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FINAL TERM

SUBJECT : Radiological

Positioning :

Q1:

What is dental OPG? describe the positioning and patient position?

ANSWER :

• DENTAL 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

OPGs are commonly used during a general dental check-up, but can also be conducted to monitor and diagnose:

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

PATIENT POSITION :

- Any bulky clothing and radio-opaque object such as jewellery should be removed from the imaged area
- The equipment is brought to the start position and careful explanation is given to the patient.
- A 15 x 30 cm image receptor is used.

- The patient walks into the machine, holding the handles and adopting a 'skiing' position
- The head is tilted downwards and the machine height adjusted to allow the patient to bite into the bite block, with upper and lower incisors within the grooves.
- The chin should be placed on the rest
- Ensure the patient is not rotated by ensuring the sagittal plane light runs down the middle of the face.
- The patient is asked to place their tongue on the roof of their mouth to reduce the air shadow
- The exposure is taken.
- Observe the patient carefully.

CENTRING OF THE X-RAY BEAM :

The antero-posterior light should be centered distally to the upper lateral incisor.

IMAGE CHARACTERISTICS

- Correct anatomical coverage.
- There should be good contrast and density between the enamel and dentine
- Edge to edge incisors
- No removable metallic foreign bodies
- No evidence of movement unsharpness.
- The spinal shadow should be minimized
- The air shadow at the roof of the mouth should be minimized, if tongue was placed correctly.

Q2:

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

ANSWER:

KNEE - ANTERO-POSTERIOR

POSITION OF THE PATIENT

- For computed radiography (CR), an 18×29 cm image receptor is generally used.
- The patient is either supine or seated on the x-ray table.
- Legs extended.
- The affected limb is rotated to centralize the patella between the femoral condyles.
- 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.

CENTRING OF X-RAY BEAM :

Centre 2.5cm below the apex of the patella through the joint space, with the central ray at 90 degrees to the long axis of the tibia.

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)

KNEE - LATERAL

POSITION OF PATIENT :

- 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 examined and supported on a sandbag.
- A sandbag is placed under the ankle of the affected side to bring the knee axis of the tibia parallel to the image receptor.
- The position of the limb is now adjusted to ensure that the forward condyles are superimposed vertically.
- The centre of the image receptor is placed level with the medial tibial condyle.

CENTRING OF X-RAY BEAM :

- 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 stable.

Q:3

How will you scan a patient with lower back pain. write a basic view for lumbar X-rays?

ANSWER:

LUMBER SUPINE X-RAY

An X-ray is a useful test for many conditions. It can help your doctor understand the cause of chronic back pain. Doctor may order a lumbar spine X-ray to diagnose.

- Birth defects that affect the spine
- Injury or fracture to the lower spine
- low back pain that's severe or lasts for more than four to eight weeks

- Osteoarthritis, which is arthritis affecting the joints
- Osteoporosis, which is a condition that cause your bones to thin
- Abnormal curvature or degenerative changes in your lumbar spine, such as bone spurs
- cancers.

LUMBER SPINE-ANTERO-POSTERIOR .

POSITION OF PATIENT :

The patient lies supine on bucky table, with the medial 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.
- The image receptor should be large enough to include the lower thoracic vertebrae and sacro-iliac joints.
- The exposure should be made on arrested expiration allowing the diaphragm to move superiorly.

CENTRING OF X-RAY

BEAM :

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

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.

Q4: (A)

Write about the positioning and technique of pelvic x-ray.

ANSWER:

PELVIS - ANTERO-POSTERIOR

POSITION OF PATIENT:

- The patient lies supine with their median sagittal plane perpendicular to the tabletop.
- The midline of the patient must coincide with the centred primary beam and table Bucky mechanism.
- To avoid pelvic rotation, the anterior superior iliac spines must be equidistant from the tabletop.
- The limbs are slightly abducted and internally rotated to bring the femoral necks parallel to the image receptor.

CENTRING OF X-RAY

BEAM:

- Centre in the midline, with a vertical beam to the centre of the image receptor.
- The centre of the image receptor is placed midway

between the upper border of the symphysis pubis and ~~also~~ anterior superior iliac spine for the whole of the pelvis and proximal femora.

Image characteristics:

- Iliac crests and 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.

CONSIDERATIONS:

- At first visit and trauma cases, gonad protection is usually omitted, local protocol can vary. It is used on follow-up images.

Q4: (B)

How you see the importance of kVp and mAs settings in your x-ray machine?

ANSWER :

Tube voltage, determines the quantity and quality of the photons generated. Along with the mAs (tube current and exposure time product) and filtration, kVp (tube voltage) is one of the primary settings that can be adjusted on x-ray machines to control the image quality and patient dose.

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

film or screen system being used.

kVp : Increasing kVp increases the penetrating power of the x-ray beam. kVp controls the property called "radiographic contrast" of an x-ray image. Each body part contains type of cellular composition which requires an x-ray beam with a certain kVp to penetrate it.

Q5:

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

ANSWER:

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

Headache and head trauma are common presenting problems in both primary care and the Accident and Emergency department. Plain skull x-ray (SXP) films (plain skull films) have largely been superseded by CT scanning or MRI scans in the context of both headaches and head injuries.

This is also true in
paediatric patients.