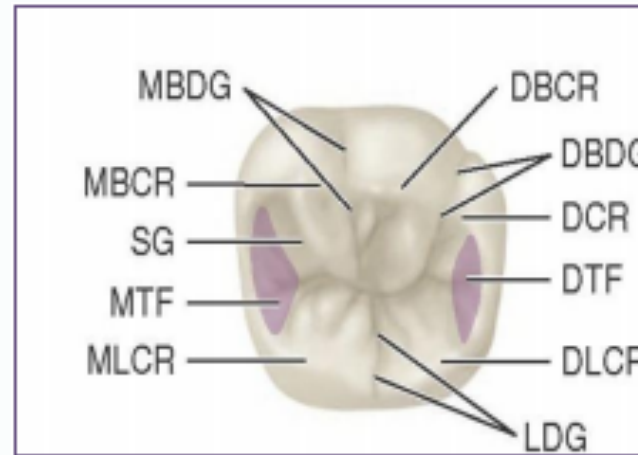


**b. Central fossa:** it is located on the occlusal surface of molar



**MMR:** mesial marginal ridge. **DMR:** distal marginal ridge. **MP:** mesial pit. **DP:** distal pit. **CP:** central pit. **CDG:** central developmental groove.

**c. Triangular fossa:** it is located on the occlusal surfaces of molars and premolars, mesial or distal to marginal ridges

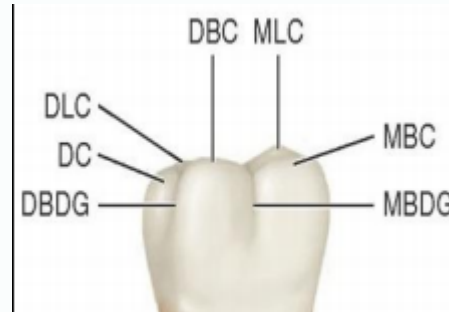


**6. Sulcus:** it is a long depression or valley in the surface of a tooth between ridges and cusps, the inclines of which meet at an angle. A sulcus has a developmental groove at the junction of its inclines.

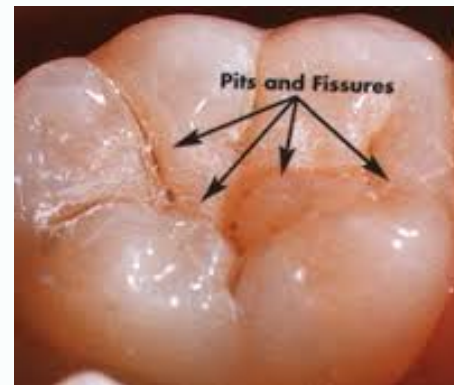




**7. Developmental groove:** it is a shallow groove or line between the primary parts of the crown or root.



**8. Pit:** it is a small pinpoint depression located at the junction of developmental grooves or at terminals of those grooves, e.g. central pit is a term used to describe landmark in the central fossa of molars where developmental grooves join.



# Thank You

