

## Introduction to Dental Anatomy

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Continuing Education Units: N/A

This continuing education course is intended for dental students and dental hygiene students. Maintaining the teeth in a state of health is of utmost importance for complete digestion and nutrition. Not only do the teeth serve several functions in the chewing process, but they also affect our speech and appearance.

### **Conflict of Interest Disclosure Statement**

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### **Overview**

The oral cavity is the first area in which digestion of the food we eat begins. All of surrounding and supporting structures in the mouth contribute to the digestive process in one way or another. The major structures that are found in and around the oral cavity include the lips, cheeks, tongue, hard palate, soft palate, teeth, gums, salivary glands and the upper and lower jaws. Maintaining the teeth in a state of health is of utmost importance for complete digestion and nutrition. Not only do the teeth serve several functions in the chewing process, but they also affect our speech and appearance.

### **Learning Objectives**

Upon the completion of this course, the dental professional will be able to:

- List by name and number the different teeth located in the human dentition.
- Define the function of each type of tooth.
- Identify where each type of tooth is located in the mouth.
- Identify the four parts of a tooth.

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## Basic Terminology

Before beginning the study of the teeth themselves it is necessary to define some terms that are basic to learning about dental anatomy.

**Human Dentition** – The teeth that are located in the upper and lower jaws are collectively referred to as the human dentition.

**Maxillae** – The upper jaw is known as the maxillae.

**Maxillary Teeth** – The teeth located in the maxillae form an arch and are referred to as maxillary teeth.

**Mandible** – The lower jaw is called the mandible.

**Mandibular Teeth** – The teeth located in the mandible are referred to as mandibular teeth.

As humans, we have two sets of teeth during our lifetime.

**Primary Dentition** – The first set of teeth we get. These are often referred to as baby teeth. There are 20 teeth in the primary dentition.

**Permanent Dentition** – The second set of teeth we get. These are often referred to as adult teeth. There are 32 teeth in the permanent dentition.

There are several terms that help to define locations on and around the teeth. These terms are used often to refer to specific areas of the mouth when describing conditions there.

**Posterior** – Towards the back of the mouth.

**Anterior** – Towards the front of the mouth

**Mesial** – Towards the midline of the mouth.

**Distal** – Away from the midline of the mouth

**Buccal** – Any area on the cheek side of the teeth

**Lingual** – Any area on the tongue side of the teeth

**Facial** – Any area on the cheek or lip side of the teeth. Is often used interchangeably with buccal but mostly in the anterior portion of the mouth.

**Palatal** – Any area on the tongue side of the maxillary teeth

**Occlusal** – Any area on the chewing surfaces of back teeth.

**Incisal** – Any area on the biting surfaces of the front teeth.

## The Four Parts of A Tooth

Each tooth in the mouth contains four different tissues that serve different functions. The teeth are made up of two major parts: the crown and the root. The crown of the tooth is what is visible in the mouth (Figure 1). The root of the tooth is the portion which normally not visible in the mouth and is anchored within the bone (Figure 2). Within each tooth, the four different tissues that are present are the enamel, the dentin, the pulp and the cementum.

1. **Enamel** – Makes up the protective outer surface of the crown of the tooth.
2. **Dentin** – Makes up the majority of the inner surface of the tooth. It cannot normally be seen except on x-rays.
3. **Pulp** – This is the area inside the tooth that holds the nerves and blood vessels of the tooth. It is in the center of the tooth and is in both the crown and the root of the tooth.
4. **Cementum** – Makes up the outer surface of the root of the tooth. It is much softer than enamel.

## Tooth Identification

In both the maxillary and mandibular arch there are similar teeth. There are four types of teeth in both arches. These include the incisors, the canines, the premolars and the molars. Each of these teeth are located in a different area of the mouth and serve different functions (Figure 3).

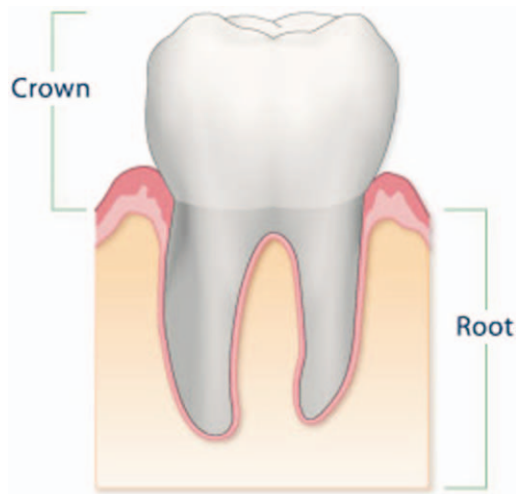


Figure 1. Crown of the tooth.

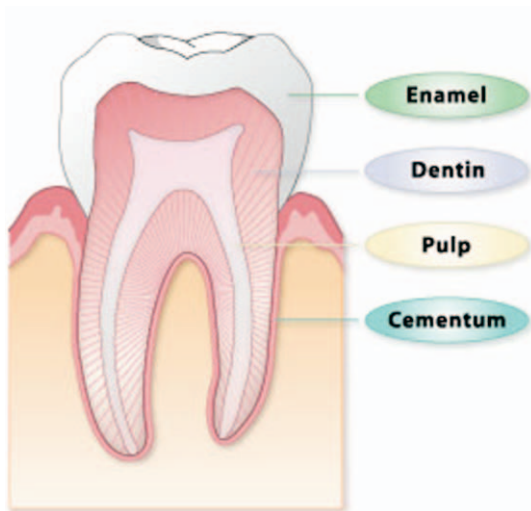


Figure 2. Root of the tooth.

**Incisors** – The four front teeth in the mouth are known as incisors. They are located in both the maxillary and mandibular arches. The two center teeth are known as central incisors and the teeth on either side of them are known as lateral incisors. All of these teeth are responsible for cutting or biting food. They act like scissors.

**Canines** – The teeth located distal to the lateral incisors are known as canines. These teeth form the corners of the mouth. There are 2 canines in the maxillary arch and 2 canines in the mandibular arch. These teeth are responsible for tearing food particles when chewing.

**Premolars** – The teeth located distal to the canines are known as premolars. There are

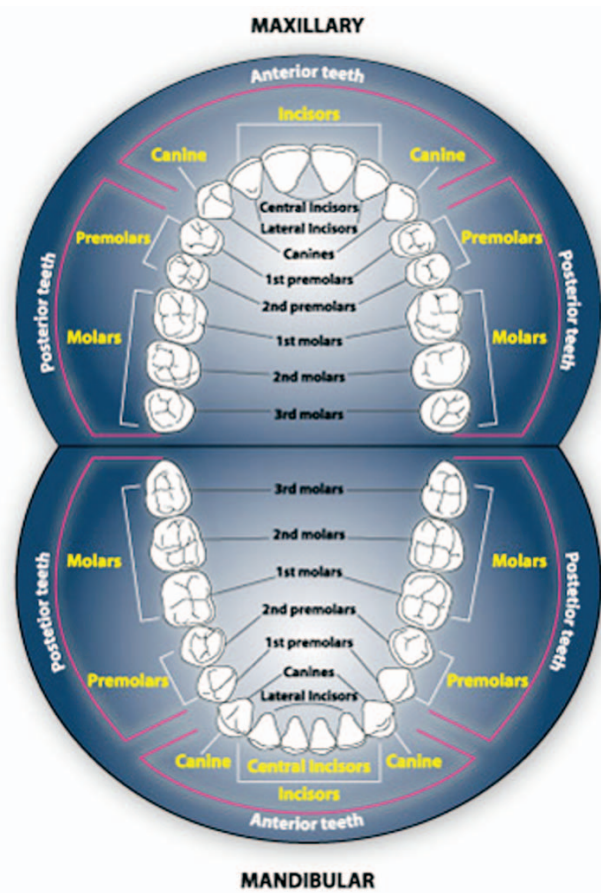


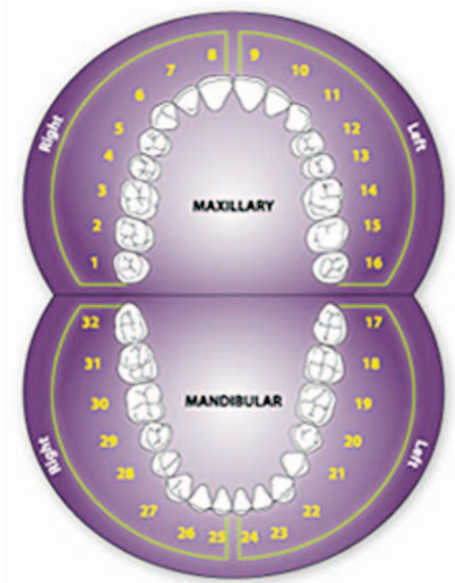
Figure 3. Four Types of Teeth.

4 premolars in each arch and two are located behind each canine in the arch. These teeth are smaller than the molars and are responsible for crushing food in the chewing process. These teeth are also only present in the permanent dentition. The primary dentition only consists of incisors, canines and molars.

**Molars** – There are normally 6 molars in each arch; three on the left and three on the right side. They are referred to as first, second and third molars. Some people never develop third molars and often these are the molars that are so far back in the mouth that they have difficulty coming in and may have to be taken out. The role of the molars in chewing is to grind the food.

### Tooth Numbering Systems

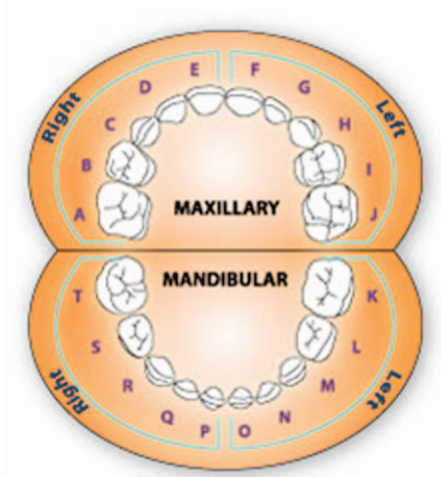
In order to effectively and efficiently refer to teeth we often use numbering or lettering systems. There are several systems that are used throughout the world. These include



**Figure 4.** Universal Numbering System for Permanent Dentition Phase.

the Universal Numbering System, the Palmer Notation System and the International Numbering System. The most widely used system in U.S. dental schools is the Universal Numbering System. This consists of assigning numbers to the teeth in the **permanent dentition** from 1 to 32 starting with the upper right third molar and continuing over to the upper left third molar and then down to the lower left third molar and onto to the lower right third molar. For example: The mandibular right canine tooth would be tooth #27 (Figure 4).

Using the Universal Numbering System the **primary dentition** is identified using letters. Beginning at the second molar on the upper right, the teeth in the maxillary arch are assigned letters A – J. Then continuing with the mandibular left second molar and around to the mandibular right second molar, the teeth are assigned letters K – T (Figure 5).



**Figure 5.** Universal Numbering System for Primary Dentition Phase.

### Conclusion

The teeth have two major parts, the crown and the root. When looking at a cross section of the tooth the four main tissues that make up the tooth are the enamel, the dentin, the cementum and the pulp. All of these parts play important roles in the proper functioning of the dentition.

The primary dentition is made up of 20 teeth, while the permanent or adult dentition contains 32 teeth. Most dental professionals refer to a numbering or lettering system when identifying the teeth. There are four main types of teeth, the incisors, the canines, the premolars and the molars. Each type of tooth serves a different function in eating.

Understanding dental anatomy is essential in order to begin to develop an appreciation for the role of teeth in digestion, appearance, speech and sensory input. Without the proper function of the teeth, usually due to disease such as decay or cavities, a person's health, appearance and nutrition can be affected.

To receive Continuing Education credit for this course, you must complete the online test. Please go to [www.dentalcare.com](http://www.dentalcare.com) and find this course in the Continuing Education section.

### **Course Test Preview**

- 1. Which teeth are responsible for tearing food?**
  - a. Canines
  - b. Molars
  - c. Central incisors
  - d. Premolars
  
- 2. How many teeth are in the primary dentition?**
  - a. 32
  - b. 10
  - c. 20
  - d. 15
  
- 3. Which tooth tissue contains the blood vessels and nerves of the tooth?**
  - a. Enamel
  - b. Pulp
  - c. Cementum
  - d. Dentin
  
- 4. Where are the mandibular teeth located?**
  - a. Upper jaw
  - b. Lower jaw
  - c. Posterior
  - d. Anterior
  
- 5. What is the area that is referred to when talking about the surface of the tooth that is on the cheek side?**
  - a. Buccal
  - b. Lingual
  - c. Palatal
  - d. Occlusal
  
- 6. What number refers to the lower right canine tooth?**
  - a. 32
  - b. 22
  - c. 27
  - d. 28
  
- 7. What tissue covers the outer surface of the crown of the tooth?**
  - a. Enamel
  - b. Dentin
  - c. Pulp
  - d. Cementum
  
- 8. How many molars are located in each arch?**
  - a. 6
  - b. 3
  - c. 2
  - d. 12

- 9. The premolars are located in what relationship to the canines?**
- a. Mesial to them
  - b. Distal to them
  - c. Lingual to them
  - d. Facial to them
- 10. Tooth #b refers to which tooth?**
- a. The permanent maxillary right first molar
  - b. The primary mandibular right second molar
  - c. The permanent mandibular left second molar
  - d. The primary maxillary right first molar

## References

1. Woelfel, JB, RC Scheid. Dental Anatomy, Its Relevance to Dentistry. Fifth ed. Williams and Wilkins, Baltimore. 1997, pp. 1-118.

## About the Author

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