X – RAY DEPARTMENT

Lecture 13 د. سـناء القصـاب

Panoramic imaging

Evaluation uses of panoramic images:

1. Gross caries
2. Alveolar bone height estimation
3. Overall bone pattern
4. Missing teeth not previously extracted
5. Mixed dentition development
6. Fractures as a result of trauma
7. General assessment ofcondylar morphology.
8. Systemic changes in the mandible or maxilla
9. Maxillary sinus assessment
10. Radiographic survey for implant site selection.

For areas must be addressed precisely if a diagnostic quality panoramic image is to be obtained these are:

Machine preparation

The radiographer must initially select the appropriate exposure factors, place of load a cassette into the machine and adjust the height of the machine to the final position. In machines that require the patient to sit, the chine rest and it's supporting arm must be moved or opened to allow the patient to enter the seat area, finally a sterile bite-pin must be placed into it's receptacle to assist in positioning the patient properly.

Patient preparation

The patient is asked to remove all eye wires, ear wires, prosthetic appliances, hearing aids and neck jewelry prior to being draped with a leaded apron covering both the front and back of the patient. The patient is then guided to the machine for final positioning.

Patient positioning

All panoramic machines use a bite-pin to position the patient's anterior teeth in the center of the preselected central image layer called the "zone of sharpness". Different machines may have different path movements in both the anterior and posterior regions of the dental arches. These newer generation machines allow the operator to label the name, positioning, exposure , and date information, other demographic information. Light guides for demographic anatomic landmarks or planes to assist in patient positioning. In general if the patient is positioned in any machine with the midsagittal plane perpendicular to the floor, and the anterior teeth centered in the focal trough according to the manufacturer's positioning guide lines or light-indicating devices.

Panoramic image obtained should be of acceptable diagnostic quality, free of artifacts and positioning errors. However, lack of proper training in patient positioning that results in the production of poor-quality panoramic films with one or more technique errors has led many clinicians to believe that the radiographs are inferior to other imaging method. Correct panoramic film can provide a significant amount of diagnostic information

Summary

Techniques designed to show a continuous view of one or both arches from 3rd molar to 3rd molar or from one T.M.J. to another. Source of radiation is placed intraorally or extraorally.

It can be very useful as a routine scanning produce and to take a general look but it can not provide the detailed information available from conventional intraoral or extraoral film. Conventional film must be used in a supplementary fashions in order to observe more critically entities uncovered by OPG "Orthopantomograph".

Panoramic radiograph is designed to show the presence or absence of teeth foreign bodies large are of osseous changes, fractures of jaws, periodontic condition evaluation. Implant purpose to see the amount of bone in the area of interest.

Advantages

1. It is simple procedure.
2. Convenient for the patient.
3. Can be used in patients with gagging problems.
4. Time required for the procedure is minimal.
5. Patient dose of x –ray is relatively low.
6. Panoramic radiographs taken for diagnostic purposes can also be useful as a visual aid in patient education.

Disadvantage

1. Overlapping of teeth, particularly in the bicuspid area.
2. It shows magnification, distortion and poor definition.
3. Artifacts are easily misinterpreted.
4. Spinal column may interfere with the production of the radiograph.
5. The anterior teeth register poorly when they have pronounced inclinations.

TABLE. Common Positioning Errors and Their Correction

Error Appearance	Cause	Correction
1. Blurred, distorted anterior teeth. Images of teeth are narrow.	Patient is positioned too far forward (closer to film than x-ray source).	Place teeth in slot or groove on bite-pin. Have patient stand very erect.
2. White shadow over anterior teeth and tooth distortion (narrow anterior teeth). Spinal column is also visible on sides of film.	Patient is slumped too far forward. Spinal shadow superimposes over teeth in midline.	As in #1, patient's head must be erect to "straighten" spine.
3. Blurred, magnified anterior teeth.	Patient is positioned too far back in machine, that is, toward the x- ray source.	Correction as in #1.
4. Teeth and structures on one side of film are larger than those on the other side.	Patient's head is rotated away from the enlarged side, bringing structures away from film and thus magnifying them.	Ensure that midsagittal plane—as determined by the light guide, is centered on the forehead and nose.
5. Exaggerated curve of Spee (smile line). Condyles are not ' visible at top of film. Hyoid bone superimposed over mandible. Lower anterior teeth blurred out of focal trough. Mandibular mentum area looks thickened or enlarged.	Patient's head or chin is tipped too far downward.	Ensure that ala-tragus line parallels the occlusal plane
6. Flattened curve of Spee. Condyles may be lost off of the sides of the film. Curve of Spee (or smile line) may actually appear to be reversed or curve downward.	Patient's head or chin is tipped too far upward.	As in #5.
7. Film appears tilted. Structures on one side of film are higher than on the other.	Patient's head is tilted or canted to one side.	Correct as in #4. Midsagittal plane should be perpendicular to the floor.