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Q1

Ans Orthopantomogram (OPG)

to take pictures of bone and other parts inside the body. An OPG is panoramic x-ray of the upper and lower jaws including teeth. The OPG unit is especially designed to rotate around the patient head during the scan.

An OPG take approximately 20 second.

An OPG can be used to take for:

- Fracture
- Dislocated jaw
- Infection
- Dentition (teeth)

## Patient position:-

During an open the patient remains in a sitting 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 jaws around the front of the patient and then to the other side of the jaws. The film rotates opposite to x-ray source behind the patient. It takes 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 glauc.
- lesser light in the will be vendor specific however.
- central lesser light in the mid sagittal plane.
- Axial lesser light at the IOML.
- lateral lesser light at lateral incisor.



- Orientation

- Landscape

- Detector size

open specific detector

- Exposure

- 70 - 80 kVp

- 8-15 mAs over a no of second

Q2

Ans

For the patient which have the lower back pain we have draw the lumbar spine x-ray at two view which is basic view of lumbar spine.

- 1 Lumbar spine AP.

- 2 Lumbar spine lateral.

### Lumbar spine AP

The long axis of the body should be parallel to the long axis of the table. The spine is centered to the midline of the grid. The lumbar spine is approximately 2 inches medial to the elevated anterior superior iliac spine in the oblique position.

The arms are in comfortable position.

Q3

Ans

When old age patient come in the department with complaint of knee pain then we should take AP and lateral image in standing or supine position.

### Lateral:

position of the patient and cassette.

The patient lies on the side to be examined with knee flexed at 45 or 90 degree.

The other limb is brought forward in front of the one being examined and supported in sandbag.

A sandbag is placed under the ankle of the affected side.

The center of the cassette is placed level with medial tibial condyle.

### Direction and centering of the x-ray beam.

Center to the middle of the superior border of the medial tibial condyle with the central ray at 90 angle to the long axis of tibia.



## Essential image characteristics.

- The patella should be projected clearly over the femur.
- The femoral condyle should be superimposed.
- The proximal tibio-fibular joint is not clearly visible.

## Antero posterior

The patient is either supine or seated on the x-ray tube with both leg extended. It is centralized the patella b/w the femoral condyle and snapberg against the ankle.

- The cassette should be in close contact with posterior aspect of knee joint.

## Direction and centring of x-ray beam.

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

## Essential image characteristics.

- The patella must be centralized over the femur.

Q4

Ans When a patient fell down from a tree being hit by a car then came to doctor.

The doctor tell the patient to perform skull x-ray prescribe first.

The patient do skull x-ray prescribe first skull AP and skull horizontally and lateral.



After the x-ray result the doctor should be decide for patient to perform MRI and CT scan or needed or not. There may be decision of your health care provider to recommend an x-ray of the skull.

A skull x-ray is an imaging test doctor use to examine the bone of skull and see a body maps of skull. It very easy method to decide to help doctor view those areas of your most vital organs your brain.

⇒ The bone view angle is AP radiograph of skull used to evaluate for fracture.

Q5

Ans The first experiment showed that when the film density is kept constant the higher the k<sub>vp</sub> the lower resolution and image contrast percentage. Also the higher mAs the higher resolution and image contrast percentage.

### k<sub>vp</sub>

k<sub>vp</sub> controls the property called radiographic contrast of an x-ray image. The ratio of transmitted radiation through region of different thickness or density. Each body part contains a certain type of cellular composition which requires an x-ray beam with a certain k<sub>vp</sub> to penetrate it.

### mAs

The mAs (milliampere second) determine the no of x-ray produce per unit time and the no of x-ray reaching the film determine the degree of blackening of the film. The type of film or screen system being used increasing k<sub>vp</sub> increases the penetrating power of x-ray beam.



Q517

Ans PELVIS - anterior - posterior.

position of patient

- The patient lies supine with their medial sagittal plane perpendicular to the table top.
- The midline of the patient must coincide with the centered primary beam and table bucky mechanism.
- To avoid pelvic rotation.
- The limbs are slightly abducted and internally rotated to bring the femoral neck parallel to the image receptor.

Direction and centering of X-ray beam.

- Center in the midline with vertical central beam to the center of image receptor.
- The center of image receptor is placed midway b/w the upper border of symphysis pubis and anterior superior iliac spine for the whole of the pelvis and proximal femurs.
- The upper edge of image receptor should be 5cm above the upper border of the iliac crest.

## Essential Image characteristics

- proximal femur including the lesser trochanter should be visible on image.
- No rotation. The iliac bone and obturator foramen should be the same size and shape.

## Additional Consideration.

• It is first visit and trauma cases gonad protection is usually omitted however local protocol can vary.

It is used on follow up images.