

CHAPTER 1

An introduction to the human dentition

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Key topics

- Overview 2
- Descriptive terms applied to the human dentition 3
- Tooth nomenclature and the FDI tooth index 4

Learning objectives

- To be familiar with the terms describing the various aspects of the dentition
- To be aware of the indices used in the charting of teeth and in particular the FDI tooth index

Overview

This chapter will introduce you to a series of *terms* which are applied to the various surfaces of the human dentition. Such terms are used constantly within the clinical scenario to describe the exact location of dental disease and the extent of dental restorations and so on. You must become familiar with these terms – you will be expected to know them in clinic. You should be familiar with the major characteristics of each tooth type, to enable you to identify the following:

- Is the tooth *permanent* (secondary) or *primary* (deciduous)?
- Has the tooth come from the *upper* or *lower* arch?
- Is the tooth a *central* or *lateral* (incisor), or a *first* or *second* (premolar) or a *first, second* or *third* (molar)?
- Is the tooth from the *right* or *left* side of the mouth?
- What is the *tooth type* (incisor, canine, etc.)?

All teeth have a *crown* and normally have one, two or three *roots*. The shape of the crown and the number of roots any tooth might have are both usually governed by the site within the oral cavity from where the tooth has come. The crown of a tooth is usually the only part of a tooth that is visible from a clinical examination of the mouth (Figure 1.1). The tip of the root is called the *apex* and usually has one or more holes (foramen/pl. foramina) through which blood vessels and nerves pass into and out of the dental pulp.



Figure 1.1 Clinical photograph of a normal healthy dentition, gingivae and oral mucosa. (Source: Dr Rachael McKeown. Reproduced with permission of Dr McKeown)

There are two arches within the oral cavity – an upper or *maxillary* arch and a lower or *mandibular* arch (Figures 1.1 to 1.3). The upper arch may be named the maxillary arch, since the roots of the maxillary or upper teeth can be found attached to the upper jaw bone – the *maxilla*. Likewise, the lower arch may be named the mandibular arch, since the roots of the mandibular or lower teeth can be found attached to the lower jaw bone – the *mandible*. An *anterior* (front) view and a *lateral* (side) view of a human skull can be seen in Figures 1.2 and 1.3.

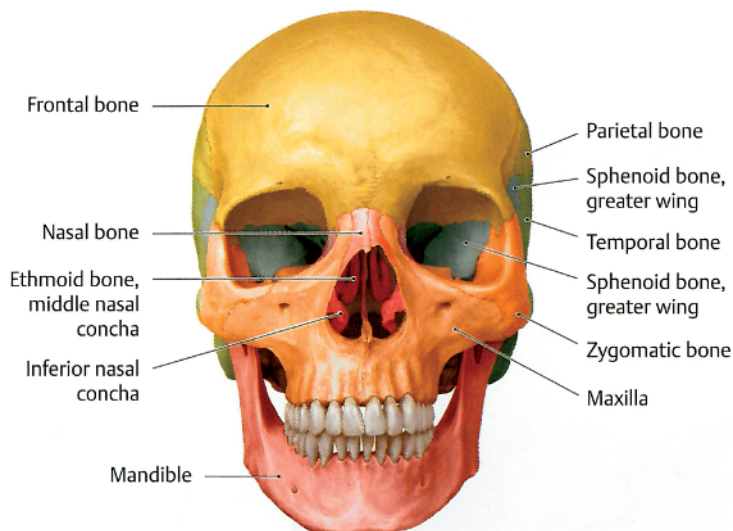


Figure 1.2 Illustrates an anterior (front) view of the human skull. From *Head and Neck Anatomy for Dental Medicine*. 2010. Ed. EW Baker. Thieme Medical Publishers, Inc.

The permanent dentition consists of 32 teeth:

- 8 incisors, 4 canines, 8 premolars and 12 molars
- The primary dentition consists of 20 teeth:
- 8 incisors, 4 canines and 8 molars

Descriptive terms

Remember when viewing a patient, you would refer to the upper right, for example, as the patient's upper right and *not* your right! The *midline* of the two arches is a common reference point – this is the line dividing right and left central incisors – see Figures 1.1 and 1.2.

The dentition may be split into either four quadrants or six sextants. Both terms are commonly used within clinical dentistry. When the dentition is split

into quadrants, each “quadrant” will normally contain a maximum of eight permanent teeth or five primary teeth – a quarter of the dentition. In the case of the permanent dentition, this is made up of two incisors and one canine (which make up the *anterior teeth*) and two premolars and three molars (which make up the *posterior teeth*). In the case of the primary dentition, this is made up of two incisors and one canine (the anterior teeth) and two molars (the posterior teeth). The quadrants are referred to as *upper right* (UR) and *upper left* (UL), and *lower right* (LR) and *lower left* (LL).

The system used in this book will be similar to the Palmer notation (see below). The quadrant will be given first, as above, where UR will be the patient's upper right quadrant, and so on. Permanent teeth are numbered 1–8, with 1 being the

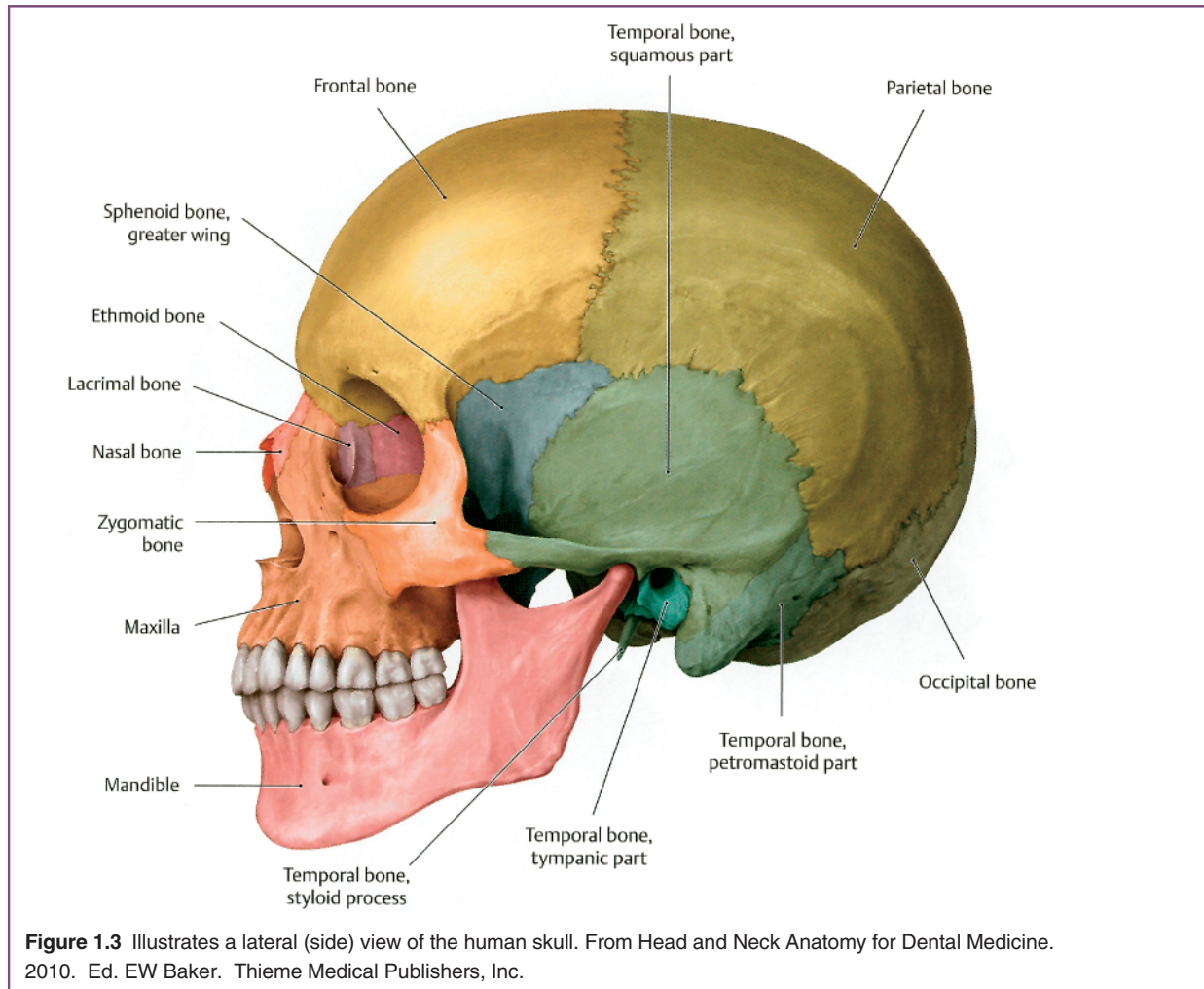


Figure 1.3 Illustrates a lateral (side) view of the human skull. From *Head and Neck Anatomy for Dental Medicine*. 2010. Ed. EW Baker. Thieme Medical Publishers, Inc.

permanent central incisor and 8 being the permanent third molar. Primary (or deciduous) teeth are referred to as A–E, with A being the primary central incisor and E being the primary second molar.

Within some clinical disciplines, the dentition is split into six *sextants*. Each “sextant” may contain approximately one sixth of the teeth – the mandible and the maxilla each contains three sextants – one sextant contains the anterior teeth (comprising four incisors and two canines) and the two right and left posterior sextants (comprising two premolars and three molars).

Remember that the numbers quoted here are the maximum number of teeth that a quadrant/sextant might contain. Teeth are often congenitally missing from one or more quadrant(s)/sextant(s). The teeth most commonly missing in humans are the third molars (>20% of the population), the second premolars (>5%) and the upper lateral incisors (>5%).

The following list defines the terms that are used commonly to describe clinical surfaces:

- Coronal – towards the crown of a tooth
- Apical – towards the apex of the root of a tooth
- Cervical – towards the neck of the tooth, that is the junction between the crown and the root, normally where the enamel ends
- Occlusal – the biting surface of a premolar or molar
- Incisal – the biting surface of an incisor
- Mesial – the surface of a tooth that is towards the middle of the arch
- Distal – the surface of a tooth that is distant from the middle of the arch
- Lingual/palatal – the surface of a tooth that lies towards the tongue/palate
- Labial/buccal – the surface of a tooth that lies towards the lip/cheek
- Central – the term given exclusively to the first incisor, both upper and lower
- Lateral – the term given exclusively to the second incisor, both upper and lower

Tooth nomenclature and the FDI tooth index

There are many ways to name individual teeth. The most common way to identify and name an

individual tooth is quite simply to refer to its entire component identification characteristics – usually five characteristics:

permanent upper right central incisor
or
 primary lower right second molar

In clinic, you will have to chart which teeth are present and which teeth are absent for all patients. This is good practice and you should carry out this procedure throughout your clinical career, since there are occasions when accurate tooth identification will aid legal proceedings or may be employed for forensic purposes.

The most common system of clinical charting, used both nationally and internationally, is the FDI system (Fédération dentaire internationale). The details of this system for the permanent dentition are illustrated in Figure 1.4.

Each quadrant is attributed a number – so the upper right quadrant (for permanent teeth) would be 1 and then moving clockwise the upper left would be 2, the lower left is 3 and lastly the lower right would be 4. The teeth are then given a number consecutively 1–8, corresponding to the central incisor through to the third molar, respectively. The primary dentition is named in a similar fashion, with the only change being that the quadrants are numbered 5–8 instead of 1–4. So, 41 would refer to permanent lower right central incisor and 73 would refer to a primary lower left canine.

There are other charting systems. In the Palmer system, each quadrant may be given a prefix symbol, but more usually a quadrant bracket and the central incisor through to the last molar are given numbers 1–8, in a way similar to the FDI system. So $\overline{6}$ would refer to an upper right permanent first molar and $\overline{5}$ (would refer to a lower left second premolar). Primary teeth are given a similar notation, but the incisors to molars are given the letters A–E, respectively.

Another means of charting teeth is by the Universal System, where the permanent teeth are numbered 1–32, in a clockwise manner from the permanent upper right third molar (1) to the permanent lower right third molar (32). The primary dentition is charted in a similar fashion only from A through to T.

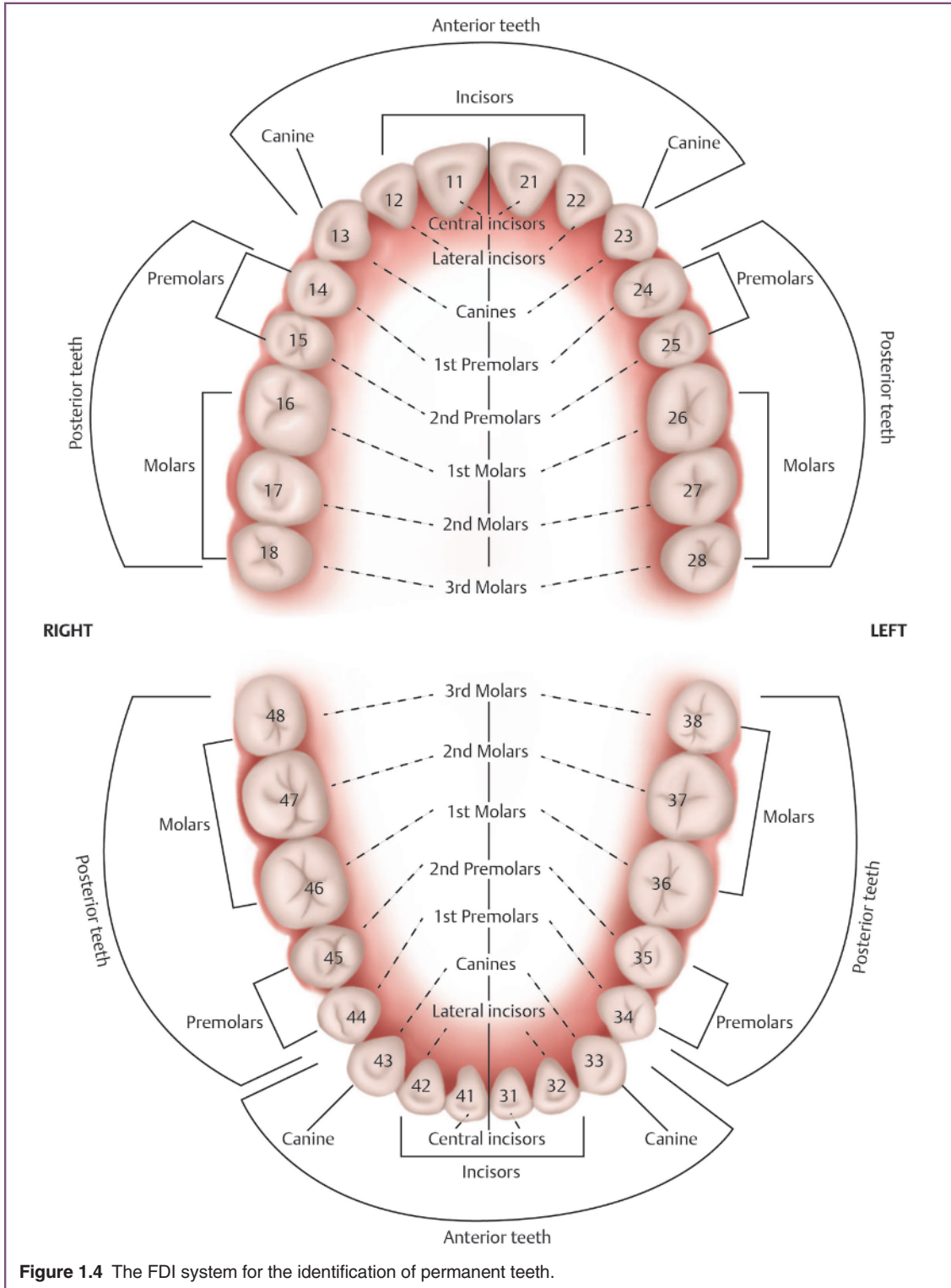


Figure 1.4 The FDI system for the identification of permanent teeth.