Oral and Maxillofacial Anatomy

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KEYWORDS

• Intraoral radiography • Extraoral radiography • Panoramic imaging • Cone beam CT imaging
• Multiplanar reconstructions • Dental anatomy • Maxillofacial anatomy • Radiographic anatomy

KEY POINTS

- Oral and maxillofacial anatomy is intricate and best evaluated via multiple forms of radiographs and techniques. This article outlines the various anatomic structures and their common radiographic appearances using intraoral, extraoral, and cone beam CT images
- Intraoral radiographs have a superior anatomic resolution, hence can be used to evaluate dental and periodontal structures. The limitation of such a radiographic method is often the amount of anatomic area covered; hence, there is a need for extraoral imaging to evaluate larger dental and maxillofacial structures.
- Extraoral imaging includes skull views; using a variety of images and line drawings, the anatomic areas are highlighted and the descriptions are concise yet useful for a medical or dental practitioner.
- Cone beam CT–based anatomic descriptions are complementary to the extraoral anatomy noted via skull views and are more objective due to the 3-D aspect of the images. Multiplanar reconstructions ie, axial, coronal and sagittal views are used to describe the anatomy.

INTRAORAL IMAGING

Proper radiographic interpretation requires a thorough knowledge of normal anatomy, variations of anatomic structures, and changes caused by pathology. Anatomic landmarks are not fully visible in intraoral radiographs; however, small areas of anatomy may be seen depending on the angulation used to acquire the radiograph. Intraoral images demonstrate the teeth and the supporting structures in detail. The 2 most commonly used intraoral radiographs, the periapical (PA) and bitewing radiographic examination types, provide clinicians with specific and different information concerning the health of the teeth.

Interproximal examination or bitewing examination is used to investigate to identify caries in the interproximal surfaces of the teeth on cross-sectional mediolateral views, showing the crown and root portion of the teeth in both arches (Fig. 1).

PA examination provides information on the cross-sectional mesiodistal view of the tooth and the surrounding structures. It presents the entire length of the tooth and the surrounding structures. Enamel, dentin, periodontal ligament space, and the lamina dura are clearly noted in each and every tooth due to their inherent differences in the densities. PAs typically show a 3-teeth to 4-teeth span in 1 arch only (Fig. 2).

Maxillary Anterior Anatomy

The median maxillary suture (median palatal suture) is a located between the 2 palatal (palatine) processes of the maxillae, extending from between the maxillary central incisors posteriorly.[1] A funnel-shaped widening at the

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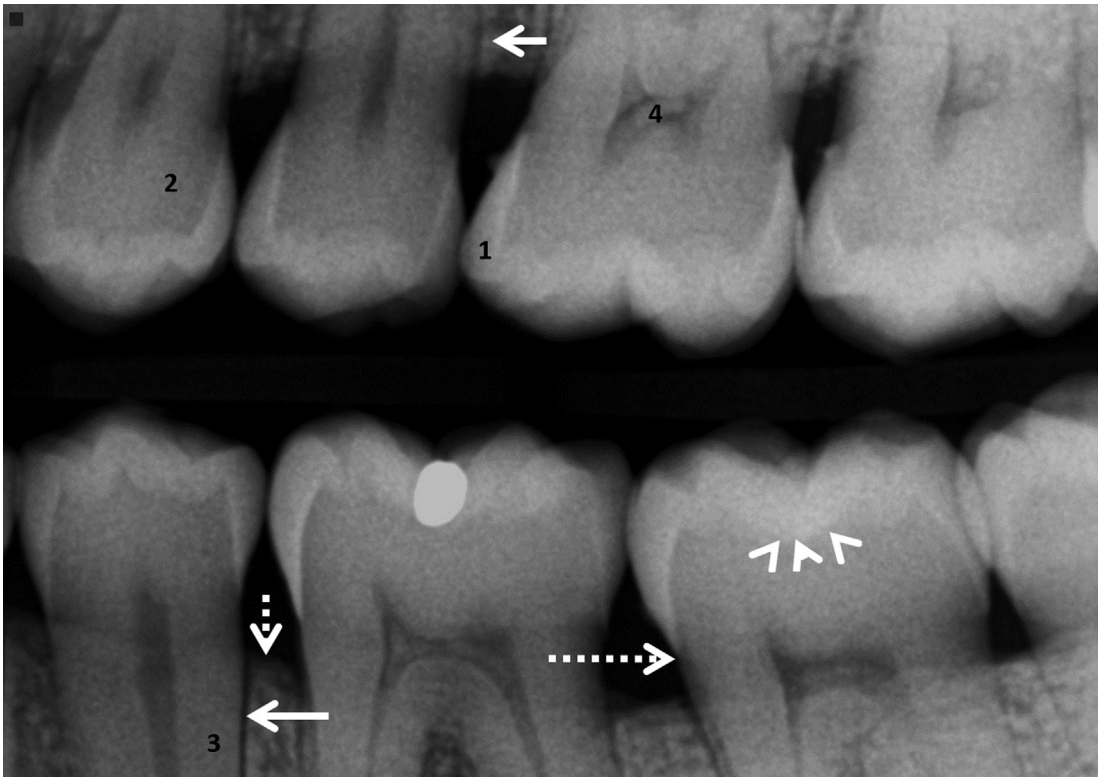

Fig. 1. Intraoral left molar bitewing radiograph labeled showing enamel (1), dentin (2), cementum (3), pulp (4), lamina dura (*short white arrow*), periodontal ligament space (*long white arrow*), crest of the alveolar bone (*short dotted arrow*), dentinoenamel junction (*arrowheads*), and cementoenamel junction (*long dotted arrow*).

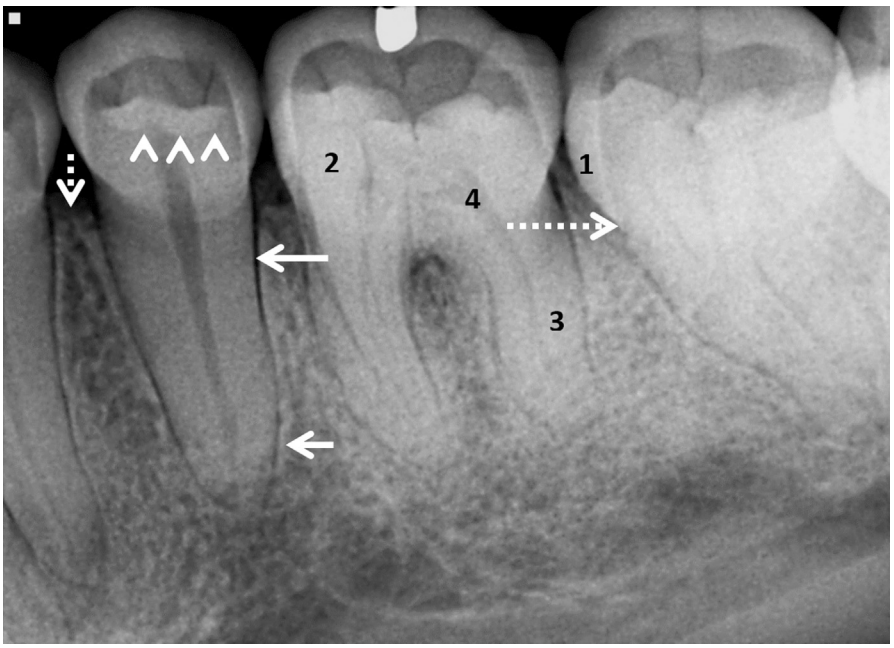

Fig. 2. Intraoral mandibular left molar PA radiograph showing the second premolar, first and second molars along with their periodontal structures. As shown in the bitewing radiograph, enamel (1), dentin (2), cementum (3), pulp (4), lamina dura (*short white arrow*), periodontal ligament space (*long white arrow*), crest of the alveolar bone (*short dotted arrow*), dentinoenamel junction (*arrow heads*), and cementoenamel junction (*long dotted arrow*) are shown in this radiograph as well.