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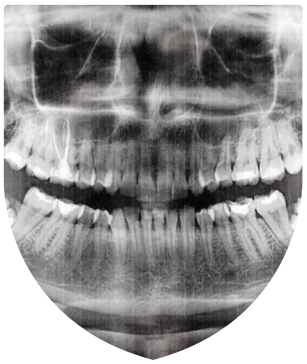
oral medicine

Common differentials in dental panoramic tomography (part 1)



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Dental panoramic tomography is one of the popular radiographic techniques in dentistry. The considerable improvements in image quality and dose reduction provided by modern panoramic radiography equipment are especially advantageous for children and adolescents. An orthopantomogram (OPG) is a panoramic single image radiograph of the mandible, maxilla, and teeth.

When requesting an OPG for a patient, the dental professionals should weigh the risks and advantages. To guarantee that the dosage to the patient (effective dose) is as low as possible, dental professionals should be aware of the hazards involved with dental imaging, make the most of the capabilities of modern dental imaging equipment, and adhere to all radiation safety guidelines.

Table 1. Common dental x-ray radiation dosage

Procedure	Approximate effective radiation dose[1]	Comparable to natural background radiation (2.4 mSv per year)[2]
Intraoral dental x-ray	1–8 µSv	~Few hours- 1 day
Cephalometric x-ray	2-3 µSv	~ Few hours
Panoramic x-ray	4-30 µSv	~1-5 days
Cone-beam computed tomography	50 – 100 µSv	~7-15 days

The main indication of OPG may include[3] (Figures 1-2)

1. General assessment/ Survey of the maxillofacial anatomy
2. Growth and development monitoring of maxillofacial complex
3. Evaluation of maxillofacial fracture of trauma
4. General evaluation for caries and periodontal disease
5. Dental anomalies
6. Impacted teeth
7. Infection
8. Tumours including metastases, cysts, foreign body and calcification (Stones)
9. Implant planning

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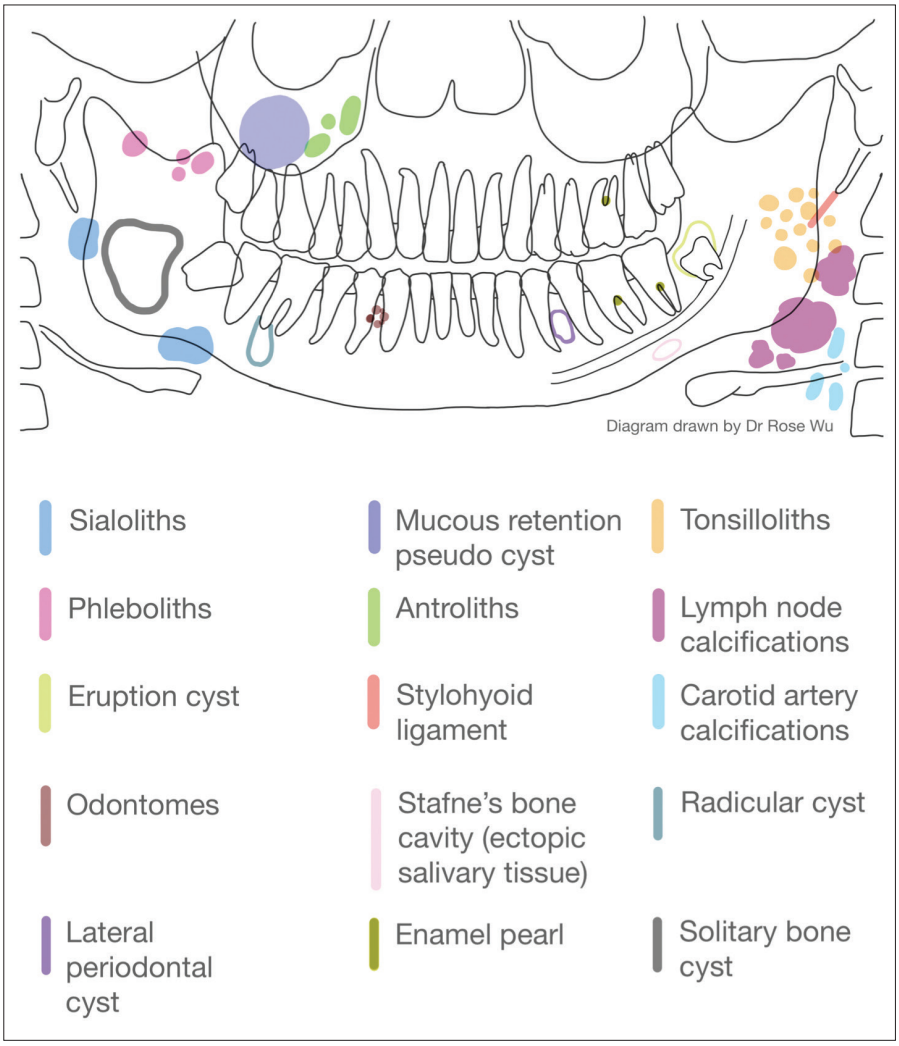

Figure 1: Diagram of common radiohraphic radioucencies and radiopacities on an OPG

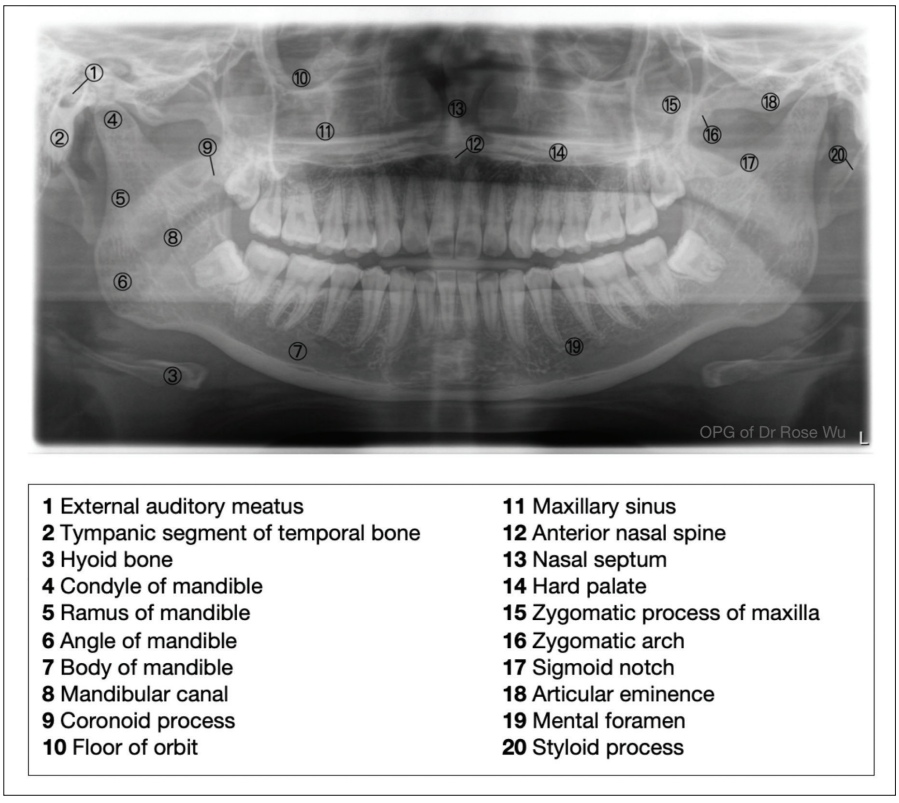

Figure 2: Anatomical features of an OPG[3]

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1. International Atomic Energy Agency. Radiation doses in dental radiology Vienna International Centre, Vienna, Austria: International Atomic Energy Agency; 2023 [cited 2023 01 August]. Available from: https://www.iaea.org/resources/rpop/health-professionals/dentistry/radiation-doses.
2. Ron E. Cancer risks from medical radiation. Health Phys. 2003;85(1):47-59.
3. Whaites E, Drage N. Essentials of dental radiography and radiology. Sixth edition ed. Ediniburgh: Elsevier; 2021.