

Chapter 17

Skull, Facial Bones, and Paranasal Sinuses

Learning Objectives

- Name the principle bones that make up the cranium and the face, and identify each on an anatomic diagram and on a radiograph
- Name and identify the four sets of paranasal sinuses on an anatomic diagram and on radiographs
- Identify significant positioning landmarks of the skull and face by palpation

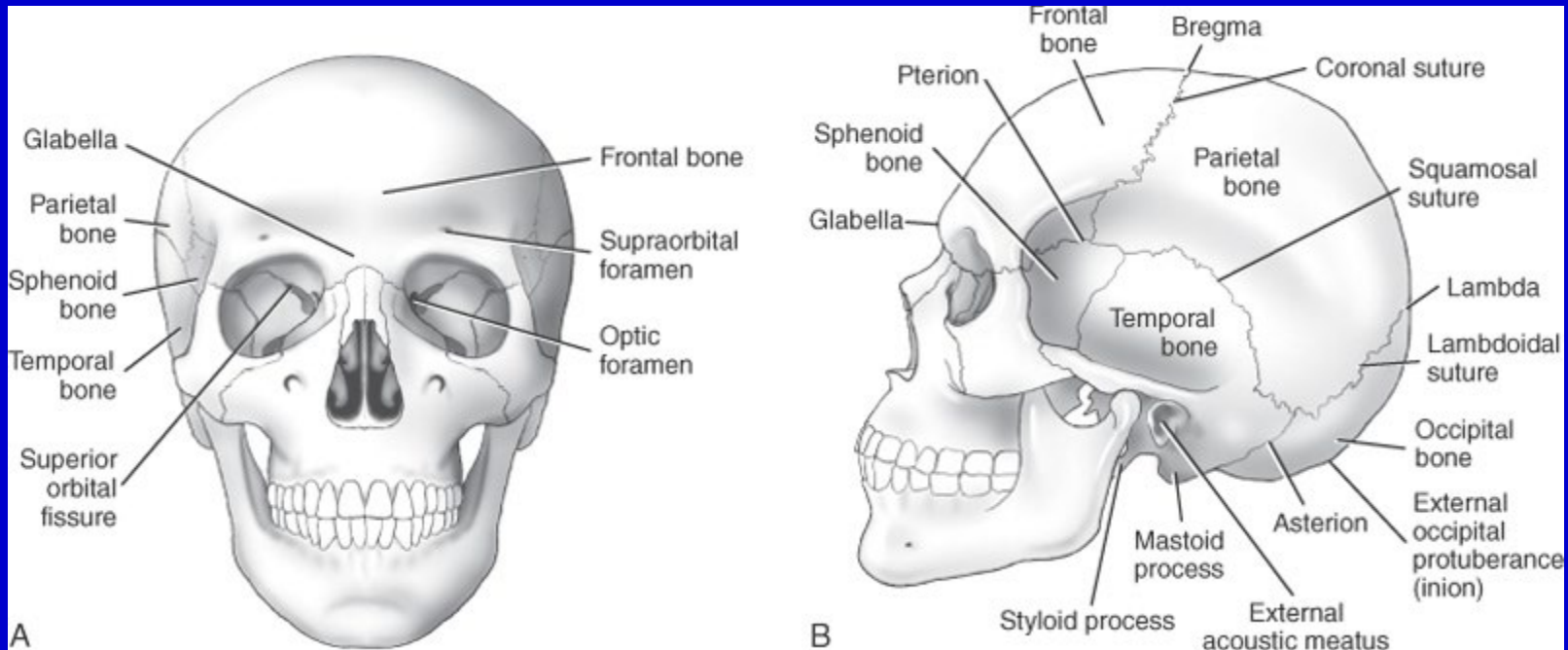
Learning Objectives

- Demonstrate correct body and part positioning for routine projections and common special projections of the skull, facial bones, and paranasal sinuses
- Correctly evaluate radiographs of skull, facial bones, and paranasal sinuses for positioning accuracy
- Describe and recognize on radiographs pathologic conditions that are common to skull, facial bones, and paranasal sinuses

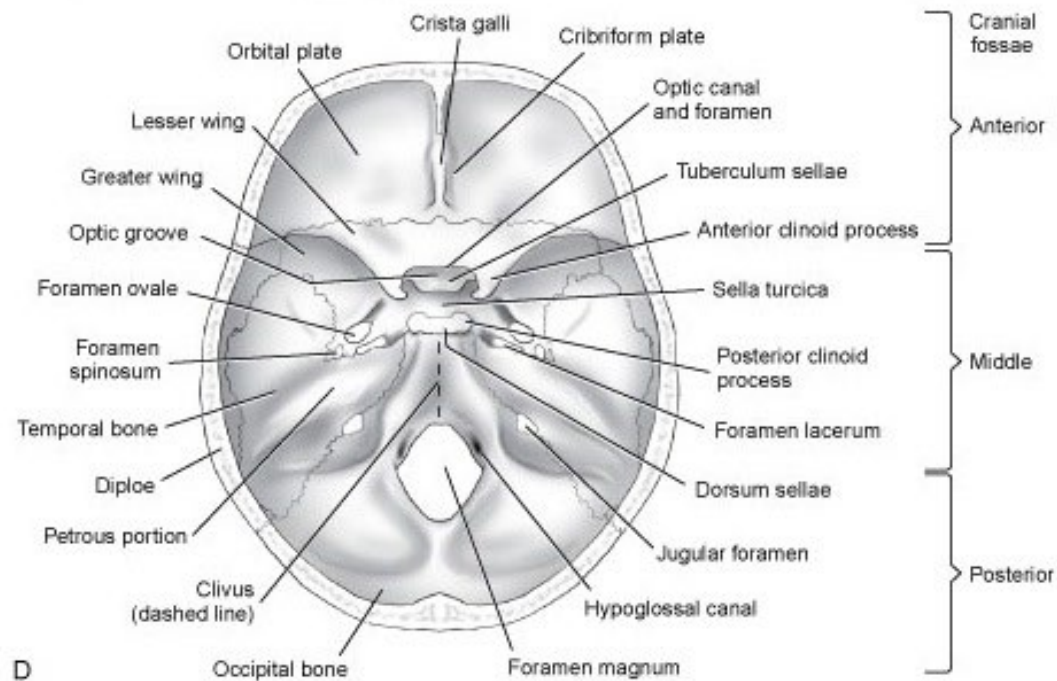
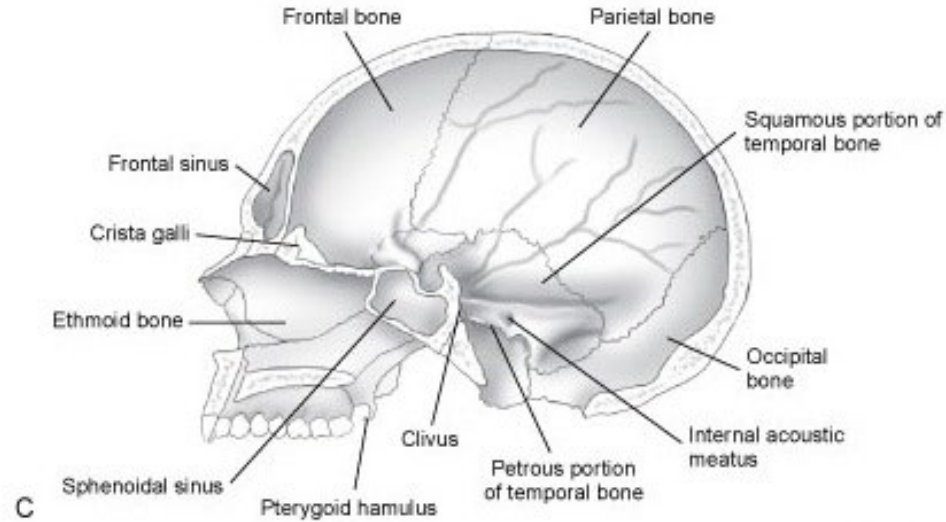
Bones of the Cranium

Skull

- Frontal
- Parietal
- Temporal
- Occipital
- Sphenoid
- Ethmoid

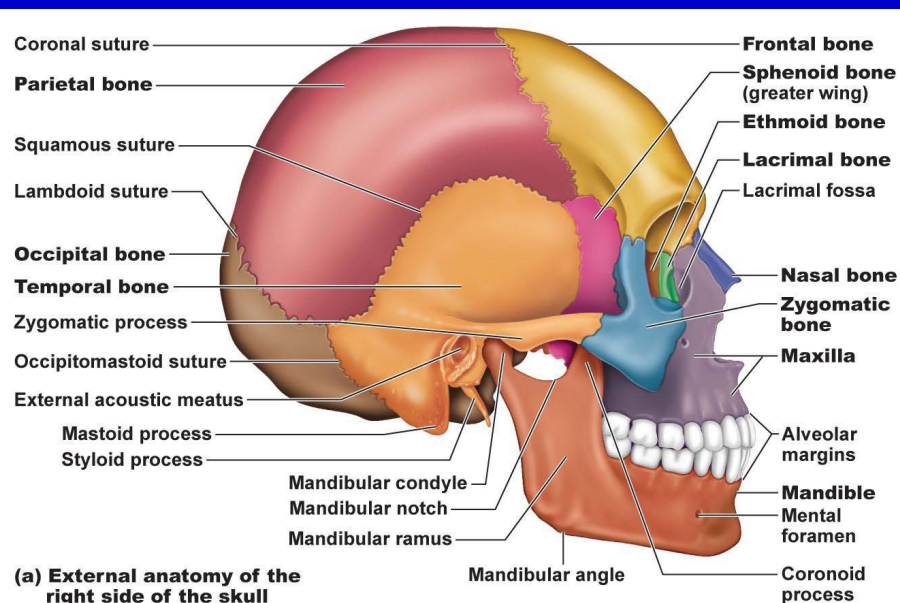
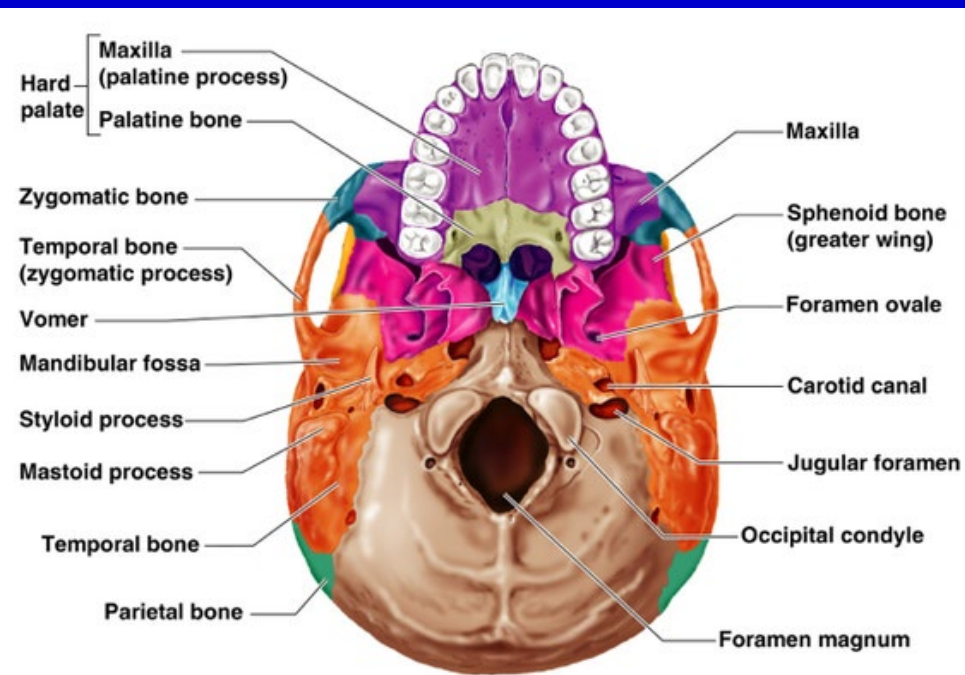
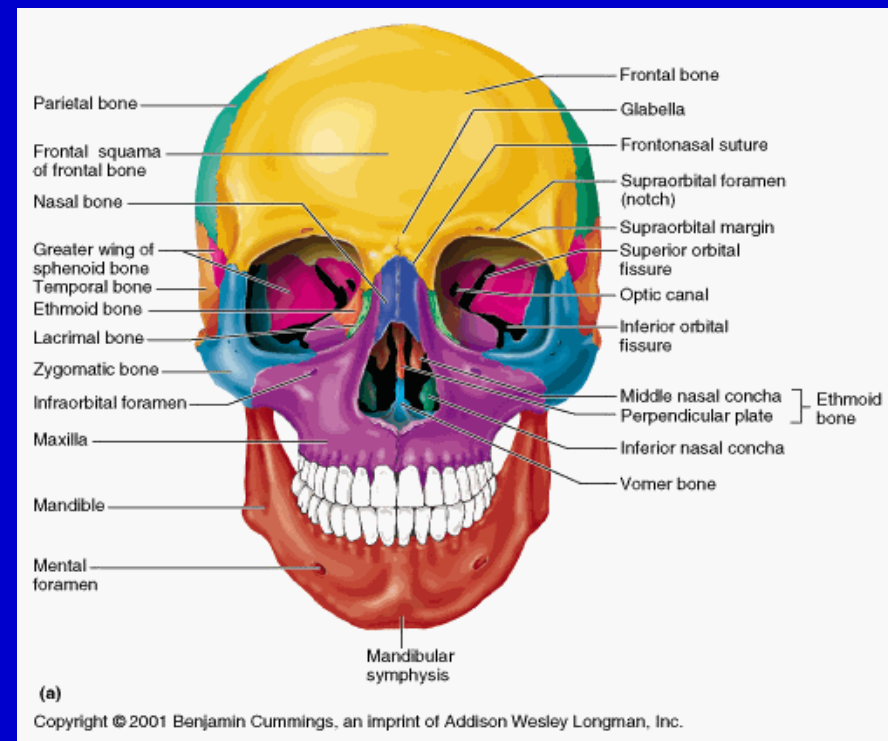


Bones of the Cranium



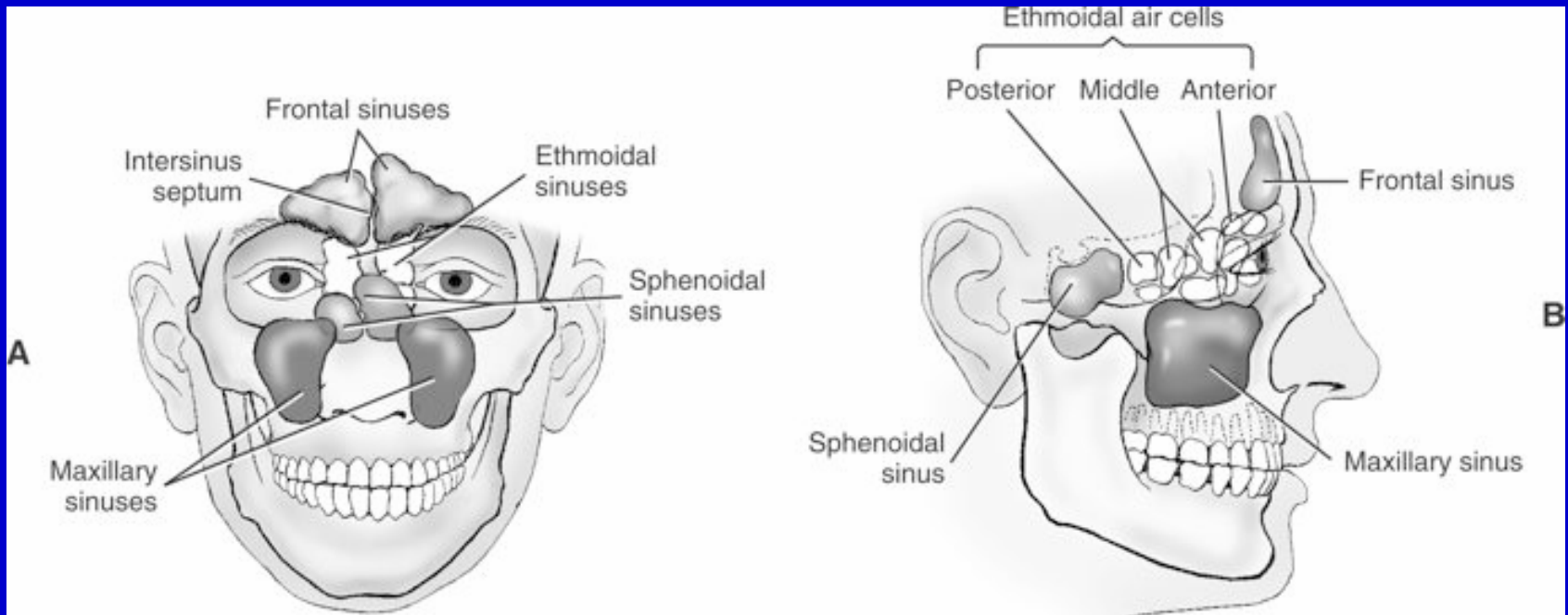
Facial Bones

- Nasal
- Lacrimal
- Mandible
- Maxilla
- Zygoma
- Vomer
- Palatine
- Nasal conchae

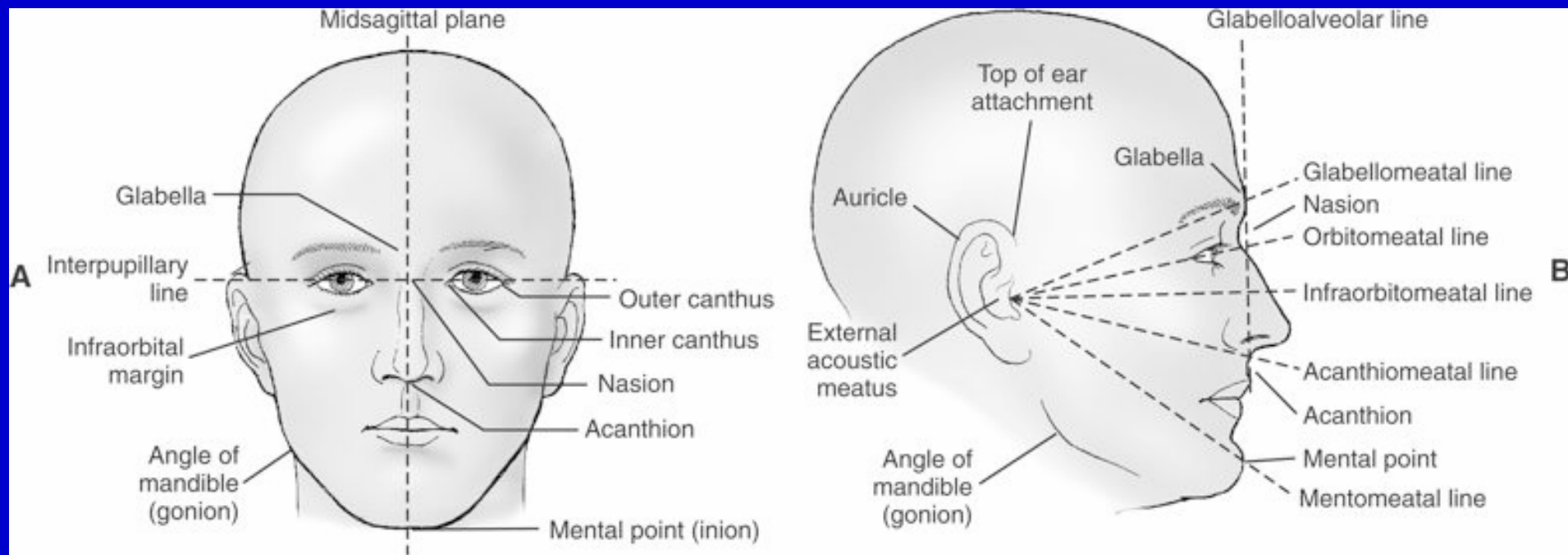


Paranasal Sinuses

- Frontal
- Maxillary
- Ethmoid
- Sphenoid



Landmarks for Positioning of the Skull, Facial Bones, and Paranasal Sinuses



Examination of the Skull, Facial Bones, and Paranasal Sinuses

- Place IR in Bucky tray
- Place patient erect in front of upright cassette holder or recumbent on table
- Remove jewelry, hair ornaments, or other items that may be within the radiation field
- Place appropriate image markers
- Shield gonads



PA Projection of the Skull

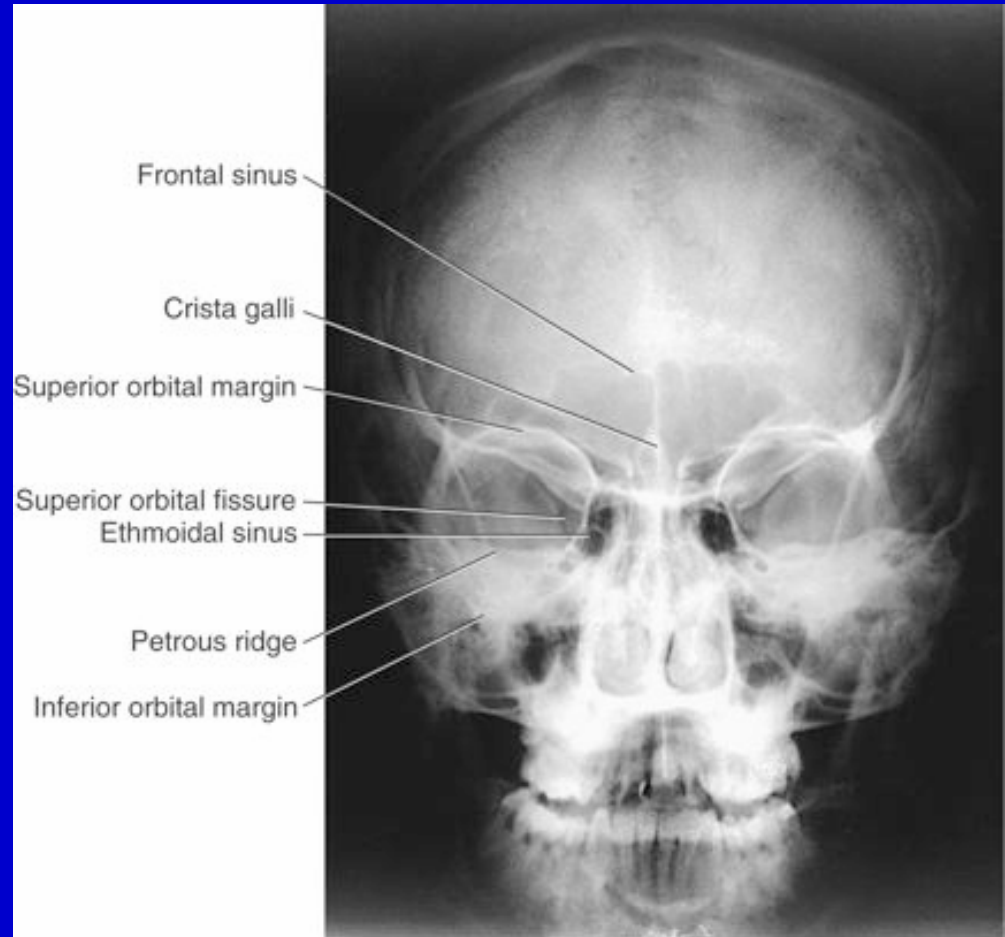


Clicker Question

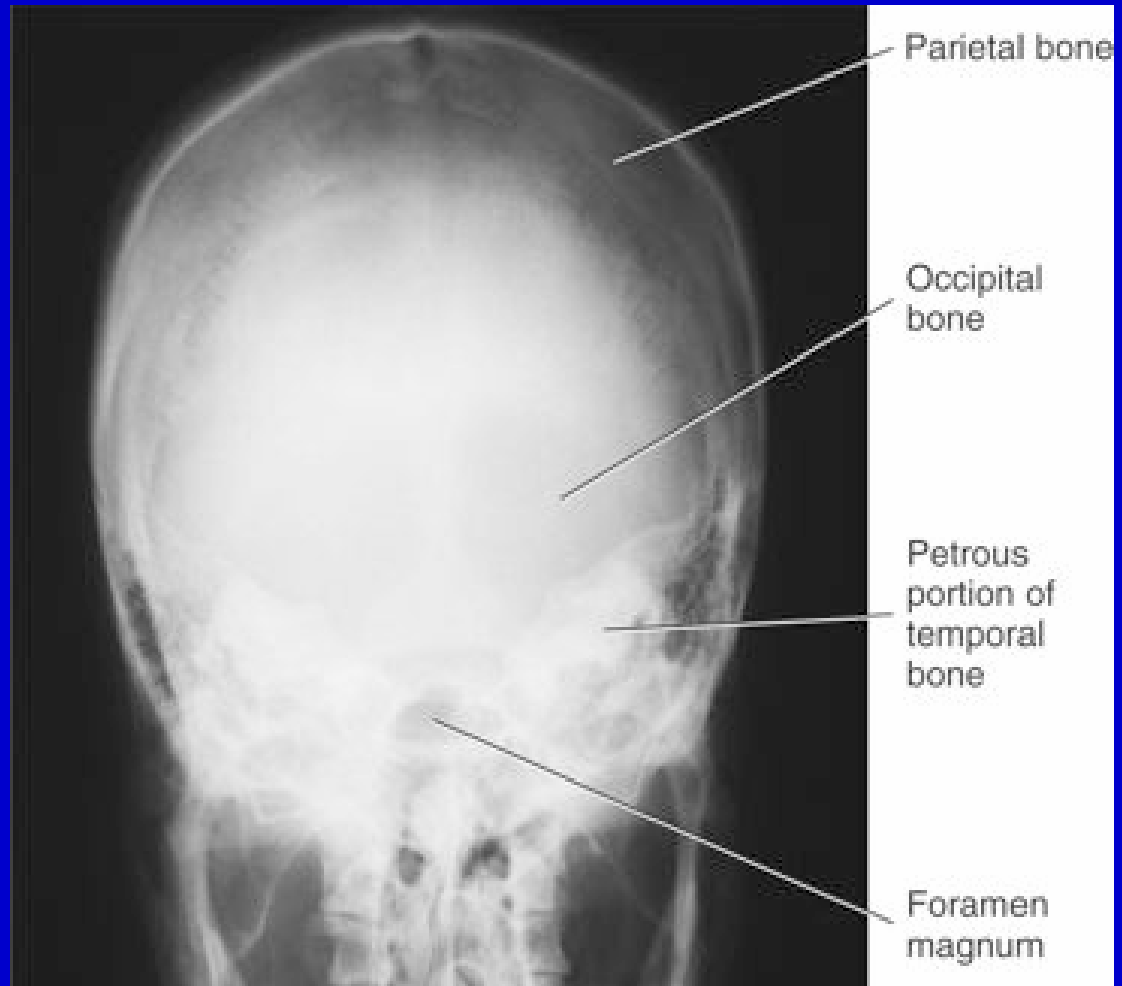
Which positioning line is placed perpendicular to the IR for a PA projection of the skull?

- a) glabellomeatal
- b) infraorbital meatal
- c) orbital meatal
- d) interpupillary

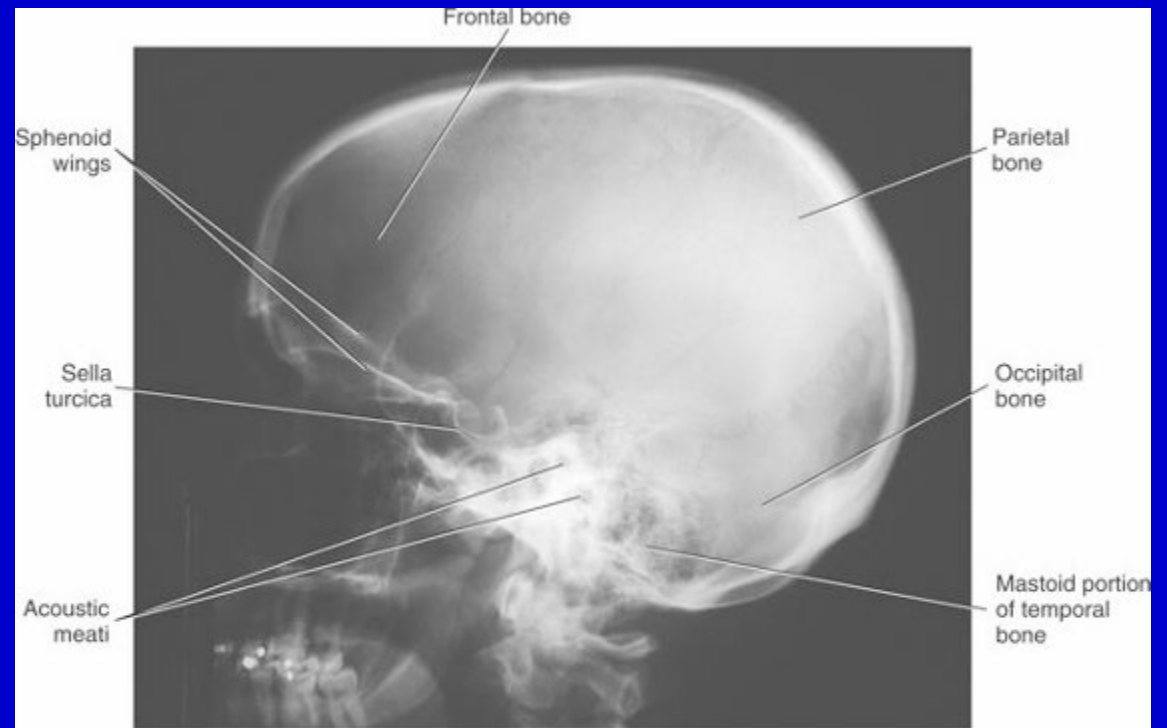
PA Axial Projection of the Skull



AP Axial Projection of the Skull



Lateral Projection of the Skull

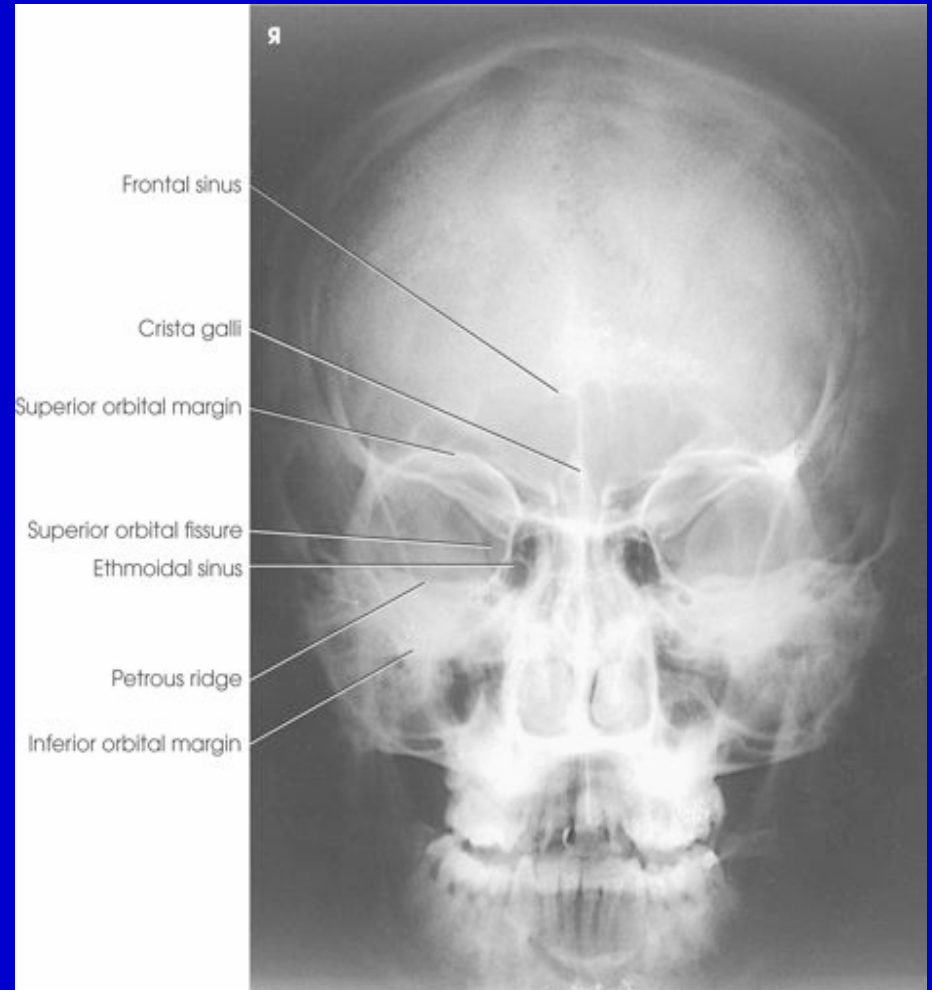


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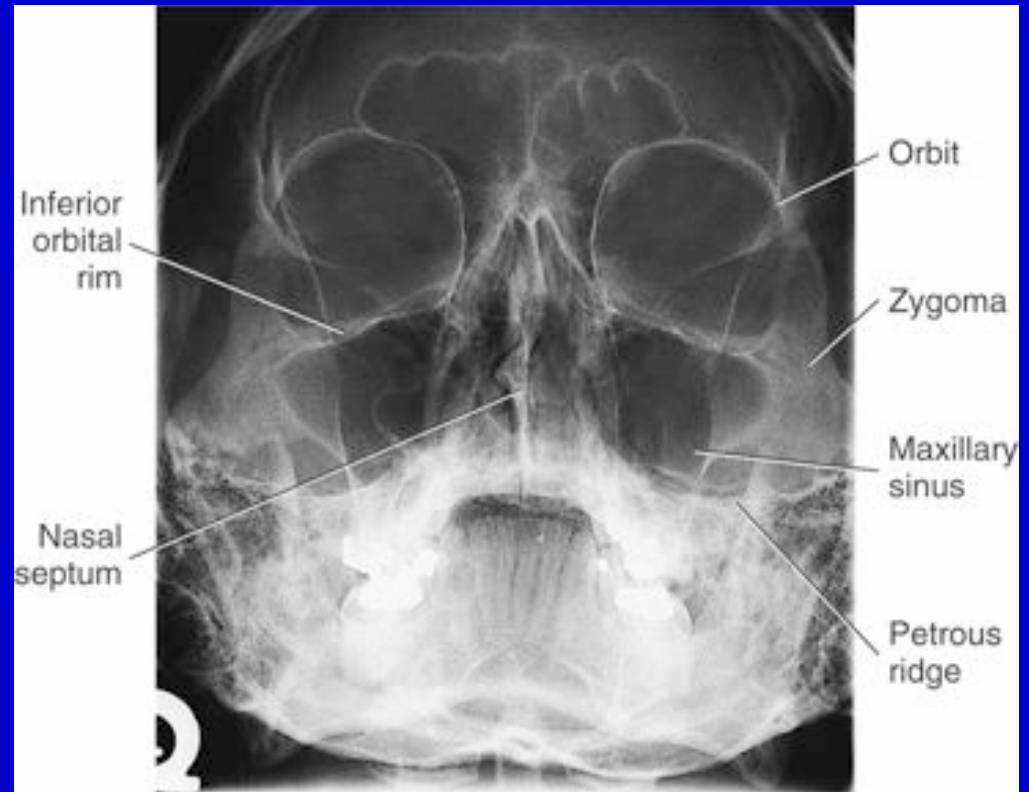
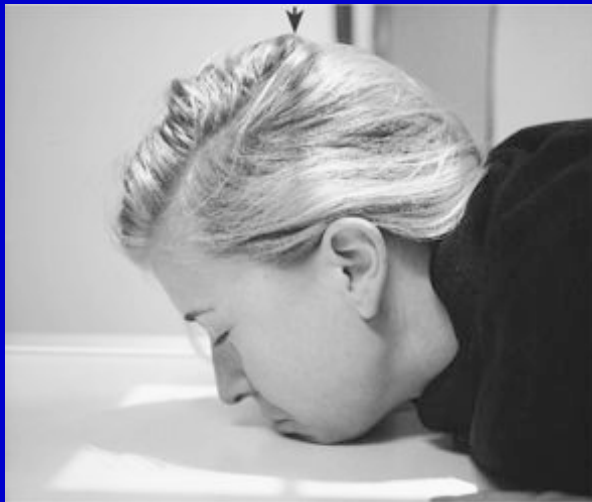
For a lateral projection of the skull the CR is directed 2 inches:

- a) above the EAM
- b) below the EAM
- c) anterior to the EAM
- d) posterior to the EAM

PA Axial Projection of the Facial Bones



Parietoacanthial Projection of the Facial Bones

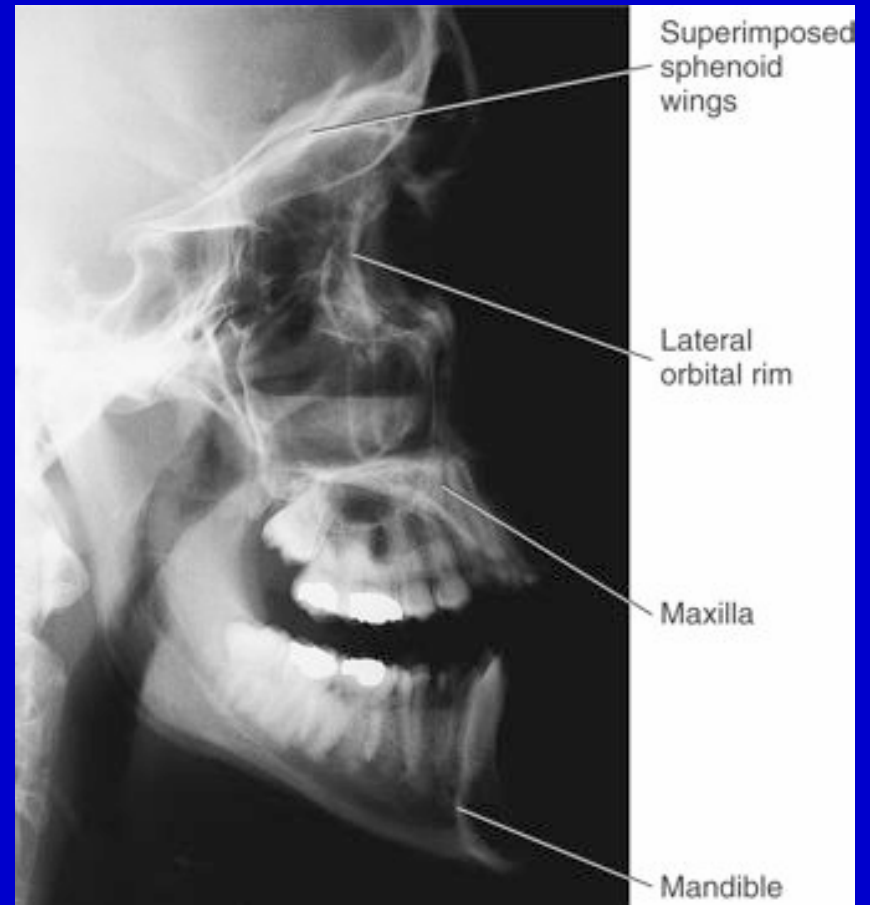


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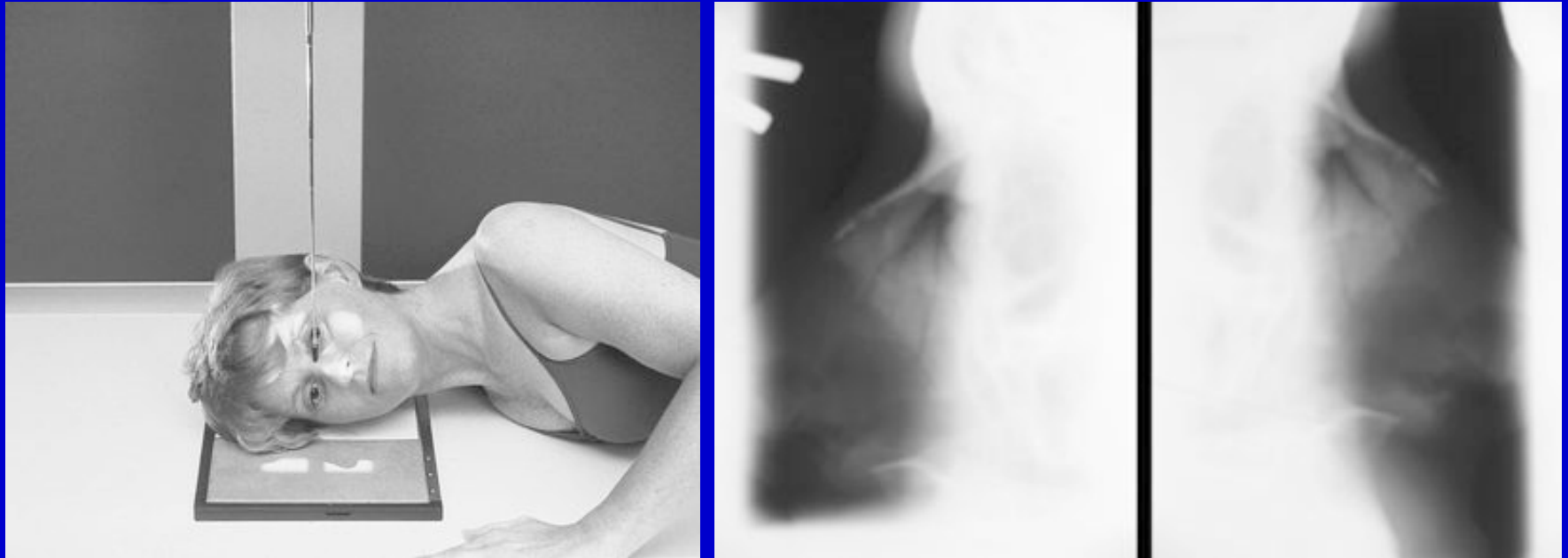
For a parietoacanthial projection, the OML and IR form an angle of:

- a) 27°
- b) 33°
- c) 37°
- d) 45°

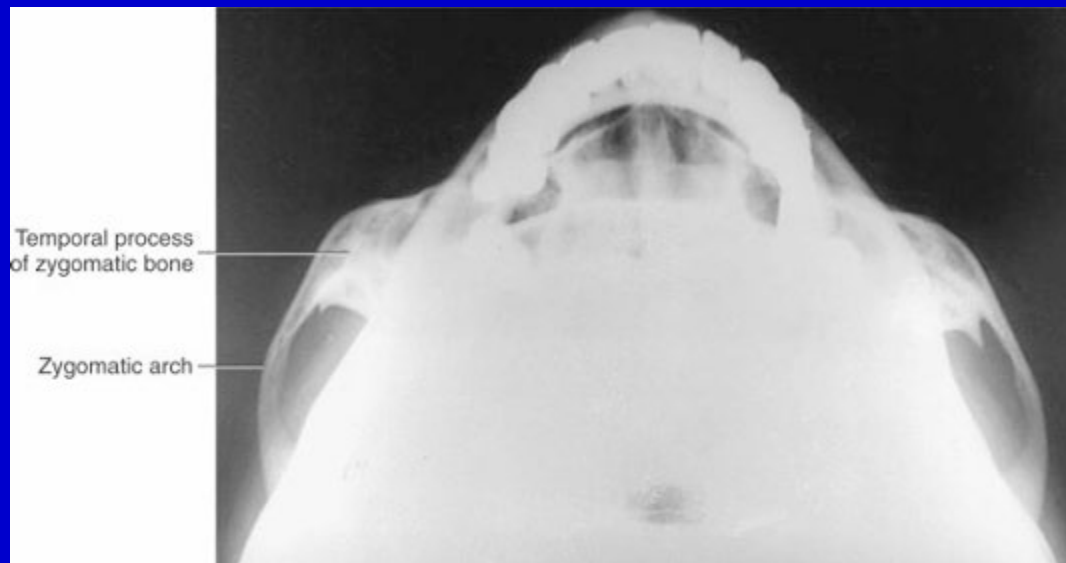
Lateral Projection of the Facial Bones



Lateral Projection of the Nasal Bones



Verticosubmental Projection of the Zygomatic Arches



PA Projection of the Mandible



Mandibular ramus

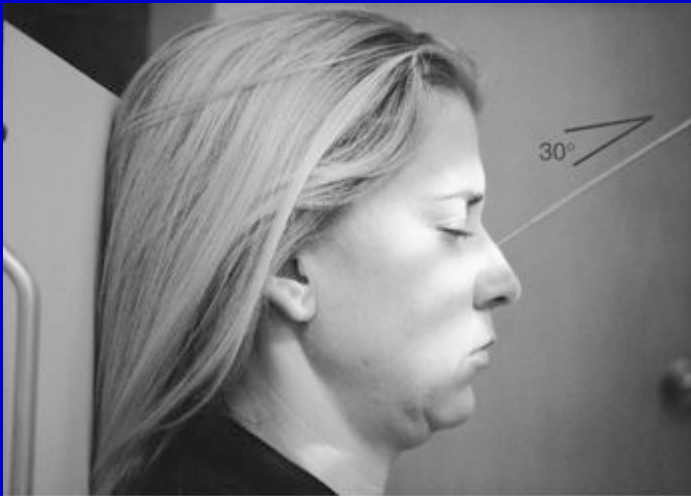
Angle of mandible

Body of mandible

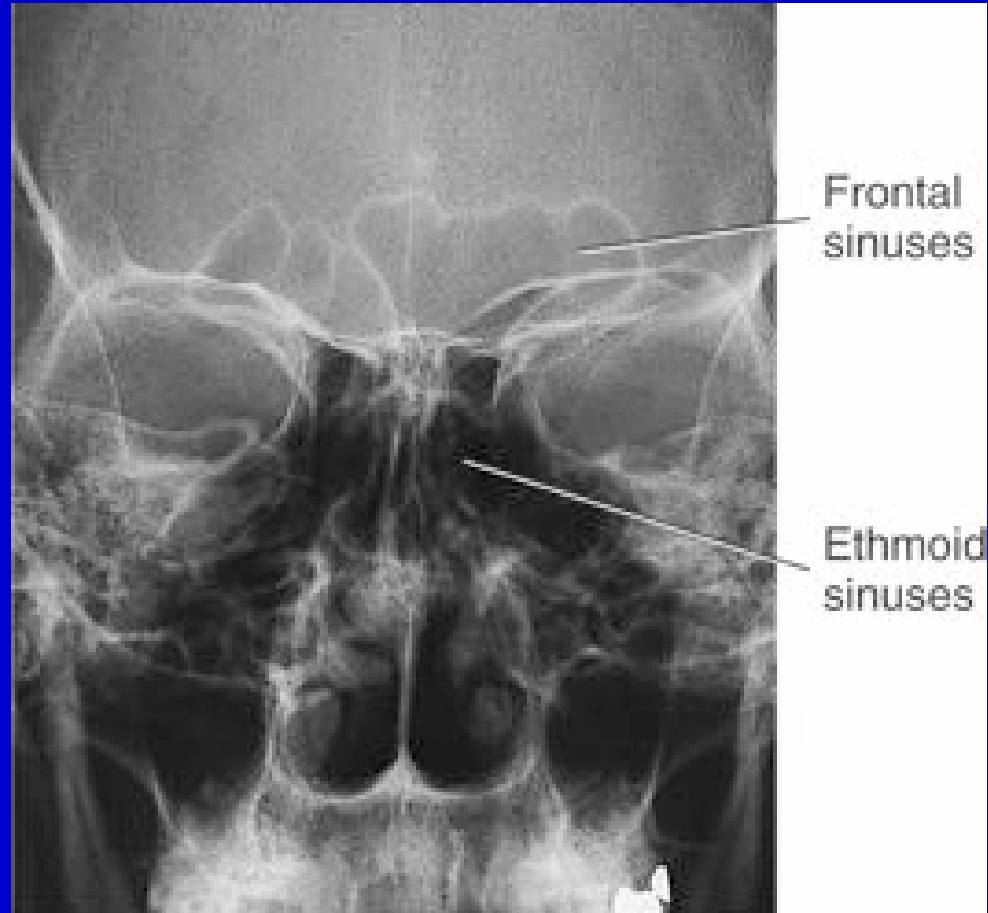
Axiolateral Projection of the Mandible



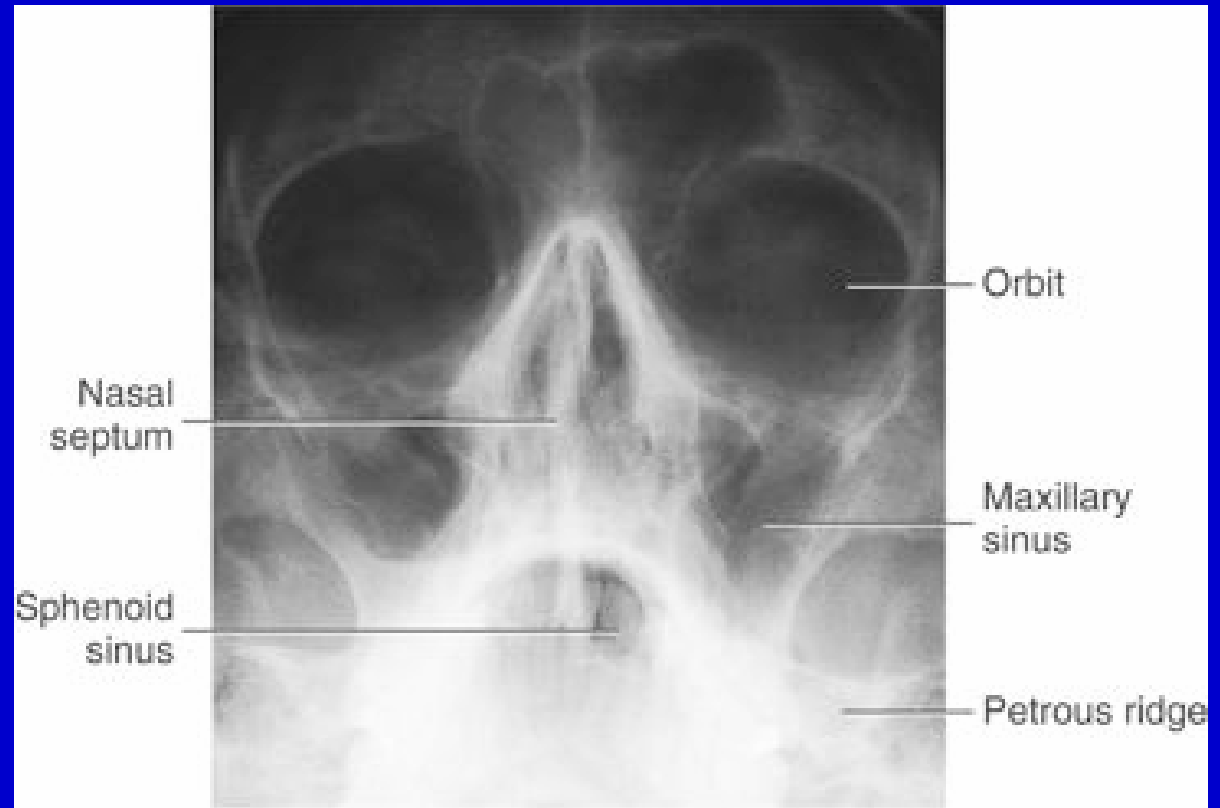
AP Axial Projection of the Mandible



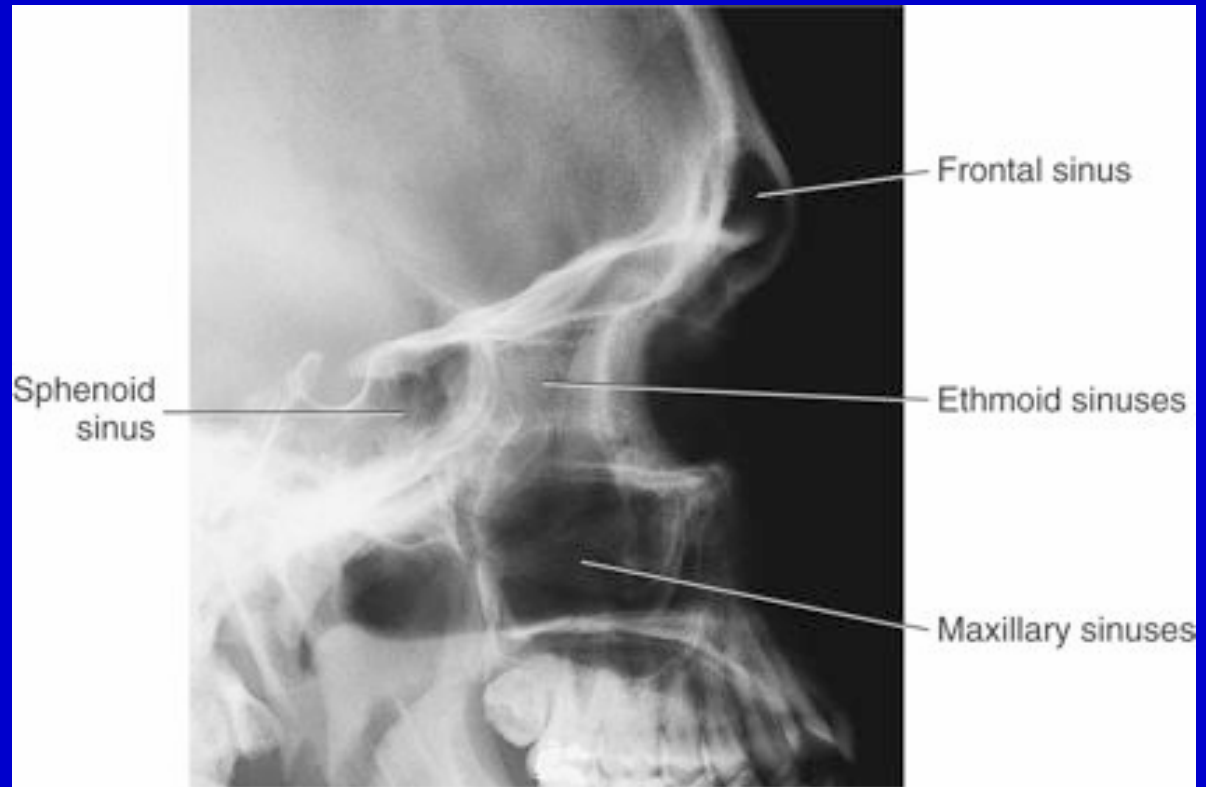
PA Axial Projection for Paranasal Sinuses



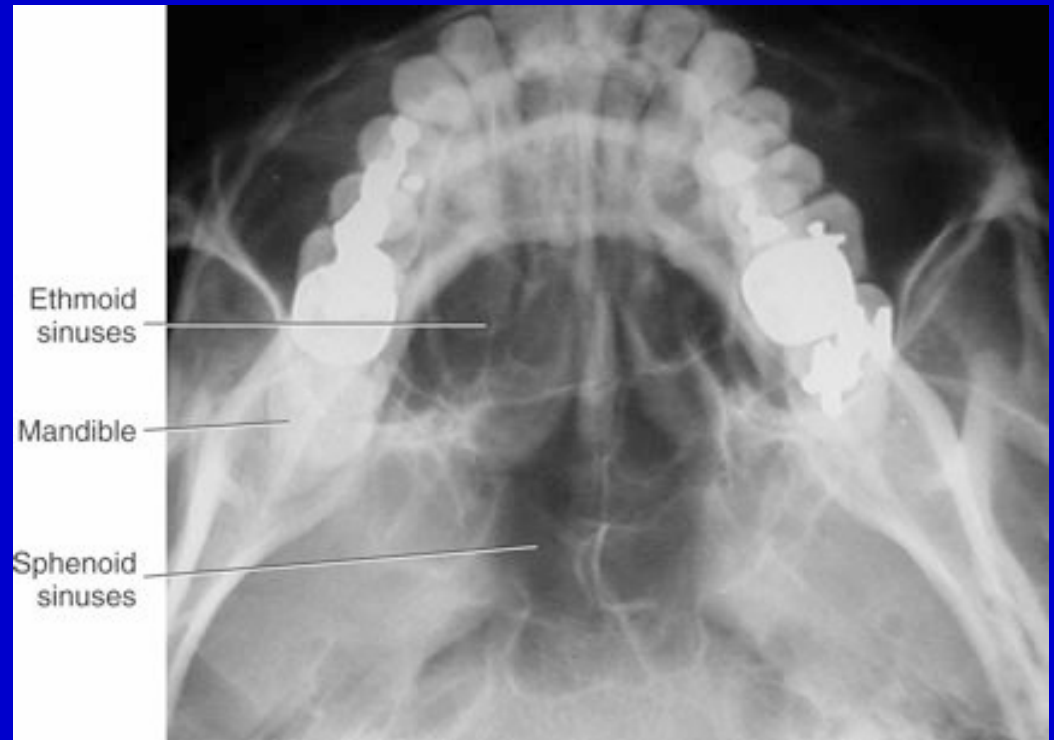
Parietoacanthial Projection for Paranasal Sinuses



Lateral Projection for Paranasal Sinuses



Submentovertical Projection of the Paranasal Sinuses



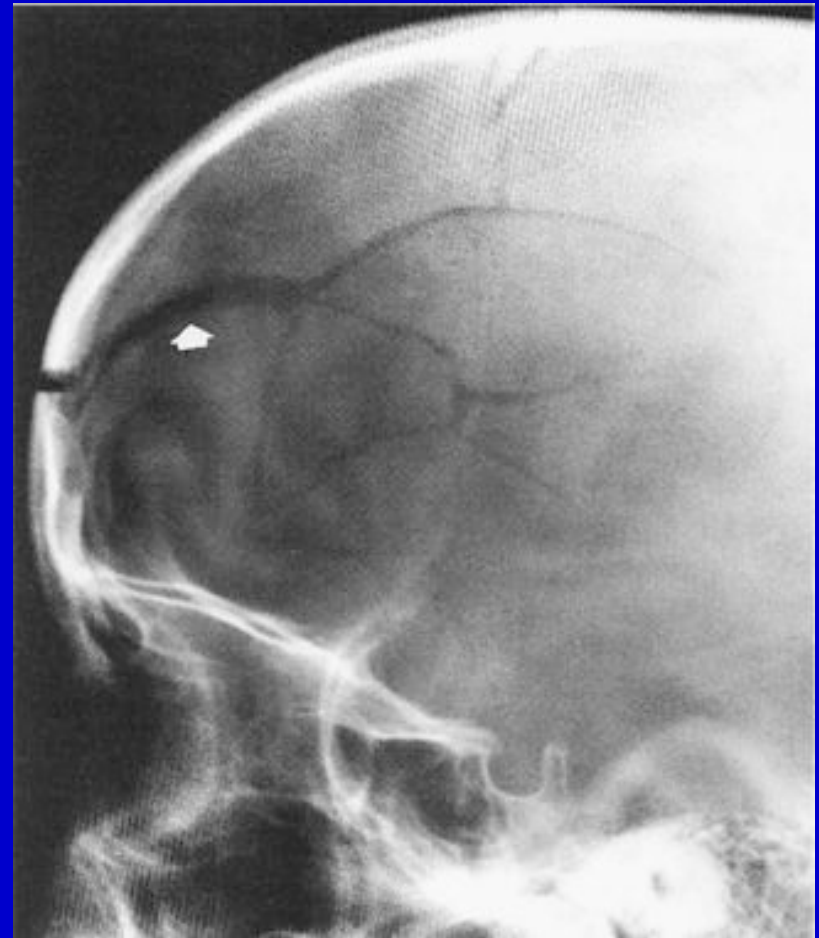
Clicker Question

Which projection demonstrates all of the paranasal sinuses?

- a) lateral
- b) PA axial
- c) parietoacanthial
- d) submentovertical

Pathology

- Trauma-related fractures
 - Cranial
 - Linear
 - Depressed
 - Orbital
 - Blowout
 - Nasal
 - Zygomatic



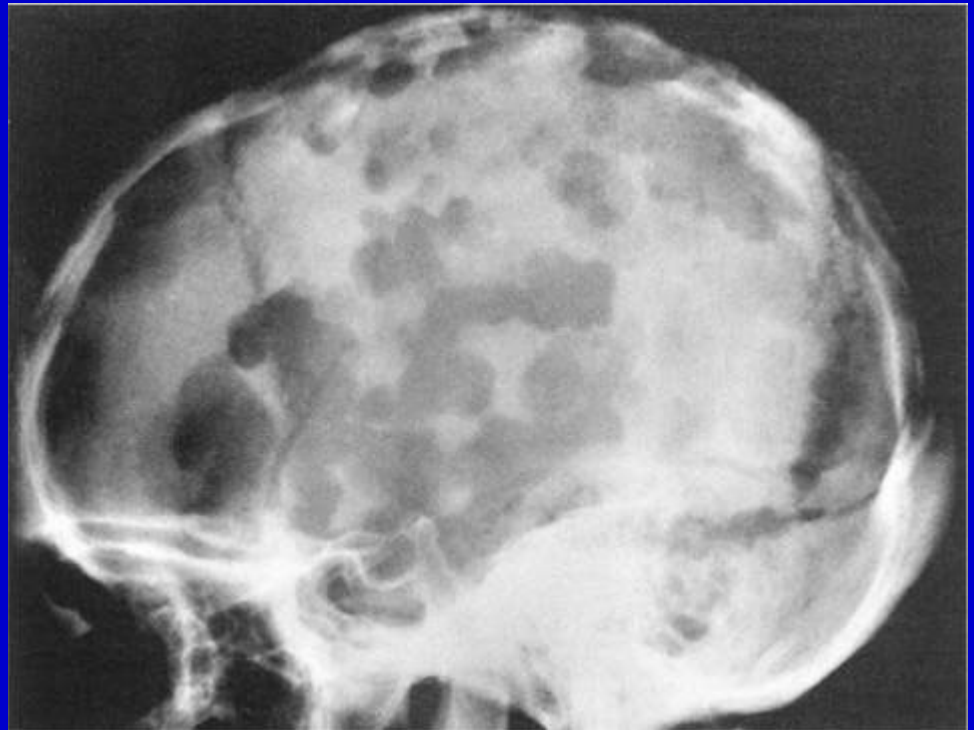
Clicker Question

A blowout fracture typically affects the:

- a) mandible
- b) nasal bones
- c) orbits
- d) zygomas

Pathology

- Other pathologic conditions
 - Sinusitis
 - Osteomyelitis
 - Multiple myeloma



Summary

- The frontal, parietal, temporal, occipital, ethmoid, and sphenoid bone compose the skull
- Facial bones include nasal, lacrimal, mandible, maxilla, zygoma, vomer, palatine, and nasal conchae
- The paranasal sinuses include frontal, maxillary, ethmoid, and sphenoid

Summary

- Landmarks such as the glabella and acanthion are used to position the skull, facial bones, and paranasal sinuses
- For examination of the skull, facial bones, and paranasal sinuses, place IR in Bucky tray, position the patient erect or recumbent as appropriate, remove items that may be within the radiation field, place appropriate image markers, and shield gonads

Summary

- Basic projections include
 - Skull
 - PA
 - PA axial
 - AP axial
 - Lateral
 - Facial Bones
 - Parietoacanthial
 - Lateral
 - Nasal Bones
 - Lateral

Summary

- Basic projections include
 - Zygoma
 - Verticosubmental
 - Mandible
 - PA
 - Axiolateral
 - AP axial
 - Sinuses
 - PA axial
 - Parietoacanthial
 - Lateral
 - Submentovertical

Summary

- Types of fractures resulting from trauma include linear, depressed, orbital (blowout), nasal, and zygomatic
- Other pathologic conditions include sinusitis, osteomyelitis, and multiple myeloma