Dental Anatomy: A Review

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Continuing Education Units: 2 hours

Disclaimer: Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

It is important for the dental team to know the appearance of normal anatomy of the face and oral cavity. This knowledge provides a sound basis for identifying abnormal conditions. The dentist holds sole responsibility for diagnosis and treatment of the patient, however, the entire dental team should always be alert for abnormal conditions in all patients’ oral cavities. There are, of course, wide variations of what can be considered normal, but with careful attention to detail the dental team will gain confidence and become more adept at identifying conditions that may require further attention.

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• The authors report no conflicts of interest associated with this work.

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Overview
It is important for the dental team to know the appearance of normal anatomy of the face and oral cavity. This knowledge provides a sound basis for identifying abnormal conditions. The dentist holds sole responsibility for diagnosis and treatment of the patient, however, the entire dental team should always be alert for abnormal conditions in all patients’ oral cavities. There are, of course, wide variations of what can be considered normal, but with careful attention to detail the dental team will gain confidence and become more adept at identifying conditions that may require further attention.

Learning Objectives
Upon completion of this course, the dental professional should be able to:
• Identify and describe the appearance of the normal anatomic structures of the face and oral cavity.
• Identify and describe the following: types of teeth and their functions, the divisions of a tooth, the tissues of a tooth, the surfaces of a tooth, and the anatomical landmarks of teeth.
• Discuss the importance of occlusion and describe the classifications of occlusion.
• Describe the two dentitions and the types of teeth in each dentition.
• Discuss the importance of the primary teeth.
• Identify and describe the components of the periodontium, and discuss the importance of the periodontium.

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  • Landmarks of the Floor of the Mouth
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Glossary
adjacent – Next to, or nearby.
anterior – Toward the front.
apex – The end of the root of a tooth.
apical foramen – The opening at the end of the root of a tooth.
bifurcated – One tooth with two roots.
bifurcation – The area in a two-rooted tooth where the roots divide.
buccal – The surface of a posterior tooth facing the cheeks.
cementoenamel junction (CEJ)/cervical line – The area of a tooth where the cementum of the root and the enamel of the crown meet.
cementum – The tissue covering the root of a tooth.
cingulum – A smooth, rounded bump on the cervical third of the lingual surface of anterior teeth.
contact area – The area on the proximal surface of a tooth where it touches an adjacent tooth.
deciduous teeth – The first set of teeth; the primary teeth.

dentin – The tissue of a tooth that comprises the main inner portion of the tooth; it is covered by cementum on the root and enamel on the crown.

dentition – Set of teeth; the natural teeth in position in the dental arches.

distal – The surface of a tooth that is away from the midline.

facial – The surface of a tooth that faces the lips or cheeks; includes the labial and buccal surfaces.

dentin – The tissue of a tooth that comprises the main inner portion of the tooth; it is covered by cementum on the root and enamel on the crown.

fissure – A groove or natural depression on the surface of a tooth.

fossa – A shallow, rounded or angular depression on the surface of a tooth.

gingiva – The mucous membrane tissue that surrounds the teeth.

incisal – Cutting edge of anterior teeth.

incisive foramen – A passageway through the bone of the hard palate for vessels and nerves; found just lingual to the central incisor region.

interproximal – Between the proximal surfaces of adjacent teeth.

labial – The surface of anterior teeth facing the lips.

lingual – The surface of a tooth that faces the tongue.

mandibular – Pertaining to the lower jaw.

maxillary – Pertaining to the upper arch.

mesial – The surface of a tooth that faces the midline.

midline – An imaginary vertical plane that divides the body into equal right and left halves.

mucogingival junction – The line or area where the alveolar mucosa meets the attached gingiva.

mucosa – The tissue lining the oral cavity.

occlusal – The biting surface of a posterior tooth.

periapical – The area surrounding the apex of a tooth.

periodontium – The tissues that surround and support the teeth; includes the gingiva, the alveolar mucosa, the cementum, the periodontal ligament, and the alveolar bone.

posterior – Toward the back.

quadrant – One-fourth of the mouth; half of the maxillary or mandibular arch.

succedaneous – Permanent teeth that replace primary teeth.

sulcus, gingival – The space between the tooth and the free gingiva.

Normal Anatomic Structures of the Face and Oral Cavity

Facial Landmarks
The following are landmarks that are found on the face (Figures 1-3).

- Ala: Outer edge (wing) of the nostril.
- Philtrum: Shallow depression between the bottom of the nose and the top of the upper lip.
- Vermilion Zone: Extraoral reddish portion of the lips.
- Vermilion Border: The border of the lips where the skin of the face meets the Vermilion zone.
- Nasolabial Sulcus: Linear depression of the face that runs from the ala to the corner of the mouth.
- Labial Commissures: Corners of the mouth where upper lip meets the lower lip.
- Tubercle of the Lip: Small projection of tissue in the middle of the upper lip.
- Nasion: Midpoint between the eyes just below the eyebrows.
- Outer Canthus of the Eye: Fold of tissue at the outer corner of the eyelids.
- Inner Canthus of the Eye: Fold of tissue at the inner corner of the eyelids.
- Tragus of the Ear: The triangular cartilage projection anterior to the external opening of the ear.
Landmarks of the Oral Cavity
There are various methods of compensation. The following are landmarks found in the oral cavity (Figures 4-7).1,2

• **Masticatory Mucosa:** Heavily keratinized tissue that lines the hard palate and tongue.
• **Alveolar Mucosa:** Lightly keratinized tissue that lines floor of the mouth and covers the alveolar processes.
• **Labial and Buccal Mucosa:** Thinline keratinized tissue that lines the inner surface of the lips and cheeks (Figures 5 & 6).
• **Oral Vestibule:** A pocket formed by the soft tissue of the lips/cheeks and the gingiva, its deepest point is called the “vestibule fornix” or the “mucobuccal fold”.

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1. [Image 120x482 to 491x734]
2. [Image 76x230 to 293x446]
3. [Image 314x272 to 543x446]
Figure 4. Normal Structures of the Oral Cavity. Diagram with structures of the mouth labeled.  

Figure 5. Labial Mucosa. Photograph of facial mucosa.  
Image courtesy of Modern Dental Assisting, 10th Ed.
• **Frenum (pl. Frena):** Raised lines of oral mucosa that extend from the alveolar mucosa to the labial and buccal mucosa.

• **Fordyce Granules/Spots:** Yellowish ectopic sebaceous glands found on the facial mucosa near the corners of the mouth.

• **Linea Alba:** A raised white line of keratinized tissue on the buccal mucosa that runs parallel to the line of the occlusal plane (Figure 7).

• **Parotid Papilla:** Flap of tissue found opposite the maxillary 2nd molar on the buccal mucosa and contains the terminal end of the Parotid Duct (Stenson's Duct).

**Landmarks of the Palate**

The following are landmarks of the palate.

• **Hard Palate:** Bony structure that separates oral cavity from nasal cavity.

• **Incisive Papilla:** Thick keratinized tissue that covers the incisive foramen.

• **Palatine Raphe:** Midline ridge of tissue that covers the bony suture of the palate.

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**Figure 6.** Buccal Mucosa. Photograph of mucosa in the back of the mouth.
Image courtesy of Modern Dental Assisting, 10th Ed.

**Figure 7.** Linea Alba. Example of a linea alba in the patient’s cheek.
Image courtesy of Modern Dental Assisting, 10th Ed.
• **Palatine Rugae:** Irregular ridges or folds of masticatory mucosa that extend horizontally from either side of the palatine raphe.

• **Soft Palate:** Forms the posterior section of the palate and is not supported by underlying bone. It can be lifted to meet the posterior pharyngeal wall to seal the nasopharynx during swallowing and speech.

• **Uvula:** Small conical mass of tissue that hangs from the palatine velum (free edge of the soft palate).

• **Fauces:** The passageway from the oral cavity to the pharynx (throat).

• **Pillars of Fauces:** Two arches of muscle tissue surrounding posterior oral cavity. The Anterior Pillar of Fauces is also called palatoglossal arch, the Posterior Pillar of Fauces is also called the palatopharyngeal arch. They contract and narrow the fauces during deglutition (swallowing).

• **Isthmus of Fauces:** The space between the left and right anterior and posterior pillars of fauces. It contains the palatine tonsils.

(These landmarks are identified in Figure 4)

**Landmarks of the Tongue**

The following are landmarks of the tongue.

• **Dorsum of the Tongue:** Superior (top) surface of the tongue (Figure 8).

• **Median Sulcus:** A centralized linear indentation on the dorsum of the tongue running anterior to posterior.

• **Ventral Surface of the Tongue:** Inferior (underneath) surface of the tongue. The ventral surface of the tongue is very vascular and covered with thin, alveolar mucosa.

• **Apex of the Tongue:** Anterior tip of the tongue.

• **Filiform Papillae:** Small cone shaped papillae found in the anterior 2/3 of the dorsum that are responsible for the sense of touch.

• **Fungiform Papillae:** Mushroom-shaped papillae spread evenly over the entire dorsum of the tongue. They are deep red in color and each contains a taste bud.

• **Circumvallate Papillae (Vallate Papillae):** Cup-shaped papillae that are approximately 1-2 mm wide and found on the posterior dorsum of the tongue. They are usually arranged in 2 rows that form a “V-shape”. Each papilla contains a taste bud.

**Landmarks of the Floor of the Mouth**

The following are landmarks of the floor of the mouth located under the tongue (Figures 9 & 10).

• **Lingual Frenum:** Midline fold of tissue between ventral surface of the tongue and floor of the mouth.

• **Sublingual Caruncles:** Two small, raised folds of tissue found on either side of the lingual frenum. They each contain a salivary duct opening for Wharton’s Duct (duct leading
from the Submandibular Salivary gland).

- **Sublingual Folds:** Folds of tissue that begin at the Sublingual Caruncles on either side of the lingual frenum and run backward toward the base of the tongue. They contain the many ducts from the sublingual salivary gland.

**Types of Teeth and Their Functions**
The four front teeth in each arch are called incisors, and their function is to cut food with their sharp thin edges. On each side of the incisors, at the corners of the mouth, are the canines. These teeth have one cusp, or pointed edge, and are used for holding or grasping food, and are very strong, stable teeth. Behind the canines are the premolars, which are designed for holding food like the canines because they have cusps, but they also function to crush food. Sometimes these teeth are referred to as bicuspid, meaning two cusps, but this is not always accurate because some premolars may have three cusps. Therefore the term premolar is preferred. The

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**Figure 9.** View of the Floor of the Mouth. Photograph of the area under the tongue.
*Image courtesy of *Illustrated Anatomy of the Head and Neck*, 3rd Ed.*

**Figure 10.** The Major Salivary Glands and Associated Structures. Diagram of location of major salivary glands.
*Image courtesy of *Illustrated Anatomy of the Head and Neck*, 3rd Ed.*
Figure 11. Primary Dentition. Primary dentition diagram of primary teeth in order in the arch.
Image source: “General Chairside Assisting: A Review for a National General Chairside Exam”.

Figure 12. Permanent Dentition. Permanent dentition diagram of permanent teeth in order in the arch.
Image source: “General Chairside Assisting: A Review for a National General Chairside Exam”.
teeth farthest back in the mouth are the molars. These teeth have broad chewing surfaces with four or five cusps, and are designed for grinding food. The incisors and canines are called anterior teeth, because they are located in the front of the mouth, while the premolars and molars are called posterior teeth because they are located in the back of the mouth (Figures 11 & 12).

In addition to aiding in acquiring and chewing food, teeth perform several other important functions within the oral cavity. They begin the digestive process by breaking down food; they protect the oral cavity; they aid in proper speech; and they affect physical appearance. There are several types of teeth, and each performs its own special function in the chewing process, depending on its size, shape and location within the jaws. Starting at the midline, the permanent dentition is comprised of incisors, canines, premolars and molars. The primary dentition is the same except it has no premolars.

Incisors
There are four incisors in each arch. Two central incisors and two lateral incisors.
• Location – the central incisors are side by side at the midline. There is a lateral incisor on each side of the central incisors.
• Shape – single rooted, crowns are arched and angle toward one sharp incisal edge.
• Function – to cut or incise food with their thin edges.

Canines
There are two canines in each arch. They are sometimes referred to as cuspids.
• Location – next to the lateral incisors, establishes the cornering of the arches.
• Shape – anchored with the longest root, one pointed cusp.
• Function – used for holding, grasping, and tearing food. Referred to as the cornerstone of the mouth.

Premolars
There are for premolars in each arch. Two first premolars and two second premolars. They are sometimes referred to as bicuspids. There are no premolars in the primary dentition.
• Location – first premolars are next to the canines followed by the second premolars.

• Shape – maxillary first premolars have a bifurcated root, all others have one root, one prominent cusp with one or two lesser lingual cusps.
• Function – holding food, like canines because they have cusps; also to crush food.

Molars
There are three molars in each arch of the permanent dentition. Two first molars, two second molars and two third molars. Third molars are sometimes called wisdom teeth. There are two molars in each arch of the primary dentition. Two first molars and two second molars.
• Location – first molars are next to the second premolars, second molars next to the first molars and third molars next to the second molars. The third molars are the farthest teeth in the mouth.
• Shape – bifurcated or trifurcated roots, broad chewing surfaces with four to five cusps.
• Function – grinding food.

Divisions of a Tooth
A tooth is divided into two main sections, the crown and the root. The crown is the portion of the tooth that is most visible in the mouth, and the root is the portion that is normally not visible because it is embedded within the bone. A tooth either will have a single root, or will have multiple roots. If a root is divided into two segments, it has a bifurcation; if a root is divided into three segments it has a trifurcation. Each root has an apex, which is the end of the root.

The crown of a tooth is covered with enamel and the root is covered with cementum. Therefore, the area where the crown and the root meet is known as the cementoenamel junction (CEJ). This area is also known as the cervix or cervical line of the tooth (Figure 13).4

Tissues of a Tooth
There are four tissues that make up a tooth. Enamel, dentin, and cementum are the hard tissues of a tooth. The pulp is the soft tissue. Enamel, which forms the outer surface of the crown of the tooth, is the hardest tissue in the body, thus making the tooth able to withstand a great amount of stress, chewing pressure and temperature change. Enamel is formed by ameloblasts. Once enamel is completely formed,
Cementum is the tissue that covers the root of the tooth in a very thin layer. It is not as hard as enamel or dentin, but it is harder than bone. It contains attachment fibers that help to anchor the tooth within the bone. There are two types of cementum. Primary cementum (or acellular cementum) covers the entire length of the root, and does not have growth capability. Once a tooth has erupted and has reached functional occlusion (when it is used for chewing) secondary, or cellular, cementum continues to form on the apical half of the root.

The pulp is located in the center of the tooth, and is surrounded by dentin. The pulp cavity is divided into two areas: the pulp chamber, located in the crown of the tooth; and the pulp canal(s), located in the root(s) of the tooth. When a tooth first erupts, the pulp chamber and canal are large, but as secondary dentin forms they decrease in size. The pulp is composed of blood vessels, lymph vessels, connective tissue, nerve tissue, and cells which are able to produce dentin; therefore the pulp nourishes the tooth and repairs dentin. The nerve supply in the pulp transmits the signals of sensitivity and pain through a small foramen (hole) in the apex of the root. If the pulp tissues become necrotic (die) then a root canal procedure is recommended to save the tooth (see Figure 13).

Cementum is the tissue that covers the root of the tooth in a very thin layer. It is not as hard as enamel or dentin, but it is harder than bone. It contains attachment fibers that help to anchor the tooth within the bone. There are two types of cementum. Primary cementum (or acellular cementum) covers the entire length of the root, and does not have growth capability. Once a tooth has erupted and has reached functional occlusion (when it is used for chewing) secondary, or cellular, cementum continues to form on the apical half of the root.

Enamel is somewhat translucent and due to the fact that it covers the dentin, the tooth receives its hue and tint from the underlying dentin. Enamel is somewhat translucent and due to the fact that it covers the dentin, the tooth receives its hue and tint from the underlying dentin. Enamel is somewhat translucent and due to the fact that it covers the dentin, the tooth receives its hue and tint from the underlying dentin.

Dentin comprises the main portion of the tooth; it is softer than enamel but harder than bone. Dentin is infiltrated in its entirety by microscopic canals called dentinal tubules. These tubules contain dentinal fibers that transmit pain stimuli and nutrition throughout the tissues. The dentin is formed by odontoblasts. There are three types of dentin referred to as primary, secondary and tertiary. The dentin that forms when a tooth erupts is called primary dentin. Unlike enamel, dentin does have the ability for further growth, and the dentin that forms inside the primary dentin is called secondary dentin. This secondary dentin will continue to grow throughout the life of the tooth and can result in a narrowing of the pulp canal. The third type of dentin, also known as reparative dentin, forms in response to irritation and trauma such as erosion and dental caries.

Figure 13. Divisions and Tissues of a Tooth. Parts of the teeth and surrounding tissues. Image courtesy of The Anatomy and Physiology Learning System, 2nd Ed.
**Surfaces of Teeth**

In order to identify specific locations on a tooth, it is divided into surfaces and each surface has a specific name. The surfaces are named according to the direction in which they face (Figure 14).2

The surfaces of teeth are as follows:
- **Lingual** – the surface of a tooth facing the tongue.
- **Facial** – the surface of a tooth facing the cheeks or lips. This surface can also be known as:
  - **labial** – the surface of an anterior tooth facing the lips.
  - **buccal** – the surface of a posterior tooth facing the cheeks.
- **Proximal** – the surface of a tooth that faces a neighboring tooth’s surface; each tooth has two proximal surfaces.
  - **mesial** – the surface of a tooth that is closest to the midline (middle) of the face.
  - **distal** – the surface of a tooth that faces away from the midline of the face.
- **Occlusal** – the chewing surface of posterior teeth.
- **Incisal Ridge (or edge)** – the biting edge of anterior teeth.

**Anatomical Landmarks of the Teeth**

Depending on the type of tooth and where it is located in the mouth, it is important to be able to recognize the various anatomical structures of a tooth. Each tooth has certain features that set it apart. The contact point where a tooth touches another tooth is often at the height of contour, or the widest bulging point. An embrasure is the triangular space formed between the contouring angles of adjacent teeth and gingiva. Figure 15 identifies additional landmarks found on certain anterior or posterior teeth.1

**Arrangement of the Teeth in the Oral Cavity**

**Arches and Quadrants**

**Arches**

The teeth are arranged in the oral cavity in two separate arches. The upper teeth are located in the maxillary arch; the lower teeth are located in the mandibular arch (Figure 16). The maxillary arch is immovable, while the mandibular arch is capable of movement. The teeth are normally arranged in the maxillary and mandibular arches in such a way that they will function properly and the position of each tooth is maintained.

**Quadrants**

Each arch can be divided in half by an imaginary vertical line drawn through the center of the face (the midline). Each half of the arch is called a quadrant. Thus there are four quadrants: maxillary right, maxillary left, mandibular right, and mandibular left (Figure 16).2

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1 Arrangement of the Teeth in the Oral Cavity

2 Surfaces of Teeth

Figure 14. Surfaces of the Teeth. Diagram of surfaces of the teeth. Images courtesy of Mosby's Comprehensive Dental Assisting: A Clinical Approach.
Figure 15. Anatomical Landmarks of Teeth. Diagram of landmarks of the teeth.

Image courtesy of Modern Dental Assisting, 6th Ed.
Malocclusion may be caused by several factors including heredity, diseases that disturb dental development, injuries, and habits such as thumb sucking or tongue thrusting.

**Classifications of Occlusion**

Angle’s classification system is a common method used to classify various occlusal relationships. This system is based upon the relationship between the permanent maxillary and mandibular first molars. Figure 17 shows the classifications of occlusion as well as the facial profiles of each. 

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Occlusion

Occlusion is the contact between the maxillary and mandibular teeth in any functional relationship. Normal occlusion is important for optimal oral functions, for prevention of dental diseases, and for esthetics. Any deviation from normal occlusion is considered as malocclusion. Malocclusion may involve a single tooth, groups of teeth, or entire arches. With malocclusion, oral functions may be affected, such as difficulty in chewing, swallowing, and speech; it may also cause pain in the temporomandibular joint (TMJ).
Permanent Dentition

The permanent dentition contains 32 teeth, with each arch having 2 central incisors, 2 lateral incisors, 2 canines, 2 first premolars, 2 second premolars, 2 first molars, 2 second molars, and 2 third molars. This period of dentition begins when the last primary tooth is shed. The permanent teeth that replace primary teeth are called succedaneous teeth. The permanent molars are not succedaneous teeth because they do not replace any primary teeth. The primary molars are replaced with the permanent premolars. Table 2 shows the eruption dates of the permanent dentition.

D-A-Q-T System

The correct sequence of words when describing a tooth is based on the D-A-Q-T system.

- **D** stands for **dentition**.
**Figure 17. Angle’s Classifications of Malocclusion**

**Class I (or neutral occlusion)** - In this normal relationship, the maxillary first molar is slightly posterior to the mandibular first molar: the mesiobuccal cusp of the maxillary first molar is directly in line with the buccal groove of the permanent mandibular first molar. The facial profile is termed mesognathic.

**Arch Relationships**
- **Molars:** MB cusp of the maxillary first occludes with the MB groove of the mandibular first.
- **Canines:** Maxillary occludes with distal half of the mandibular canine and the mesial half of the mandibular first premolar.

**Descriptions**
- Dental malalignment(s) present (see text), such as crowding or spacing.

**Class II (or distoclusion)** - In this classification, the maxillary first molar is even with or anterior to the mandibular first molar: the buccal groove of the mandibular first molar is distal to the mesiobuccal cusp of the maxillary first molar. The facial profile is termed retrognathic.

**Class II Malocclusions**

**Class II, Division 1** - occurs when the permanent first molars are in class II and the permanent maxillary central incisors are in their normal or slightly protruded position.

**Class II, Division 2** - occurs when the permanent first molars are in class II and the permanent maxillary central incisors are retruded (pulled backward toward the oral cavity) and tilting lingually.

**Arch Relationships**
- **Molars:** MB cusp of the maxillary first occludes (by more than the width of a premolar) mesial to the MB groove of the mandibular first.
- **Canines:** Distal surface of the mandibular canine is distal to the mesial surface of the maxillary canine by at least the width of a premolar.

**Descriptions**
- **Division 1:** Maxillary anterior protrude facially from the mandibular anterior, with deep overbite.
- **Division 2:** Maxillary central incisors are either upright or retruded, and lateral incisors are either tipped labially or overlap the central incisors with deep overbite.

**Class III (or mesioclusion)** - In this classification, the maxillary first molar is more posterior to the mandibular first molar than normal: the buccal groove of the mandibular first molar is mesial to the mesiobuccal cusp of the maxillary first molar. The facial profile is termed prognathic.

**Arch Relationships**
- **Molars:** MB cusp of the maxillary first occludes (by more than the width of a premolar) distal to the MB groove of the mandibular first.
- **Canines:** Distal surface.

**Descriptions**
- Mandibular incisors in complete crossbite.
Deep Bite – In a deep bite (over bite), the maxillary incisors vertically overlap the mandibular incisors excessively. (In severe cases, mandibular incisors may contact the palate or maxillary incisor may strike lower gingiva.)

Open Bite – In an open bite, there are areas where the maxillary and mandibular teeth do not touch. A patient can have an anterior or posterior open bite. (An anterior open bite can sometimes be attributed to thumb sucking or a tongue thrust. Other times the condition is a skeletal problem.)

Overjet – Overjet refers to the distance between the facial surfaces of the maxillary incisors and the facial surfaces of the mandibular incisors.

Crossbite – There are two types of crossbites. A buccal crossbite is a malocclusion characterized by any teeth of the maxillary jaw being located lingually (to the inside of) the teeth of the mandibular jaw. Anterior crossbite, the maxillary incisors are lingual (behind) the mandibular incisors, usually with a Class III occlusion.

Diastema – Space between two teeth is called a diastema. This is most common between the maxillary central incisors.

Impacted Teeth – Impacted teeth are prohibited from normal eruption due to their position in the bone or surrounding teeth.

Figure 17a. Discrepancies
The Periodontium consists of the hard and soft tissues that help to anchor, support, and protect the teeth. It is made up of the gingival unit and the attachment unit. Figure 18 illustrates the components of the Periodontium.

Table 1. Eruption and Exfoliation Dates of the Primary Dentition

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Eruption Date</th>
<th>Exfoliation Date</th>
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<tbody>
<tr>
<td>Maxillary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Incisor</td>
<td>6-10 months</td>
<td>6-7 years</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>9-12 months</td>
<td>7-8 years</td>
</tr>
<tr>
<td>First Molar</td>
<td>12-18 months</td>
<td>9-11 years</td>
</tr>
<tr>
<td>Canine</td>
<td>16-22 months</td>
<td>10-12 years</td>
</tr>
<tr>
<td>Second Molar</td>
<td>24-32 months</td>
<td>10-12 years</td>
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<tr>
<td>Mandibular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Incisor</td>
<td>6-10 months</td>
<td>6-7 years</td>
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</tr>
<tr>
<td>Second Molar</td>
<td>20-32 months</td>
<td>10-12 years</td>
</tr>
</tbody>
</table>

Table 2. Eruption Dates of the Permanent Dentition

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Eruption Date</th>
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<tbody>
<tr>
<td>Maxillary</td>
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</tr>
<tr>
<td>First Molar</td>
<td>6-7 years</td>
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<tr>
<td>Central Incisor</td>
<td>7-8 years</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>8-9 years</td>
</tr>
<tr>
<td>First Premolar</td>
<td>10-11 years</td>
</tr>
<tr>
<td>Second Premolar</td>
<td>11-12 years</td>
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<tr>
<td>Canine</td>
<td>11-12 years</td>
</tr>
<tr>
<td>Second Molar</td>
<td>12-13 years</td>
</tr>
<tr>
<td>Third Molar</td>
<td>17-21 years</td>
</tr>
<tr>
<td>Mandibular</td>
<td></td>
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<tr>
<td>First Molar</td>
<td>6-7 years</td>
</tr>
<tr>
<td>Central Incisor</td>
<td>6-7 years</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>7-8 years</td>
</tr>
<tr>
<td>First Premolar</td>
<td>9-10 years</td>
</tr>
<tr>
<td>Second Premolar</td>
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- A stands for arch.
- Q stands for quadrant.
- T stands for the tooth type.

The dentition is named first, followed by the arch, then the quadrant, and finally the tooth name. For example, a primary first molar would be identified as the primary maxillary right first molar. A permanent central incisor would be identified as the permanent mandibular left central incisor. Teeth can also be referred to by number/letter.
Gingival Unit
The gingival unit consists of the gingiva (soft tissues that surround the teeth) and the alveolar mucosa (soft tissues that line the oral cavity).

Gingiva – The gingiva, also known as gum tissue, surrounds the teeth and can be attached to the underlying bone (attached gingiva) or unattached (free gingiva). When healthy, the gingiva should be firm and well adapted to the teeth, and have a stippled appearance. This means that its texture appears similar to an orange peel. The color of healthy gingiva depends on the pigmentation of each person, but in general it should appear light pink.

Alveolar Mucosa – The alveolar mucosa consists of the tissue inside the cheeks, vestibule (the space between the lips or cheeks and the teeth), lips, soft palate, and under the tongue. This tissue is more movable and is lightly attached to the underlying bone and muscles. Its texture is smooth and its color is red to bright red.

Attachment Unit
The attachment unit consists of the cementum, the alveolar bone (bone surrounding the teeth), and the periodontal ligaments (fibers or ligaments that anchor and support the teeth in their sockets).

Cementum – The cementum, a tooth tissue covering the root of the tooth; periodontal ligament fibers are imbedded in the cementum which serve the function of anchoring the teeth in their sockets.

Alveolar Bone – The alveolar bone is also called the alveolar process. It is the bone that forms the sockets for the teeth.

Periodontal Ligament – The periodontal ligament is connective tissue arranged into groups of fibers; these fibers are attached to the cementum, to the alveolar bone and to the cervical gingivae.

Conclusion
A working knowledge of normal anatomy of the face and oral cavity is critical for the entire dental team. This is one of many facets necessary in providing oral healthcare. Communication between team members and other healthcare providers is an important component to the overall health and well being of the dental patient.
Course Test Preview

To receive Continuing Education credit for this course, you must complete the online test. Please go to www.dentalcare.com and find this course in the Continuing Education section.

1. ____________ is the portion of the tooth that comprises the main inner portion of the tooth.
   a. Enamel
   b. Cementum
   c. Dentin
   d. Apex

2. The ____________ consists of hard and soft tissues and helps anchor, support and protect the teeth.
   a. gingiva
   b. periodontium
   c. sulcus
   d. hard palate

3. The area where two roots divide on a two rooted tooth is called the ____________.
   a. cingulum
   b. bifurcation
   c. midline
   d. uvula

4. The incisors are responsible for ____________ food.
   a. cutting
   b. holding
   c. crushing
   d. chewing

5. If a patient’s maxillary first molar is slightly posterior to the mandibular first molar, that is considered ____________ occlusion.
   a. Class III
   b. Class I
   c. Class II, Division 2
   d. Class II

6. The primary dentition is the same as the permanent dentition, except it has no ____________.
   a. canines
   b. lateral incisors
   c. premolars
   d. first molars

7. The inner portion of the tooth that is comprised of blood vessels, lymph vessels, connective tissue, nerve tissue and cells is the ____________.
   a. cementum
   b. dentin
   c. pulp
   d. enamel
8. During an exam, the dentist states the patient has decay on the cervical buccal of the maxillary right first molar. The decay is located ____________ and ____________.
   a. facing the cheek / on the biting surface
   b. facing the tongue / near the gingiva
   c. facing the tongue / the midline
   d. near the gingiva / facing the cheek

9. The ____________ consists of the tissues inside the cheeks, vestibule, lips, soft palate and under the tongue and covers bone.
   a. periodontium
   b. alveolar mucosa
   c. periodontal ligament
   d. attachment unit

10. The permanent dentition has a total of _____ teeth, while the primary dentition has a total of _____ teeth.
    a. 20 / 32
    b. 30 / 22
    c. 30 / 20
    d. 32 / 20

11. The surface of a tooth facing the cheek or lip would be known as labial or buccal as well as ____________.
    a. occlusal
    b. facial
    c. incisal
    d. lingual

12. There are four hard tissues that make up a tooth, the hardest tissue in the body is the ____________.
    a. cementum
    b. dentin
    c. pulp
    d. enamel

13. The triangular space formed between the contouring angles of adjacent teeth and the gingiva is a(n) ____________.
    a. contact
    b. incisal ridge
    c. embrasure
    d. fossa

14. The correct sequence of words used when describing a tooth is ________________.
    a. dentition, arch, quadrant and tooth
    b. arch, quadrant, dentition and tooth
    c. tooth, dentition, arch and quadrant
    d. dentition, quadrant, tooth and arch

15. A parent should expect their child to get his/her first tooth at approximately _______ months.
    a. 36
    b. 9-12
    c. 6-10
    d. 12-16
16. The crown of a tooth is covered with enamel and the root is covered with ____________.
   a. dentin
   b. cementum
   c. enamel
   d. apex

17. Gingiva surrounds the teeth. Healthy gingiva should be __________ and __________.
   a. soft / stippled
   b. red / soft
   c. firm / stippled
   d. smooth / loose

18. The Attachment Unit consists of cementum, alveolar bone and ________________.
   a. periodontal ligaments
   b. gingiva
   c. alveolar mucosa
   d. cementum

19. The _____________ line angle of a tooth is away from the midline and faces the cheek.
   a. mesiobuccal
   b. distobuccal
   c. distolingual
   d. mesiolingual

20. A child would be about _____ years old if the first permanent molars have erupted but the
    canines have not.
    a. 7
    b. 4
    c. 12
    d. 10
References

About the Authors

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Antoinette Metivier has experience as a chairside assistant and as an assistant professor of dental assisting at the New Hampshire Technical Institute in Concord, NH. She has developed and presented a radiology review course for the New Hampshire Dental Assistants Association, and has also authored or co-authored several other workbook courses for the American Dental Assistants Association. When Antoinette authored this course she was a Certified Dental Assistant with a Bachelor of Science in Education from the University of Maine (She is now retired and no longer certified by the Dental Assisting National Board.). She has served on the Council on Education of The American Dental Assistants Association.

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Kimberly Bland has served as ADAA's President as well as held all national offices and the position of ADAA Fifth District Trustee. She has held several offices in both the local and state ADAA organizations, having been President of the Florida Dental Assistants Association for three terms. Ms. Bland is a member of the Florida Board of Dentistry Dental Assisting Council and has held offices in the Florida Allied Dental Educators Association. She is currently Florida Region V Postsecondary Advisor of the Florida Health Occupation Students of America (HOSA).

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