

①

LAILA KAMAL

ID 15292

Qnot: What is dental OPG, Describe the positioning and patient positioning technique in detail.

Ans: OPG (Orthopantomogram) and Cephalogram are type 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 tissue to assess the relation of the teeth of the jaws to the skull, and the relation of the soft tissues to the teeth and jaws.

OPG are commonly used during a general dental checkup but also conducted to monitor and diagnose:

②

- = Teeth (general review)
- = Teeth (cavities)
- = Teeth impaction
- = Fractures
- = Dislocation
- = Injection
- = Tumours
- = Sinuses

Dental x-ray are quick, painless, and expose the patient to a minimal amount of low-level radiation, whilst providing invaluable information to Dentists

Positioning:

OPG or panoramic single image radiograph of mandible, maxilla and teeth.

It is often encountered in dental practice and occasionally in the emergency department.

General dental health evaluation for caries or pulp origin disease.

trauma assessment for tooth or jaw fractures.

infection evaluation of sinusitis, periodontitis abscess.

(3)

- = Tumor or radicular cyst evaluation.
- = facial bone disease evaluation
- = foreign body localization
- = salivary stone identification

Patient position:

During OPG

- = Patient remain stationary position. (Seated or standing)
- = In both the x-ray source and film rotate in combination around the patient.
- = 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.
- = The film rotates opposite to the x-ray source behind the patient.
- = It take a few seconds during which the patient must remain completely still.

Technical factors:

- panoramic projection
- paused respiration
- centering point
- = Frankfort's horizontal line is perpendicular to the floor.

(4)

- Laser light will be vendor-specific however
 - = central laser light in the midsagittal plane.
 - = axial laser light at the OML
 - = lateral laser light at the lateral incisor.
- Orientation
 - = landscape
- Detector size
 - = open specific detector
- Exposure
 - = 70-80 kVp
 - = 8-15 mA over a number of seconds
- Grid
 - = yes.

Direction and centering of x-ray beam:

Anterior-posterior light should be centred distally to upper lateral incisor.

Allow optimal positioning of the focal trough the zone of focus outside which the anatomical detail becomes blurred.

(5)

Essential image characteristics:

- Correct anatomical coverage.
- Edge to Edge incisor
- No removable metallic foreign bodies.
- No evidence of movement or sharpness
- No evidence of positioning error. including rotation and errors within the occlusal plane
- Spinal shadow should be minimized.

Additional consideration:

problems can occur with producing an optimal image with this technique due to a number of factors including patient movement and positioning errors.

Cooperate and stay still for up to 20 seconds for successful examination to take place.

Ques: How will you scan a patient with lower back pain, write a basic view for lumbar x-rays?

Ans: Position of patient and IR:

- The patient lies supine on the Bucky table, with the median sagittal plane coincident with, and the right-angled to, the midline of the table and bucky.
- The anterior superior iliac spines should be equidistance from the tabletop.
- The hips and knees are flexed and the feet are placed with their planter aspect on the tabletop to reduce the lumbar arch and bring the lumbar region of the vertebral column parallel with a image receptor. The image receptor should be large enough to include the lower thoracic vertebrae and the sacro-iliae joints and is centered at the level of the lower costal margins.

(7)

The exposure should be made made on arrested expiration allowing the diaphragm to move superiorly.

Direction of centering x-ray beam.

Direct the central ray towards the midline at the level of the lower costal margin.

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 equidistance from the spine.

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

8

An x-ray is a useful test for many conditions. It can help your doctor understand the cause of chronic back pain or view the effects of injuries, diseases and infection. Your doctor may order a lumbar spine x-ray to diagnose.

Birth defect the effect the spine injury or fracture to the lower spine.

lower back pain that is severe or lasts for more than four to eight weeks.

Osteoarthritis, which is arthritis affecting the joints.

Osteoporosis, which is a condition that causes your bones to thin, abnormal curvature or degenerative changes in your lumbar spine, such as bones spurs

Cancer.

(9)

Q no. 3. Patient of old age come in the department with a complain of knee pain. What view should be done?

Position of patient and Image Receptor

- For Computed radiography (CR), an 18x24-cm image receptor is generally used.

- The patient is either supine or seated on the x-ray table, with both legs extended.

- The affected limb is rotated to centralize the patella between the femoral condyles, and sandbags are placed against the ankle to help maintain this position.

The image receptor should be in close contact with the posterior aspect of the knee joint, with its central level with the upper borders of the tibial condyles.

Direction and Centring of X-ray Beam

Centre 2.5 cm below the apex

of the patella through the joint space, with the central ray at 90 degrees to the long axis of the tibia.

Essential Image Characteristics

= The patella must be centralized over the femur.

= The distal third of femur and proximal third of tibia are included.

Additional Considerations

= This projection can also be undertaken in the erect position (weight bearing).

Q4: A patient fell from the bike after being hit by a car. has now complained of headache, what are the x-ray prescribed for a skull.

Doctor prescribe

First doctor prescribe the skull x-ray.

Skull AP & Horizontal lateral the according to x-ray result then doctor prescribe CT & MRI if necessary.

The patient fell from bike and hit by car the doctor prescribe the x-ray

Two x-ray named

1) Skull AP

2) Skull horizontal Ray lateral

A when the doctor see the x-ray result then doctor prescribe the CT and MRI if both are necessary.

(12)

Qnos: @ How you see the importance of setting kVp and MAS in your x-ray machine.

Ans: kVp is the peak potential applied to the x-ray tube, which accelerates electrons from the cathode to the anode in radiography or computed tomography. Tube voltage is kV in. determines the quantity and quality of the photons generated. kVp control the property called "radiographic contrast" of an x-ray image (the ratio of transmitted radiation through regions of different thickness or density). Each body part contains a certain type of cellular composition which required an x-ray beam with a certain kVp to penetrate it.

~~MAA~~

mAs: The mAs (milliamper seconds) determines the number of x-ray produced per unit time and the number of x-rays reaching the film determines the degree of blackening of the film.

The type of film or screen system being used. increasing kVp increasing the penetrating power of the x-ray beam.

The first experiment showed when the film density is kept constant, the higher the kVp the lower the resolution and image contrast percentage also. the higher the mAs the higher the resolution and image contrast percentage.

(b) About the positioning and technique of pelvic x-ray.

Pelvic (AP View)

The AP pelvic is part of a pelvic series examining the iliac crests, sacrum, proximal femurs, pubis, ischium and the great pelvic ring. It is of the considerable importance in the management of severely injured patient presenting to the emergency Department.

Patient position:

Patient is supine
lower limb are internally rotated 15-25° from the hip (do not attempt this if a fracture is suspected).

Technical factors:

AP projection

Centering point

The midpoint of the anterior superior iliac spine and the

pubic symphysis.

= Collimation

laterally to the skin margin

= superior to above the iliac crest

= inferior to the proximal third
of the femur.

= Detector size

35 cm x 43 cm

= Exposure

70-80 kVp

20-30 mAs

= SID

100 cm

Technique:

= Entirely of the bony pelvis
is imaged from superior
of the iliac crest to the
proximal shaft of the femur.
Obturator foramina appear equal
iliac wings have a equal
concavity

Greater trochanter of the
proximal femur are in
the profile.

Essential image characteristics:

iliac crests are proximal femora,

including the lesser trochanters.

should be visible on the image

No Rotation - The iliac bones and

obturator foramina should be the

same size and shape

Additional consideration:

At first visit and trauma cases,

gonadal protection is usually omitted

however local protocols can vary

it is used on follow up images