**IQRA NATIONAL UNIVERSITY**

**DEPARTMENT OF ALLIED HEALTH SCIENCES**

**Final-Term Examination (spring -20) (BS. Radiology)**

**Course Title: Radiological positioning Instructor: Atoofah Azmat**

**Time: 360 mins Max Marks: 50**

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

**Ans: OPG:**

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 structure. A lateral Cephalogram produces a side profile image of the face , jaws and 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.

**Patient positioning :**

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.

**Technical factors:**

1. Panoramic projection
2. Paused respiration
3. Centering point

Frankfort’s horizontal line is perpendicular to floor

Laser light will be vendor- specific however

central laser light in the midsaggital plane

axial laser light at the IOML

lateral laser light at the lateral incisor

1. Orientation

landscape

1. Detector side

OPG specific detector

1. Exposure

70-80kvp

8-15 mA over a number of seconds

**Techniques:**

this techniques create panoramic image that should include the lower limits of the mandible, the upper limits of the maxillary sinuses, and the mandibular candyles and tamporomandibular joints laterally . panoramic image limitations include inherent anatomy distortion , double images, ghost images and don’t provide spatial relationship between structures.

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

**ANS :: Lumbar supine :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 mid line of the table and Bucky . The hip and knees are fixed and the feet are placed with their planter aspect on the table top to reduce the lumber arch and bring the lumber region of the vertebral column parallel with the image receptor. The exposure should be made on arrested expiration allowing the diaphragm to move superiorly .The air within the lungs would otherwise cause a large different in density and poor contrast between the upper and lower lumbar vertebrae .

 **DIRCTION AND CENTERNING OF X RAY BEAM :**

Direct the central ray towards the midline at the level pf the lower costal margins.

**BASIC VIEW OF LUMBAR X\_RAY** :

An x-ray is useful test for many condition .it can help your doctor to understand the cause of chronic back pain are view the effect of injuries ,disease or infection your doctor may order a lumbar spine x\_ ray to diagnose .

 **‘birth defect that affect the spine**

 **injury are fracture to the lower spine**

 **lower back pain that serve are lasts for more then four to eight weeks ,**

 **Osteoarthritis which arthritis affect the joint**

**Osteoporosis which is condition the cause our bone to thin**

 **abnormal curvature or degenerative change in our lumbar spine ,such as bone spurs**

 **cancer.**

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

**Ans: knee- Antero-posterior:**

Position of Patient and Image of Receptor :

* For computed radiography (CR) , an 18in to 24cm image receptor is generally used.
* The patient either supine or seated on the x-ray table, with both legs extended.
* Tye affected limb is rotated to centralize the patella between the femoral condyles,and sandbags are placed against the ankles to help maintain this position.
* The image receptor should be in close contact with the posterior aspect of the knee joint, with its centre level with the upper borders of the tibial condyles.

**Direction and Centring of X-Ray Beam:**

* Centre 2.5 below the apex of the patella through the joint space, with ther 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:**

* The projection can also be undertaken in the erect position (weight bearing).

**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 fell down from bike being hits by ear then comes to doctor.

The doctor tell the patient to perform skull x-ray prescribed first. Then the patient perform skull x-ray and skull horizontal ray lateral.

After the x-ray result the doctor should decide the patient to perform MRI and CT scan are needed or not.

A skull x-ray is an image test doctor use to examine the bones of skull to see the body map of skull.

 Its very easy method to decode to help doctor view .The tone view angled is AP Radiograph of skull used to evaluate the fracture.

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

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

**ANS . KVP:**

KVP is he peak potential applied to the x-ray tube which accelerates electron from cathode to anode in radiography or computed tomography .the voltage in turn determine the quantity and quality of the photons generated .An increase in kVP extends and intensifies the x-ray emission spectrum .such that the maximal and average /effective energies and higher the photon number /intensity is higher .

Along with MAS and filtration KVP is one of the primary setting that can be adjusted on X-ray machine to control the image quality and dose.

**MAS :**

Milliamp ere-seconds more commonly known aas MAS measure of radiation produce over a set amount of time via an x-ray tube .it directly influence the radiographic density ,when all other factor are constant.

**Positioning and technique of pelvic x-ray**

The AP view is a part of pelvic series examine the iliac crest sacrum ,proximal femur ,pubis ,ischium and the great pelvic ring .It is of considerable importance in the management of severely injured patients presenting to emergency departments.

**Patient position :**

* Patient is supine
* Lower limbs are internally rotated 15\_25 degree from hip

**TECHNICAL FACTORS:**

* **AP projection**
* **Centering point**

the midpoint of anterior superior iliac supine and the pubic symphysis

* **Collimation**

literally to the skin margins , superior to above the iliac crests , inferior to the proximal third of the femur

* **Orientation :**

landscape

* **Detector size:**

35cm to 43 cm

* **Exposure :**

70 -80 kVp

* **SID :**

100cm