

# Extraoral Radiography

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- Extraoral radiograph is Defined as:  
Examination made of the head and facial region using films located outside the mouth.
- They allow the Dentist to view large areas of the jaws and skull on a single radiograph not covered by intraoral films

# Purpose and use of extraoral radiographs:

- Examine large areas of the jaws and Skull.
- Study growth and development of bone and teeth.
- Detect fractures and evaluate trauma
- Detect pathological lesions and Diseases of the jaws.
- Detect and evaluate impacted teeth.
- Evaluate TMJ Disorders.

# Purpose and use of extraoral radiographs:

- Extraoral radiographs can be used alone or in conjunction with intra oral radiographs.
- Except for the panoramic radiographs, extraoral radiographs are not frequently used by General practitioners, Major users are orthodontists, prosthodontists, oral surgeons.

# Purpose and use of extraoral radiographs:

Orthodontists uses lateral cephalometric radiograph to:

- measure and compare changes in Growth and development of bone and the teeth through pre & progress and post treatment records.
- Prosthodontists: Use Facial profile radiographs (lateral cephalometric ) to record :
- The contour of the lips and the face
- The relation ship of the teeth before removal, this will help them construct prosthetic appliances that look natural.

# Purpose and use of extraoral radiographs:

- Oral surgeons:  
use Extraoral radiographs extensively to:
  - evaluate trauma.
  - to determine the location and extent of fractures.
  - to locate impacted teeth & abnormalities .
  - Malignancies .
  - injuries to TMJ

- many film positions and techniques require special equipments and a sound knowledge of the anatomical structures through which the radiation beam is directed.
- Most of these radiographs are made in hospitals and by highly experienced operators.
- films are Utilized with intensifying Screens

# Patient preparation

- Seat the patient
- Explain the radiographic procedures to the patient
- Adjust chair.
- Place lead apron on the patient
- Remove eyeglasses and objects from mouth.



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# Extraoral Radiographic techniques:

- Lateral jaw projection.
- Lateral skull (cephalometric radiograph)
- Posteroanterior .
- Water's view ( Sinus)
- Reverse townes.
- Submentovertex
- Temporomandibular joint projections

# Lateral jaw projection

- Known also as lateral oblique projection
- It has been largely replaced by panoramic radiographs but still taken when image details is needed.

## Purpose:

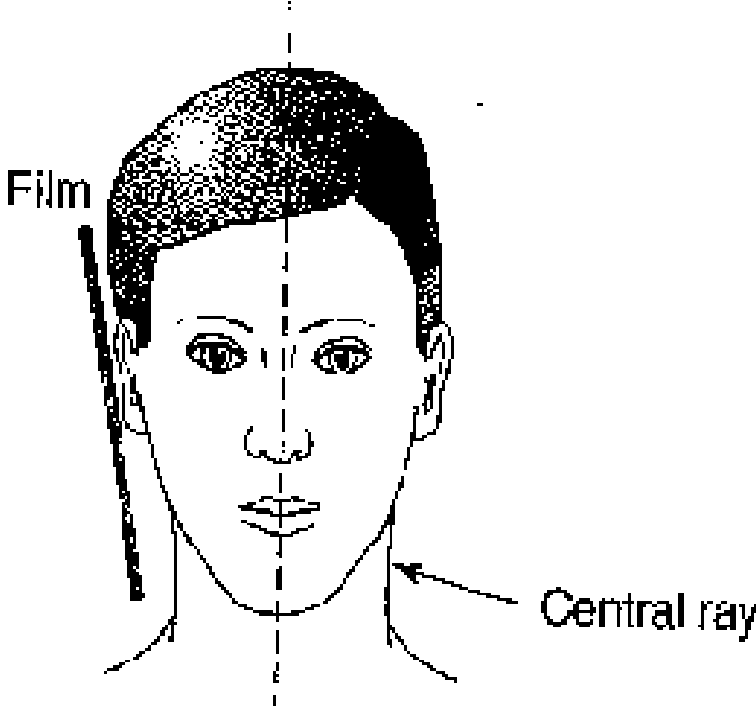
- To Examine the posterior region of the mandible.
- Valuable in children, or Senile patients who can't withstand intraoral films.
- Patients who have fractures or swelling.
- It evaluate the condition of the bone and to locate impacted teeth or large lesions.

# Lateral jaw projection

## Film placement and head position:

- Cassette is positioned flat against the cheek and centered over the mandibular first molar area.
- The patient presses the tube side of the cassette firmly against the cheek with the palm of one hand and the thumb is placed under the lower edge of the cassette.
- Head position is tilted about 10 to 20 degree toward the side to be examined and the chin is protruded.
- The central ray is directed toward the first molar region of the mandible from a point slight underneath the opposite side of the mandible and directed as perpendicular to the horizontal plane as possible

Sagittal plane



Lateral jaw projection



lateral oblique projection

# Cephalometric Radiographs

## Film placement and head position:

- may be either frontal (posteroanterior) or lateral skull projections
- Cephalometric means measurements of the head.
- Cephalometer is a device used to Standardize the placement of the head during exposure .
- Either conventional x- ray machines modified for cephalometric work or special units may be needed.

# Cephalometric Radiographs

## Film placement and head position:

- Device called cephalostats have ear rods that stabilizes the patient's head parallel to the film and at right angle to the direction of the beam
- The patient head will be between the source of radiation and the cassette.
- The cephalometer allows the Exposure to be taken several times for the same patient in the same head position



# Cephalometric Radiographs

## Lateral skull (cephalometric )projection:

- It shows the entire skull from the side and the X-ray passes from the lateral side

## Purpose:

- Orthodontic purpose
  - 1.Pre and post treatment records.
  - 2.Evaluate the growth and development
  - 3.Facial soft tissue profile of the face
- Surgeons also use it for pre and post treatment records
- Trauma
- Pathology
- Developmental Abnormalities

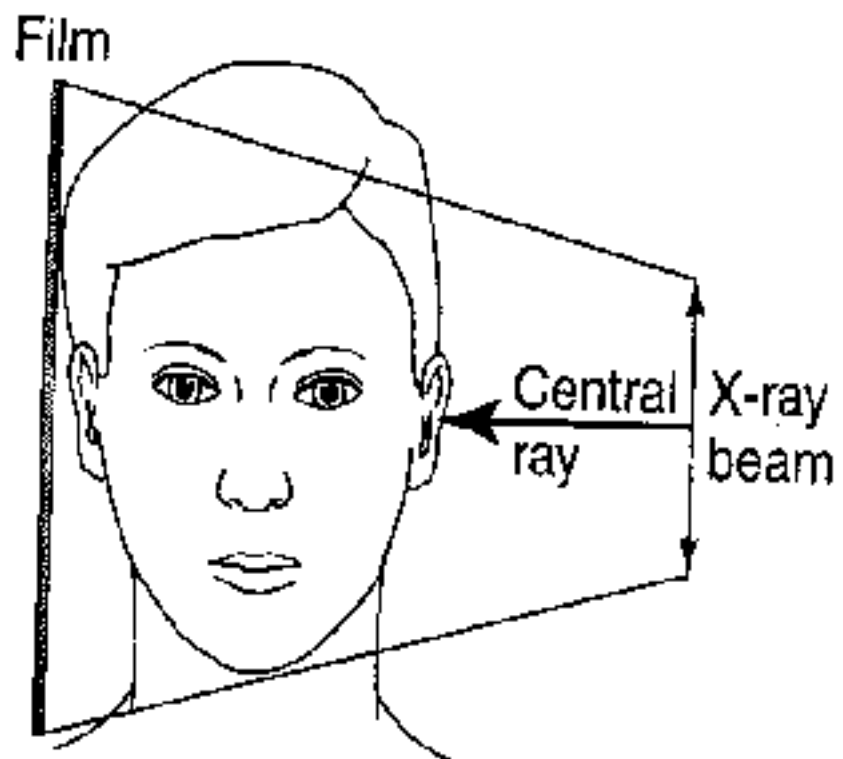


Lateral skull (cephalometric )projection:

# Cephalometric Radiographs

## Film placement and head position :

- Film is positioned vertically in a holding Device.
- The head is positioned with the left side of the face next to the cassette, the midsagittal plane is parallel to the cassette.
- If the facial soft tissue profile is desired , a wedge filter is placed over the anterior side of the beam at the tube head so that filter will absorb some of the x-rays in the anterior region.
- The x-rays is Directed towards the acoustic meatus perpendicular to the film

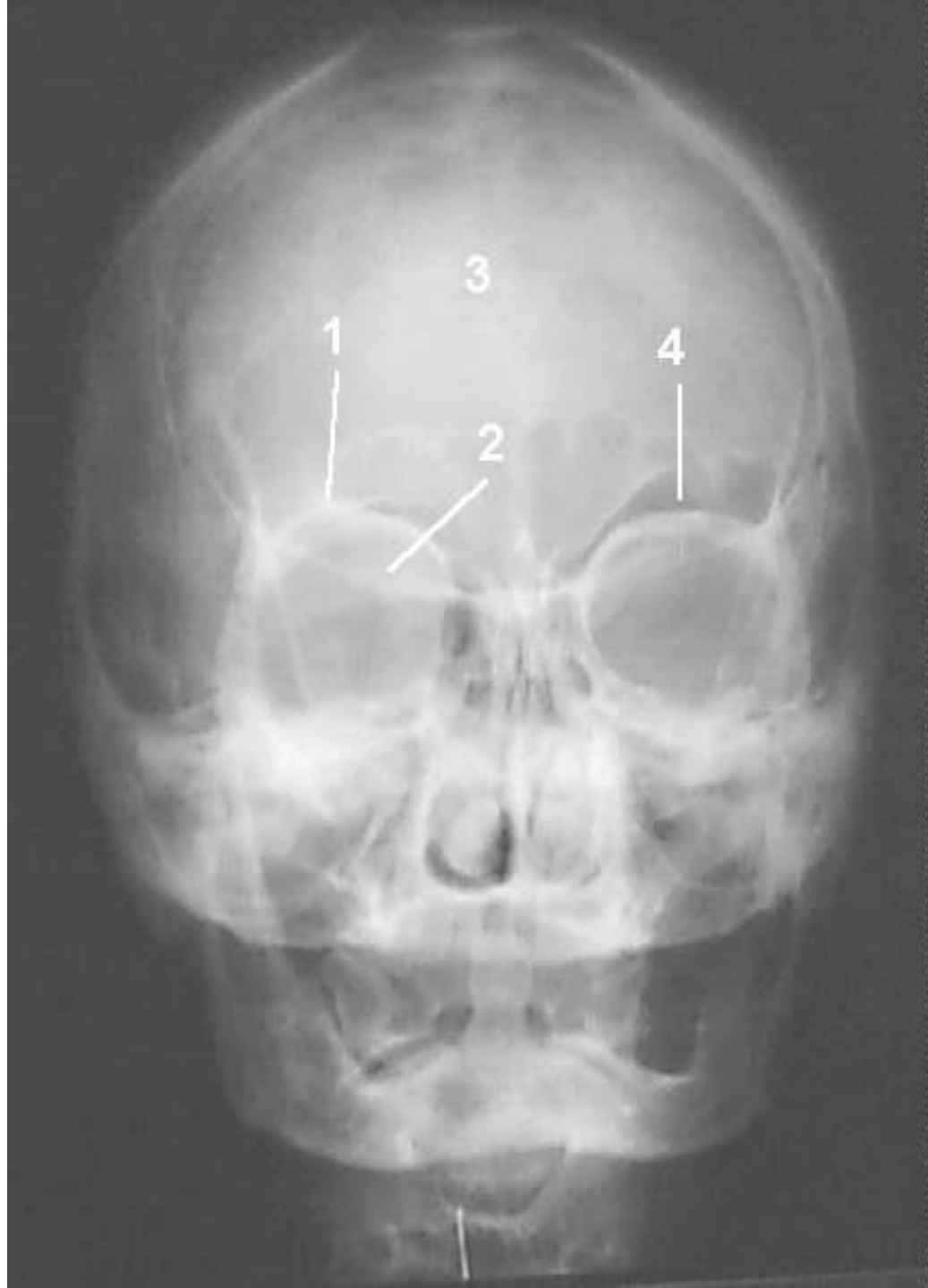


# Posteroanterior (PA) cephalometric projection:

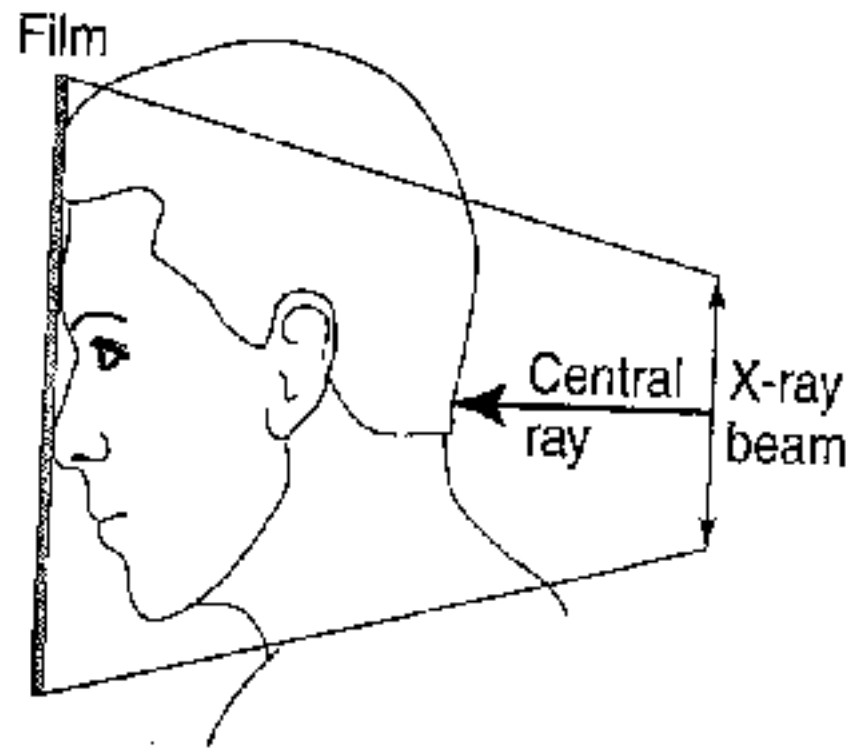
- Shows the entire skull in a posteroanterior plane.
- The beam passes through the skull in a posterior to anterior direction.

## Purpose:

- Asymmetry .
- Disease
- Trauma
- Developmental abnormalities



# Posteroanterior (PA) cephalometric projection:



# Water's view projection

- Also known as sinus projection
- It's similar to the posteroanterior projection  
Except that the center of interest is focused on the middle third of the face.

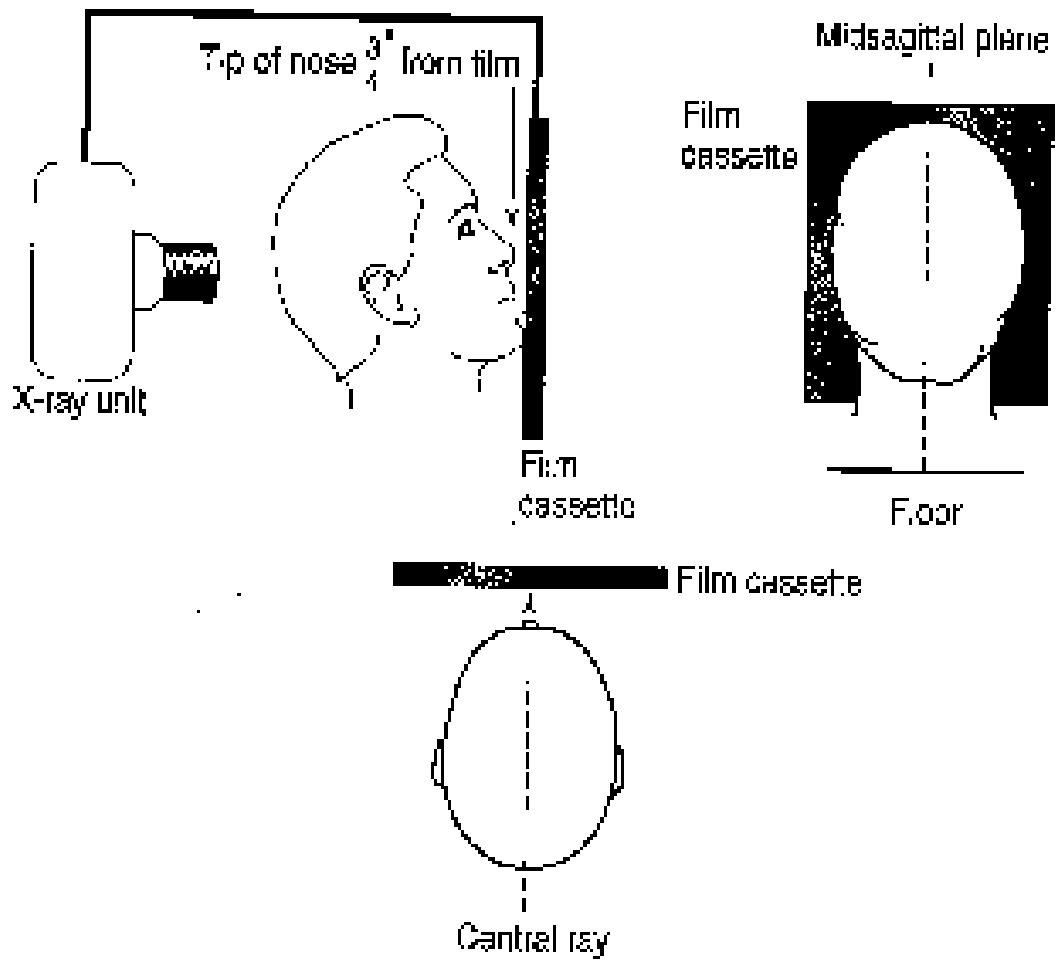
## Purpose:

To Evaluate the maxillary , frontal and ethmoid sinuses.



## Water's view projection



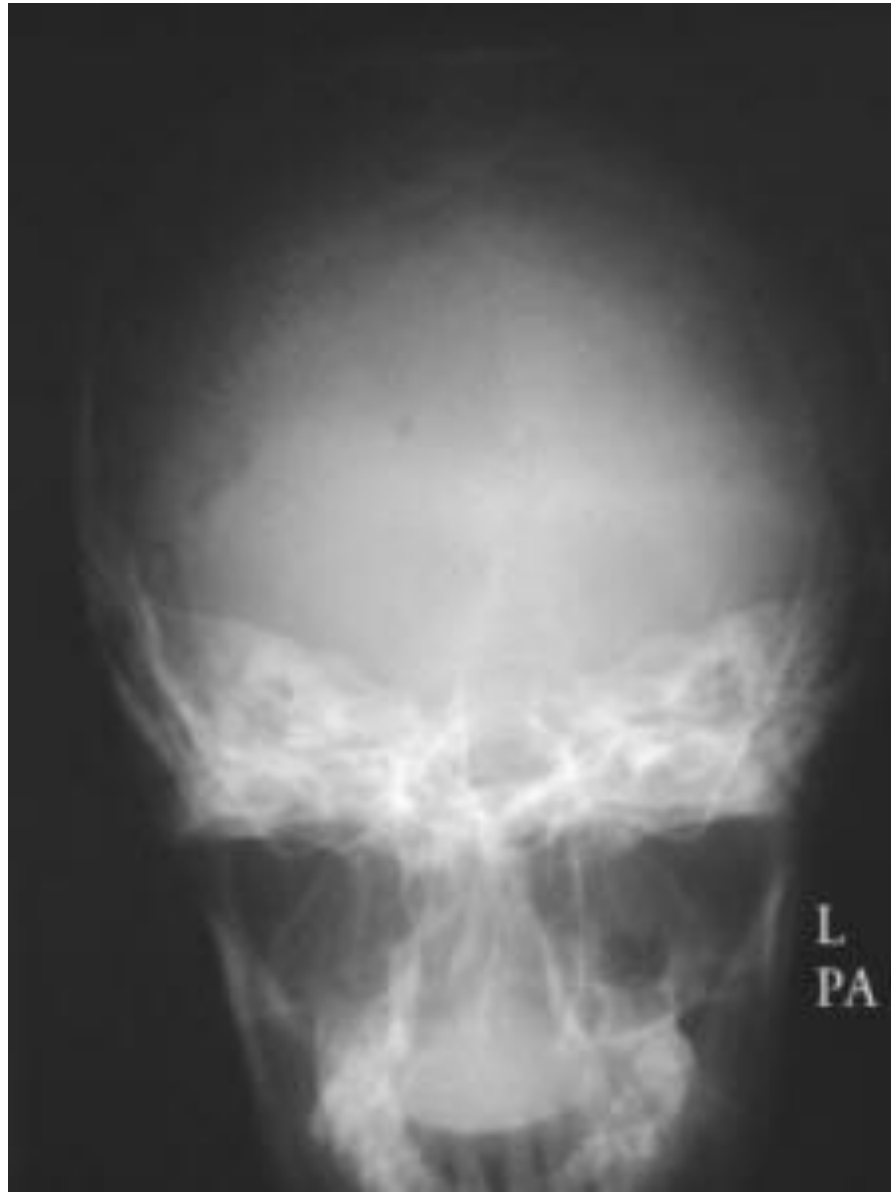


Head position in water's view

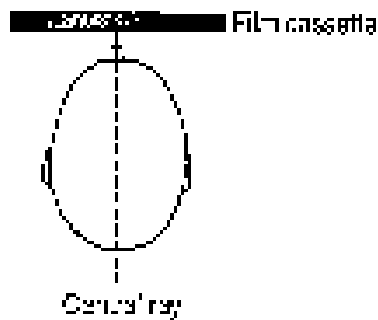
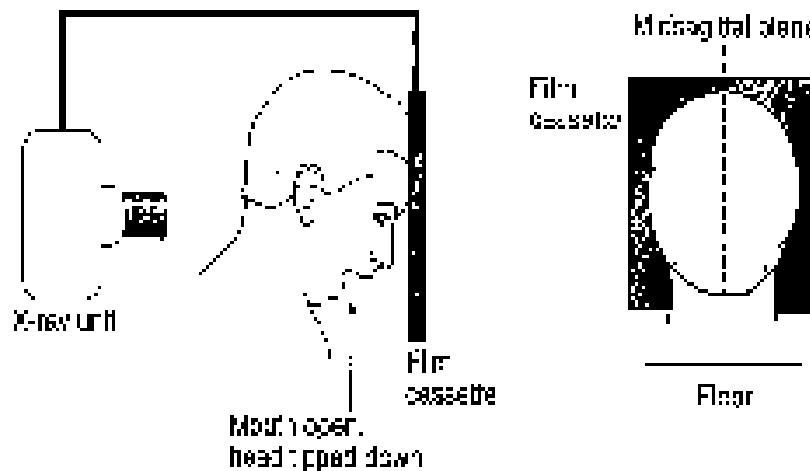
# Reverse –towne projection

## Purpose:

To examine fractures of the condylar neck of the mandible.



Reverse towne projection



Reverse towne projection

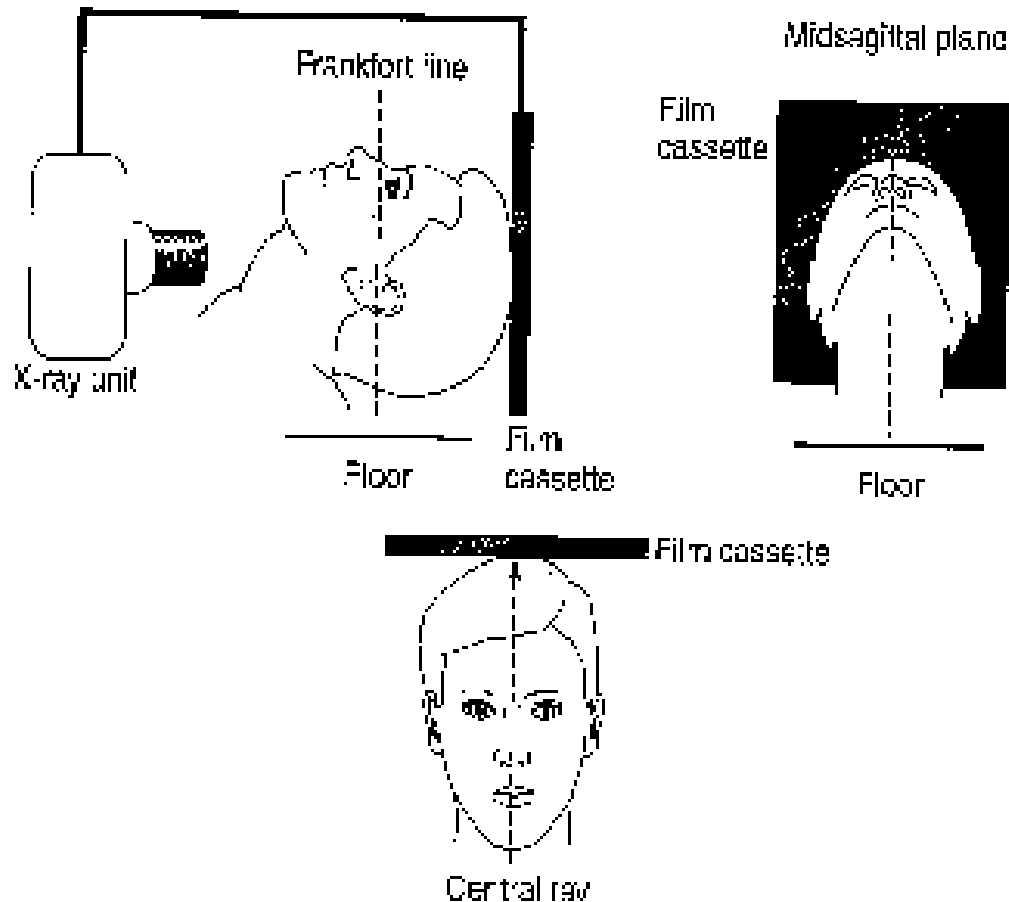
# Submentoververtex projection

## Purpose:

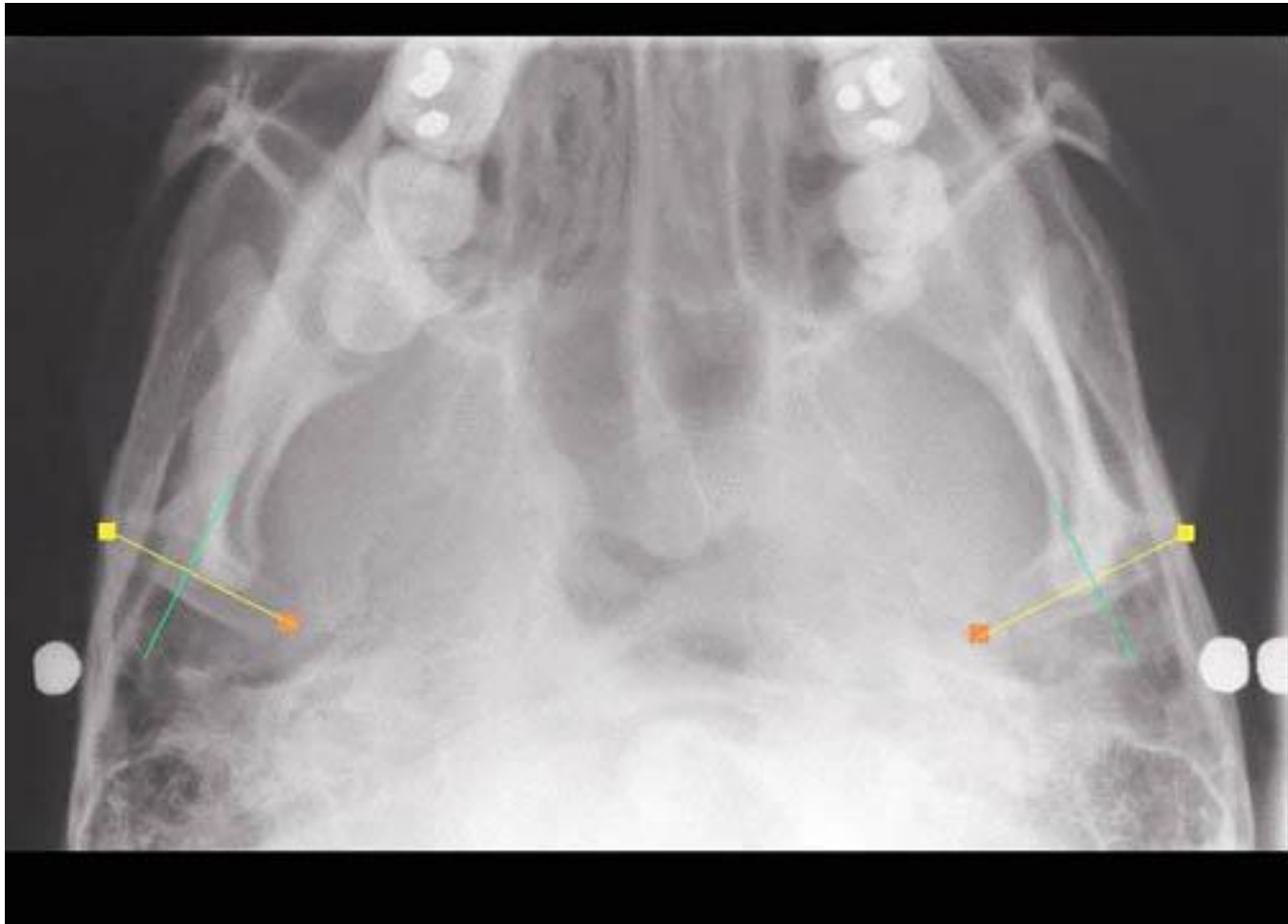
- used to show the base of the skull.
- The position and orientation of the condyles.

Sphenoid sinus and fractures of the Zygomatic arch.

# Submentoververtex projection



# Submentovertebral projection





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