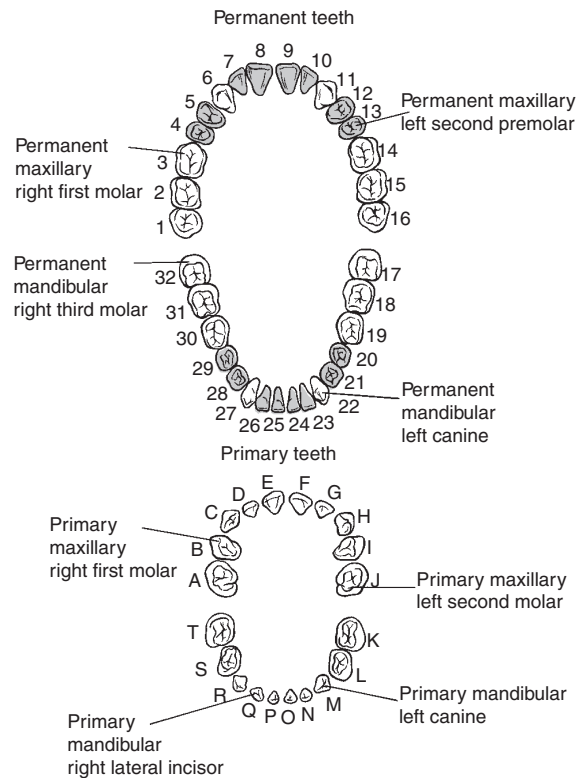


# Dental Anatomy and Occlusion

Ma'Lou C. Sabino DDS, and  
Emily G. Smythe, DDS

- **What numerical system is used most commonly in the United States for designating the adult dentition? Pediatric dentition?**

The Universal Numbering System was adopted by the American Dental Association and is also used by the Armed Forces. NUMBERS designate the 32 permanent (adult) teeth (1–32) and begin at the RIGHT maxillary third molar and end at the RIGHT mandibular third molar. LETTERS designate the 20 primary (deciduous) teeth (A–T). Other systems in use include the International Numbering System and the Palmer Notation Method.



**Figure 53-1** Reproduced, with permission, from Tintinalli JE, Kelen GD, Stapczynski JS, et al. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*. 6th ed. New York: McGraw-Hill, 2004. Fig. 242-2.

○ Describe the following anatomic terms used in describing surfaces of teeth:

1. Facial: part of tooth that faces the lips or cheeks. Can be further subdivided into:
  - a. Labial: facial surface of ANTERIOR teeth (incisors and canines).
  - b. Buccal: facial surface of POSTERIOR teeth (premolars and molars).
2. Palatal: surface of maxillary teeth that face the palate.
3. Lingual: describes both maxillary and mandibular surfaces that face the tongue.
4. Mesial: TOWARD the dental midline.
5. Distal: AWAY from the dental midline.
6. Occlusal: the chewing surface of the POSTERIOR teeth.
7. Incisal: the biting surface of the ANTERIOR teeth.

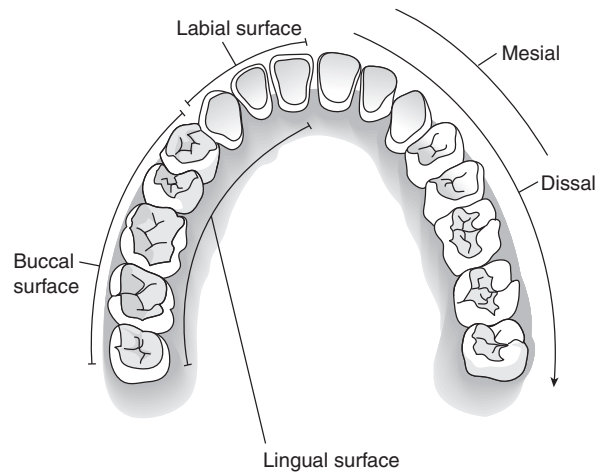


Figure 53-2

○ Describe the following occlusal relationships:

1. Overbite: VERTICAL overlap between the maxillary and mandibular central incisal edges.
2. Overjet: HORIZONTAL distance between the maxillary and mandibular central incisal edges.
3. Crossbite: a NEGATIVE overJET relationship (mandibular teeth FACIAL to maxillary teeth).
4. Openbite: a vertical difference or opening between maxillary and mandibular teeth incisal edges/occlusal surfaces.

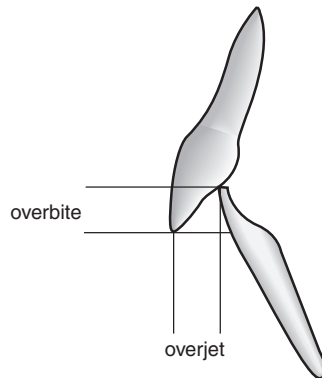


Figure 53-3



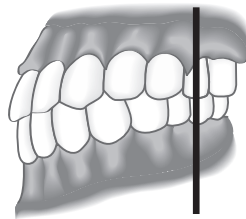
Figure 53-4 Posterior crossbite due to size discrepancy, maxillary hypoplasia.



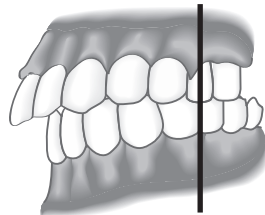
Figure 53-5 Anterior openbite.

○ What is the relationship of the mesial buccal cusp of the maxillary first molar to the buccal groove of the mandibular first molar in the following Angle classifications:

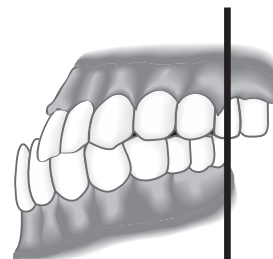
- Class I
- Class II
- Class III



A Class I: **On** the buccal groove.



B Class II: **Anterior** to the buccal groove.



C Class III: **Posterior** to the buccal groove.

Figure 53-6 Reproduced, with permission, from Dorland's Illustrated Medical Dictionary. 31st ed. Elsevier, 2007.

○ **Describe the difference between Angle Class II division 1 (A) and Angle Class II division 2 (B).**

Both have molar Class II relationships but division 1 patients have minimal crowding of maxillary teeth with a resultant large overjet of the incisors (see Figure 53-6).

Class II division 2 patients demonstrate incisors that crowd in such a way so as to diminish the overjet. The central incisors are lingually inclined (“shoveled”) and the lateral incisors are facially malpositioned (“flared”).

○ **What are some causes of an openbite and how would one distinguish a preexisting openbite in a facial trauma patient?**

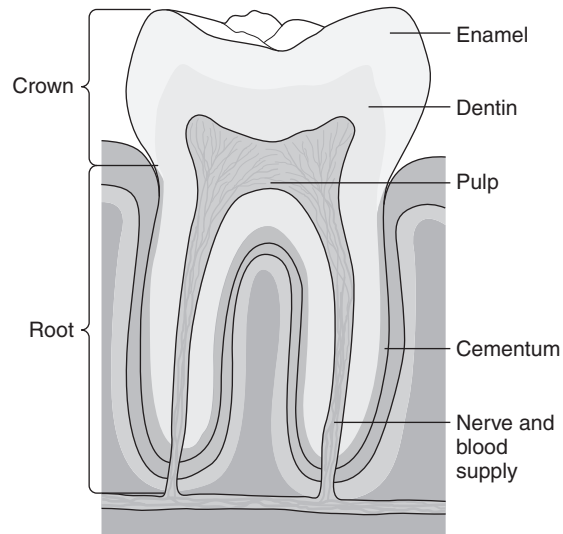
1. Tongue thrust.
2. Foreign object placed chronically between teeth (ie, thumb, pencil).
3. Trauma—often causing premature contacts on the posterior teeth.
4. Orthodontics—prior to orthognathic surgery.

Teeth will erupt until the point of contact, whether that contact is with the opposing dentition, tongue, or foreign object. Without a point of contact, teeth are dynamic and will continue to erupt.

In a trauma patient, the surfaces of the teeth, specifically, will act as a guide to the pretraumatic occlusion. Mamelons are ridges on the incisal edges of teeth that are generally worn off of adult teeth due to occlusion and contact; however, they are often present in patients with overbites due to the lack of occlusal contact.

○ **What are the parts of the tooth and its housing?**

1. Enamel—hard outer highly mineralized covering of the tooth crown composed mainly of hydroxyapatite.
2. Cementum—Located only on the root, it covers the dentin. It is less calcified than enamel or dentin and attaches to the periodontal ligament.
3. Dentin—less mineralized structure than enamel that also includes organic material and water containing microtubules. When exposed, teeth become sensitive.
4. Pulp—neurovascular component of teeth containing also connective tissue and cells (odontoblasts). Pulpal inflammation or exposure causes significant pain.
5. Periodontal ligament—connective tissue that attaches cementum to bone, allowing for movement of the tooth in the socket as well as proprioception.
6. Alveolar bone—made of cortical and cancellous bone.



**Figure 53-7** Reproduced, with permission, from Stone CK, Humphries RL. *Current Diagnosis & Treatment: Emergency Medicine*, 2008. 6th ed. New York: McGraw-Hill. Fig. 30-11.

• • • REFERENCES • • •

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