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EXTRA ORAL RADIOGRAPHY

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PROFESSOR AND HEAD

ORAL MEDICINE AND RADIOLOGY

SUBHARTI DENTAL COLLEGE AND HOSPITAL

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Extra oral examinations are those in which both the source & image receptor are placed outside the patient's mouth.

EXTRA ORAL RADIOGRAPHY

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INDICATIONS OF EXTRA ORAL RADIOGRAPHY

- Not possible to place film inside mouth as in trismus.
- To examine the extent of large lesions.
- When jaws or other facial bones are to be examined for evidence of disease lesions and other pathological conditions.
- Evaluate skeletal growth & development.
- Evaluate status of impacted teeth.
- Evaluate trauma.
- Evaluate TMJ area.

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DRAWBACKS

- Magnification occurs due to the greater object to film distance.
- Details are not well defined due to the use of cassettes & intensifying screens.
- Contrast is reduced as the secondary radiation produced by soft tissues is more.

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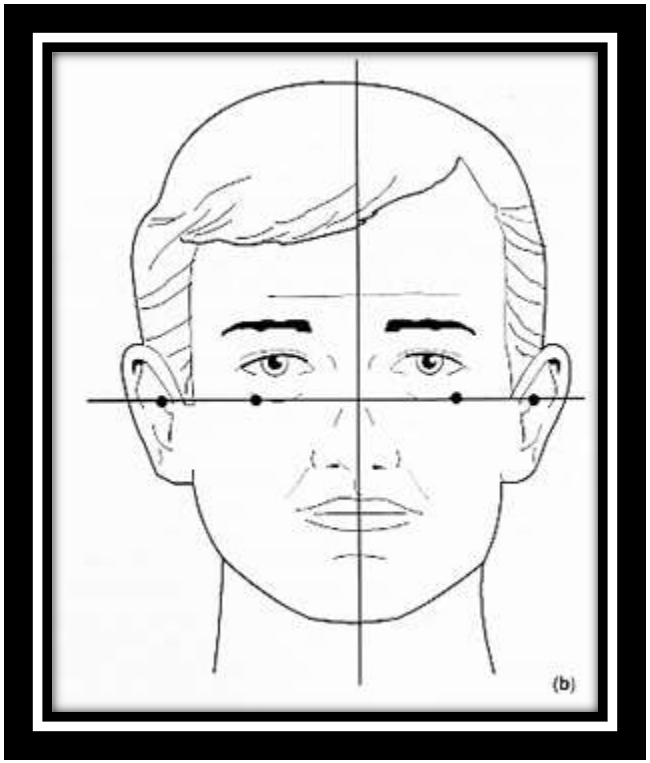
EXTRA ORAL LANDMARKS FOR PATIENT POSITIONING



(MIDSAGITTAL PLANE): a line coincidental with sagittal suture.

lateral views →parallel to cassette

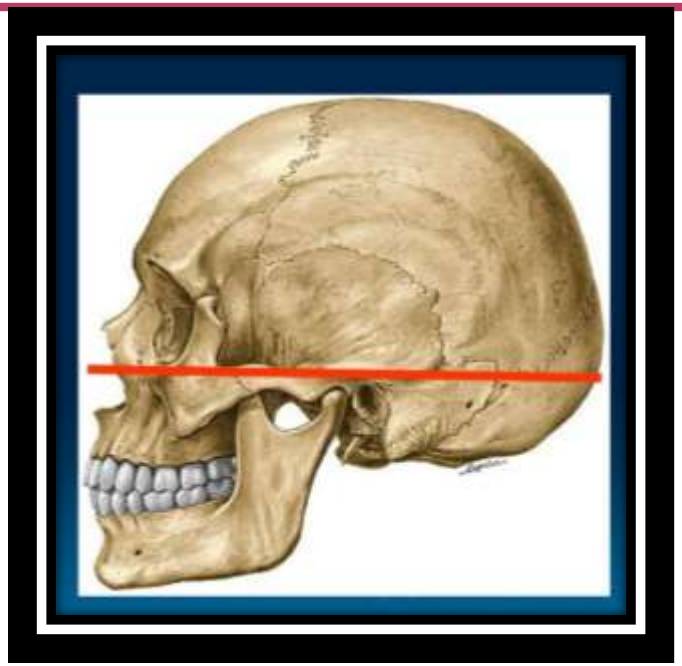
P.A. or A.P. view →rt. Angle to cassette

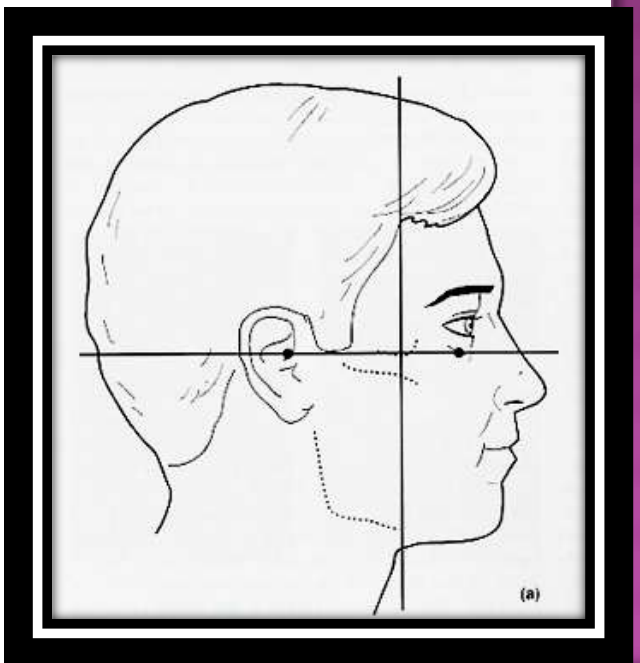
INFRA ORBITAL LINE: from one infra orbital margin to other.

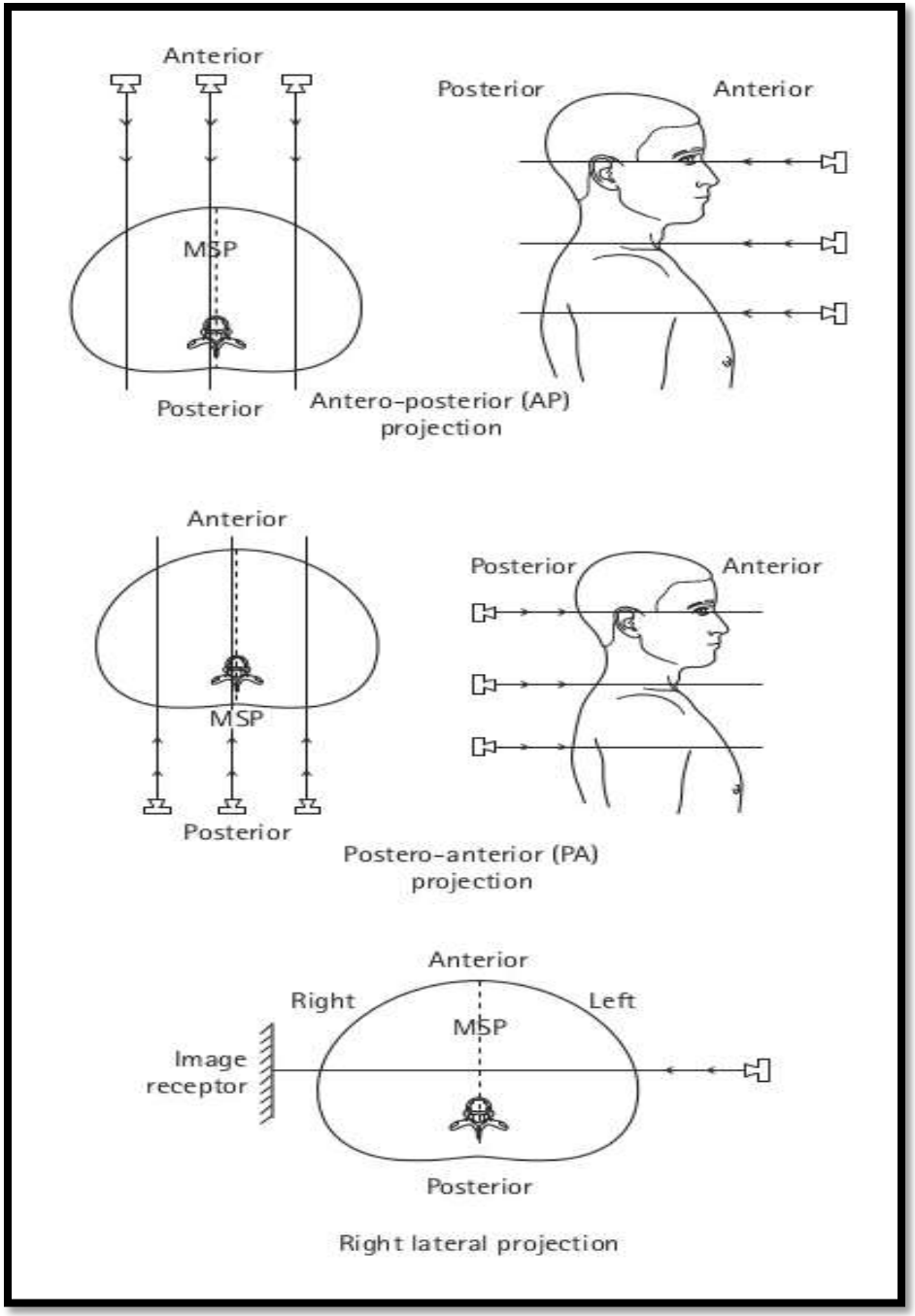
True lateral→ rt. Angle to film.

CANTHOMEATAL LINE: outer canthus of eye to tragus of ear.

4. FRANKFORT'S HORIZONTAL LINE: most inferior portion of the infraorbital margin of orbit to the highest pt. on the superior surface of the external auditory meatus.






Anterior
MSP
Posterior
Posterior
Anterior
Antero-posterior (AP) projection
Anterior
MSP
Posterior
Posterior
Anterior
Postero-anterior (PA) projection
Anterior
Right
Left
MSP
Image receptor
Posterior
Right lateral projection

EXTRAORAL RADIOGRAPHY OF VARIOUS MAXILLO-FACIAL REGIONS

- Radiography of the skull
- Radiography of maxillary sinus/ PNS
- Radiography of mandible
- Radiography of base of the skull
- Radiography of the zygomatic arches
- Radiography of the TMJ

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RADIOGRAPHY OF THE SKULL

- Lateral cephalogram
- True lateral
- PA cephalogram
- PA skull
- Towne's view

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RADIOGRAPHY OF MAXILLARY SINUSES

- 0^0 OM
- 30^0 OM
- PA waters
- Bregma Menton

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RADIOGRAPHY OF MANDIBLE

- PA Mandible
- Lateral oblique
  - Body of the mandible
  - Ramus of the mandible

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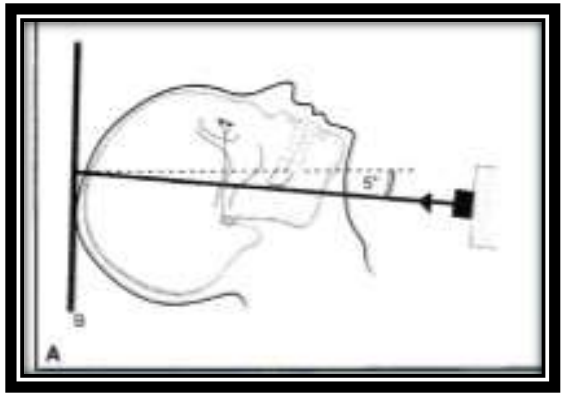
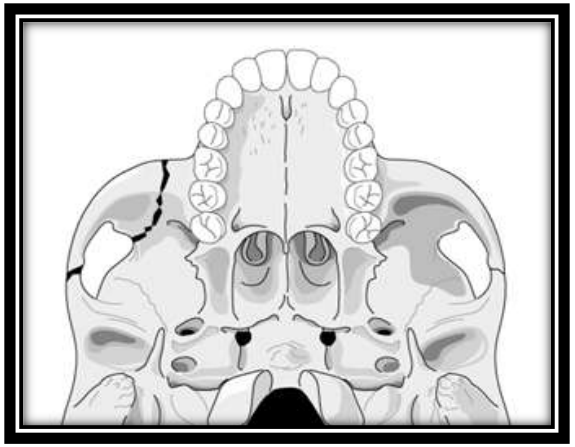
RADIOGRAPHY OF BASE OF THE SKULL

- **SMV** (SUB-MENTO VERTEX)
  - Base of the skull

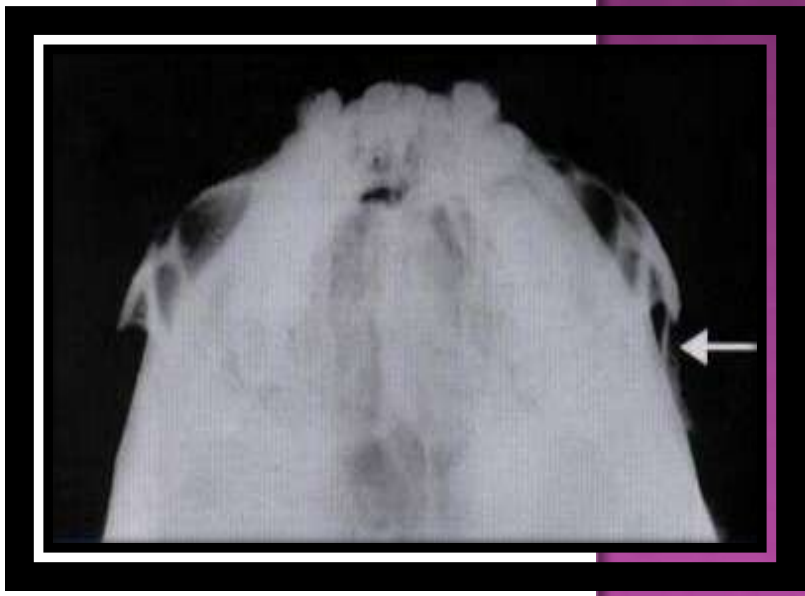




RADIOGRAPHY OF ZYGOMATIC ARCHES

- Jug handle view

(modification of SMV)



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RADIOGRAPHY OF TMJ

- Transcranial
- Transpharyngeal(Infracranial or McQueen Dell)
- Transorbital (Zimmer Projection)
- Reverse Towne's

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RADIOGRAPHY OF THE SKULL

- Lateral cephalogram
  - Facial growth
  - Soft tissue profile

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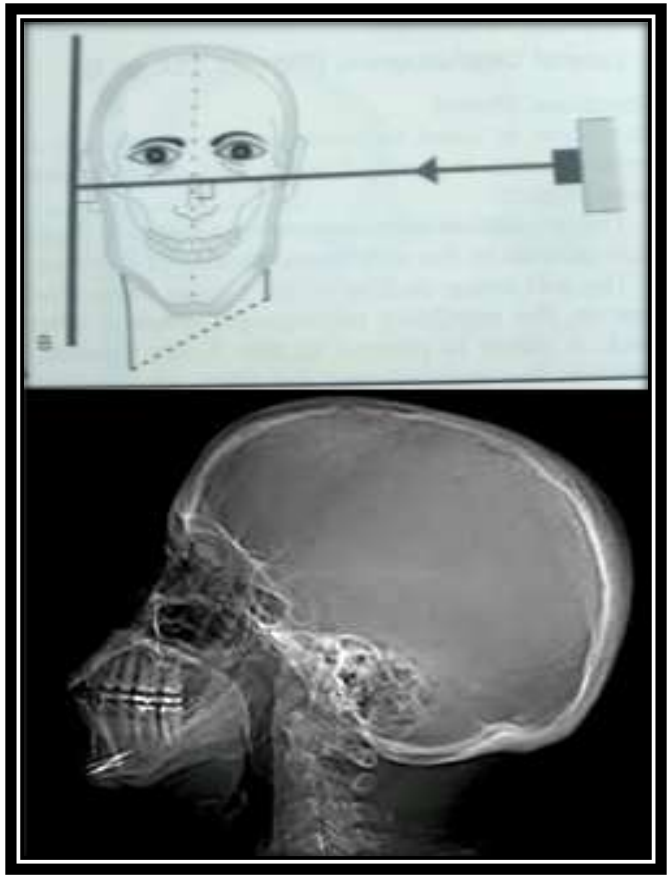
RADIOGRAPHY OF THE SKULL

- True lateral



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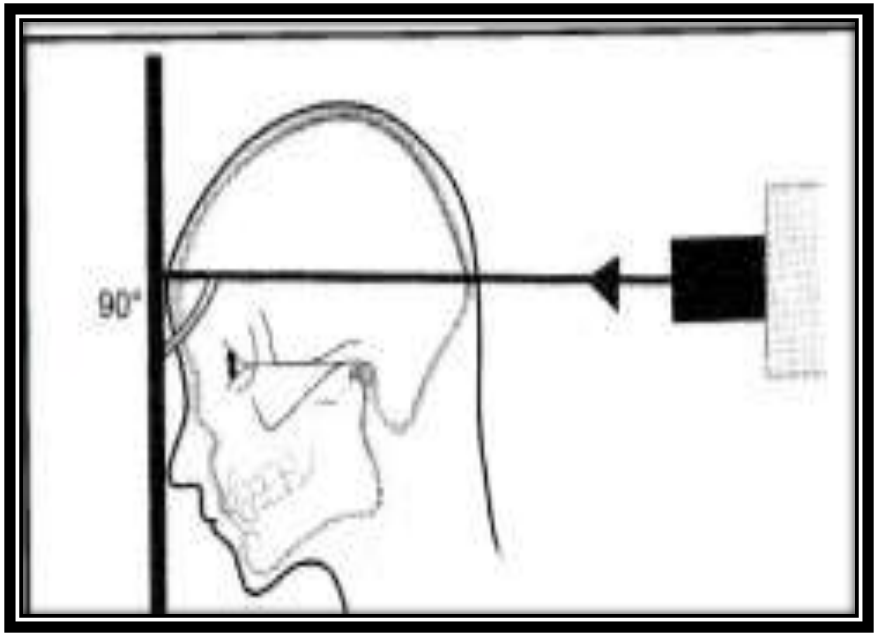
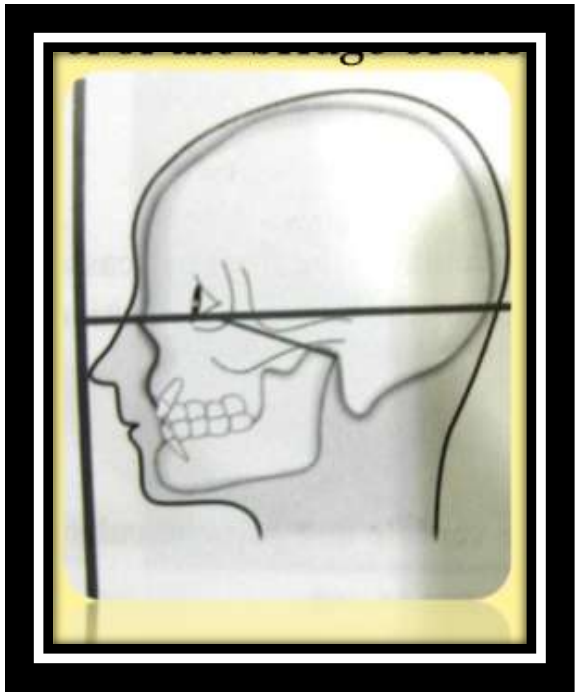
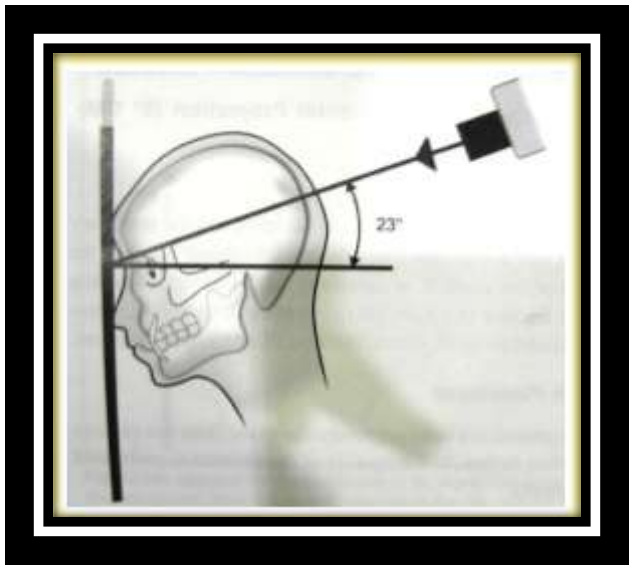
RADIOGRAPHY OF THE SKULL



- PA cephalogram

PA SKULL(OCCIPITO FRONTAL) GRANGER PROJECTION





- Caldwell

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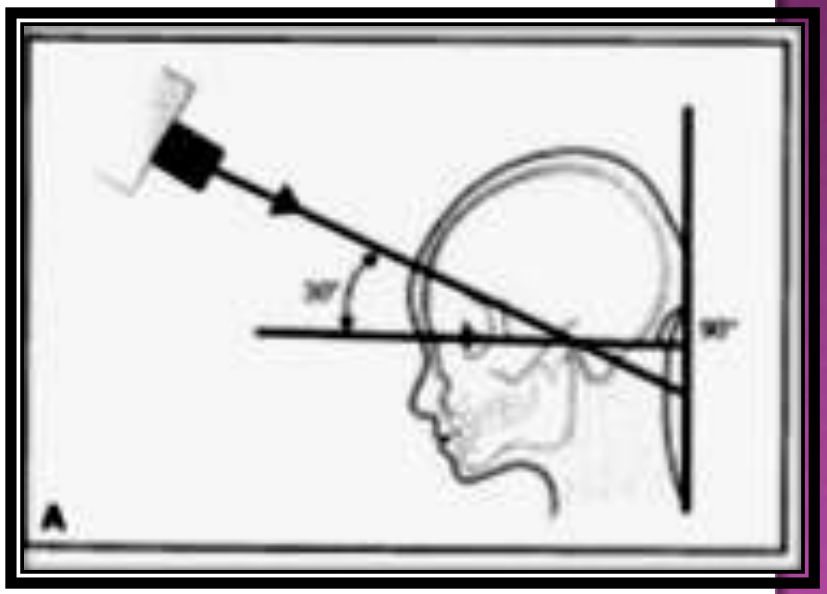
RADIOGRAPHY OF THE SKULL

- Towne's view
  - Occipital bone evaluation



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RADIOGRAPHY OF MAXILLARY SINUSES

- 0^0 OM
- 30^0 OM
- PA waters
- Bregma Menton

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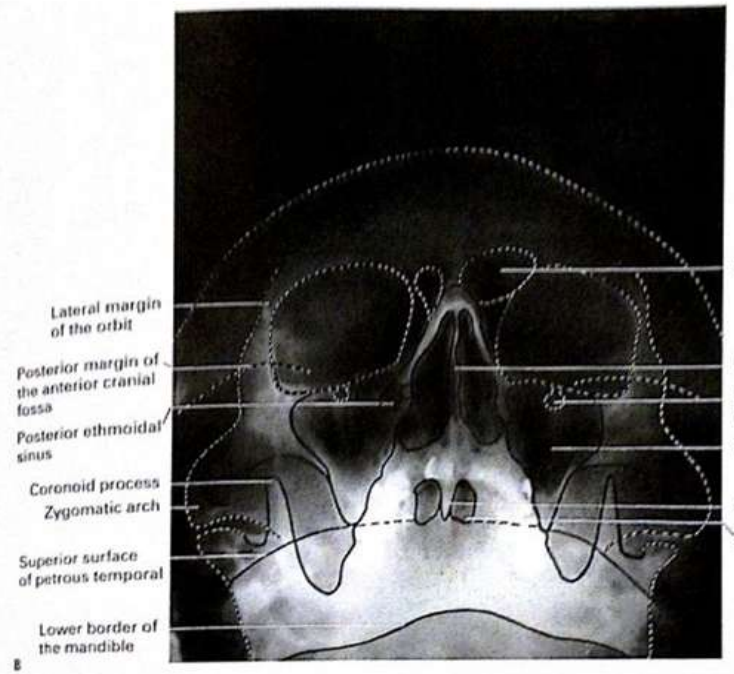
Indications:

- **Middle third facial fracture**
- **Coronoid process fracture**
- **Maxillary,Ethmoidal and Frontal sinuses**



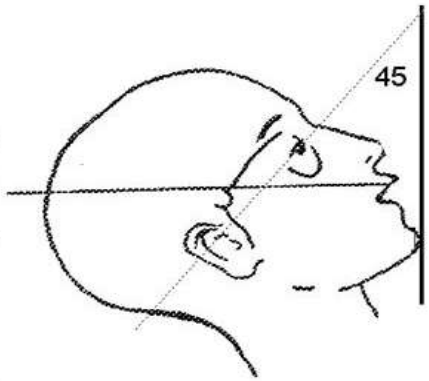


Fig. 14.6B The same radiograph with the major anatomical features drawn in.

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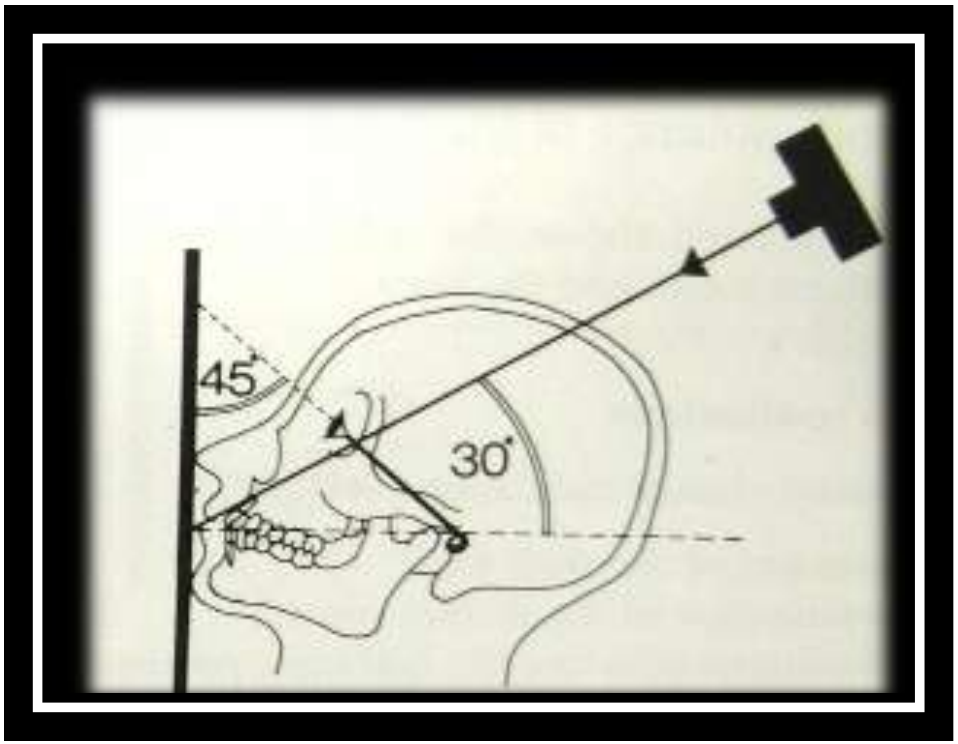
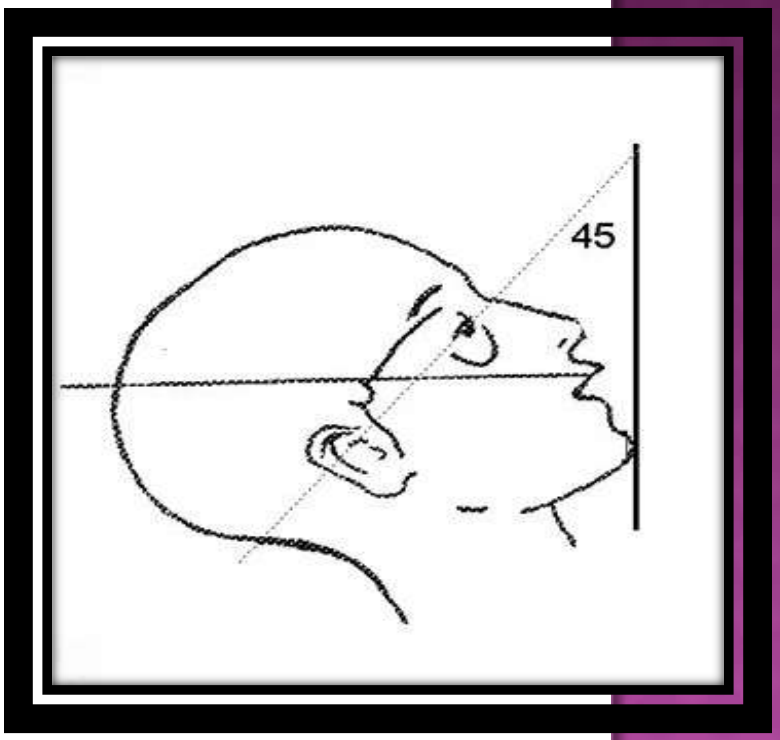
MAXILLARY SINUS





30^0 OM

0^0 OM

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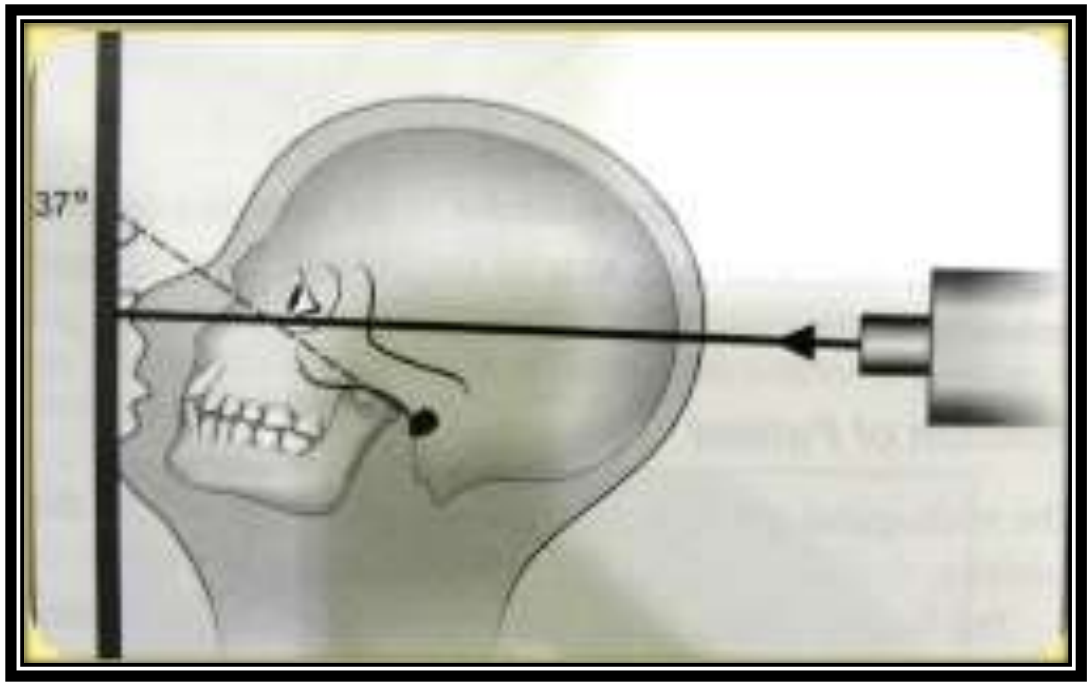
PA WATERS/PNS VIEW



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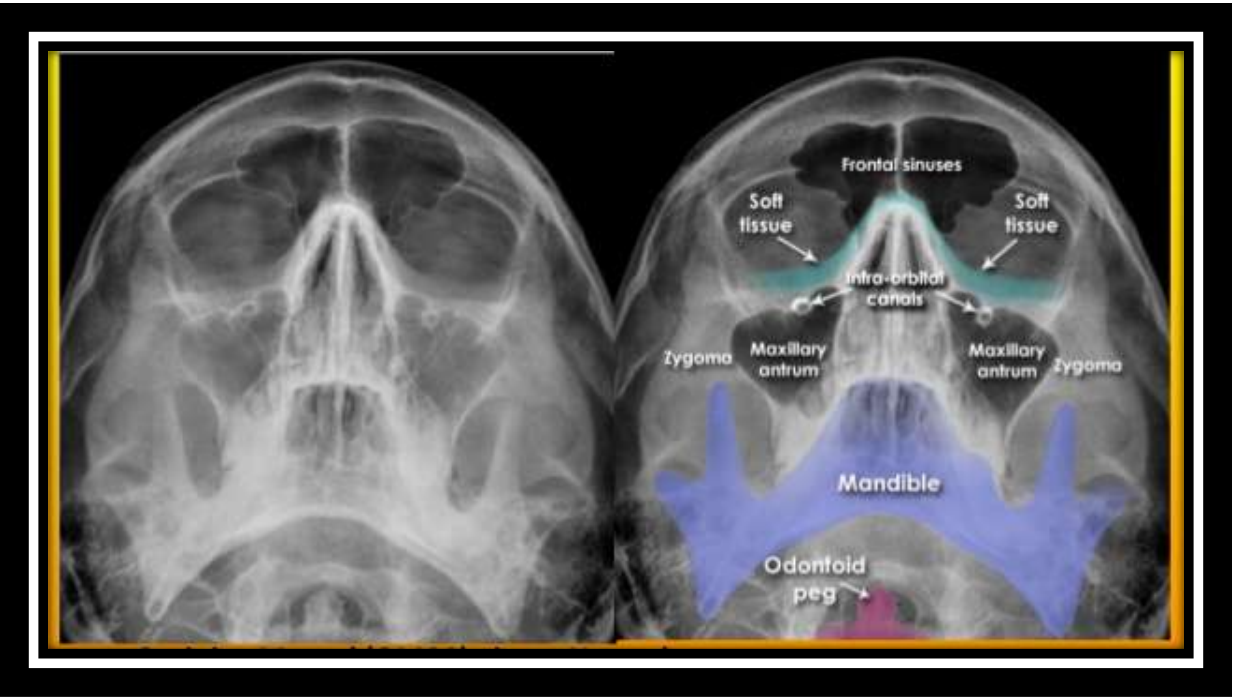

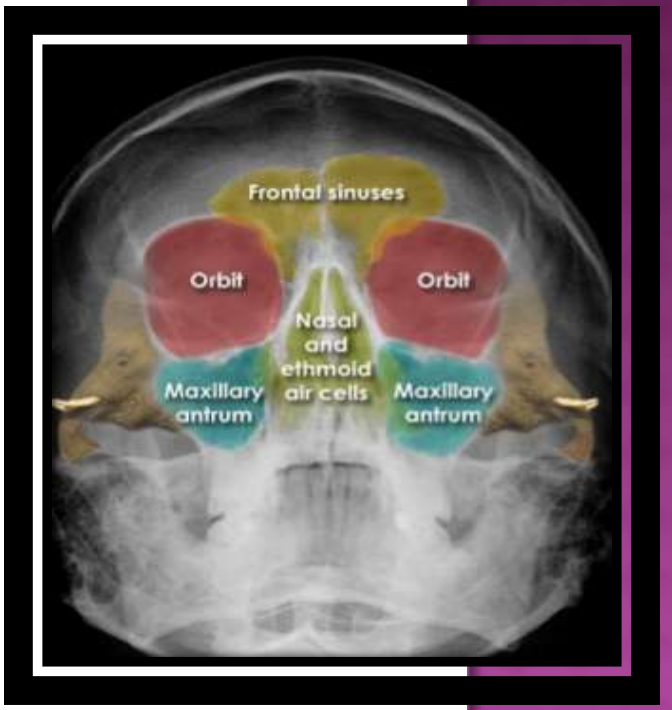

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- Symmetry
- Sinus
- Soft tissue shadow
- Sharpness

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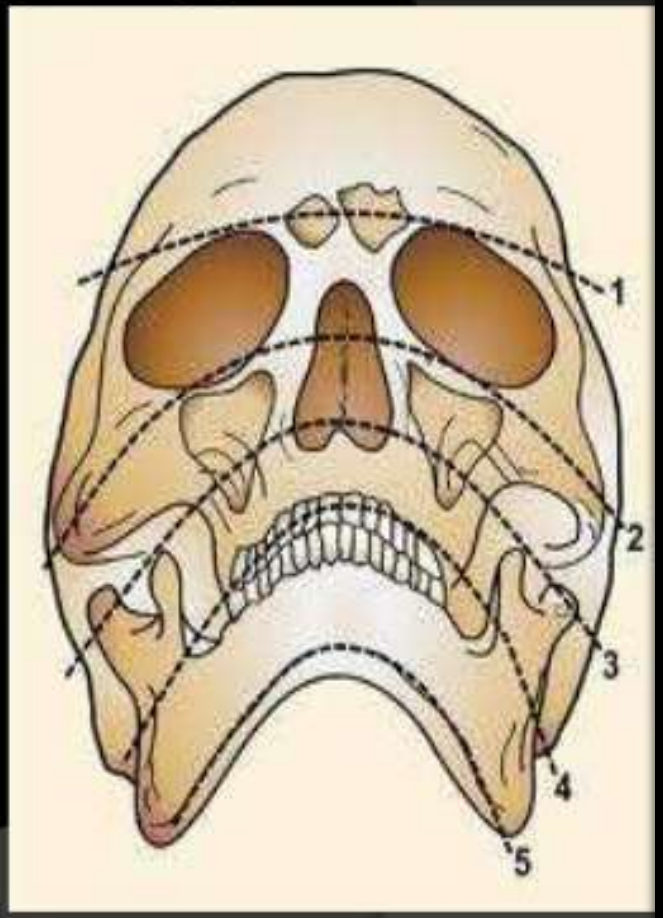
Campbell's and trapnell's lines

- 1- First line across the zygomaticofrontal, the superior margin of the orbit and the frontal sinus
- 2- Second line across the zygomatic arch, zygomatic body, inferior orbital margin and nasal bone
- 3- Third line across the condyles, coronoid process and the maxillary sinus
- 4- Fourth line across the mandibular ramus, occlusal plane
- 5- Fifth line (trapnell's line) across the inferior border of the mandible from angle to angle



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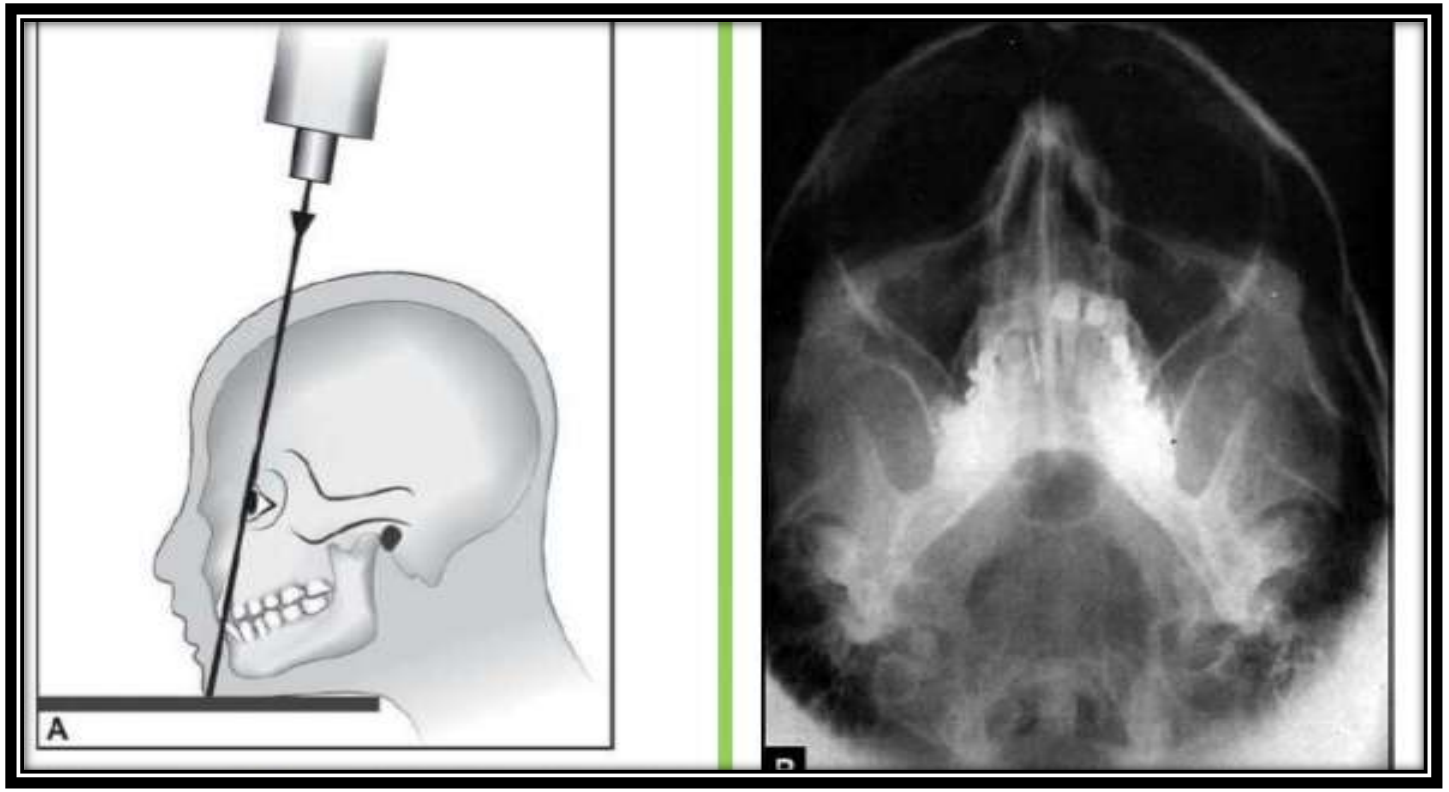
BREGMA MENTON



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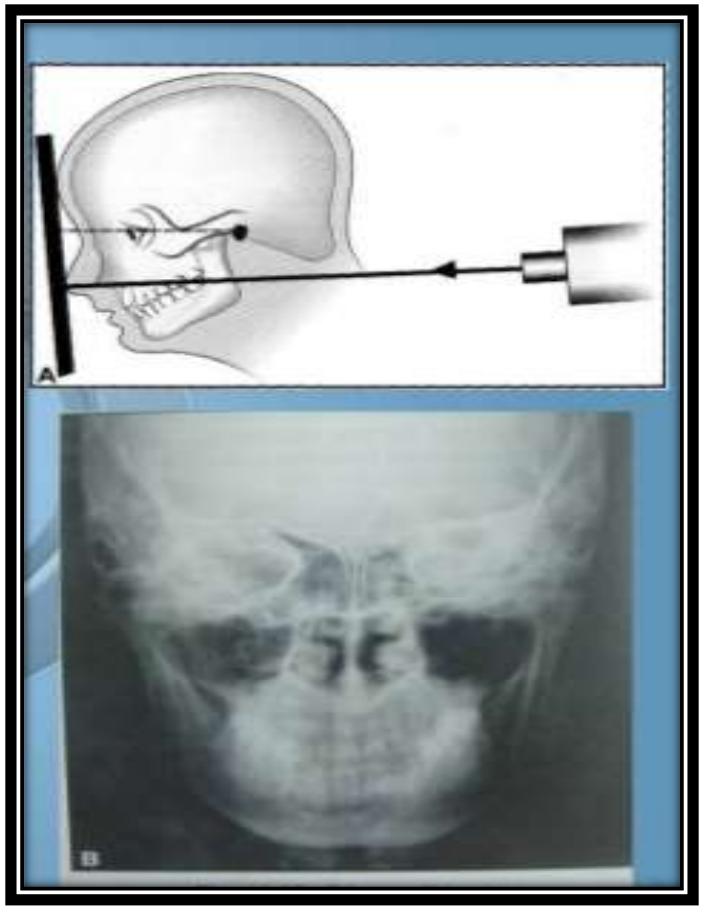
RADIOGRAPHY OF MANDIBLE

- PA Mandible



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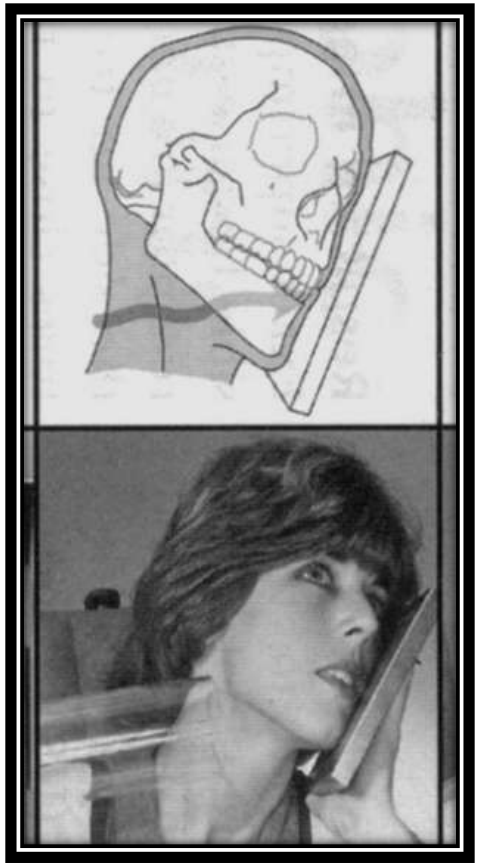
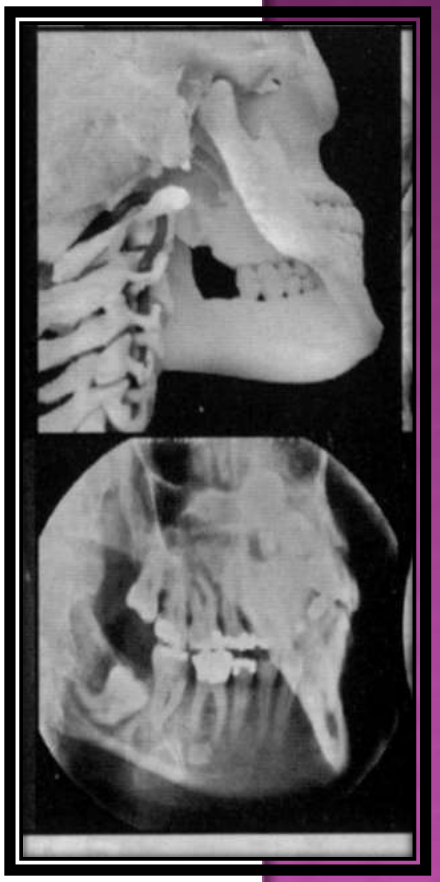
RADIOGRAPHY OF MANDIBLE

- Lateral oblique
  - Body of the mandible





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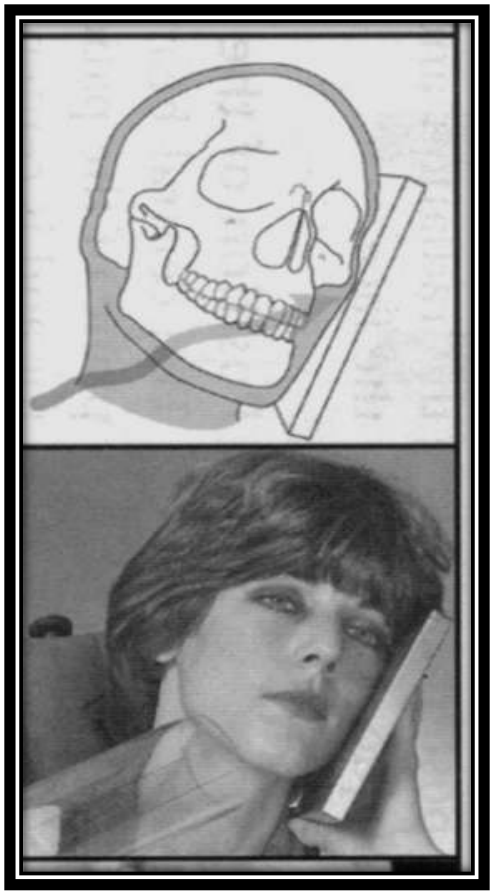
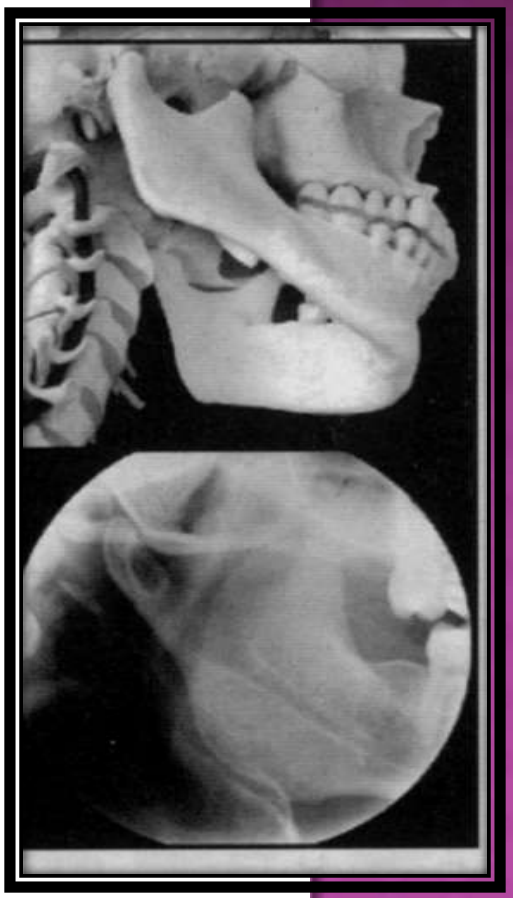
RADIOGRAPHY OF MANDIBLE

- Lateral oblique
  - Ramus of the mandible





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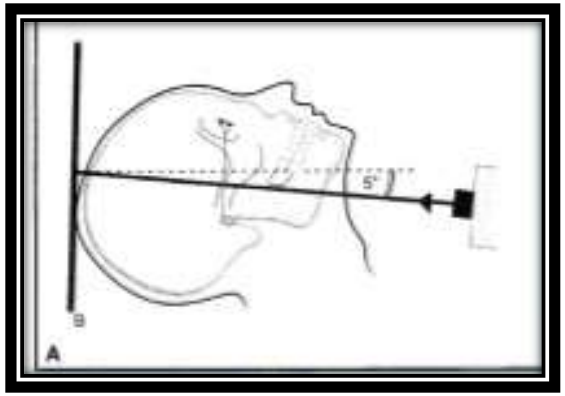
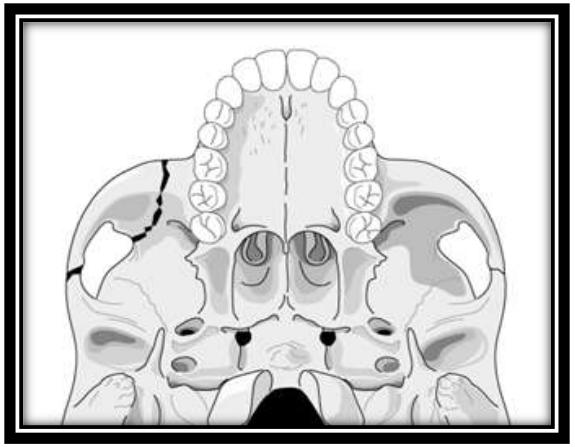
RADIOGRAPHY OF BASE OF THE SKULL

- **SMV** (SUB-MENTO VERTEX)
  - Base of the skull





- SMV

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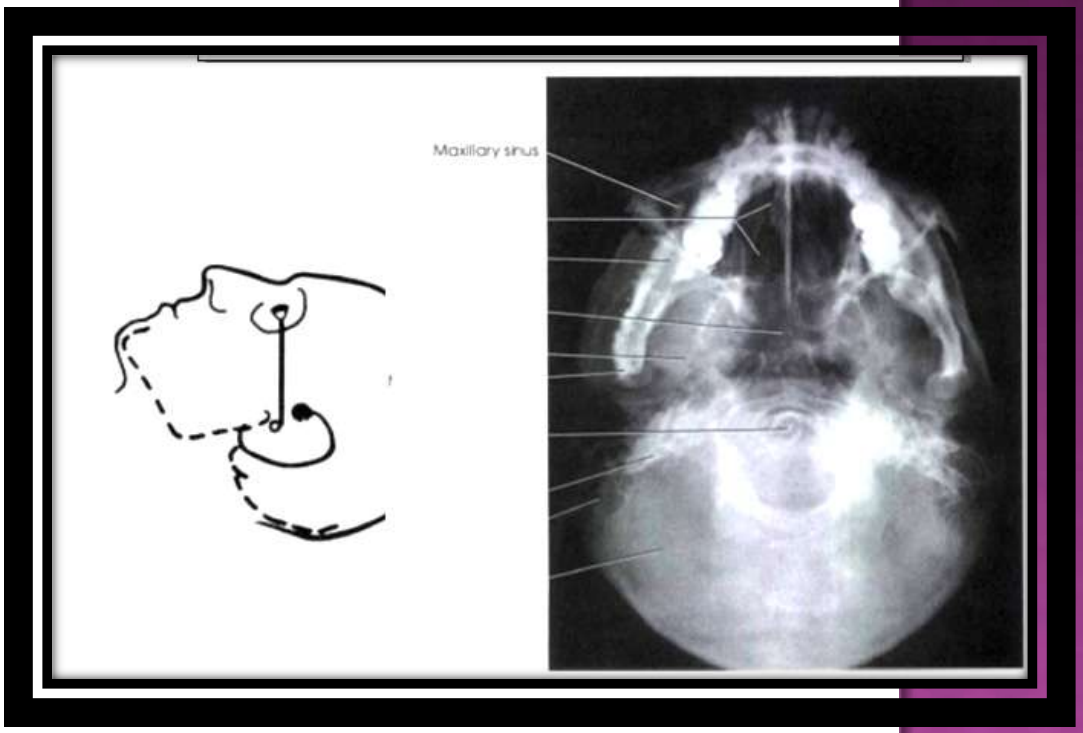
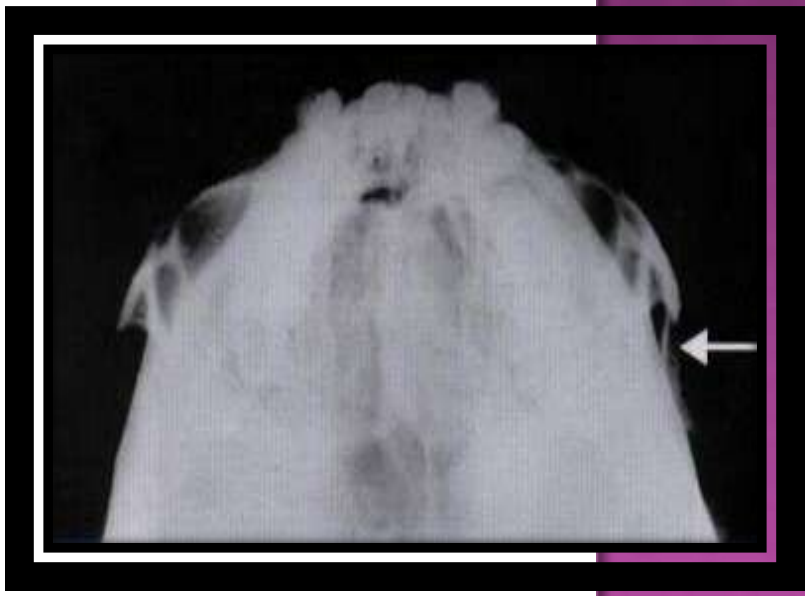
ACCREDITED WITH GRADE A NAAC



RADIOGRAPHY OF ZYGOMATIC ARCHES

- Jug handle view

(modification of SMV)



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RADIOGRAPHY OF TMJ

- Transcranial
- Transpharyngeal(Infracranial or McQueen Dell)
- Transorbital (Zimmer Projection)
- Reverse Towne's

TRANS CRANIAL

Central Ray

1. The central ray is direct at an angle of 25^0 (+ve angulation) from the opposite side, through the cranium and above the petrous ridge of the temporal bone.
2. The horizontal angulation can be individually corrected for the condylar long axis, or an average 20^0 anterior angle may be used.

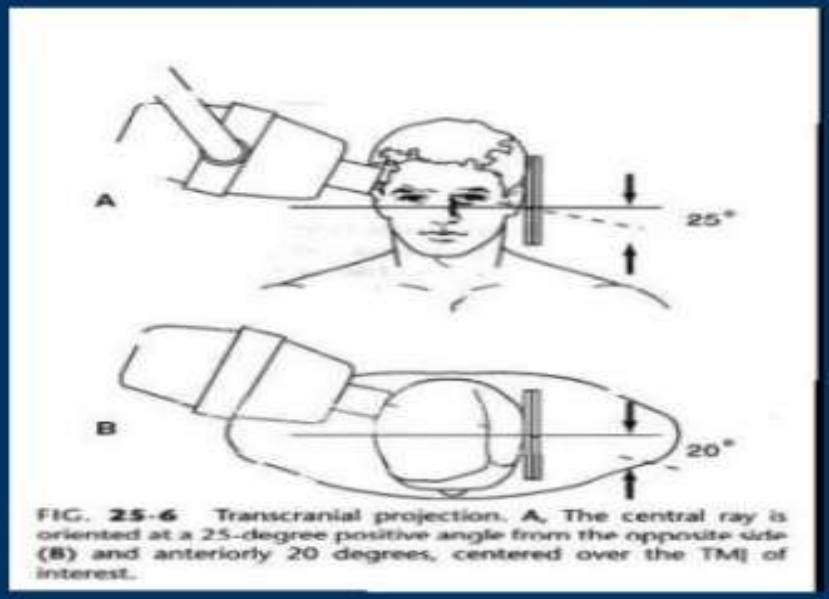
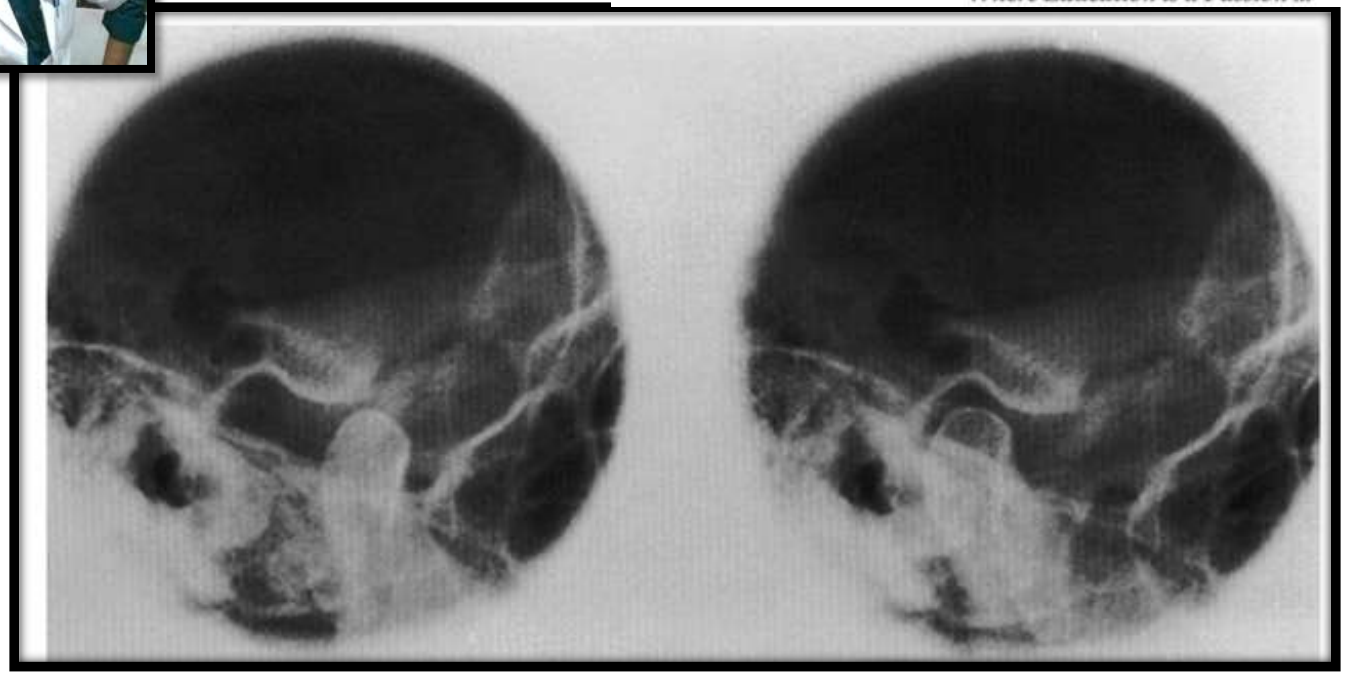


FIG. 25-6 Transcranial projection. A, The central ray is oriented at a 25-degree positive angle from the opposite side (B) and anteriorly 20 degrees, centered over the TMJ of interest.



- Open — Lindblom
- Rest — Grewcock
- Closed — Gills

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TRANSPHARYNGEAL (INFRA CRANIAL/ MCQUEEN DELL)

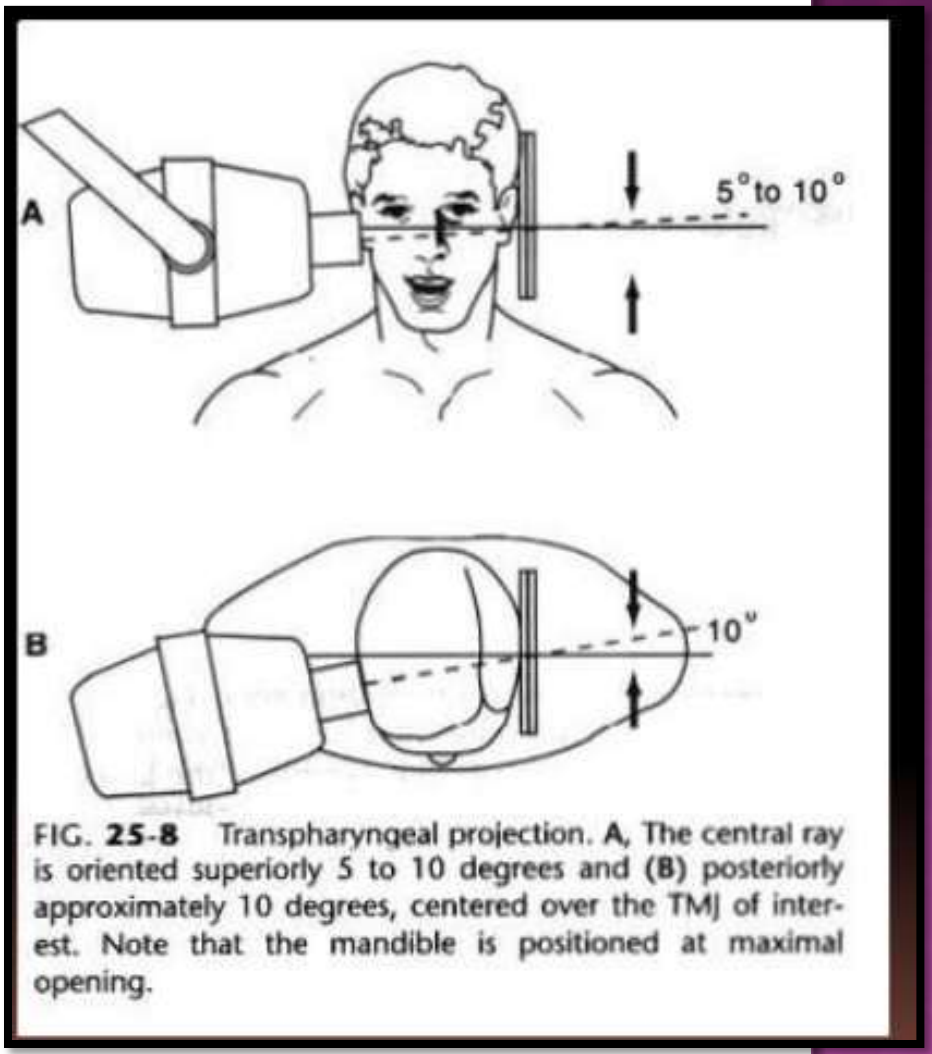

FIG. **25-8** Transpharyngeal projection. **A**, The central ray is oriented superiorly 5 to 10 degrees and **(B)** posteriorly approximately 10 degrees, centered over the TMJ of interest. Note that the mandible is positioned at maximal opening.

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TRANS ORBITAL

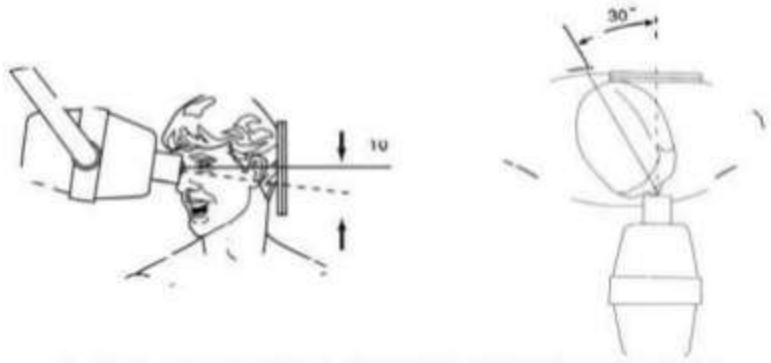

FIG. 25-10 Transorbital projection. The central ray is oriented downward approximately 10 degrees and laterally approximately 30 degrees through the ipsilateral orbit, centered over the TMJ of interest.

Exposure Parameters
Intra Oral X-ray Machine
kVp – 65-70
mA – 7-10
Seconds – 0.8
Extra Oral X-ray Machine
kVp – 40
mA – 40
Seconds – 1

Transorbital projection showing a frontal view of the condyle. The lateral pole is indicated with an *arrow*.

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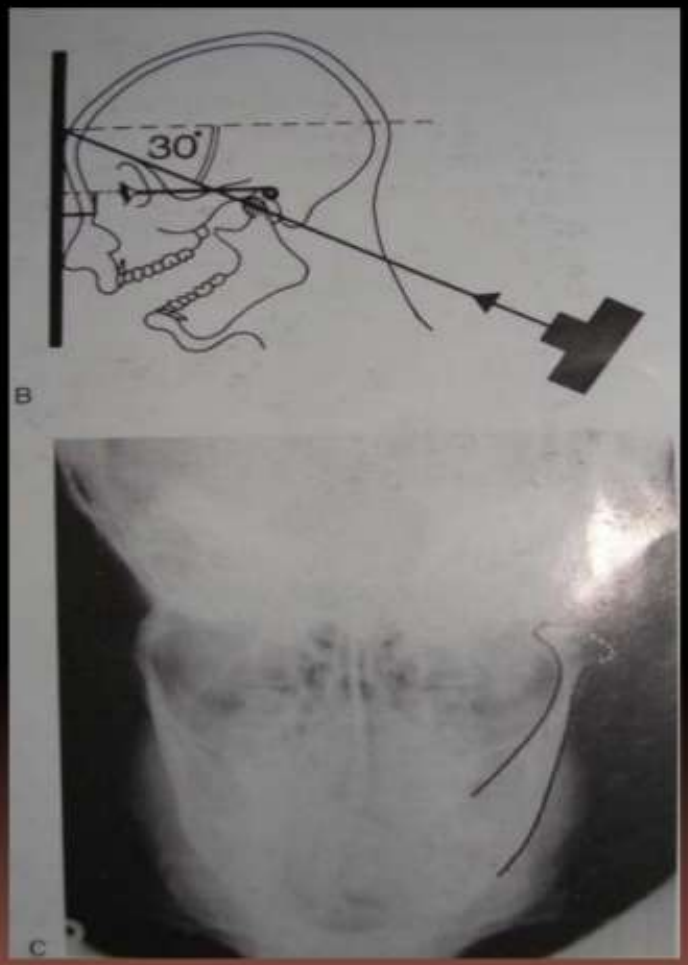

Forehead –nose position

Appreciation of condyle on left side

REVERSE TOWNE'S (Eric Whaites)

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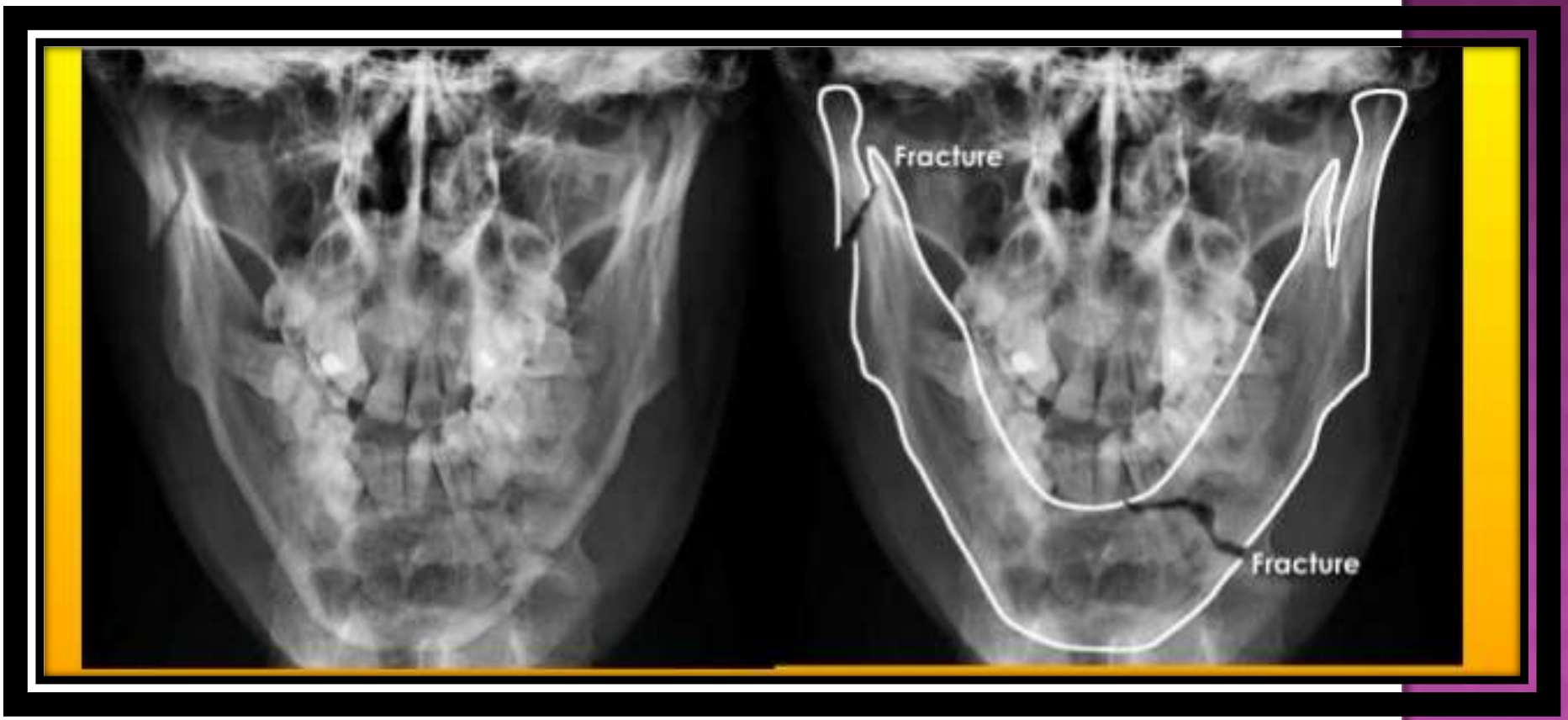

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REFERENCES

- Oral Radiology: Principles and Interpretation (Mosby) (Hardback) By (author) Stuart C. White, By (author) Michael J. Pharoah
- Essentials of oral and maxillofacial radiology (Freny R Karjodker)
- Essentials of Dental Radiography and Radiology BY Eric Whaites

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THANK YOU