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Paper # Positioning

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Q1:- Dental OPG:-

Ans:-

Dental OPG:- OP G means (Orthopantomogram) is a type of Dental x-ray.

→ OPG produce a panaromic view of the jaw.

Equipments of OPG:-

A Specialized x-ray machine is used in dental OPG examination, Part of machine rotate around the patient Head.

OPG Use:-

→ teeth general view
→ teeth impaction
→ teeth cavities
→ fracture
→ Dislocation, infection, tumor and sinuses.

Position of Patient:-

First of All make sure to

remove the jewellery, dentures or hearing aide from the area which is imaged.

And any other radiopaque objects must be removed.

→ The procedure should be explained to patient clearly and the

Machinery brought never to start position.

→ Then the patient walked into the machine holding the handle and adopting 'Sking Position'.

→ The Head downward tilted to parallel the frankfort plane with and the machine hieght adjusted to allow the Patient to bite the bite block, with upper and Lower incisors within the groves

→ Jhes should be placed on the rest, with close lips and eye.

→ instruct the patient to not rotate and ensure the light at the middle of face then close the head restraints.

→ Asked the patient to hold the tongue and press behind at the palat, to reduce the air shadow and keep for 20 second.

→ Radiograph is taken in carfuly Patient observation.

image Receptor:- Normaly 15×30 cm IR is used but new equipment is utilized for Direct Radiography.

Techniques:-

Maintain anatomical coverage which include the entire mandible and tempero-mindible joint.

- Ensure good contrast densities between enamal and dentine
- edge to edge incisors
- No evidence of movement unsharpness and positioning error.
- Reduce spine shadow
- Tongue should be correctly placed at hard palate
- Eye and lips should be closed during exposure.

Additional Considerations:-

Number of factor cause error in this technique e.g Patient movement and positioning error

Q2:- Patient scan:- With Lower back Pain!-

Back Pain Can be excruciating. So It seems that Setting on x-ray table or CT-scan or MRI to find cause should be a good idea.

So we will scan the Patient Lower back with MRI - x-ray CT-Scan.

Lumber Spine:-

Antero- Posterior:-

Position of Patient:-

First of All Patient lying on supine position on the Bucky table.

→ Idealy Spinal imaging should be taken erect in setting of non trauma to give Functional overview of Lumber spine-

→ All image of Patient with suspected Spinal injury must occur in the supine position without moving the patient.

→ Patient will be with mid Sigittal plane at right Angle

→ The Superior Iliac Spine will be equidistant from the table top.

→ Hip and knee will be flexed.

→ Feet will be in planter aspect

→ Lumber region of Vertebral Colum will be in parallel with the image Receptor.

→ In Spine Position the hand are place by Patient's Sicle

image Receptor:- The image Receptor Should be lage enough to cover the Thoracic Vertebrae and Sacro-Iliac joint.

→ At the centre of the level

of lower costal margin.

Direction and Centring of X-ray Beam:-

→ Central ray directed toward midline at level of lower costal margin.

Essential Image Characteristic:-

→ Image will be include from T12 down to bottom of Sacro-Iliac Joints.

→ Exposure should be produce a density such as the bony detail.

→ Rotation can be assessed by ensuring that Sacroiliac joint are equidistant from

the Spine.

Collimation:- Superiorly to include T_{12}/L_1 function.

Detector Size:-

35cm x 43cm

Exposure

70 – 80 kvp

→ 40 – 60 mAs

SID:-

110 cm:-

(2) Lumber Lateral View:-

Patient Position:- The Patient Position is erect, Supine or Lateral or the Patient lies on their side on bucky table.

→ In Lateral Position So that humeri are extended to 90°

To Thoracic.

→ Elbow will be flexed. So that forearm are parallel to thorax.

→ The arm should be raised and resting of pillow in front of the patient head.

→ Hip and knee are flexed for stability.

image receptor:- The image Receptor is centered at the level of lower costal margin.

Direction and Centring:-

→ Central ray directed at right angle to line of spinous process toward a

a Point 7.5cm anterior to third Lumber Spinous Process at level of costal margin

Essential Characteristics:-

The image must be include T12 downword to include the Lumber Sacral Junction.

→ Protection produce will be clearly view through the centre of intervertebral disc spaces

→ anterior and Posterior margin of Vertebral column will be superimposed.

Their some factor which is follow.

Collimation:- superiorly include the T12 inferiorly include Sacrum

Detector Size:-
35cm x 43cm

Exposure:-
70-80 kvp
60-80 mAs

SID:-
minimum SID will be 110cm

3) Lumber Spine:-

oblique view:-

Patient Position:-

→ The Patient Position Supine on bucky table

→ Rotated at 45° to right and left Side.

→ Hip and knee will be flexed.

→ 7. Pad is Placed at 45° To support the Patient.

Image Receptor:-

→ It is directed towards the midclavicular lies on raised side vertically at the level of lower costal margin

Essential Characteristics:-

→ Posterior elements of vertebrae are aligned in such a way to show the classi scotting clog appearance.

There are some factor which is follow.

Collimation:- superiorly include T12/L1 inferiorly include sacrum same as above.

Q3 :- An old Patient came in the depertment with a Complaint of knee Pain, ~~what~~ The follow x-ray will be taken-

Knee- AP:-

Position of Patient and image receptor:-

Patient Position:-

Patient is supine on the table with the knee and ankle joint in contact with table

→ Leg ~~will be~~ should be extended

→ ensure the knee is not rotated.

→ The limb should be rotated to centralize the Patella between the femoral condyles

→ To maintain this position sandbages are placed ~~and~~ against the ankle.

Image receptor:-

18x24 image receptor is generally used for CR.

Detector Size:-

24cm x 30cm

SID

100cm

No grid will be use.

→ The Posterior aspect of the knee joint Should be in contact with ~~knee joint~~ image receptor.

Direction and centring x-ray Beam-

centre the x-ray Beam ~~below~~ 2.5cm below the Apex of the Patella through the joint space.

→ And central ray should be 90° to the long axisis of the tibia.

Essential image characteristics:-

→ The Patella Should be centralized over the femur.

→ Both Proximal and distal third

of femur should be include.

Additional consideration:-

→ it can be also taken in erect position.

~~left~~

② Knee lateral:-

Patien Position laying the Patient on the side of interest with the knee of interest closest to the table And Anteriorly rolled the other lower limb.

→ Slightly ~~-~~ flexed the ~~knee~~ affect knee to ~~30°~~ 45 to 90° to the best of Patient ability.

→ Support the other limb with Sand bags-

→ To bring the long axis of the tibia Parallel to the image receptor placed the sand bag under the affected side of the knee.

Collimation:-

To include the distal fem

Collimate it to Superior

→ No grid will be use.

→ Detector size
35cm x 43cm.

Direction and Centring of x-ray Beam:-

→ Centre the x-ray beam to the middle of superior border of the medial tibial condyle

→ And the central ray at 90° to the long axis of the tibia.

Essential image characteristics:-

→ The patella should be projected clear of the femur.

→ The femoral condyles must be superimposed.

→ The proximal part of the tibio-

Fabular joint is not clearly visible.

Additional Consideration:-

→ To superimpose the femoral condyles A 3°-to 5° cranial tube can help sometime.

→ Over rotation:- Fibula is protected too posteriorly.

→ Under rotation:- fibula head is hidden behind the ~~fibula~~ tibia.

Q4:-

Ans:- A Patient fell from the bike after being hit by a car has now complained of Headache The x-ray prescribed for a skull is

(1) Occipito-Frontal 30 degrees

(2) Lateral Erect

(3) Fronto-occiptal 30 Degree ↑ (Supine / Trolley)

These are x-rays which is prescribe for the Patient of skull injury.

Q No(5)

(A) KUP and mAs setting importance on x-ray machines:-

KUP:-

The Killo Volt Peak is responsible for quality and Quantity of x-rays.

Change in KVP changes the Quality of images.

→ The KVP change the Contrast of radiograph.

When we increase the KVP from the specific level the contrast will increase, if decrease the KVP from optimine level, the Contrast will decrease, So changes in Contrast change the Quality

of image.

→ KVP also affect the spatial resolution.

So that's why KVP setting in machine is important- Because different KVP is used for different technique-

mAS:- The mill Ampere Second is responsible for quantity of x-rays.

→ If mAs changes from the setting it will change the optical density, Contrast at some extent and spatial resolution of radiograph

→ The Adjustment of KVP and mAs for each Procedure

is specific.

→ The proper Adjustment of mAs and kvp depends upon the patient, body parts IR and machine Quality.

→ Standard techniques require specific value of kvp and mAs which can be change accordingly.

Q5(B) Positioning and Technique of Pelvic x-ray:-

- The Pelvic Series is composed of an anteroposterior (AP) with additional Projection
- Based on indication and Pathology-

Pelvic- Antero- Posterior View:-

The Pelvis View Part of a Pelvic examing the the Iliac Crest, Sacrum Proximal femur pubis and great Pelvic ring-

Patient Position:-

Patient is lying supine Position

- Lower limbs are internally

→ The Patient will be mid sagittal plane Perpendicular to table top.

→ Limbs are Slightly abducted and rotated internally.

→ Femoral Neck Parallel to IR

→ To avoid Pelvic rotation

Direction and Centring:

Central beam towards Centre of IR.

→ Centring x-ray beam will be in mid line

→ The Centre of IR is Placed

Additional consideration:-

Gonadal Protection - usually omited.

Some factor :-

Collimation. - Laterally to skin margin.

→ Superorly to above the illac

Chest -

Dectector size :- 35 + 43cm

Exposure → 70-80kvp
70-30 mAs-

The End