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**Paper radiological positioning**

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**Exam Final Term**

**Q NO1: What is dental OPG? Describe the positioning and patient positioning technique in detail?**

**Ans:- Dental (OPG):-** OPGs are commonly used during a general dental checkup, but can also be conducted to monitor and diagnose GENRAL VIEW, cavities ,impaction ,fractures, dislocation, infection, tumors , sinuses.

**Positioning :-**

* **position :-** 
  + during an OPG the patient remain in the stationary position
  + the x-ray source film and cassette rotated in combination of around the patient
  + The x ray source rotated from one side of the jaw around the front of the patient. And then to the other side.

**Technique:-**

* **Panoramic projection:-**
  + The cassette will be rotated for the complete image.
* **Paused respiration :-**
  + Breathing will be paused for the remove of image bluer.
* **Centering point :-**
  + Central laser light in the midsagittal plane
  + Axial laser light at the IOML
  + Lateral laser light at the lateral incisors.
* Detector size:-
  + Specific OPG detector.
* **Exposure** 
  + 70-80 KVP.
  + 8-15 ma over a number of second
* **Collimation**
  + A narrow vertical slit diagram is attached to the x-ray which provided the collimation.

**QNO2: How will you scan a patient with lower back pain .write a basic view for lumber X-rays?**

**Ans:-**For the patient which have the lower back pain we have made lumber spine x-ray at two view which is basic view of for the lumber spine.

1. Lumber spine AP
2. Lumber spine LATERAL

**Basic view for lumber vertebra:-**

1. **Antero-posterior (AP):-**

* **Position of patient and cassette :-**
  + The patient ling supine on the Bucky table with the median sagittal plane coincident with and at right angle to the midline of the table.
  + The anterior superior iliac spine should be equidistance from the tabletop.
  + The hip and knee are flexed.
  + The cassette will be large enough to include the lower thoracic vertebrae and sacro-iliac joint.
  + The expose should be made on arrested expiration.
* **Centering :-**
  + Center ray toward the mid line at level of the lower coastal margin.
* **Image characteristic :-**
  + The image should include from T12 down, to include all of the sacro-iliac joints.
  + Radiation can be assessed by ensuring that the sacroiliac joints are adjusting from the spine
* **Radiological consideration :-**
  + The presence of intact pedicles is an important sign in excluding metastatic disease. Pedicles are more difficult to see on an underexposed or rotated film.
  + Same like thoracic vertebra.
* **Common faults:-** 
  + The most common faults is to miss some or all of the sacroiliac joint

1. **Lateral basic**

* **Patient position :-**
  + The patient lies on either side on the Bucky table.
  + The arms should be raised and resting on the pillow in front of the patient’s head.
  + The coronal plane running through the center of the spine should coincide with, and be perpendicular to, the midline of the Bucky.
  + The cassette is centered at the level of the lower costal margin
  + The exposure should be made on arrested expiration.
* **Centering:-**
  + Direct the central ray at right-angles to the line of spinous processes
  + And towards the anterior third lumbar spinous process at the level of the lower costal margin.
* **image characteristics:-**
  + The image should include T12 downwards, to include the lumbar sacral junction.
  + The projection will produce a clear view through the center of the intervertebral disc space, with individual vertebral endplates superimposed.
  + The imaging factors selected must produce an image density sufficient for diagnosis from T12 to L5/S1, including the spinous processes.

**QNO3: Patient of old age came in the department with a complaint of knee pain, what view should be done?**

**Ans: -** For old age patient which have complaint of knee pain we have to done the knee basic x-ray which is

* Knee anterior posterior
* Knee lateral

1. **Knee anterior posterior (AP)**

* **Patient position :-**
  + The patient is either supine or seated on the X-ray table, with both legs extended
  + The cassette should be in close contact with the posterior aspect of the knee joint
* **Centering:-** 
  + Centre 2.5 cm below the apex of the patella through the joint space,
* **image characteristics:-**
  + The patella must be centralized over the femur.

1. **Knee lateral :-**

* **patient Position**
  + The patient lies on the side to be examined, with the knee flexed at 45 or 90 degrees
  + The other limb is brought forward in front of the one being examined and supported on a sandbag.
  + A sandbag is placed under the ankle of the affected side to bring the long axis of the tibia parallel to the cassette.
  + The position of the limb is now adjusted to ensure that the femoral condyles are superimposed vertically.
  + The center of the cassette is placed level with the medial tibia condyle.
* **Centering :-** 
  + Centre to the middle of the superior border of the medial tibial condyle, with the central ray at 90 degrees to the long axis of the tibia.
* **image characteristics:-** 
  + The patella should be projected clear of the femur.
  + The femoral condyles should be superimposed.
  + The proximal tibio-fibular joint is not clearly visible.

**QNO.4 a patient fell from the bike after being hit by a car, has now complained of headache, what are the x-rays prescribed for a skull.**

**Ans: -** when a patient fall from bike and complained of headache we have to perform skull basic view which is

* Skull anterior posterior (AP)
* Skull horizontal ray lateral (L)
* Skull submentovertex
* Skull Townes.

1. **Skull anterior posterior (AP):-** 
   * **Patient position :-** 
     + The patient is ling supine on the Bucky table with posterior aspect of skull resting against the image receptor.
     + The head is adjust to being the medium sagittal plane at right angle to the image receptor and coincident with its midline
     + All the cranial bones should be included within the image include the orbital baseline should be perpendicular to the image receptor.

* **Centering :-**
  + The central ray is angled 30 degree cranial and directed to the image receptor
* **Collimation :-**
  + A collimation field should be set to include the vertex of the skull superior
  + The base of the occipital bone inferiorly and the lateral skin margin
* **Image characteristic :-**
  + All the cranial bones should be included with in the image included the skin margins.
  + It is important to ensure that the skull is not rotated

1. **Skull lateral:-**

* **Patient position :-** 
  + The patient facing the erect buky and the head is then rotated such that the medium sagittal plane is parallel to the buky and the internal orbital line perpendicular to it.
  + The shoulder may be rotated slightly
  + Position that image receptor transverse in that erect Bucky
* **Centering:-**
  + The x-ray tube should have been center previously to the Bucky
  + Adjust the height of the buky
  + Center midway between the glabella and the external occipital protuberance to point of 5cm superior to the external auditory mature.
* **Image characteristic :-**
  + Image should contain all of cranial bones and the first cervical vertebra
  + A true lateral will result in perfect superimpose of the lateral portion of the floors of the interior cranial fossa and those of the posterior cranial fossa

**QNO.5 A) How you see the importance of KVP and MAS settings in your x-ray machine.**

**Ans: -** importance of KVP and MAS in x-ray machine:-

1. **KVP:- (kilovolt peak )**

* It is the peak potential applied to the x-ray tube
* It accelerate electron in x-ray machine from cathode to anode.
* The tube voltage in turn determine the quantity and quality of photon generator

1. **MAS:- (mile ampere second )**

* It is move commonly known is MAS.
* It is major of radiation procedure.
* It is directly influence the radiographer density and all other factor are constant
* When increase the MAS so high production of electron are inside the x-ray tube.

**B) Write about the positioning and technique of pelvic X-ray.**

**Ans: -** **pelvis (AP):-**

* **Patient position :-** 
  + The patient lies supine with their median sagittal plane perpendicular to the table top
  + The mid line of the patient must be coincide with the center primary beam and table Bucky mechanism.
  + To avoided pelvis rotation the interior superior iliac spine must be equidistance from the table top.
  + The limbs are slightly abducted and internally rotated to bring the femoral necks parallel to the image receptor.
* **Centering :-**
  + Centre in the midline with a vertical center beam to the center of the image receptor.
  + The center of the image receptor is pleased midway between the upper border of the symphysis pubis and interior superior iliac spine for the hole of the pelvic and proximal femora
  + The upper edge of the image receptor should be 5cm above the upper border of the iliac crust to compensate for the divergent beam and to ensure that the hole of t5he bony is included.
* **Image characteristic :-**
  + Iliac crust and proximal femora including the laser trochanters should be visible on the image
  + No rotation.
  + The iliac bone and obturator foramina should be the same size and shape

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