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- PROGRAMME : BS RADIOLOGY 6TH SEMESTER
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- SUBJECT :RADIOLOGICAL POSITIONING

❖ QNO. 1 :what is dental OPG? Describe the positioning and patient positioning in detail?

Ans :

Orthopantomogram :

OPG (Orthopantomogram) and Cephalogram are types of dental x-rays. An OPG produces a panoramic view of the jaw whilst a cephalogram is an x-ray of the facial structures. A lateral cephalogram produces a side profile image of the face, jaws and soft tissues to assess the relation of the teeth to the jaws, the jaws to the skull, and the relation of the soft tissues to the teeth and jaws .

Image technical evaluation :

Radiolucency over maxillary teeth

tongue not against the hard palate

Hard palate superimposed on roots, flat occlusal plane, condyles at the edge

Chin too high

Mandible is V-shaped, too much smile line

Chin too low

Unequal condyles, slanted mandible, distorted nasal structures

Head tilted to side

Teeth wide on one side and narrow on the other, condyle size asymmetry

Head turned to side

Anterior teeth blurry small and narrow, large amount of spine visible on edges

Too far forwards

Anterior teeth blurry and wide, ghosting of mandible and spine, condyles close to the edge

Too far backwards

Blurred image

Movement

Artefact

Earrings, hearing aids,

Piercing Patient position :

During an OPG the patient remains in a stationary position (seated or standing) while both the x-ray source and film rotate in combination around the patient. The x-ray source rotates from one side of the jaw, around the front of the patient, and then to the other side of the jaw.

Standing Position :

If patient is able to stand, have them stand erect without the spine being slumped.

If patient is seated, they should sit as upright as possible.

It helps to do a test run with the panoramic machine to make sure it will not hit the patient's shoulders.

Mouth position :

Patient needs to place maxillary/mandibular incisors correctly on bite block in order to achieve proper alignment of the teeth.

Most units have a notch in the bite block indicating the proper location for the patient to bite.

MI sagittal Plane :

The patient's head must be straight & not tilted.

The midsagittal plane must be kept perpendicular to the floor.

Frankfort Plane :

Keep the Frankfort plane parallel with the floor.

Tongue :

Instruct the patient to place their ENTIRE tongue on the hard palate and leave it there for the duration of the exposure.

Lips :

Instruct patient to keep their lips together for the duration of the exposure.

Eye :

Have patient close their eyes so they do not follow the movement of the tube head.

Practical points :

All jewelry, dentures, hearing aids and glasses should be removed. The patient should be positioned:

- sitting/standing completely upright

- head immobilized and on a chin rest
- biting down on a radiolucent bite block
- tongue against the hard palate.
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❖ QNO .2 : How will you scan a patient with lower back pain. Write a basic view of lumber-rays?

ANS :

LUMBAR SPINE – ANTERO-POSTERIOR

Position of Patient and Image Receptor

■ The patient lies supine on the Bucky table, with the median sagittal plane coincident with, and at right-angles to, the midline of the table and Bucky.

■ The anterior superior iliac spines should be equidistant from the tabletop.

■ The hips and knees are flexed and the feet are placed with their plantar aspect on the tabletop to reduce the lumbar arch and bring the lumbar region of the vertebral column parallel with the image receptor.

■ The image receptor should be large enough to include the lower thoracic vertebrae and the sacro-iliac joints and is centred at the level of the lower costal margin.

■ The exposure should be made on arrested expiration allowing the diaphragm to move superiorly. The air within the lungs would otherwise cause a large difference in density and poor contrast between the upper and lower lumbar vertebrae.

Direction and Centring of X-ray Beam

■ Direct the central ray towards the midline at the level of the lower costal margin (L3).

Essential Image Characteristics

■ The image should include from T12 down to the bottom of the sacro-iliac joints.

■ Rotation can be assessed by ensuring that the sacro-iliac joints are equidistant from the spine.

■ The exposure used should produce a density such that bony detail can be discerned throughout the region of interest .

LUMBAR SPINE – LATERAL

Position of Patient and Image Receptor

■ The patient lies on their side on the Bucky table. If there is any degree of scoliosis, then the most appropriate lateral position will be such that the concavity of the curve is towards the X-ray tube.

■ The arms should be raised and resting on the pillow in front of the patient's head. The knees and hips are flexed for stability.

LUMBAR SPINE – OBLIQUE

Position of Patient and Image Receptor

■ The patient is positioned supine on the Bucky table and is then rotated 45 degrees to the right and left sides in turn.

■ The hips and knees are flexed and the patient is supported with a 45-degree foam pad placed under the trunk on the raised side.

■ The image receptor is centred at the lower costal margin.

Direction and Centring of X-ray Beam.

❖ QNO.3 : A patient fell from the bike after hit by a car, has now complained of headache, what are the x rays prescribed for a skull ?

ANS : A skull X-ray is an imaging test use to examine the bones of the skull, including the facial bones, the nose, and the sinuses. See a Body Map of the skull. It's an easy, quick, and effective method that has been used for decades to help view the area that houses your most vital organ — your brain.

SKULL – OCCIPITO-FRONTAL 20 DEGREES↓

Position of Patient and Image Receptor

■ This projection may be undertaken erect or in the prone position (erect positioning described).

■ The patient is seated facing the erect Bucky, so that the median sagittal plane is coincident with the midline of the Bucky and is also perpendicular to it.

■ The neck is flexed so that the orbito-meatal baseline is

perpendicular to the Bucky. This can usually be achieved by ensuring that the nose and forehead are in contact with the Bucky.

Direction and Centring of X-ray Beam

■ The central ray is angled 20 degrees caudally and is aligned to the median sagittal plane.

■ A collimation field should be set to include the vertex of the skull superiorly, the region immediately below the base of the occipital bone inferiorly, and the lateral skin margins. It is important to ensure that the tube is centred to the middle of the Bucky.

Essential Image Characteristics

■ All the cranial bones should be included within the image, including the skin margins.

■ It is important to ensure that the skull is not rotated.

■ The petrous ridges should appear just below the inferior orbital margin.

SKULL – OCCIPITO-FRONTAL 30 DEGREES↑ (REVERSE TOWNE'S)

Position of Patient and Image Receptor

■ This projection is usually undertaken with the patient in the erect position and facing the erect Bucky, although it may be performed prone.

■ Initially, the patient is asked to place their nose and forehead on the Bucky table. The head is adjusted to bring the median sagittal plane at right-angles to the image receptor and so it is coincident with its midline.

■ The orbito-meatal baseline should be perpendicular to the image receptor.

Direction and Centring of X-ray Beam

■ The central ray is angled cranially so it makes an angle of 30 degrees to the orbito-meatal plane.

■ Adjust the collimation field, such that the whole of the occipital bone and the parietal bones up to the vertex are included within the field. Avoid including the eyes in the primary beam. Laterally,

the skin margins should also be included within the field.

❖ PAPER END.....