



RADIOGRAPHIC TECHNIQUE-2

PARANASAL SINUSES

Sawa University

College of health and medical techniques

Department of Radiology Tech.

3rd Academic year

LEC.4

THEORETICAL

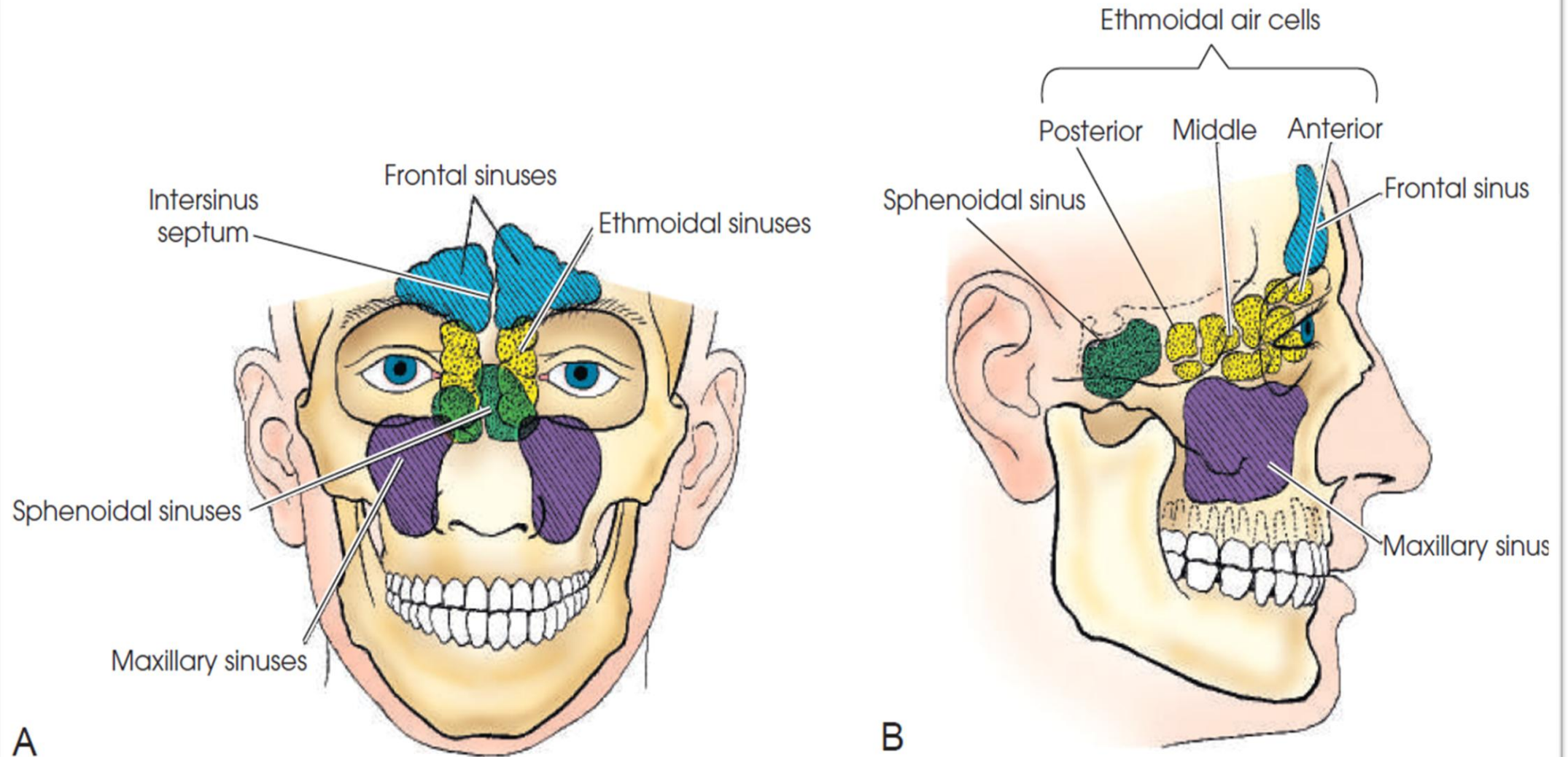
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Paranasal Sinuses

Air-containing cavities. They are very variable in size and shape.

1. **Maxillary Sinuses:** The largest sinuses, are paired and located in the body of each maxilla. Begin to develop early in fetal life.
2. **Frontal Sinuses:** The second largest sinuses, are paired and normally located within frontal bone. in some individuals they may be absent. Develop by age 6 or 7 years.
3. **Sphenoid sinus:** lies immediately beneath the sella turcica and posterior to the ethmoid sinuses. often only one sphenoidal sinus is present. develop by age 6 or 7 years.
4. **Ethmoidal Sinuses:** Paired and located within ethmoid bone. They are composed of a varying number of air cells that are divided into three main groups: anterior, middle, and posterior. Develop during puberty.

The sinuses are not completely developed until age 17 or 18 years. When fully developed, each of the sinuses communicates with the others and with the nasal cavity.

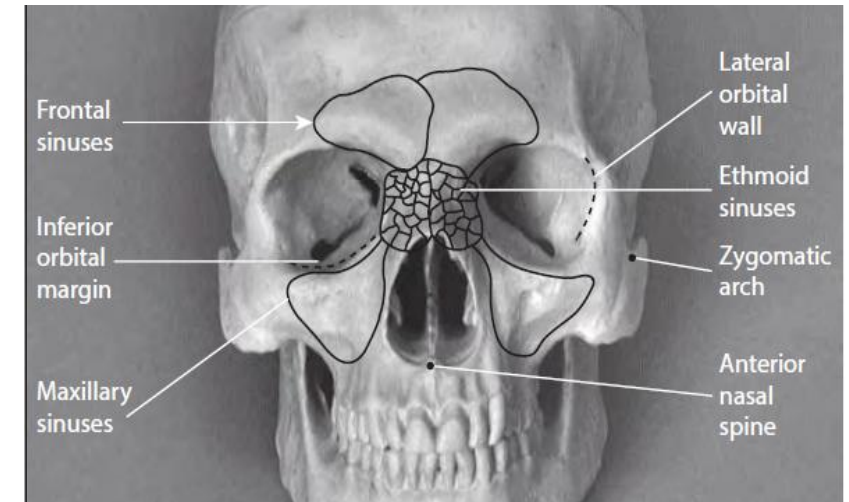


Routine Projections :

1. Lateral (Right or Left)
2. PA Axial (Caldwell method)
3. Parietoacanthial (Waters method)
4. Parietoacanthial Transoral:
(open-mouth Waters method)

Clinical Indications

- Inflammatory conditions (sinusitis, secondary osteomyelitis)
- Sinus polyps or cysts



1. Lateral (Right or Left)

Position patient

- patient is erect. lateral aspect of head against IR, with side of interest closest to IR.
- Adjust head into true lateral, body in an oblique direction (MSP parallel to IR).
- Align IPL perpendicular to IR (ensures no tilt).
- Adjust chin to align IOML perpendicular to front edge of IR.

CR: Align horizontal CR perpendicular to IR. Center CR to a point midway between outer canthus and EAM. Center IR to CR.

Collimation Collimate on four sides to anatomy of interest.

Technical Factors

SID: 102 cm **IR size:** (8 × 10 inches) C.W

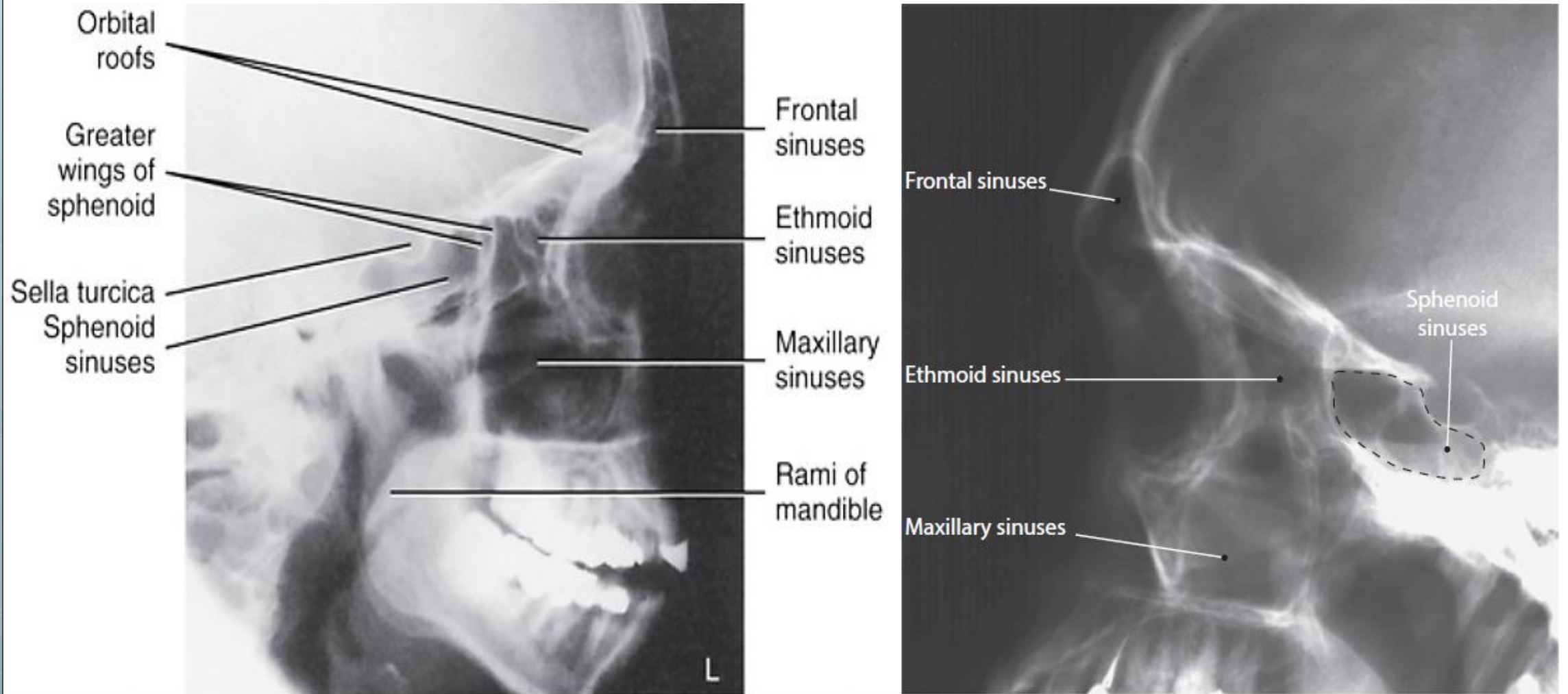
Kv: 66 **mAs:** 16

Grid: yes **Respiration:** Suspended

Evaluation Criteria

- All four sinuses demonstrated.
- No rotation or tilt of sinus.
- Sufficient brightness and contrast to
- Visualize air-fluid levels





Lateral Projection

2. PA axial Projection (Caldwell method)

NOTE: For frontal and anterior ethmoidal sinuses. The dense petrous pyramids extend from the inferior third of the orbit inferiorly to obscure the superior third of the maxillary sinus.

Position patient:

- Place patient's nose and forehead against IR with neck extended to elevate OML 15 ° from horizontal.
- Align MSP perpendicular to midline of IR.
- Center IR to CR and to nasion, ensuring no rotation.

CR: Align CR horizontal, center CR to exit at nasion.

Collimation: Collimate on four sides to anatomy of interest.

Technical Factors

SID: 102 cm Grid: yes

IR size: (8 × 10 inches) L.W

kV: 75 mAs: 24

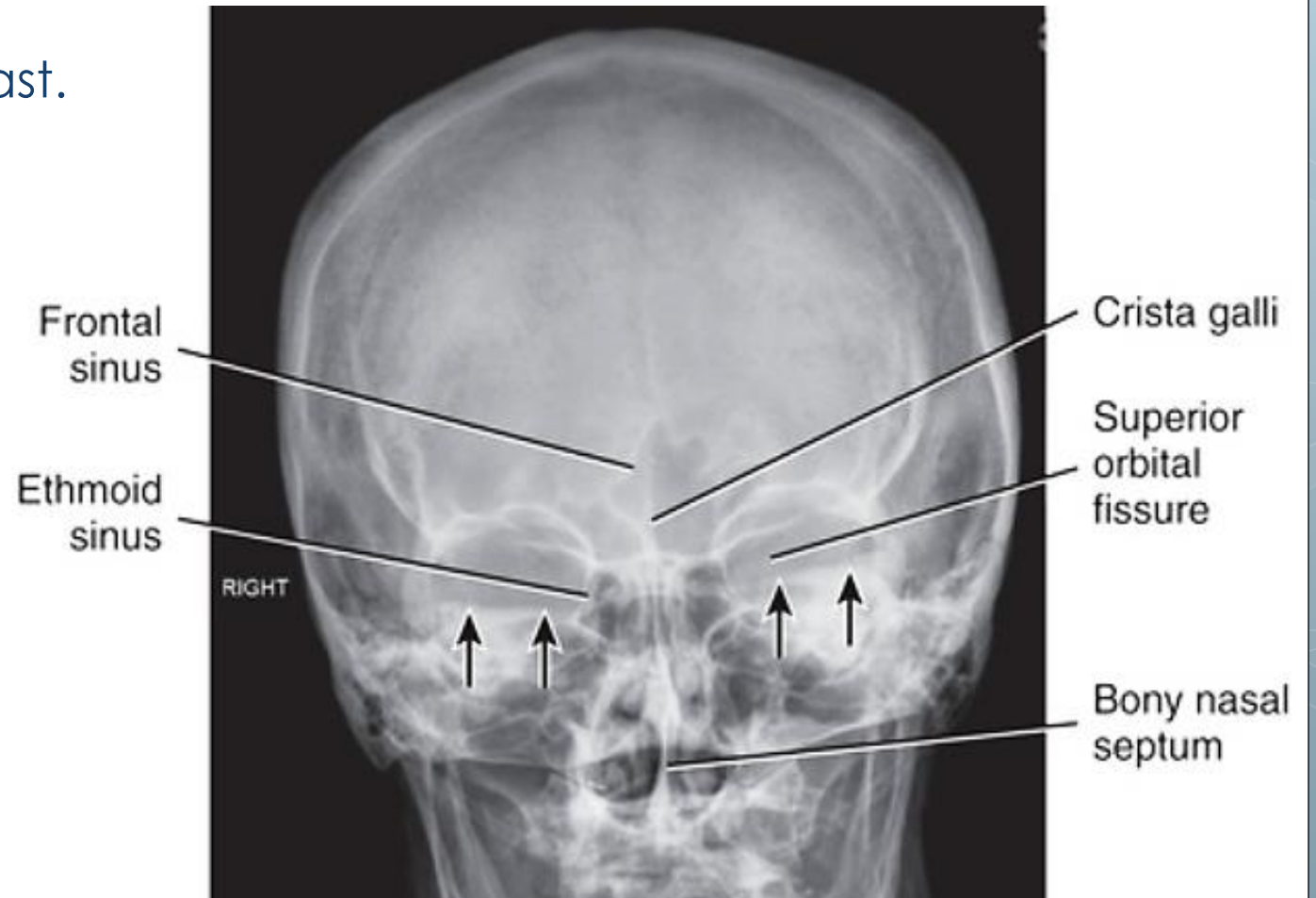
Respiration: Suspended



CR horizontal, OML 15° to CR (if cannot be tilted). If IR can be tilted 15° (Inset).

Evaluation Criteria

1. Frontal sinuses projected above the frontonasal suture .
2. Anterior ethmoid air cells are visualized lateral to each nasal bone.
3. No rotation or tilt.
4. Sufficient brightness and contrast.



3. Parietoacanthial Projection (Waters method)

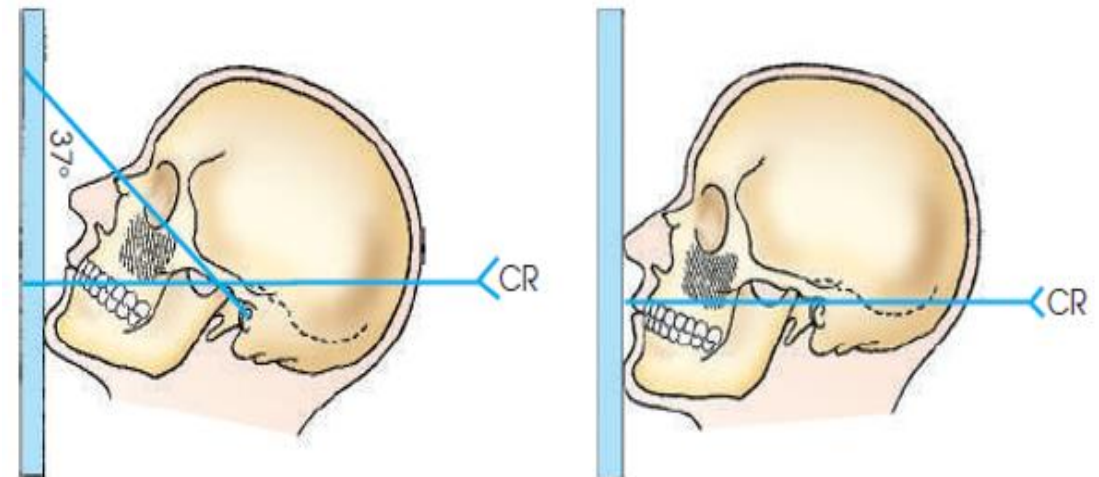
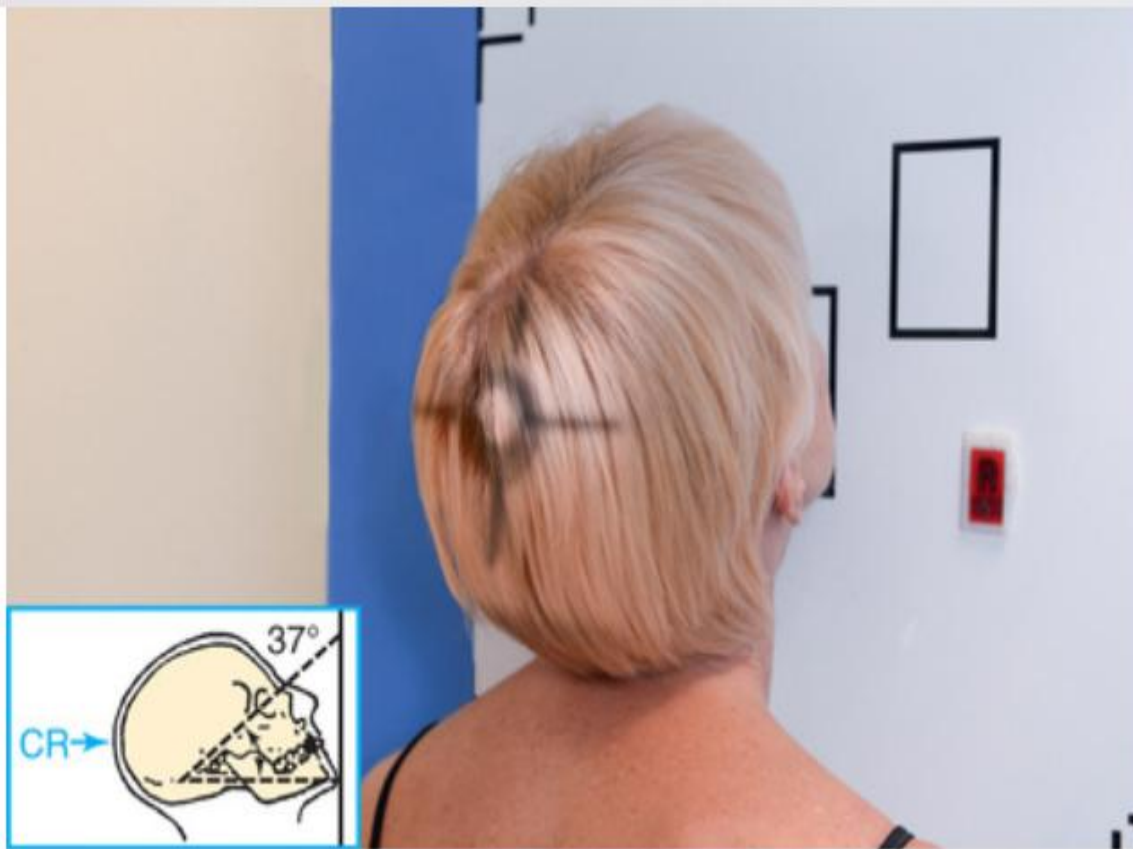
NOTE: For maxillary sinuses, with the petrous ridges lying inferior to the floor of the sinuses.

Position patient

- Patient is erect. Extend neck, placing chin and nose against IR.
- Adjust head until MML is perpendicular to IR; OML forms a 37° angle with IR.
- Position MSP perpendicular to midline of grid.
- Center IR to CR and to acanthion.

CR: Align horizontal CR perpendicular to IR centered to exit at acanthion.

Collimation: Collimate on four sides to anatomy of interest.



Parietoacanthial Projection (Waters Method)

Technical Factors

SID: 102 cm

Grid: yes

IR size: (8× 10 inches) L.W

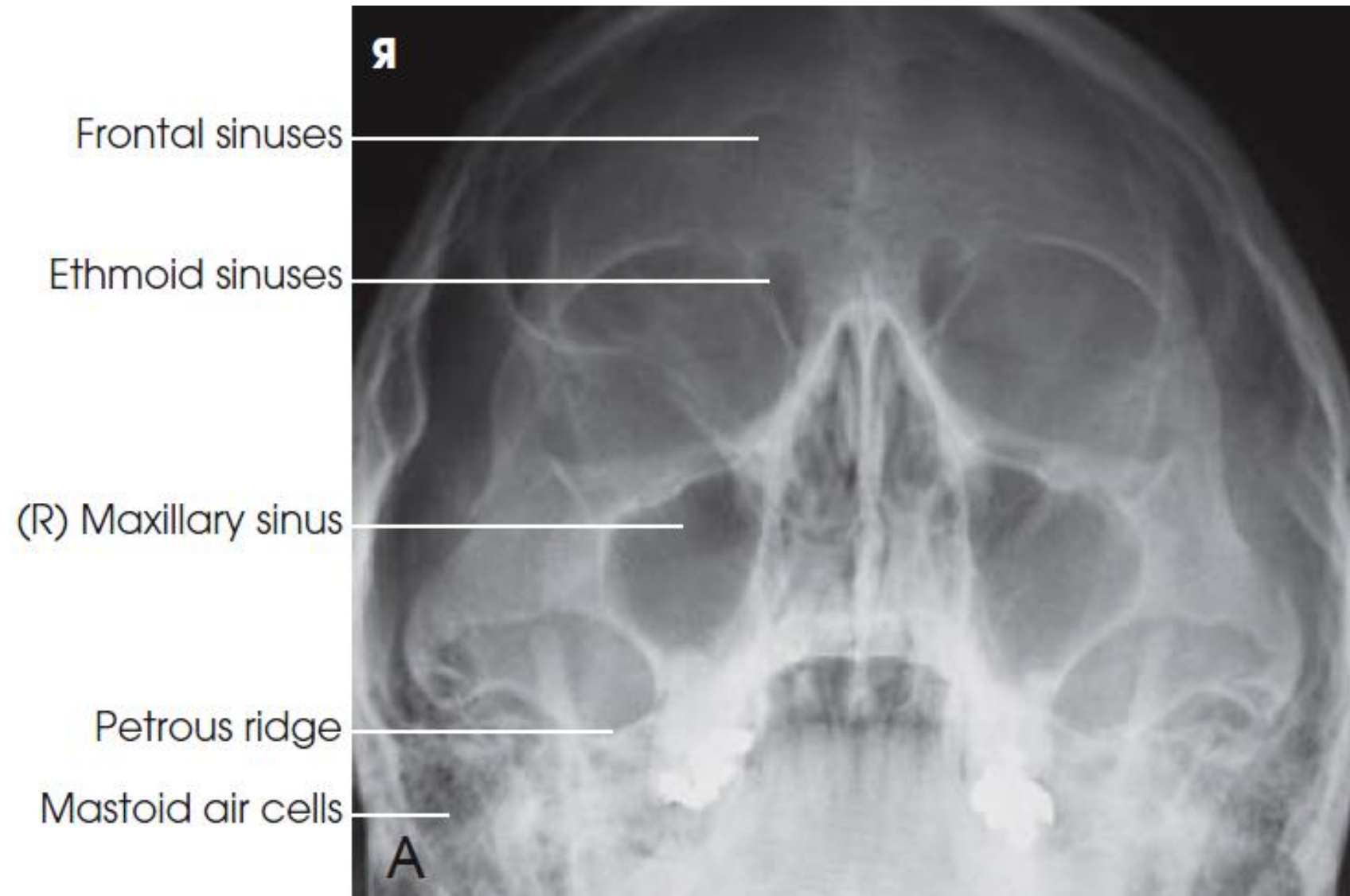
kV: 80

mAs: 28

Respiration: Suspended

Evaluation Criteria

1. Maxillary sinuses with the inferior aspect visualized free from superimposing alveolar processes and petrous ridges.
2. The inferior orbital rim, and an oblique view of the frontal sinuses.
3. No rotation or tilt.
4. Sufficient brightness and contrast.



Parietoacanthial sinuses: Waters method

4. Parietoacanthial Transoral Projection: Open-Mouth Waters method

NOTE: Provides an excellent demonstration of the sphenoidal sinuses.

Position patient

- Patient is erect, extend neck, placing chin and nose against IR.
- Adjust head until OML forms 37° angle with IR (MML is perpendicular with mouth closed).
- Position MSP perpendicular to the midline of grid; ensure no rotation or tilt.
- Instruct patient to open mouth by instructing to “drop jaw without moving head.” (MML is no longer perpendicular.)
- Center IR to CR and to acanthion.



Parietoacanthial Transoral Projection: Open-Mouth Waters Method

CR: Align horizontal CR perpendicular to IR. Center CR to exit at acanthion.

Collimation: Collimate on four sides to the anatomy of interest.

Technical Factors

SID: 102 cm

Grid: yes

IR size: (8 × 10 inches) L.W

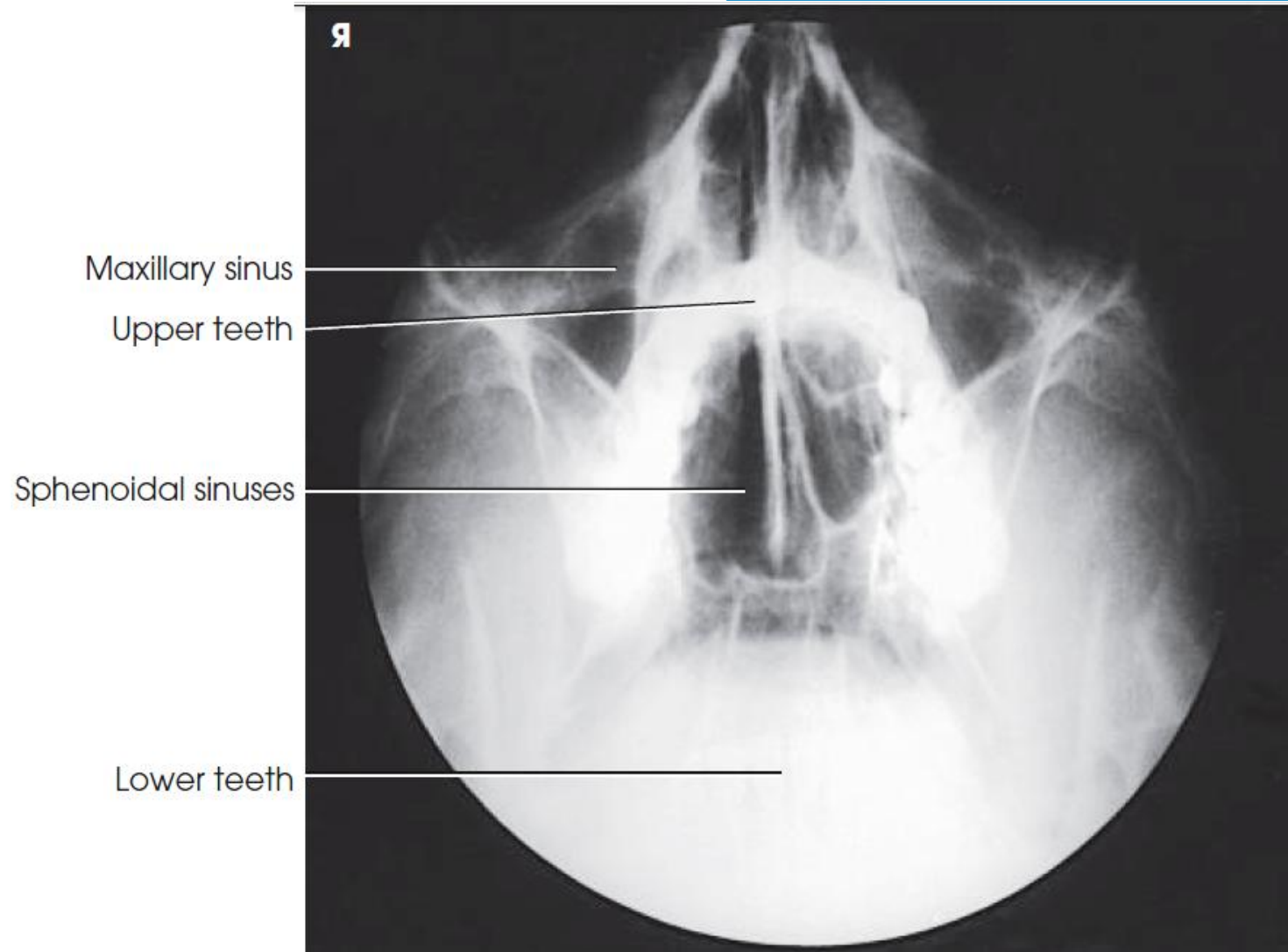
kV: 80

mAs: 28

Respiration: Suspended

Evaluation Criteria

- Maxillary sinuses with the inferior aspect visualized, free from superimposing alveolar processes and petrous ridges.
- The inferior orbital rim.
- an oblique view of the frontal sinuses, and the sphenoid sinuses visualized through the open mouth.



Parietoacanthial Transoral Projection: Open-Mouth Waters Method

