

# Radiographic procedures (3)

## 12: Paranasal sinuses

*Merrill's Chapter 22*

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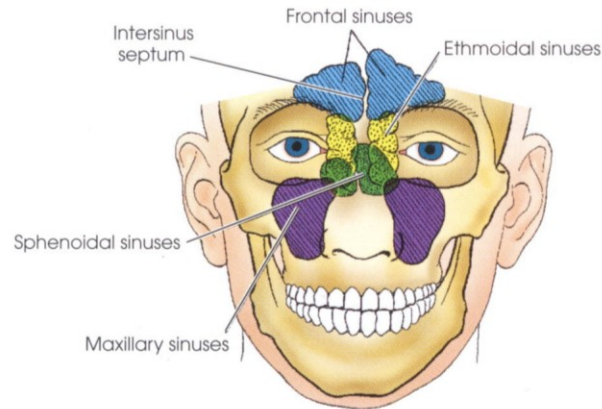
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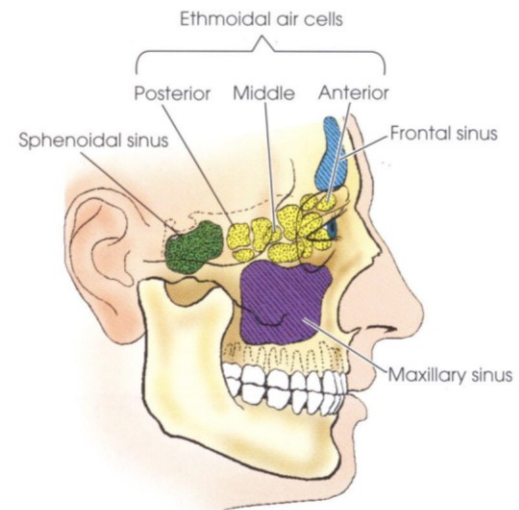
# Outline

- Paranasal sinuses
- Technical considerations
- Radiation protection
- Projections

# Paranasal sinuses



**Fig. 22-1** Anterior aspect of paranasal sinuses, showing lateral relationship to each other and to surrounding parts.



**Fig. 22-2** Schematic drawing of paranasal sinuses, showing AP relationship to each other and surrounding parts.

# Effect of exposure parameters

Correctly exposed  
radiograph

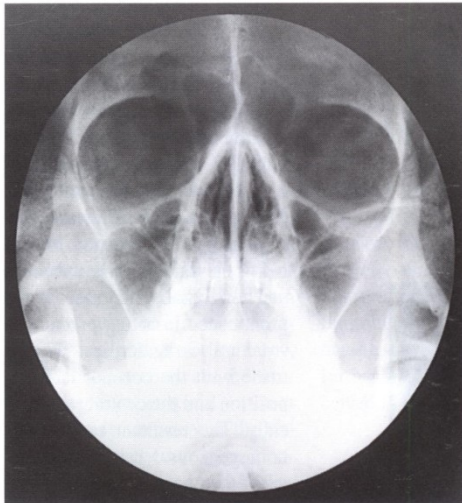


Fig. 22-3 Correctly exposed radiograph of sinuses.

Overexposed  
radiograph

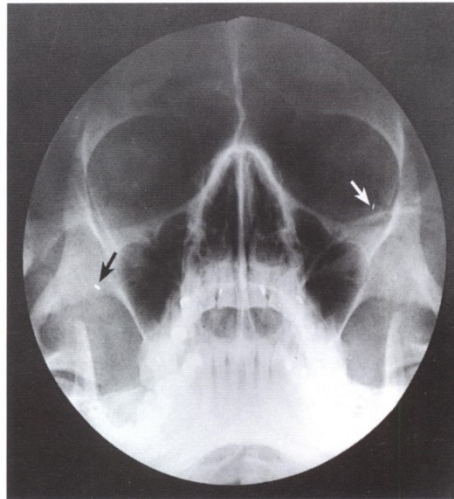


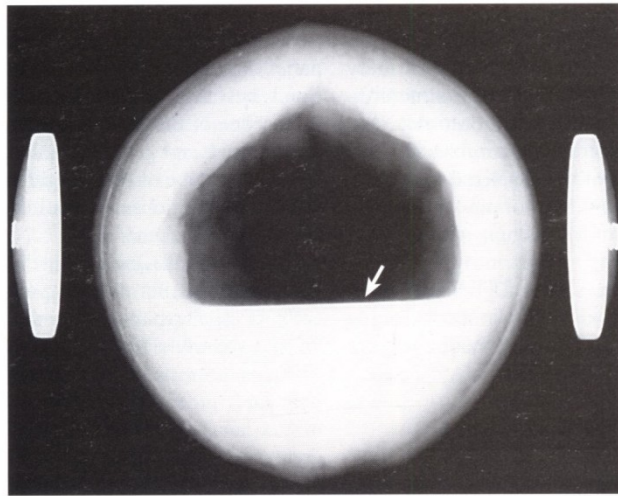
Fig. 22-4 Overexposed radiograph of sinuses demonstrating two artifacts caused by dirt on screens (arrows).

Underexposed  
radiograph

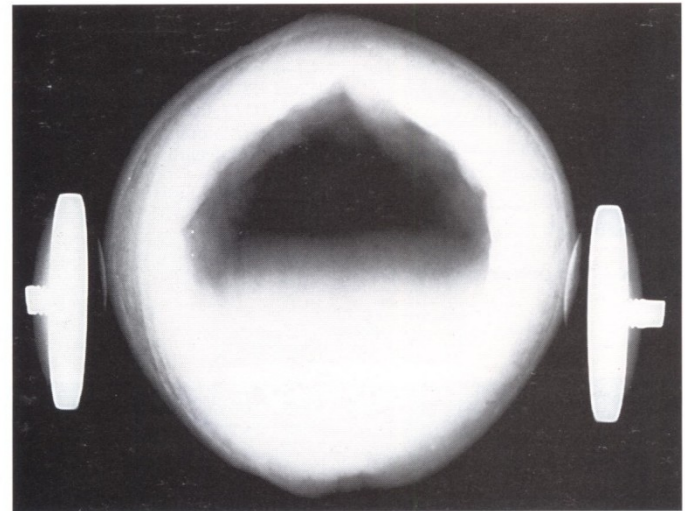


Fig. 22-5 Underexposed radiograph of sinuses.

# Effect of central ray angle



**Fig. 22-6** Coconut, vertical position: horizontal central ray. Air-fluid level is demonstrated (arrow).



**Fig. 22-7** Coconut, vertical position: central ray angled 45 degrees upward. Note that air-fluid level is not as sharp.

# All groups of sinuses

## Lateral projection

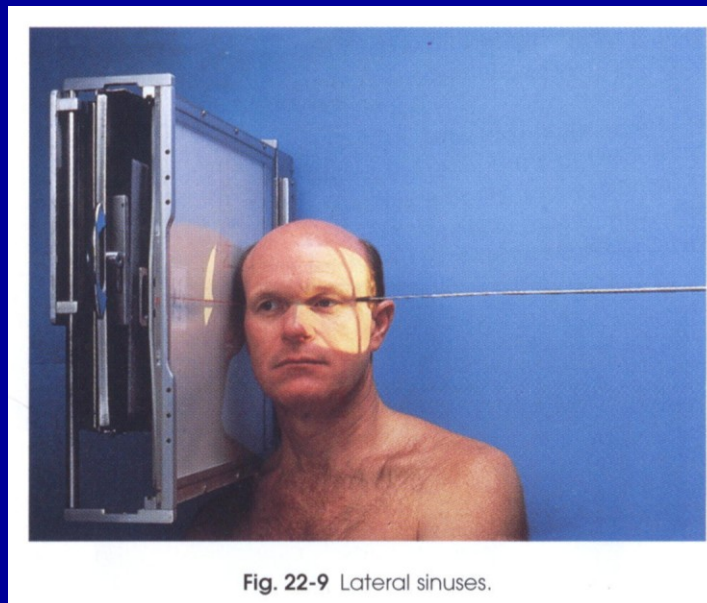
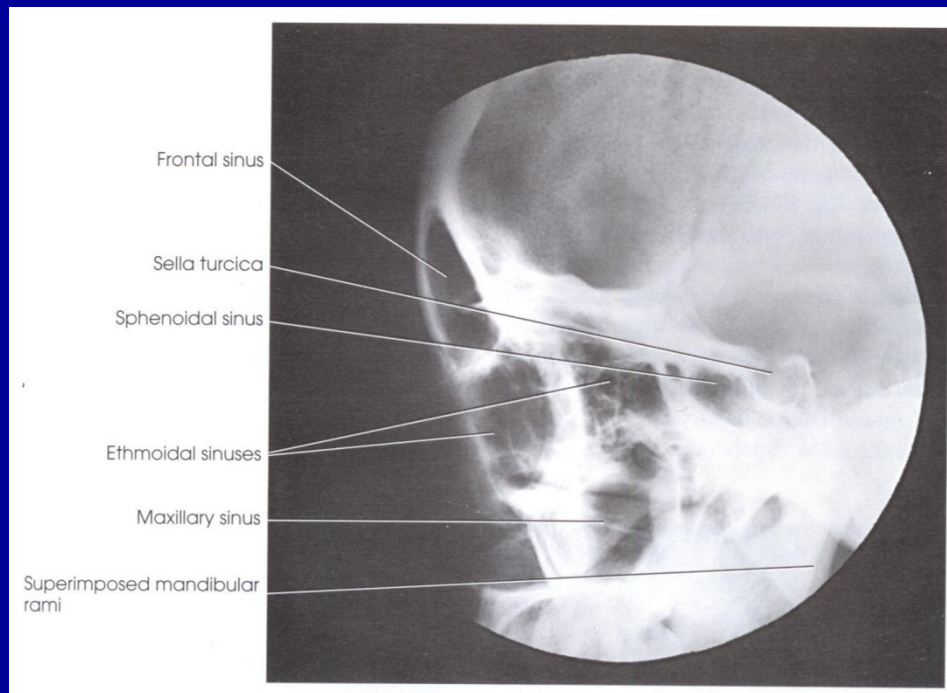


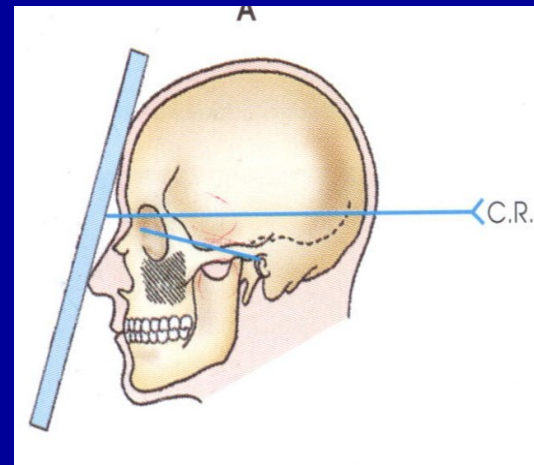
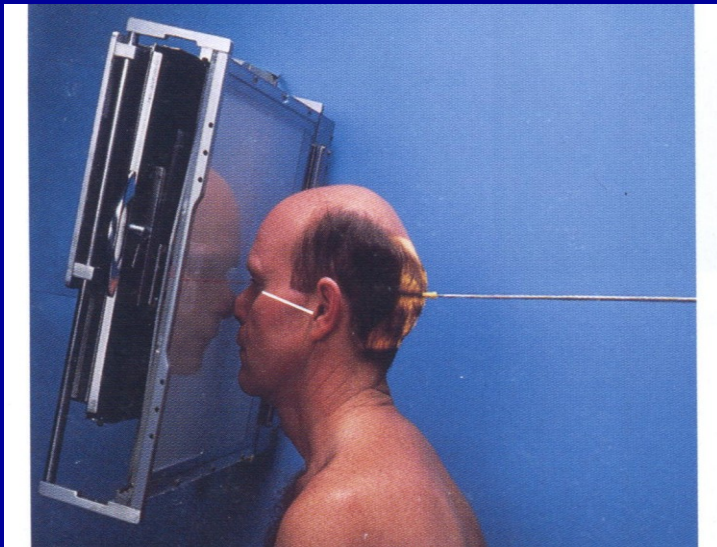
Fig. 22-9 Lateral sinuses.

# Lateral sinuses



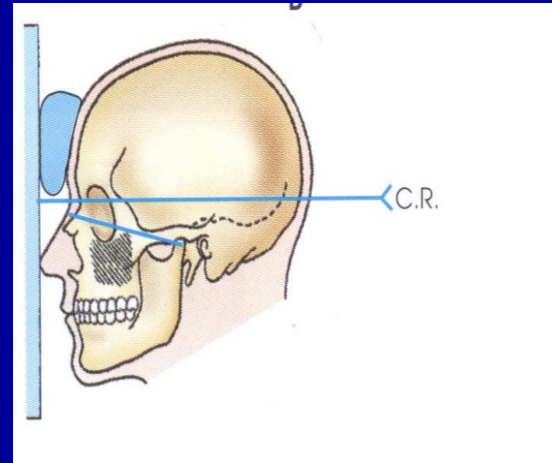
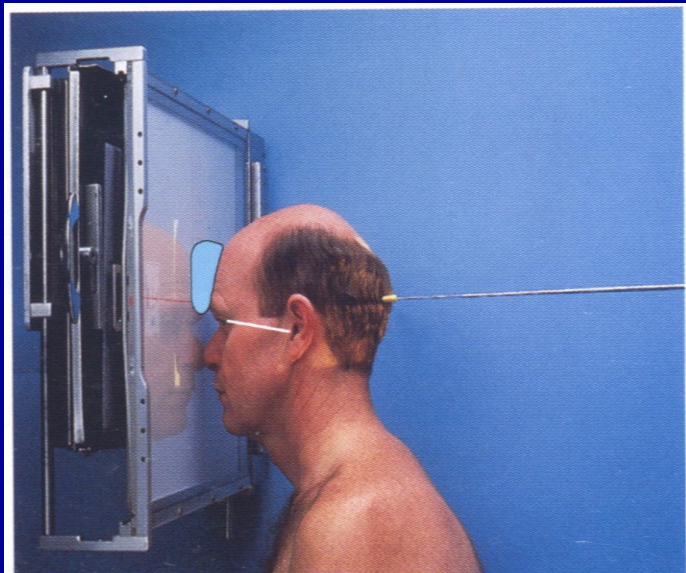
# Frontal and anterior ethmoidal sinuses

## PA axial projection (Caldwell method)

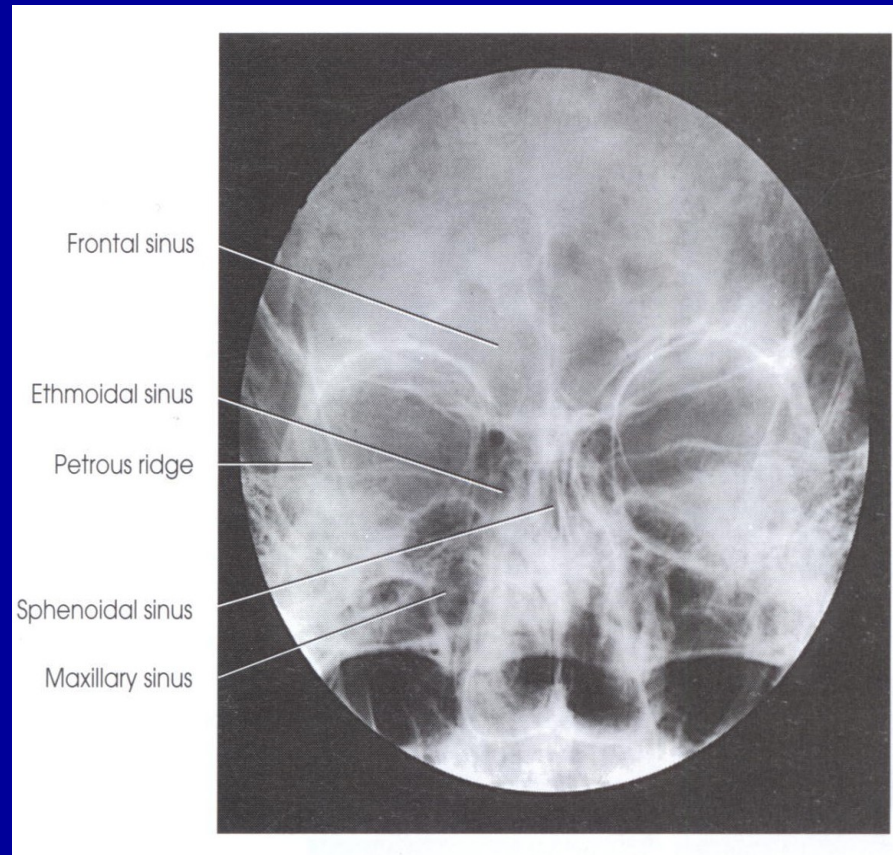


# Frontal and anterior ethmoidal sinuses

## PA axial projection (Caldwell method)



# PA axial sinuses



# Maxillary sinuses

## Parietoacanthial projection (Waters method)

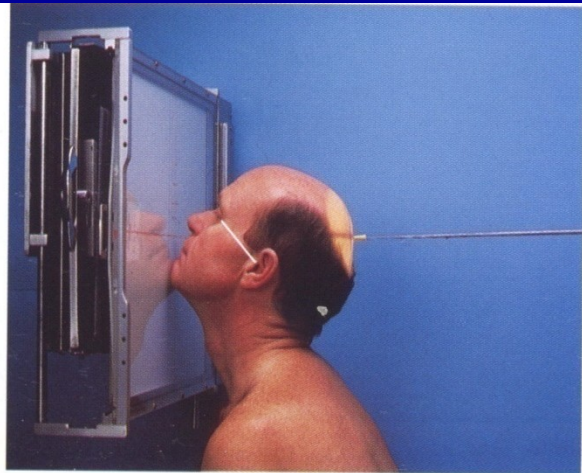


Fig. 22-16 Parietoacanthial sinuses: Waters method.

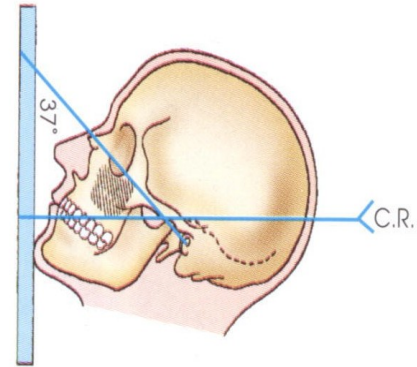
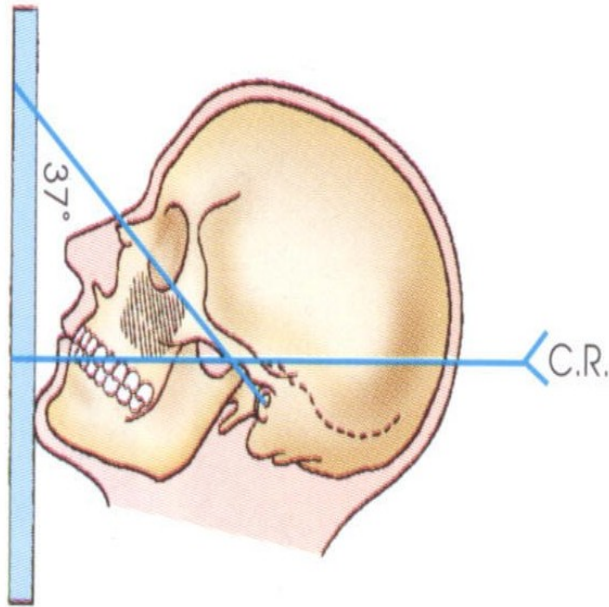
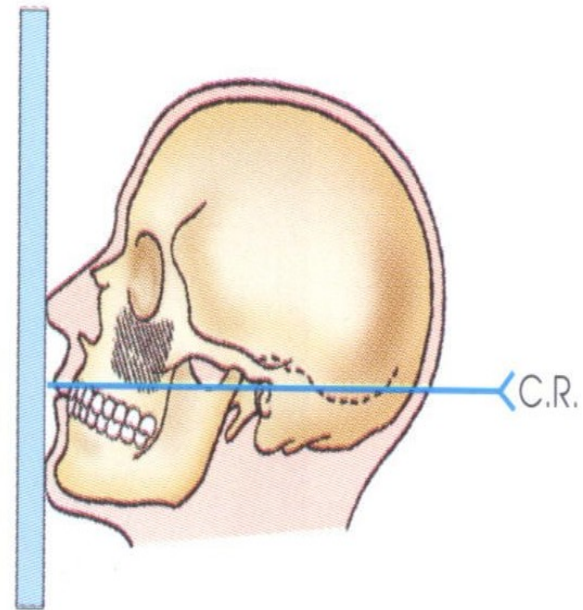


Fig. 22-14 Proper positioning. Petrous ridges are projected below maxillary sinuses.

# Parietoacanthial projection (Waters method)

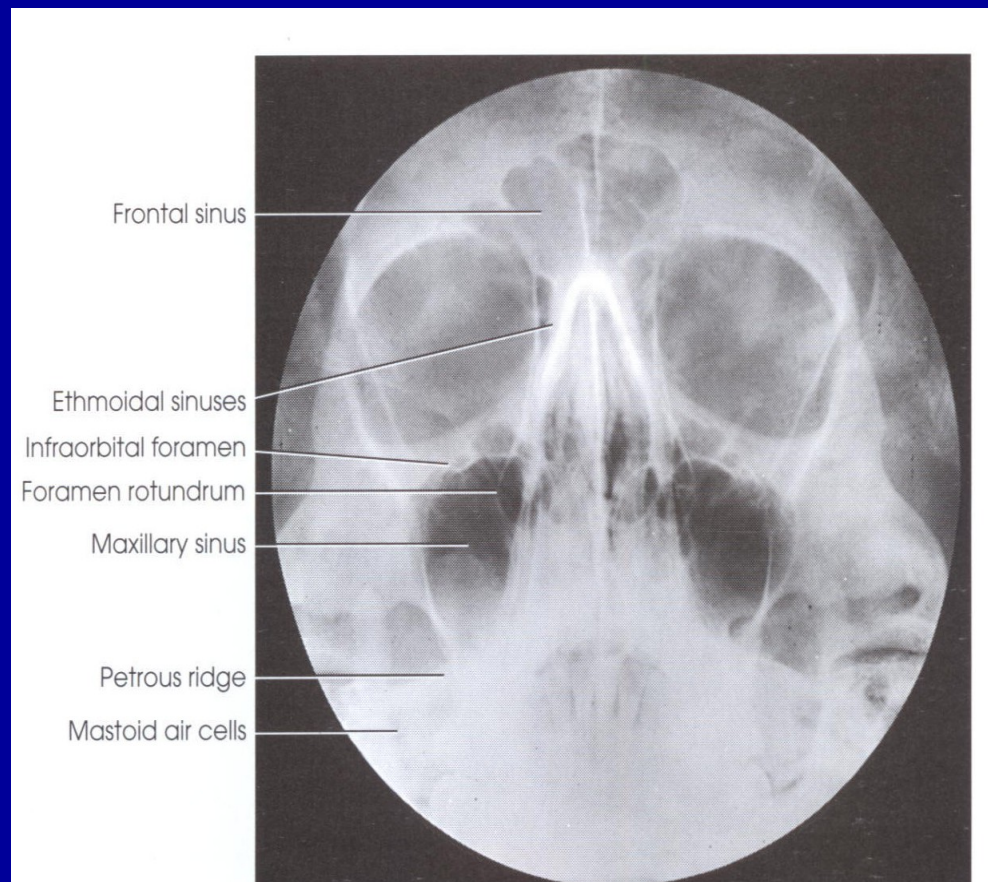


**Fig. 22-14** Proper positioning. Petrous ridges are projected below maxillary sinuses.



**Fig. 22-15** Improper positioning. Petrous ridges are superimposed on maxillary sinuses.

# Parietoacanthial sinuses (Waters Method)



# Maxillary and ethmoidal sinuses

## Parietoacanthial projection (open- mouth Waters method)

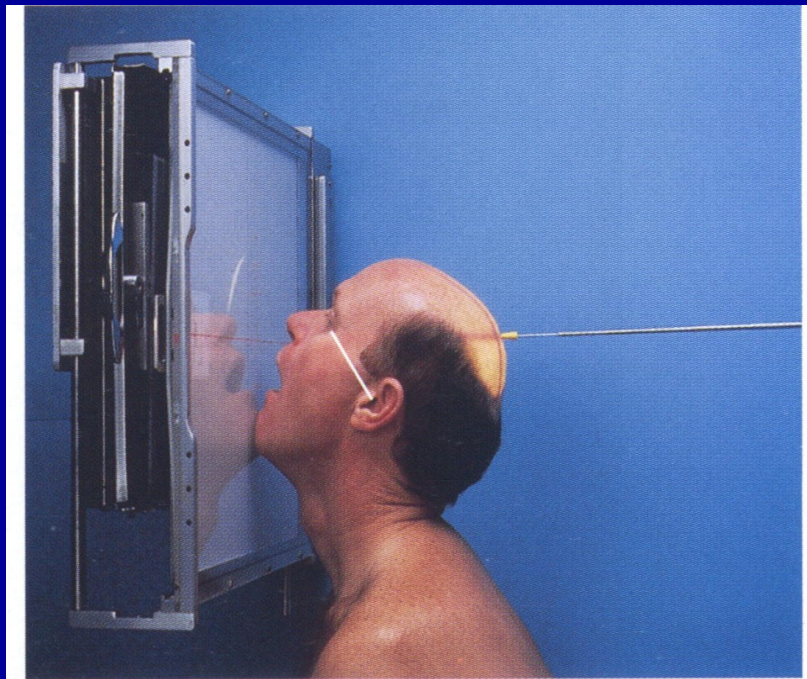
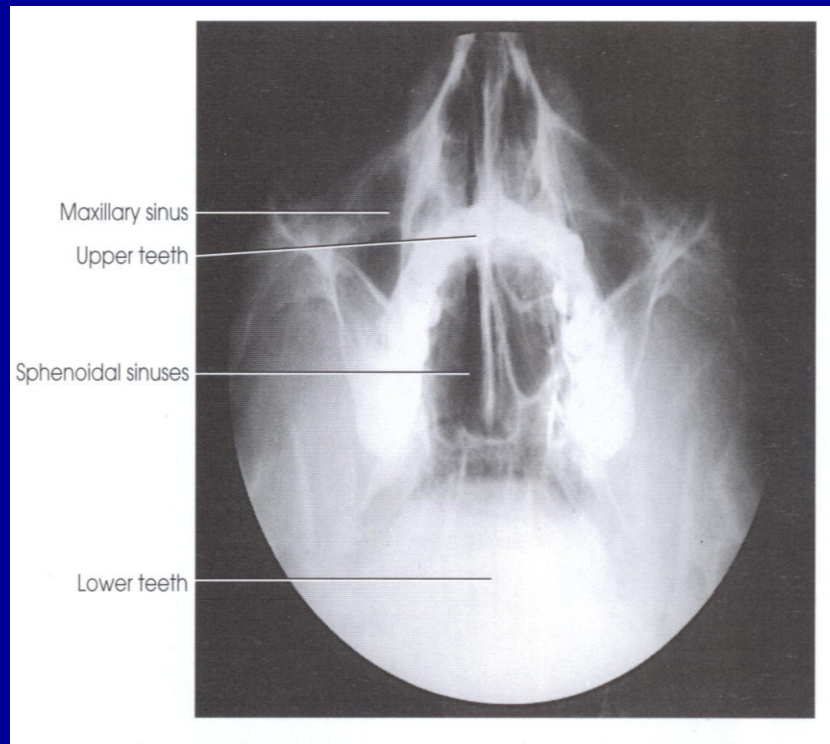


Fig. 22-18 Parietoacanthial sinuses: open-mouth Waters method.

# Parietoacanthial sinuses (open mouth Waters method)



# Ethmoidal and sphenoidal sinuses

## Submentovertical method

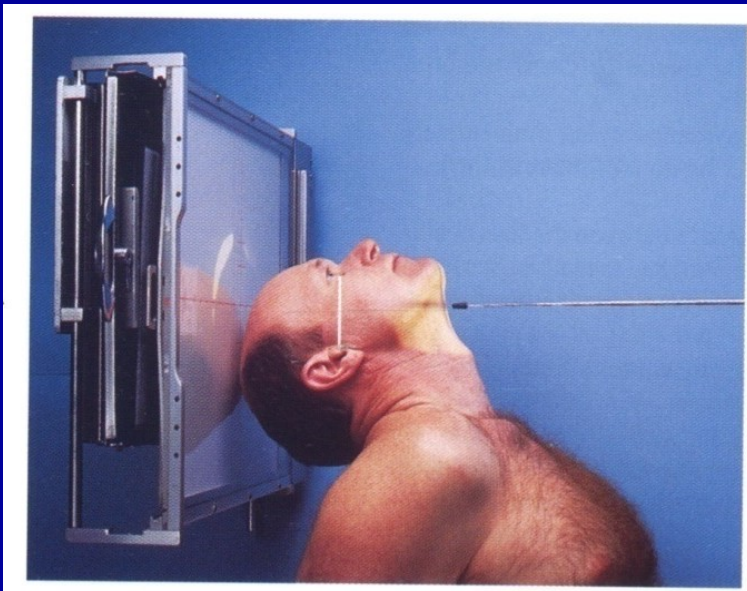
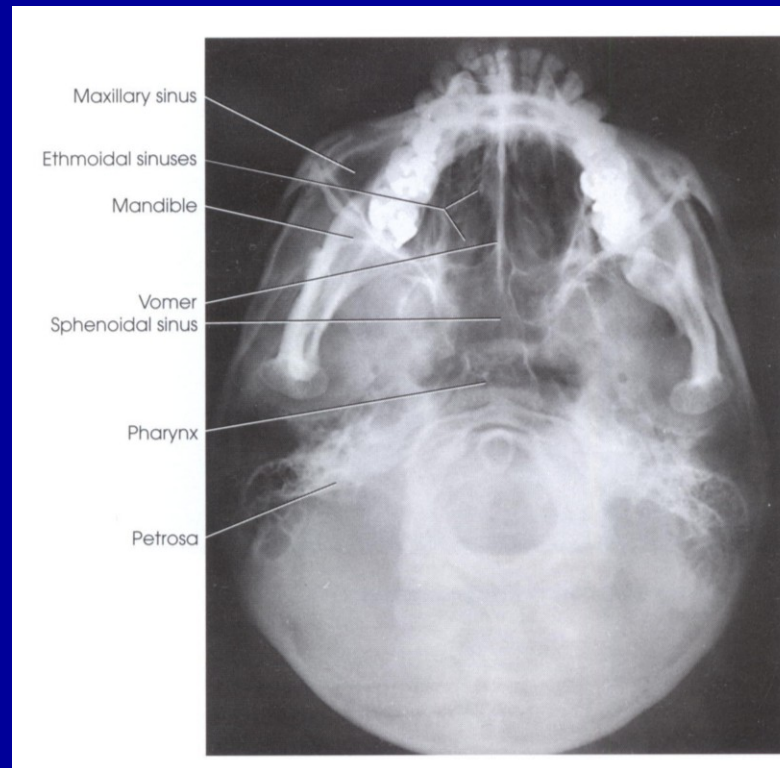


Fig. 22-20 Submentovertical sinuses.

# Submentovertical sinuses



# Ethmoidal, sphenoidal and maxillary sinuses

## PA projection

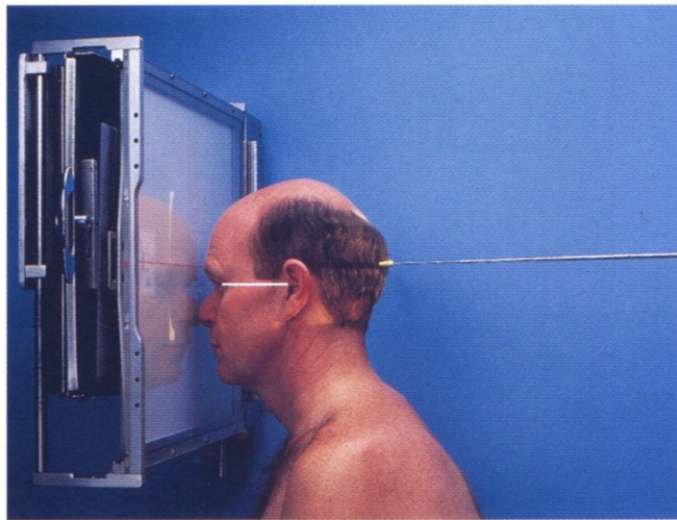
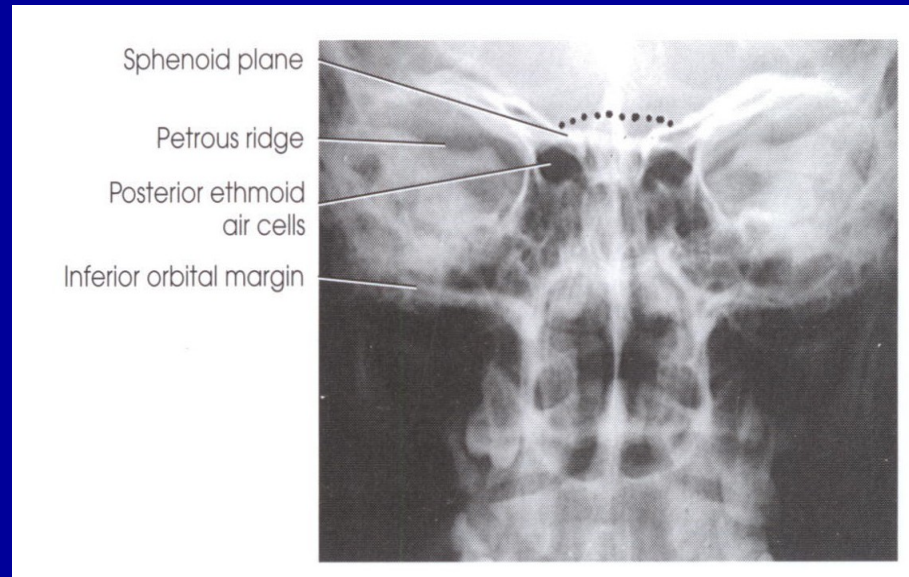
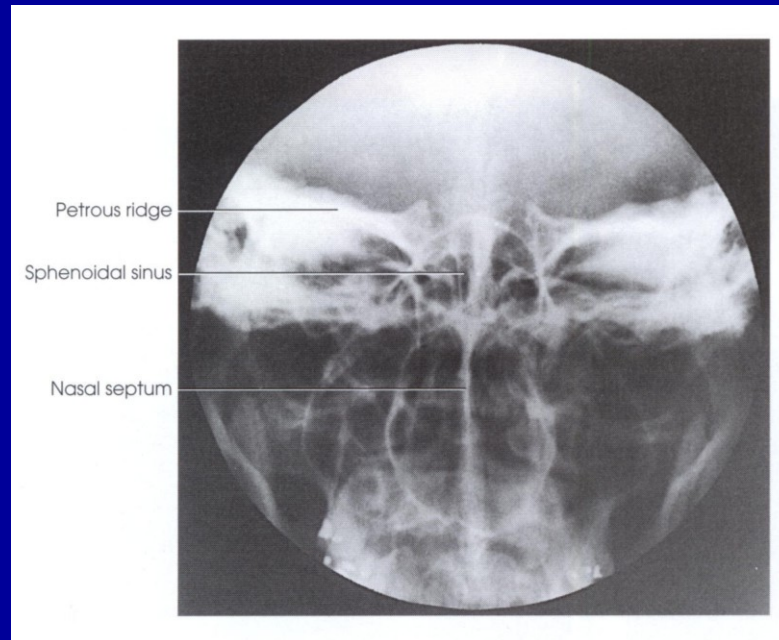


Fig. 22-24 PA posterior ethmoidal sinuses.

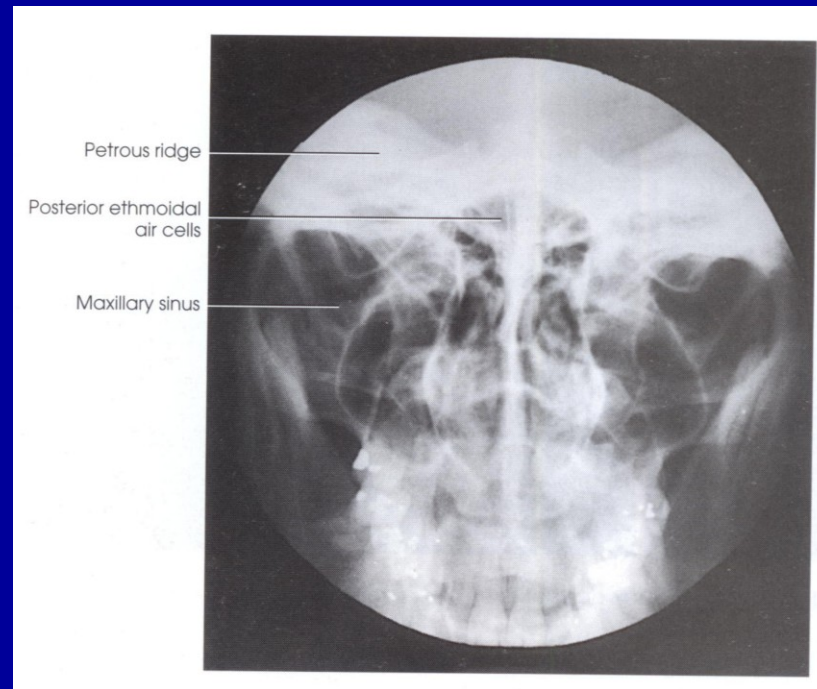
# PA posterior ethmoidal sinuses



# PA sphenoidal sinuses



# PA maxillary sinuses



# Reference

- Philip W Ballinger, Merrill's Atlas of Radiographic Positions and Radiographic Procedures, Volume 2, 2007, Mosby