INTERPRETING PANORAMIC RADIOGRAPHS FOR BEGINNERS

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Introduction

Panoramic radiography is widely used in dentistry and was considered a significant breakthrough as both jaws, together with the dentition, are imaged with a quick and straightforward procedure.¹ It has a wide variety of uses requiring broad coverage of the jaws, including traumatic fractures, impacted third molars, dental problems or bony diseases, evaluation of tooth development, temporomandibular joint pain and other anomalies.² Distinct soft tissue, bony landmarks from midfacial to the chin region as well as the teeth can be seen in the radiograph.³ Interpreting panoramic radiographs may be tricky especially for beginners, and this article will discuss the steps needed to read the wide sized black, white and grey images.

Step 1: Assess the quality of the radiograph

Only good quality radiographs can be used for diagnosing dental-related problems. Poor quality radiographs are mainly caused by poor patient positioning and when patient's tongue was not held against the palate.⁴ A dental student or a dentist should eyeball the panoramic radiograph making sure that the occlusal plane has a slightly curved arc, similar width of ascending ramus on both sides and a similar level of ghost shadow of the mandibular angle.⁵ All areas of interest from the condylar head to the chin should be included in the image and the maxillary dentition roots should not be superimposed on the hard palate. Living in the digital age, some enhancement can be done to improve the image quality of the panoramic radiograph to aid visual examination and diagnosis. This enhancement is usually done

by increasing the contrast and adjusting the brightness.⁴

Step 2: Know your normal anatomy

A good dentist should know the anatomy of the head and neck region by heart. Normal anatomy, double images, ghost images, and pathology must be categorised before formulating the diagnosis.^{2,5}

Step 3: View the radiograph in a sequenced, systematic approach

Several methods of reading the radiographs are described in the literature, either from left to right, top to bottom or spiral from outer border to the centre areas. A more preferred systematic approach for a beginner is the spiral method, with three swipes to cover the whole area. The first spiral begins at the right condyle, moving down along the border of the mandible and up to the left condyle. Then, move anteriorly assessing the left maxillary antrum, the hard palate, nasal area and right maxillary sinus. The second spiral begins at the right sigmoid notch area, then focuses on the periapical region of the mandibular teeth and continues with the periapical area of the maxillary teeth. The last part focuses on each tooth and alveolar bone area.⁵ A systematic approach is essential to ensure all areas are covered in your interpretation and diagnosis.

How to interpret the radiograph?

Once you have examined the radiograph thoroughly, and are able to identify normal anatomy, artefacts and pathology, another systematic approach in deducing the diagnosis is needed.⁶ Always compare the right side and the left side when an abnormality is detected because normal anatomic variation commonly occurs bilaterally.⁷

1. Describe the location of the lesion
2. Describe the internal structure of the lesion: radiopaque or radiolucent
3. Describe the size, shape and border of the lesion
4. Describe the effect of the lesion to the surrounding structures.

Once the four steps have been undertaken and have we ruled out that the area of interest is not a variation of normal anatomy, we can move to deducing the diagnosis of the lesion by categorising it into developmental or acquired pathology. Several categories of diseases include cysts, benign or malignant tumours, inflammation, bony dysplasias, vascular abnormalities, metabolic disorders or trauma.⁶ Always try to correlate the radiographic findings with clinical details to get the best differential diagnosis.

With the brief steps of a systematic approach on the interpretation of panoramic radiographs, hopefully, it this can be a guide for all beginners in describing a radiographic image and recording a probable differential diagnosis in the patient's notes. A lot of practice with this systematic approach will help boost confidence when interpreting radiographs.

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