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Imaging in oral diagnosis (part 1)

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The common imaging modalities in dentistry are plain film, cone beam computed tomography (CBCT), computer tomography (CT), contrast enhanced imaging, ultrasonography and magnetic resonance imaging (MRI).

Common plain films include intra-oral and extra-oral radiology.

Intro-oral radiography	Extra-oral radiology
Periapical radiographs	Panoramic view (Orthopantomagram)
Bitewing	Lateral oblique view
Occlusal films	Lateral cephalometric radiograph
	Transcranial/transpharyngeal radiograph
	Occipitomental view
	Postero-anterior (Skull/jaw) view
	Reverse Towne's
	Rotated poster-anterior
	Submento-vertex

Intraoral imaging helps with diagnosing dental diseases. An orthopantomogram (OPG) is often used for general reviews of teeth, the jaws and sinuses and mainly for survey. They provide evidence of gross pathology and disease. Skull and maxillofacial radiography such as occipitomental view, postero-anterior (Skull/jaw) view, reverse Towne's, rotated poster-anterior and submento-vertex may be required for the evaluation of fractures of the skull and maxillofacial skeleton, investigation of the antra, diseases affecting the skull base and vault and TMJ diseases.[1] CBCT provides 3D information and has become increasingly important as a low-radiation imaging technique with relative high resolution (Figure 1). The main indications may include implant dentistry, dental anomalies, inflammatory and degenerative diseases, cysts and tumours.[2] Authors highly recommend to obtain a formal CBCT radiographic report from a registered radiologist, as general dentist may not be sufficiently trained and knowledgeable to report or read the CBCT correctly.

Figure 1: CBCT

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Indication of CT, MRI and Ultrasound[1]

CT (Figure 2)	MRI (Figure 3)	Ultrasound
Investigation of bone or hard tissue pathology and tumour Tumour staging Assessment of fractures or implant	Assessment of intracranial or head and neck pathologies (Best for soft tissue lesions) Tumour staging	Investigation of soft swellings of head and neck region (e.g. salivary gland, lymph nodes, thyroid glands, other soft tissue lesions) Salivary calculi Ultrasound-guided fine-needle aspiration

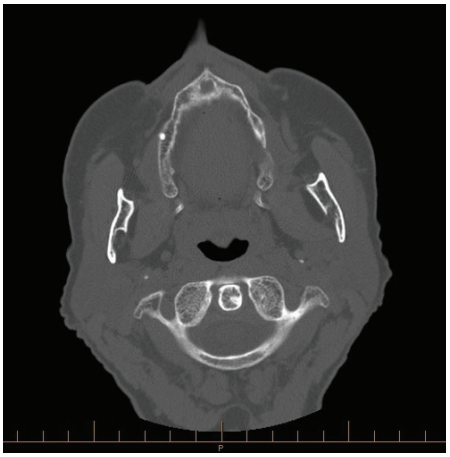

Figure 2: CT

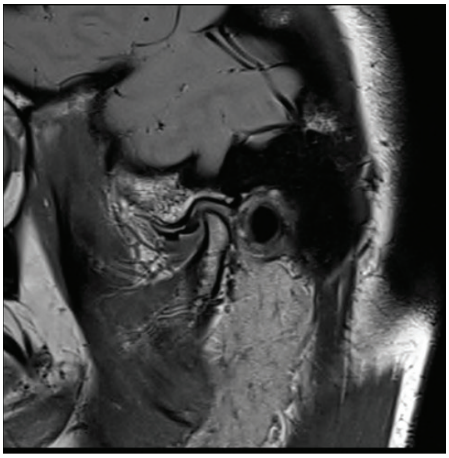

Figure 3: MRI

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1. Whaites E, Drage N. Essentials of dental radiography and radiology. Sixth edition ed. Edinburgh: Elsevier; 2021.
2. Caruso P, Silvestri E, Sconfienza LM. Cone beam CT and 3D imaging: a practical guide. Milan: Springer; 2013.