DENTAL NOMENCLATURE

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This material is taken from:

Wheeler’s Dental Anatomy, Physiology and Occlusion, Ash, Saunders, Chapter 1
Assignment:

- *Wheeler’s Dental Anatomy, Physiology and Occlusion, Ash, Saunders*
- Chapter 1 and 2
Objectives!

- Identify all teeth and tooth structures
- Relate the teeth to the surrounding tissues.
- To use proper dental nomenclature and concepts.
A branch of gross anatomy

- Position
- Relationship
- Structure
- Form and function
- Surrounding tissues of teeth.
Functions of Teeth

- Prehension – seizing or grasping
- Protection
- Esthetics and facial shape – psychological elements
- Speech and communication
- Mastication
Location and arrangement of teeth

- Two dental arches and bones.
- The superior bone is the maxilla and anchors maxillary teeth.
- The inferior bone is the mandible and anchors mandibular teeth.
- All teeth collectively form the dentition.
Location and arrangement of teeth

- Maxillary Right Quadrant
- Maxillary Left Quadrant
- Mandibular Left Quadrant
- Mandibular Right Quadrant
Location and arrangement of teeth

- Alveolar process.
  - Alveolus- boney socket
• The mandible is the moving jaw.
  – Occlusion
Location and arrangement of teeth

Median line of the face vs. Midline.
Classifications of dentitions

• Heterodont: different shapes and functions, i.e. human dentition
Classifications of dentitions

- Homodont: same basic shape and function
Classifications of dentitions

- **Monophyodont**: an animal having only one set of teeth during its lifetime

Note the placement of the molars, incisors, and diastema.
Classifications of dentitions

• **Polyphyodont**: three or more sets of teeth during its lifetime. Most reptiles and fish fall into this category.

The Shark is an example of an animal with polyphyodont teeth. The photograph on the upper left is a sand shark mandible with multiple rows of replacement teeth.
Classifications of dentitions

- Diphyodont: two sets of teeth during its lifetime, i.e. the Human Dentition
Deciduous Human Dentition
(also called Primary, Baby, or Milk teeth)

- These teeth are shed / exfoliated
- There are 20 teeth which usually erupt into the oral cavity at 0 to 2 years.
- There are 5 teeth per quadrant, therefore 10 teeth per arch.
Permanent Teeth

Succedaneous & Nonsuccedaneous teeth

- 32 total erupting between 6-21 years
- 8 teeth per quadrant
- 16 teeth per arch
Succedaneous & Nonsuccedaneous teeth: classification in each quadrant’s development

Note: all teeth on the right side are present except the permanent 3rd molars
Succedaneous teeth (white teeth)

- These are the 5 teeth in each quadrant that replace the 5 deciduous teeth in that quadrant.
Nonsuccedaneous teeth (yellow teeth)

- These are the 3 permanent molar teeth in each quadrant which have no deciduous teeth to replace.
Classification & Function in each quadrant

Anterior teeth

2 INCISORS/quadrant

• 1 Central Incisor/quad.
• 1 primary
• 1 permanent
• Incises &/or cuts
Classification & Function in each quadrant

Anterior teeth

2 INCISORS/ quadrant

- Lateral Incisor
- 1 primary
- 1 permanent
- Incises &/or cuts
Classification & Function in each quadrant

Anterior teeth

1 CANINE/quadrant
- 1 primary
- 1 permanent
- Grip &/or hold
Classification & Function in each quadrant

Posterior teeth

2 PREMOLARS

- 1<sup>ST</sup> Premolar
- 0 primary
- 1 permanent
- Hold &/or crush
Classification & Function in each quadrant

Posterior teeth

2 PREMOLARS
- 2\textsuperscript{nd} Premolar
- 0 primary
- 1 permanent
- Hold &/or crush
Classification & Function in each quadrant

Posterior teeth

3 MOLARS/ quadrant
- 1<sup>ST</sup> Molar/ quad.
- 1 primary
- 1 permanent
- Grind &/or mix
Classification & Function in each quadrant

Posterior teeth

3 MOLARS/quadrant

- 2nd Molar: 1/quad.
- 1 primary
- 1 permanent
- Grind &/or mix
Classification & Function in each quadrant

Posterior teeth

3 MOLARS/quadrant

- 3rd Molar: 1/quad.
- 0 primary
- 1 permanent
- Grind &/or mix
Tooth Identification Systems: Names

Naming System: list in sequence
- Dentition (ie. Permanent), then
- Arch, then
- Side, then
- Tooth name.

**Example #1: Permanent Maxillary Right First Premolar**
**Example #2: Permanent Mandibular Left Central Incisor**
Naming and Coding of Teeth

There are Three Systems for Identification:

- Universal Numbering System
- International Numbering
  - 2-number system
- Palmer Notation
  - uses one digit & character
Tooth Identification Systems: Universal Numbering System

- Permanent Teeth 1-32.
- Begins at maxillary right 3rd molar = #1
- Sequentially progresses around the arch to maxillary left 3rd molar = #16.
- Mandibular left 3rd molar = #17.
- Sequentially progresses around the arch to mandibular right 3rd molar = #32.

**Example #1:** Permanent Maxillary Right First Premolar = #5

**Example #2:** Permanent Mandibular Left Central Incisor = #24
Tooth Identification Systems: Universal Numbering System

- Primary Teeth use “A” through “T”
- Begins at maxillary right 2\textsuperscript{nd} molar = A
- Sequentially progresses around the arch to maxillary left 2\textsuperscript{nd} molar = J
- Mandibular left 2\textsuperscript{nd} molar = K
- Sequentially progresses around the arch to mandibular right 2\textsuperscript{nd} molar = T

Example #1: Primary Maxillary Right Canine = C
Example #2: Primary Mandibular Left Lateral Incisor = N
Tooth Identification Systems: International Numbering – 2-number system

- First digit = quadrant #.

- Permanent Teeth 1-4 quadrants, begins at maxillary right = 1, maxillary left = 2, mandibular left = 3, mandibular right = 4.

- Primary Teeth 5-8 quadrants, begins the same at maxillary right = 5, maxillary left = 6, mandibular left = 7, mandibular right = 8.
Tooth Identification Systems: International Numbering – 2-number system

- Second digit = tooth # in the quadrant.
- Permanent Teeth and Primary Teeth are numbered in the fashion, beginning at the midline.
- Therefore, all central incisors = 1
- Numbering sequentially progresses through the arch to the last molar:
  - Primary teeth = 5
  - Permanent teeth = 8

Example #1: Permanent Maxillary Right
First Premolar = #14
Example #2: Primary Mandibular Left
Lateral Incisor = #72
Tooth Identification Systems: Palmer Notation – uses one digit & character

- Permanent teeth are numbered and primary teeth are lettered using capital letters beginning at the midline.
- Numbering or lettering sequentially progresses through the arch to the last molar:
  - Primary teeth = E
  - Permanent teeth = 8
- The character is a portion of the perpendicular intersecting lines:
  - vertical (y) = mid-saggital plane
  - horizontal (x) = divides arches
- Graphically, this appears as
Tooth Identification Systems:
Palmer Notation – uses one digit & character

- Therefore, when viewing the patient’s face, the 4 quadrants, are represented as:
  - maxillary right = 
  - maxillary left = 
  - mandibular left = 
  - mandibular right = 

Example #1: Primary Maxillary Right Canine = c

Example #2: Permanent Mandibular Left Lateral Incisor = 2
Tooth Parts:
Anatomic v. Clinical

- **Anatomic Crown:** the portion of tooth covered by enamel.

- **Anatomic Root:** the portion of tooth covered by cementum.
Tooth Parts: Anatomic v. Clinical

- Clinical Crown: the portion of tooth visible in the mouth and exposed to fluids.
- Clinical Root: the portion of tooth which is not visible, embedded in periodontal tissues (bone and gums).
Crown - Root Relationship:

• Cemento-enamel Junction: also called the CEJ, it is the junction of the anatomic crown and anatomic root.

• Cervix: the most narrow circumference of the tooth, and can be referred to as the cervical line.
Root Parts:

- **Root Trunk**: the base of the root adjacent the anatomic crown, in multi-rooted teeth.

- **Bifurcation**: a division of the root trunk into two branches.

- **Trifurcation**: a division of the root trunk into three branches.
Root Parts:

- **Apex**: The end of the root most distant from the crown.

- **Apical Foramen**: opening at or near the apex, through which vessels and nerves pass.

- **Terminal Root**: the portion of the root ending in the root trunk.
Tooth Surfaces

- All teeth have 5 surfaces, named for their:
  - function,
  - relationship to the midline, or
  - anatomical structure.
Tooth Surfaces

- **FACIAL**: the labial and buccal surfaces collectively toward the face.

- **LABIAL**: facial surface of anterior teeth, near lips. (anterior teeth)

- **BUCCAL**: facial surface of posterior teeth, near buccinator muscle of the cheek. (posterior teeth)
Tooth Surfaces

- **LINGUAL**: surfaces of the teeth nearest the tongue.

- **OCCLUSAL**: surfaces of the posterior teeth nearest the opposing posterior teeth, for chewing; farthest from root.
Tooth Surfaces

• **INCISAL**: surfaces of anterior teeth nearest the opposing anterior teeth, for biting; farthest from root.
Tooth Surfaces

• PROXIMAL: two surfaces that are adjacent to one another in the same arch.

• MESIAL: an adjacent surface closest to, or facing the midline.

• DISTAL: an adjacent surface distant from, or facing away from the midline.
Tooth Surfaces: proximal contacts

• CONTACT AREA: the portion of a proximal surface that touches the adjacent tooth.

• DIASTEMIA: space between adjacent teeth if the adjacent surfaces do not touch
Division into Thirds

Crown and root surfaces are divided both horizontally & vertically into imaginary thirds to differentiate general areas on the tooth.
Division into Thirds: facial & lingual

Three Vertical & Equal Divisions

- Mesial third
- Middle third
- Distal third
Division into Thirds: facial & lingual

Three **Horizontal** & Equal Divisions

- Incisal or Occlusal third
- Middle third
- Cervical or Gingival third
Division into Thirds: proximal

Three Vertical & Equal Divisions

- Facial (labial or buccal) third
  - Middle third
  - Lingual third
Division into Thirds: root divisions

Three Horizontal & Equal Divisions

- Apical third
- Middle third
- Cervical third
A line formed by the junction of two surfaces (planes) & derives its name from those surfaces that join.
Point Angle:
A point formed by the junction of three surfaces (planes) and derives its name from those surfaces that join.
Coronal Morphology

CUSPS: an elevation on the crown portion of a tooth, and a divisional part of the occlusal surface.

TUBERCLE: a small, atypical, extra formation of enamel on a portion of the crown.
LOBE: a primary area of formation in the development of a crown.

MAMELON: any one of three rounded elevations found on the incisal edges of newly erupted incisors; it is the result of lobe development.
Coronal Morphology

FOSSA: an irregular depression or concavity on the surface of a tooth.

Lingual fossa: on the named surface of anterior teeth between the marginal ridges.
Coronal Morphology

CINGULUM: from Latin for “girdle,” it composes most of the cervical 1/3 of the lingual surface of anterior teeth; it is the result of lobe development.

RIDGE: named for its location, it is any linear elevation on the surface of a tooth.
Coronal Morphology

Find Additional Structures In your textbook!
Coronal Morphology

What are these Structures?
Coronal Morphology

Find and name more ridges in your textbook!
Coronal Morphology

Transverse Ridge

Find and Name
One more ridge.
Coronal Morphology

Transverse Ridge

Find and Name
One more ridge.
Coronal Morphology

FISSURE: a cleft or crevice in a tooth surface thought to be the result of the imperfect fusing of the enamel from adjoining lobes or cusps.
Coronal Morphology

**Triangular Fossa:** found on occlusal surfaces & formed by three, ridge inclines.

**Central Fossa:** found at the middle of the occlusal surface, only on molars.

**FOSSA:** an irregular depression or concavity on the surface of a tooth.
Coronal Morphology

**GROOVE**: a shallow linear depression on the surface of a tooth.

**Buccal & Lingual Grooves**: found on the named surfaces of posterior teeth.
Coronal Morphology

**Developmental Groove:**
a shallow linear depression between lobes on the crown.

**Supplemental Groove:**
a shallow, less distinct, linear depression & does not mark lobe junctions; secondary to developmental groves.
Coronal Morphology

**PIT**: a small pinpoint depression located at:

- the junction of developmental groves;

- the terminal ends of developmental groves.
**PULP CAVITY**: the entity space within the tooth which resembles the external shape of the tooth and contains the nerves and vascular supply of the tooth.

**PULP CHAMBER**: the portion of the pulp cavity within the anatomic crown; it may exhibit conical-shaped extensions named pulp horns.
Pulpal Anatomy

ROOT CANAL: the portion of the pulp cavity within the anatomic root.

CANAL ORIFICE: the opening leading from the chamber to the root canal.

APICAL FORAMEN: the opening(s) at the root tip which terminate the root canal.
Supporting Structures of teeth: The Periodontium

- **CEMENTUM**: bone-like substance that covers the root.

- **PERIODONTAL LIGIMENT (PDL)**: fibrous attachment connecting the cementum to the alveolar bone.
Supporting Structures of teeth: The Periodontium

- **GINGIVA**: outermost soft tissue which covers the alveolar bone from which the crown emerges and defines the clinical crown.

- **ALVEOLAR BONE**: forms around teeth and crypts of developing teeth.
Emergence, Periods, Development

- **Emergence** (eruption) patterns vary from one text to another, just as they vary from one individual to another.

- According to Wheeler, a common sequence for the primary dentition:
• One common sequence for the permanent dentition might be:

19, 30, 3, 14,
24, 25, 23, 26,
8, 9, 7, 10,
22, 27,
21, 28, 5, 12,
20, 29, 4, 13,
6, 11,
18, 31, 2, 15,
17, 32, 1, 16
Primary Dentition Period:

- Only primary teeth are present.
- Ends when the first permanent tooth emerges.
- Occurs approximately from six months to 6 years
Mixed Dentition Period:

- Both primary and permanent teeth are present.
- Ends when the last primary tooth is exfoliated.
- Occurs approximately from six to twelve years.
Emergence, Periods, Development

Permanent Dentition Period:
- Only permanent are present
- Present after ~12 years of age.
As these lobes fuse, developmental grooves result at their junctions.

The form and contour of each lobe as well as the arrangement of the lobes determine the individual tooth form.