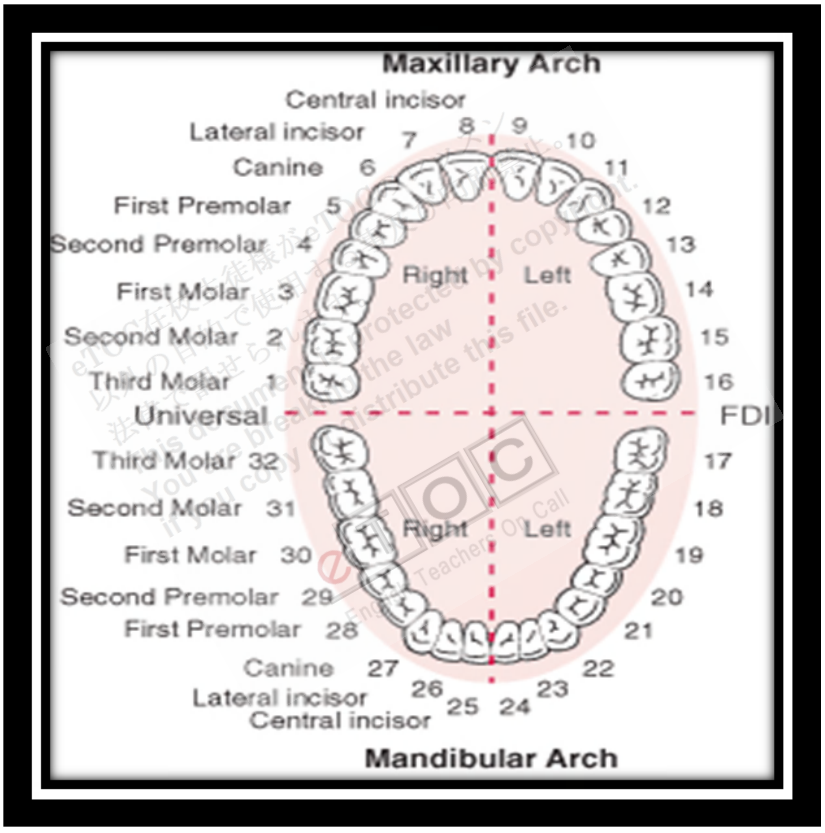
# Dental Anatomy and Development

**Teeth**

The teeth are categorized as incisors, canines, premolars, and molars and conventionally are numbered beginning with the maxillary right 3rd molar.

**Fig. 1**

**Identifying the teeth.**



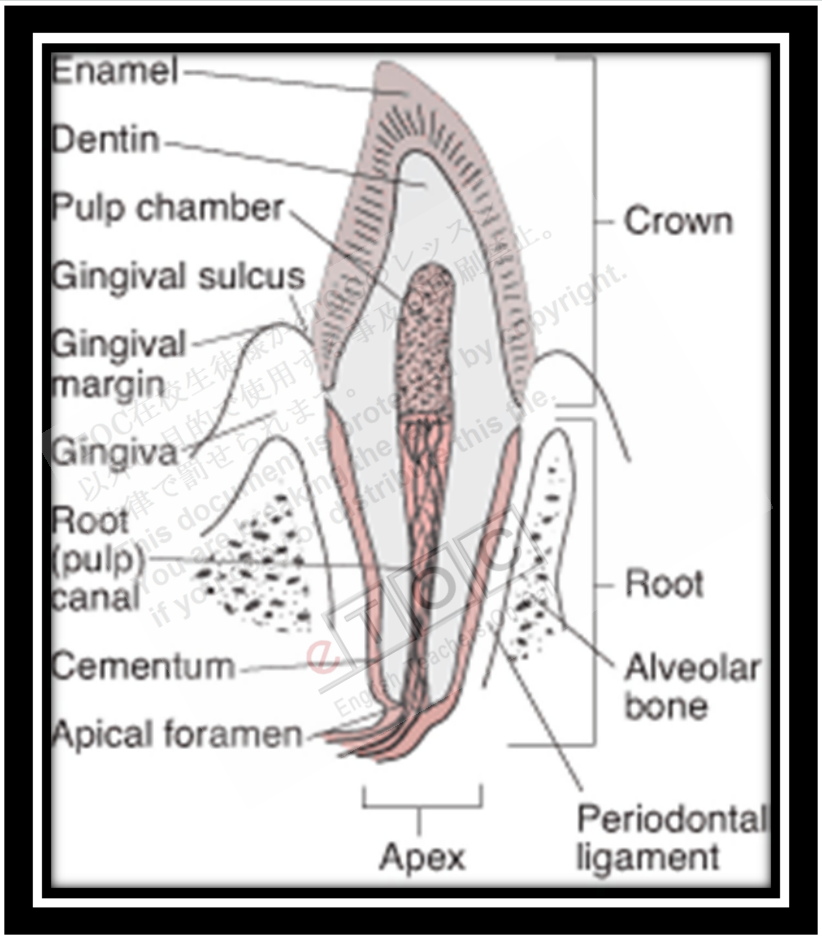

The numbering system shown is the one most commonly used in the US.

Each tooth has a crown and a root. The canines have the largest and strongest roots. An inner pulp contains blood vessels, lymphatics, and nerves, surrounded by the hard but porous dentin, a very hard enamel coating that covers the crown. The bonelike cementum is over the root, which, when healthy, is covered by gingiva. Twenty deciduous teeth normally begin appearing at close to age 6 mo and should all be in place by age 30 mo. These teeth are followed by 32 permanent teeth that begin to

appear by about age 6. The period from age 6 to 11 is called the mixed dentition stage, in which both deciduous and permanent teeth are present. Timing of tooth eruption is one indicator of skeletal age and may identify growth retardation or establish age for forensic purposes.

**Fig. 2**

**Section of a canine tooth.**




**Supporting tissues**

The gingiva surrounds the teeth at the base of their crown. The alveolar ridges are trabecular bone containing sockets for the teeth. The periodontium consists of the tissues that support the teeth—the gingiva, epithelial attachment, connective tissue attachment, periodontal ligament, and alveolar bone. The mandible and maxilla support the alveolar ridges and house the teeth. Saliva from the salivary glands bathes and protects the

teeth. The tongue directs food between the grinding surfaces and helps clean the teeth. The maxilla receives innervation from the maxillary nerve, the 2nd division of the trigeminal nerve (the 5th cranial nerve). The mandibular nerve, which is the 3rd and most inferior division of the trigeminal nerve, innervates the mandible.

In the elderly, or in some periodontal diseases, gingival recession exposes the dental root adjacent to the crown, making root caries common. If tooth destruction results and the tooth must be removed, the mechanical stimulation necessary for maintaining bone integrity ceases. Consequently, atrophy of the alveolar ridge (senile atrophy) begins when teeth are absent.

Gingival Recession



**Mouth**

Normally, keratinized epithelium occurs on the facial aspect of the lips, dorsum of the tongue, hard palate, and gingiva around the teeth. When healthy, the gingiva extends 5 to 7 mm from the tooth. Nonkeratinized mucosa occurs over alveolar bone further from the teeth, inside the lips and cheeks, on the sides and undersurface of the tongue, on the soft palate, and covering the floor of the mouth. The skin and mucosa of the lips are demarcated by the vermilion border.

The buccal mucosa, including the vestibule and nonkeratinized alveolar mucosa, is usually smooth, moist, and more red than pink (as compared to healthy gingiva). Innocuous entities in this region include linea alba (a thin white line, typically bilateral, on the level of the occlusal plane, where the cheek is bitten), Fordyce's granules (aberrant sebaceous glands appearing as < 1 mm light yellow spots that also may occur on the lips), and white sponge nevus (bilateral thick white folds over most of the buccal mucosa).

Recognizing these avoids needless biopsy and apprehension. The orifices of the parotid (Stensen's) ducts are opposite the maxillary 1st molar on the inside of each cheek and should not be mistaken for an abnormality.

The dorsal surface of the tongue is covered with numerous whitish elevations called the filiform papillae. Interspersed among them are isolated reddish prominences called the fungiform papillae, occurring mostly on the anterior part of the tongue. The circumvallate papillae, numbering 8 to 12, are considerably larger and lie posteriorly in a V pattern. The circumvallate papillae do not project from the tongue but instead are surrounded by a trench. The foliate papillae appear as a series of parallel, slitlike folds on the lateral borders of the tongue, near the anterior pillars of the fauces. They vary in length and can easily be confused with malignant lesions, as may the foramen cecum, median rhomboid glossitis, and, rarely, a lingual thyroid nodule. Lingual tonsils are components of Waldeyer's ring, are at the back of the tongue, and should not be mistaken for lesions. If an apparent abnormality is bilateral, it is almost always a normal variant.

Innervation is supplied by the lingual nerves (branches of the 5th cranial nerves), for general sensory innervation, and the chorda tympani fibers (of the 7th cranial nerve), which innervate the taste buds of the anterior two thirds of the tongue. Behind the circumvallate papillae, the glossopharyngeal nerves (9th cranial nerves) provide the sensations of touch and taste. The tongue has taste receptors for sweet, salty, sour, bitter, and umami (a savory taste triggered by natural glutamic acid and glutamates such as the flavoring agent monosodium glutamate). Although previously thought to be isolated to particular portions of the tongue, these receptors are now known to be distributed over the surface of the tongue. The hypoglossal nerves (12th cranial nerves) control movement of the tongue.

The major salivary glands are the paired parotid, submandibular, and sublingual glands. Most oral mucosal surfaces contain many minor mucus-secreting salivary glands. Anteriorly and near the midline on each side of the floor of the mouth are the openings of Wharton's ducts, which drain the ipsilateral submandibular and sublingual glands. The parotid glands drain into the cheeks via Stensen's ducts.

**Reference: http://www.merckmanuals.com**