

Dental Anatomy and Histology

Ø The Oral Cavity:

1. Teeth:

Incisors, canines, premolars, molars.

2. Gingiva:

It is that part of the masticatory tissues that surrounds the cervical part of teeth.

3. Tongue:

It is a broad, flat organ composed of muscle fiber and glands. It rests in the floor of the mouth.

4. Floor of the mouth:

It is shiny and some blood vessels may be seen near the surface.

5. Roof of the mouth:

Formed of hard palate, soft palate and uvula.

6. Cheeks:

The lining of the inside of the cheek is shiny with linea alba buccalis & parotid papilla.

Ø Terminology of the Dentition:

a) The primary dentition (deciduous): composed of 20 teeth.

b) The permanent dentition (adult): composed of 32 teeth.

Ø Tooth Anatomy:

1. Macro-anatomy of the tooth:

Crown: the coronal part seen in the oral cavity (anatomical, clinical)

Root: that part embedded surrounded and supported with the jaw bone (anatomical, clinical).

The Neck: it is the junction between the anatomical crown and the anatomic root (cervical line).

2. Micro-anatomy of the tooth:

Enamel: it covers the anatomical crown.

Dentin: yellow tissue underlying enamel.

Cementum: dull yellow surface that covers the anatomical root.

Pulp: the soft tissue supplying the tooth with blood.

3. Junctions of tooth tissue:

Cemento-enamel junction (CEJ).

Dentino- enamel junction (DEJ).

Dentino-cemental junction (DCJ).

4. The Peridontium:

Formed of two soft tissues (gingiva, periodontal ligament), and two hard tissues (cementum, alveolar bone).

5. Tooth Surfaces:

Each tooth has five surfaces: facial, lingual, mesial, distal, masticatory.

6. Tooth Angles:

Line angle: formed by the junction of two surfaces.

Point angle: formed by the junction of three surfaces.

7. Division into thirds:

The crown is divided horizontally and vertically into three portions or thirds.

The root is divided into thirds only horizontally.

Ø Functions of the Teeth:

1. Mastication.

2. Appearance.

3. Speech.

4. Growth of jaws.

Ø Tooth Identification Systems:

1. Palmer Notation system:

It utilizes simple brackets using number for the permanent teeth (1-8) and letter of alphabet for the deciduous (A-E).

2. The International Numbering System:

Teeth are designed by using two digit system:

a- The first digit is located at the left side of the number and indicate the quadrant, from 1 - 4 for the permanent, and from 5 - 8 for the deciduous.

b- At the right side the second digit indicates the number of the tooth in the quadrant.

3. The Universal Numbering System:

Permanent teeth are numbered from 1 - 32 starting from maxillary right third molar.

Deciduous teeth use the alphabet from A - T starting from the upper right deciduous second molar.

Ø Anatomical Landmarks of the Crown:

1. Crown Elevations:

- a) Lobe: mamelones, cingulum, cusps.
- b) Tubercle: small elevation on the crown.
- c) Ridge: - Facially → labial, buccal, and cervical ridges.
 - Lingually → incisal, cuspal, lingual and marginal ridges.
 - Occlusally → marginal, triangular, transverse, oblique ridges.

2. Crown Depressions:

- a) Developmental groove.
- b) Supplemental groove.
- c) Fissure.
- d) Fossa.
- e) Pits.
- f) Sulcus.

3. Other terms:

Self-cleansing surfaces: that cleaned by normal functional action (facial, lingual, incisal, and occlusal)

Crypt: it is the bony space in the alveolar bone containing the developing unerupted tooth.

Socket: it is the bony space the alveolar bone containing the root of erupted tooth.

Calcification: the organic framework of a tooth that becomes hard from calcium and phosphorous salts deposition.

4. The maxillary molar Primary cusp triangle theory:

Developmentally, the occlusal surface of upper molar is formed of three major cusps called the primary cusps, any additional one called the secondary cusp.

Ø The Permanent Dentition:

1. Maxillary central incisor:

It is the first tooth from the middle, the largest of all incisors and the longest of all human teeth.

2. Maxillary lateral incisor:

Similar to the central but the root is longer.

3. Mandibular central incisor:

The smallest in the permanent dentition with fan shaped crown.

4. Mandibular lateral incisor:

Resembles the lower centrals with a slight longer root and the crown had a slight distolingual twist.

5. Maxillary canine:

Called also the cusped because it has a large pointed cingulum, also it has the longest root of all the dentition.

6. Mandibular canine:

Closely resembles the upper but the crown is longer and narrower.

7. Maxillary first premolar:

It is called bicusped, its buccal & lingual cusps are long & sharp, two rooted tooth.

8. Maxillary second premolar:

It resembles the maxillary first premolar but the buccal cusp is short & not pointed.

9. Mandibular first premolar:

The lingual cusp (non functional) is small & short, it has a single root.

10. Mandibular second premolar:

It has two types, three & two cusps types, it has a single root.

11. Maxillary first molar:

It has two buccal cusps & two lingual cusps & additional cusp of carabelli, it has three roots.

12. Maxillary second molar:

It resembles the first molar but shorter cervico occlusally, smaller mesiodistally & the crown tilted distally.

13. Maxillary third molar:

Similar to the upper second molar but smaller with wrinkled occlusal surface & shorter roots.

14. Mandibular first molar:

It has three buccal cusps, two lingual cusps & two roots.

15. Mandibular second molar:

It has two buccal cusps & two lingual cusps.

16. Mandibular third molar:

It resembles the second molar but smaller & it shows only the buccal cusps. The roots are shorter & distally inclined.