IN THE NAME OF GOD

ANATOMIC LANDMARKS

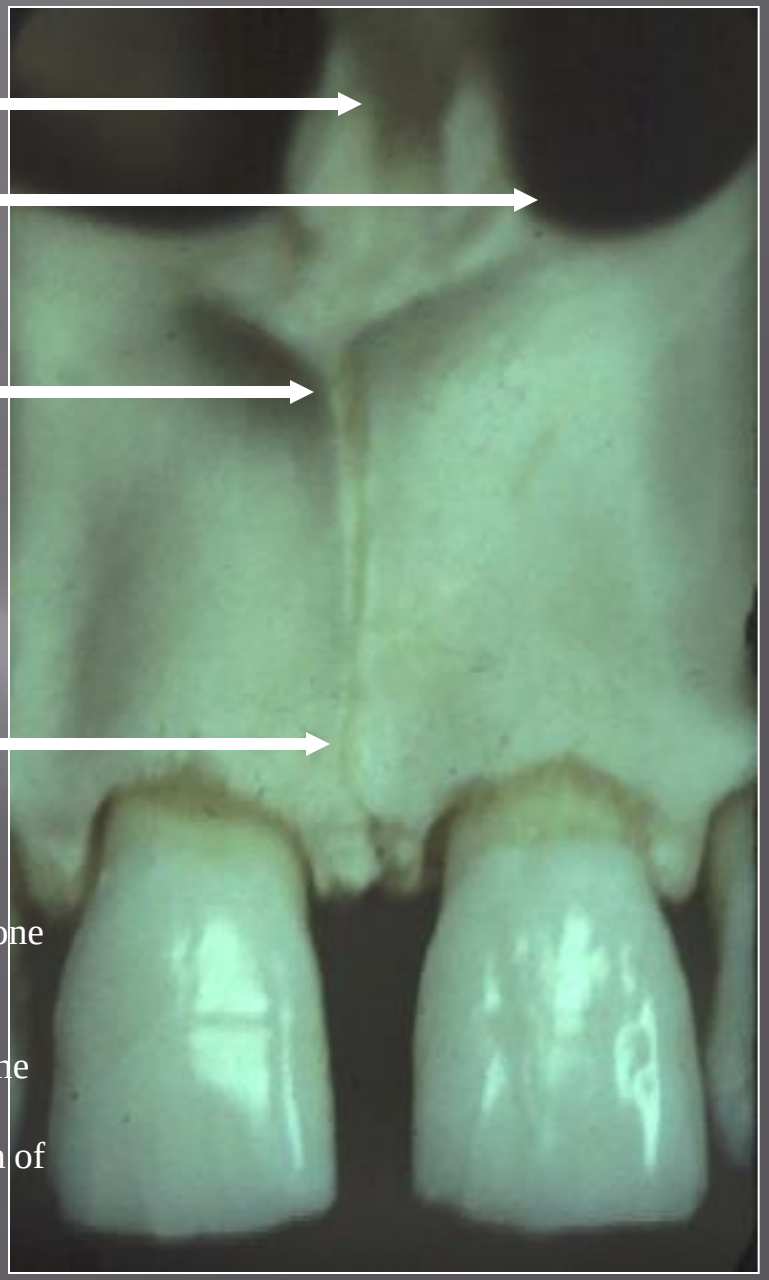
Dr.Sepideh Falah-kooshki

Anatomic Landmarks

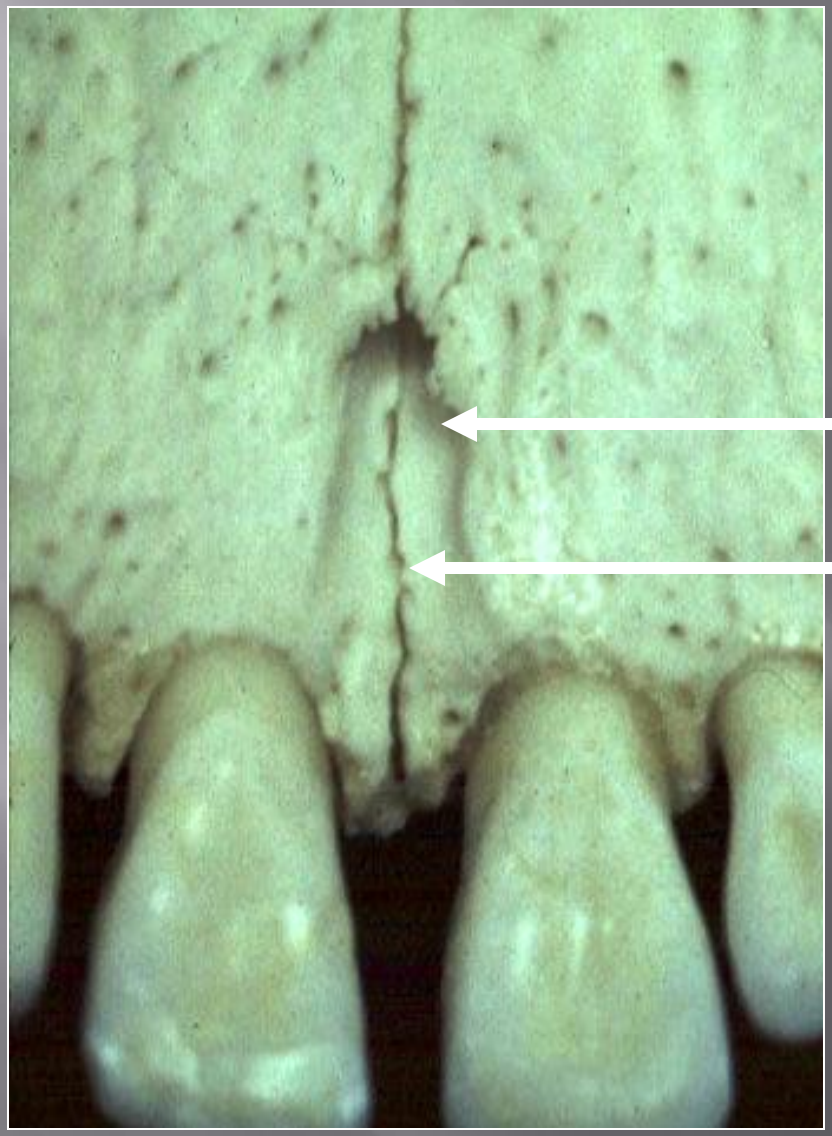
MAXILLA

Central Incisor View (Maxilla)

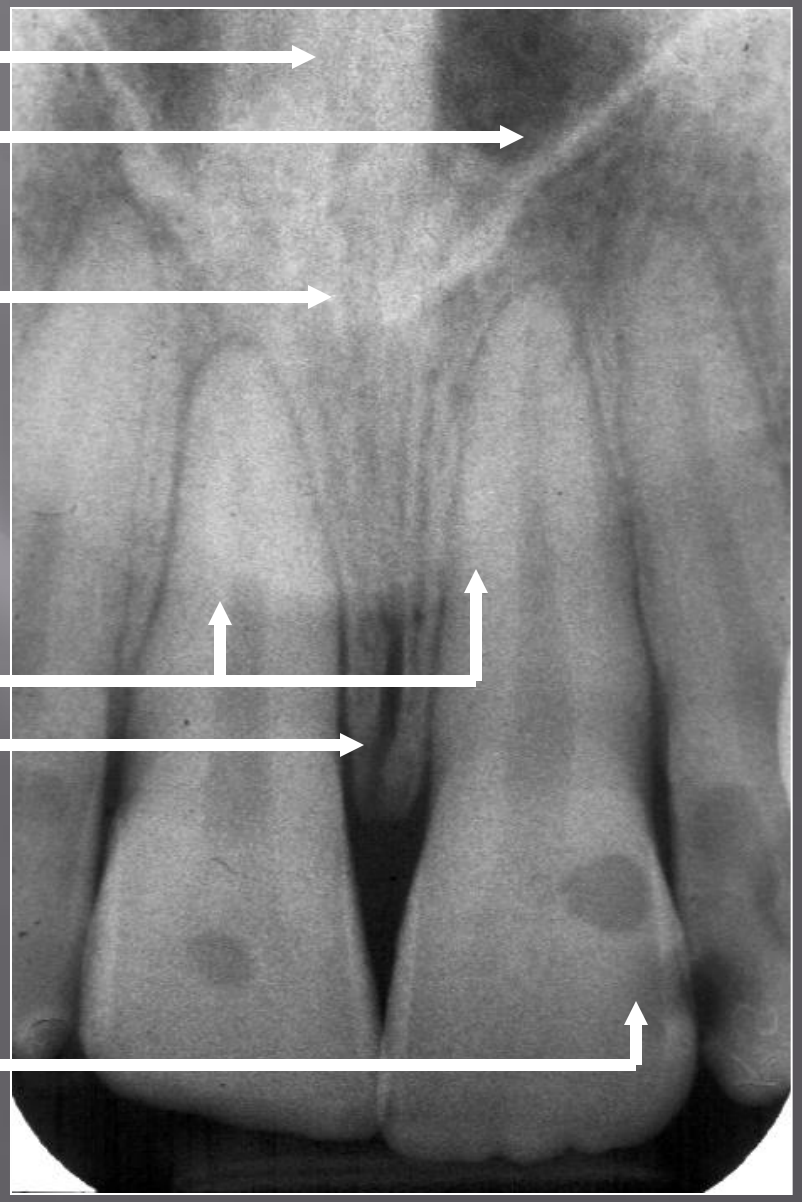
- Premaxillary/median palatal suture (radiolucent).
- Incisive fossa and foramen (radiolucent).
- Nasal passages (radiolucent).
- Nasal septum (radiopaque).
- Anterior nasal spine (radiopaque).
- Soft tissues of nose and lips (radiopaque).



•a thin radiolucent line in the midline between the two portions of the premaxilla
•limited by two parallel radiopaque borders of thin cortical bone
•uniform width
•the inferior **border of the fossa aperture appears as a radiopaque line extending bilaterally away from the base of the ANS
Above this line is the radiolucent space of the inferior portion of the cavity.


Incisive foramen
Premaxillary suture

Located in the midline, it lies approximately 1.5 to 2 cm above the alveolar crest.
below the junction of the inferior end of the nasal septum and the inferior outline of the nasal aperture
V shape-opaque.


Nasal septum
Nasal passage
Anterior nasal spine
Soft tissue shadow of nose
Premaxillary suture
Dental caries

LATERAL FOSSA

incisive fossa

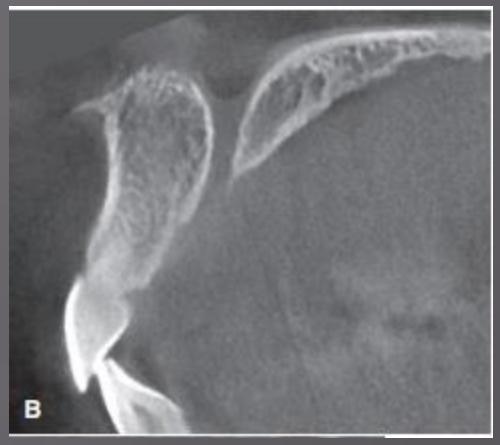
a gentle depression in the maxilla near the apex of the lateral incisor

appear diffusely radiolucent

pathologic condition:

1. Intact LD
2. absence of clinical symptoms

NPC
oral terminus of the nasopalatine canal
in the innervation of the maxillary central incisors
CBCT
the borders of the nasopalatine canal
placing an implant



Incisive foramen
between the roots and in the region of the middle and apical thirds of the central incisors
1/3 apical
Cyst
(1)the differing angles at which the x-ray beam is directed for the maxillary central incisors and
(2) some variability in its anatomic size.

Differentiation

- The incisive fossa can be superimposed on central incisor apices.
- The periodontal ligament spaces are intact.
- Same Lingual Opposite Buccal: The incisive fossa being lingually situated moves on the resulting image in the same direction as the movement of the tubehead.

Note how shadow of the incisive fossa moves in the direction of the movement of the tubehead. The fossa becomes superimposed over the root apex of the central incisor.The periodontal ligament space is intact.

Canine (Maxilla)

- Structures found on **central** incisor view are displaced - lingual structures appearing more posteriorly and facial structures more anteriorly.
- Inverted "Y": Lateral wall of nasal passage and anterior wall of maxillary sinus (if you look carefully it is really an "X"!).

Nasal passage

Anterior nasal spine


Anterior wall of maxillary sinus
Maxillary sinus
Lateral wall of nasal fossa

Edentulous maxillary canine region indicating the two parts of the "Inverted Y" radiographic landmark

Inverted “Y”

Locule in maxillary sinus: note tooth periodontal ligament space intact

Septum in maxillary sinus

Bridge unit in porcelain Fused to metal

Radiolucent anterior filling material

Premolars (maxilla)

- Maxillary sinus (radiolucent).
- Maxillary sinus floor and septums (radiopaque).
- Nutrient canals (radiolucent).
- Occasionally: lateral wall of nasal passage (radiopaque).
- Soft tissue shadow of lips/cheeks.

Premolar region: maxilla

Maxillary sinus

The largest of the paranasal sinuses

Borders: a thin, delicate, tenuous radiopaque line continuous…… BM

They enlarge during childhood, achieving mature size by age 15 to 18 years.

IN ADULTS: distal aspect of the canine to the posterior wall of the maxilla above the tuberosity.

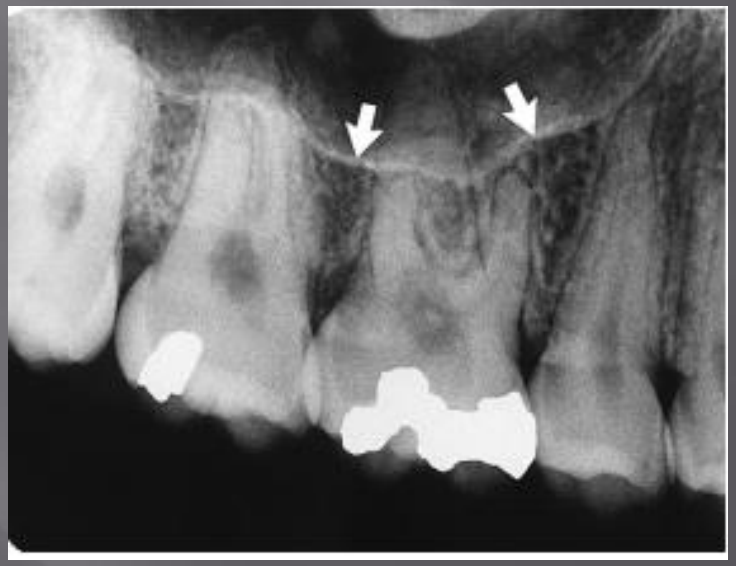
The right and left sinuses usually appear similar in shape and size.

The flors of the maxillary sinus and nasal cavity are seen at the same level.

In older individuals, the sinus may extend farther into the alveolar process, in the posterior region of the maxilla, its flor may appear considerably below the level of the flor of the nasal

Floor of maxillary sinus

When the rounded sinus flor dips between the buccal and palatal molar roots and is medial to the premolar roots, the projection of the apices is superior to the flor. This appearance conveys the impression that the roots project into the sinus cavity, which is an illusion. As the positive vertical angle of the projection is increased, the roots medial to the sinus appear to project farther into the sinus cavity. In contrast, the roots that are lateral to the sinus appear to move either out of the sinus or farther away from it as the angle is increased.

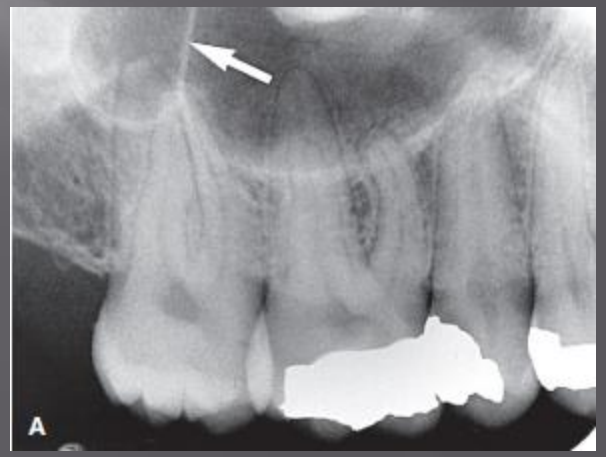


•neurovascular canals
•in the lateral sinus walls
•any direction (including vertically), they are usually seen running a curved posteroanterior course that is convex toward the alveolar process.
•CYSTS

•one or several radiopaque lines traverse the image of the Maxillary sinus .These opaque lines are called septa.

• vertically

•Septa warrant attention because they sometimes mimic periapical disease, and the chambers they create in the alveolar recess may complicate the search for a root fragment displaced into the sinus.



The flor of the maxillary sinus occasionally shows small radiopaque projections, which are nodules of bone
root tips, which they resemble in shape.
1.In contrast to a root fragment, which is quite homogeneous in appearance, the bony nodules often show trabeculation;

2.although they may be quite well defied, at certain points on their surface they blend with the trabecular pattern of adjacent bone.

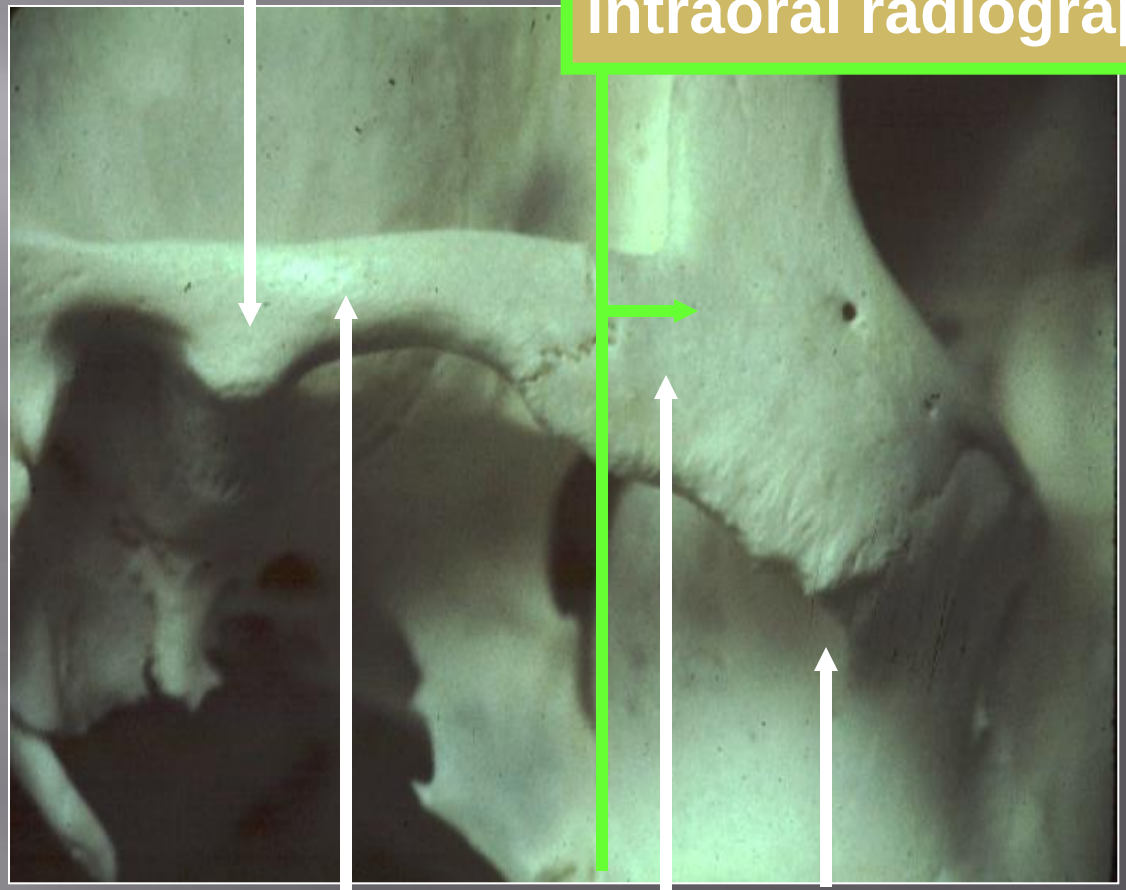
3.A root fragment may also be recognized by the presence of a root canal.

First/Second Molar (Maxilla)

- Maxillary **sinus** floor and septums (radiopaque).
- Maxillary sinus (radiolucent).
- Nutrient canals (radiolucent).
- Zygomatic process of the maxilla ("U"-shaped radiopacity).
- Zygomatic arch/zygoma (radiopaque).
- Less commonly: Lateral wall of nasal passage (radiopaque).

Articular eminence

Structures anterior to green line seen on intraoral radiographs



Zygomatic process of temporal bone

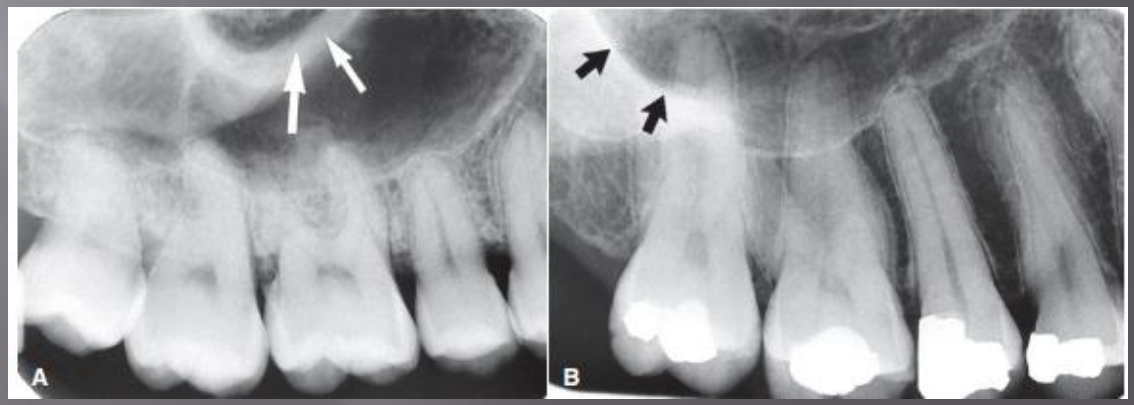
Zygoma

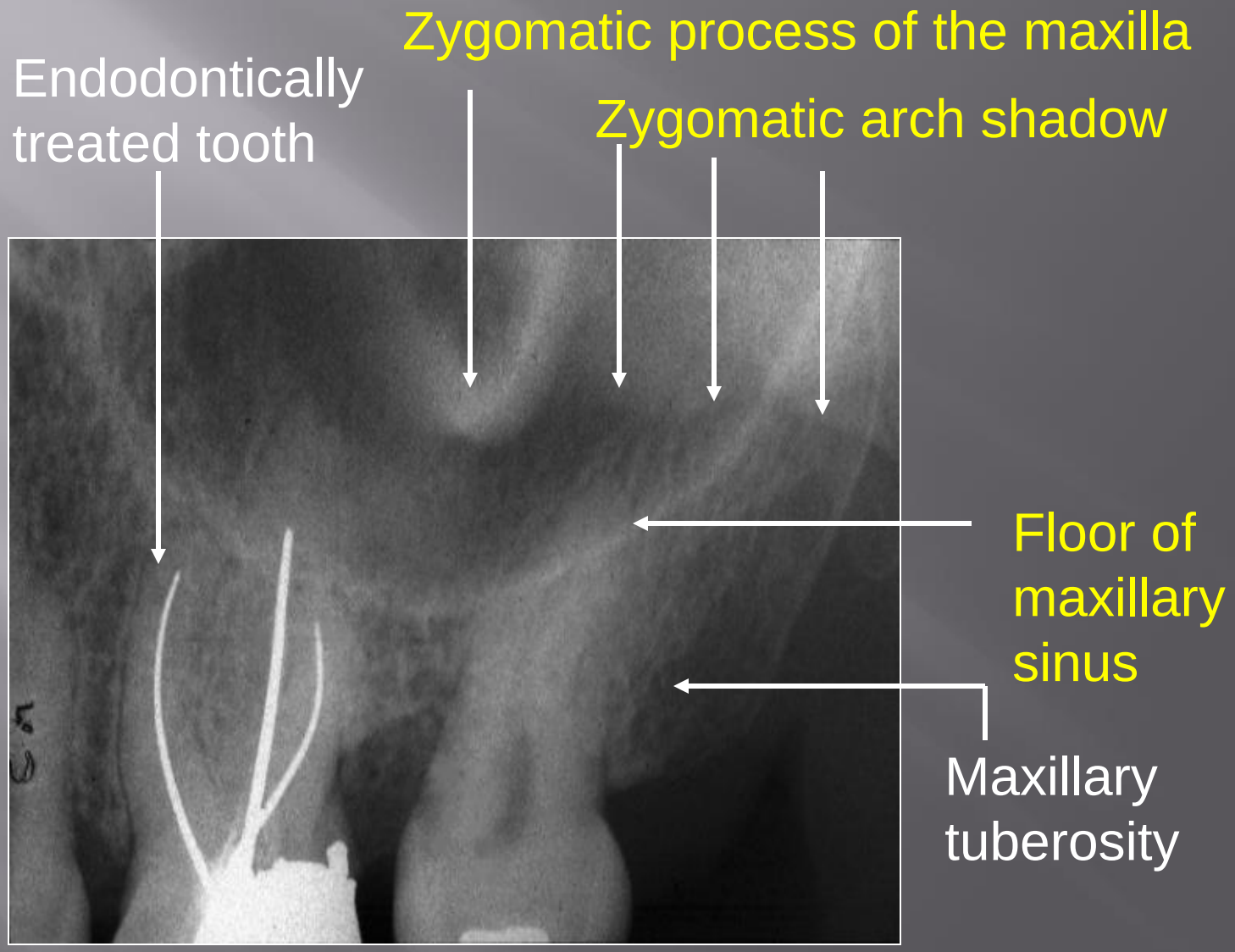
Zygomatic process of maxilla

ZYGOMATIC PROCESS

an extension of the lateral maxillary surface

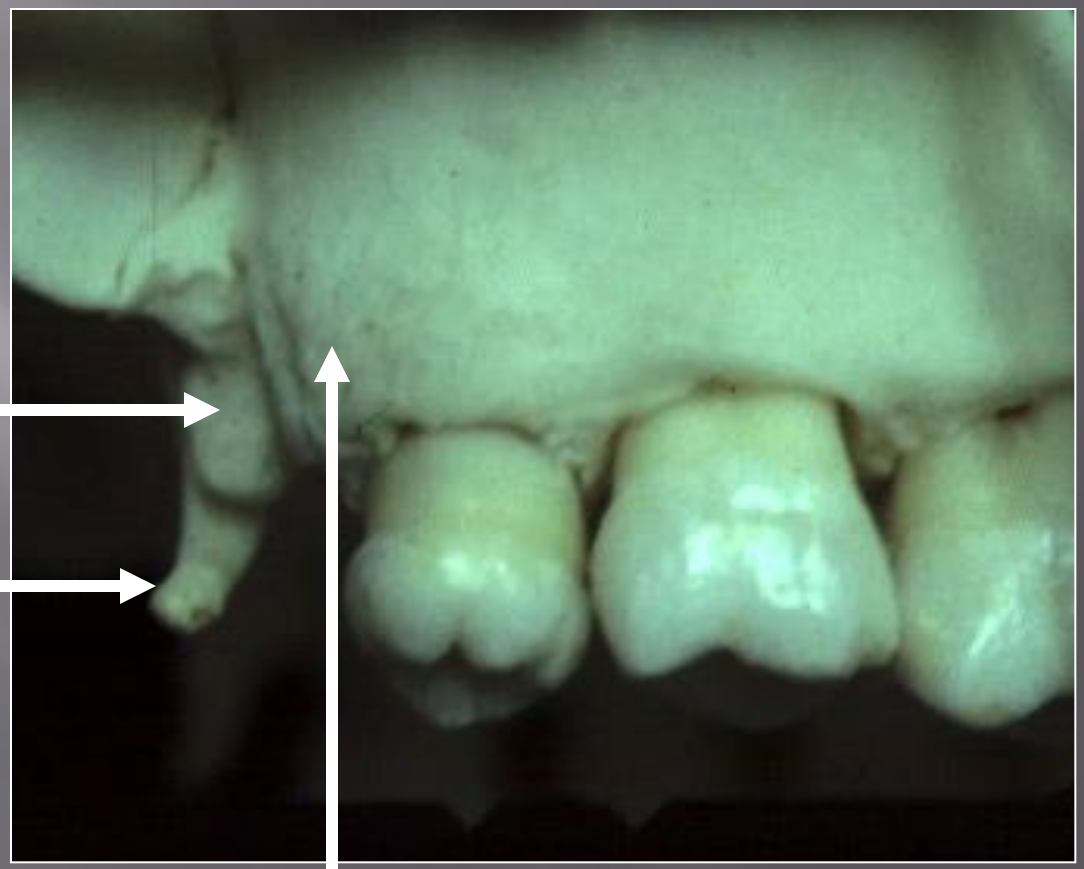
- Apex of first & second molars
- a U-shaped radiopaque line with its open end directed superiorly.
- When the sinus is recessed deep within the process the image of the air space within the process is dark. Typically the walls of the process are thin and well defined.
- When the sinus exhibits relatively little penetration of the maxillary process (usually in younger individuals or individuals who have maintained their posterior teeth and vigorous masticatory function), the image of the walls of the zygomatic process of the maxilla tends to be thicker, and the appearance of the sinus in this region is smaller and more opaque.

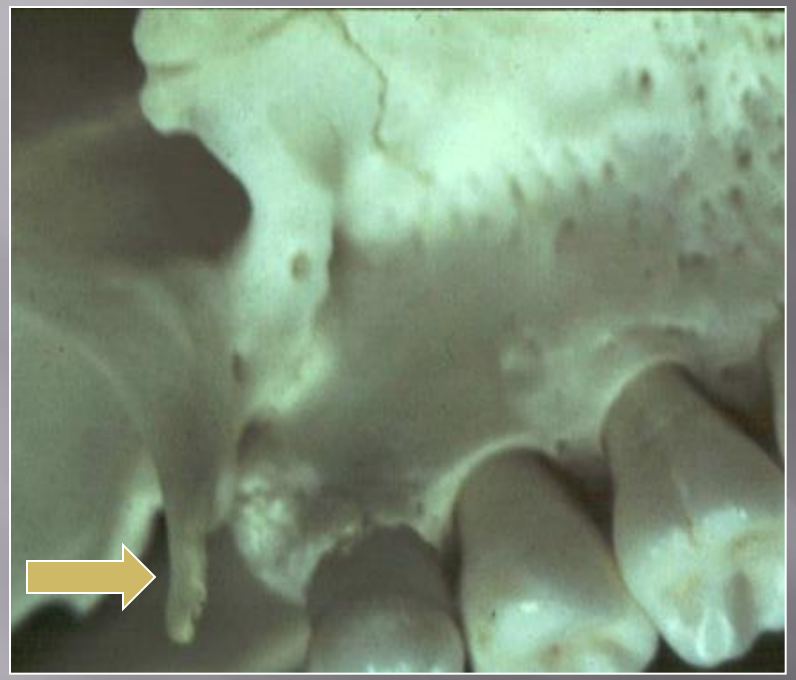


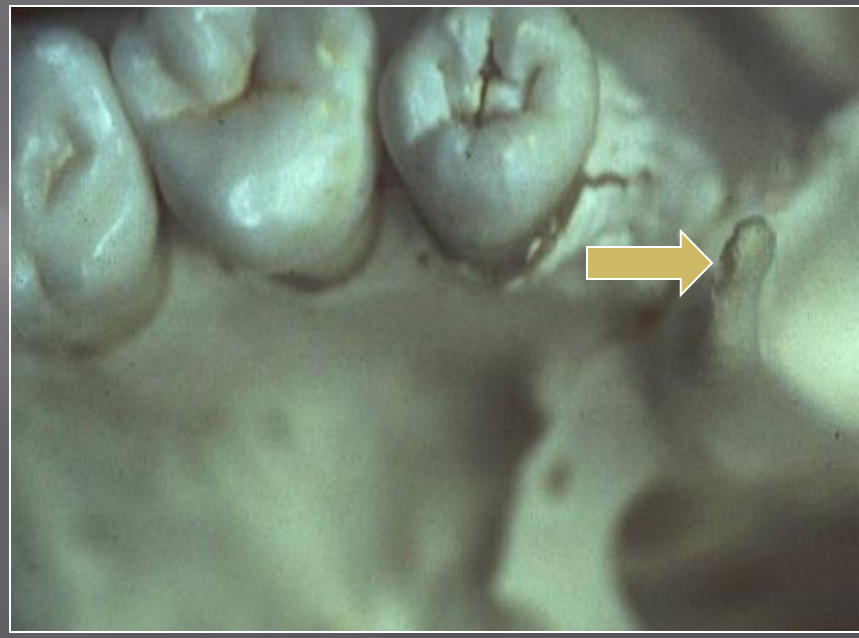

Endodontically treated tooth
Zygomatic process of the maxilla
Zygomatic arch shadow
Floor of maxillary sinus
Maxillary tuberosity

Second/Third molar (maxilla)

- Coronoid process of mandible (radiopaque).
- Maxillary tuberosity (radiopaque).
- Posterior wall of maxillary sinus (radiopaque).
- Maxillary sinus (radiolucent).
- Pterygoid hamulus (radiopaque).
- Pterygoid notch (radiolucent).
- Lateral pterygoid plate (radiopaque).


Lateral pterygoid plate
Pterygoid hamulus (medial Pterygoid)
Maxillary tuberosity

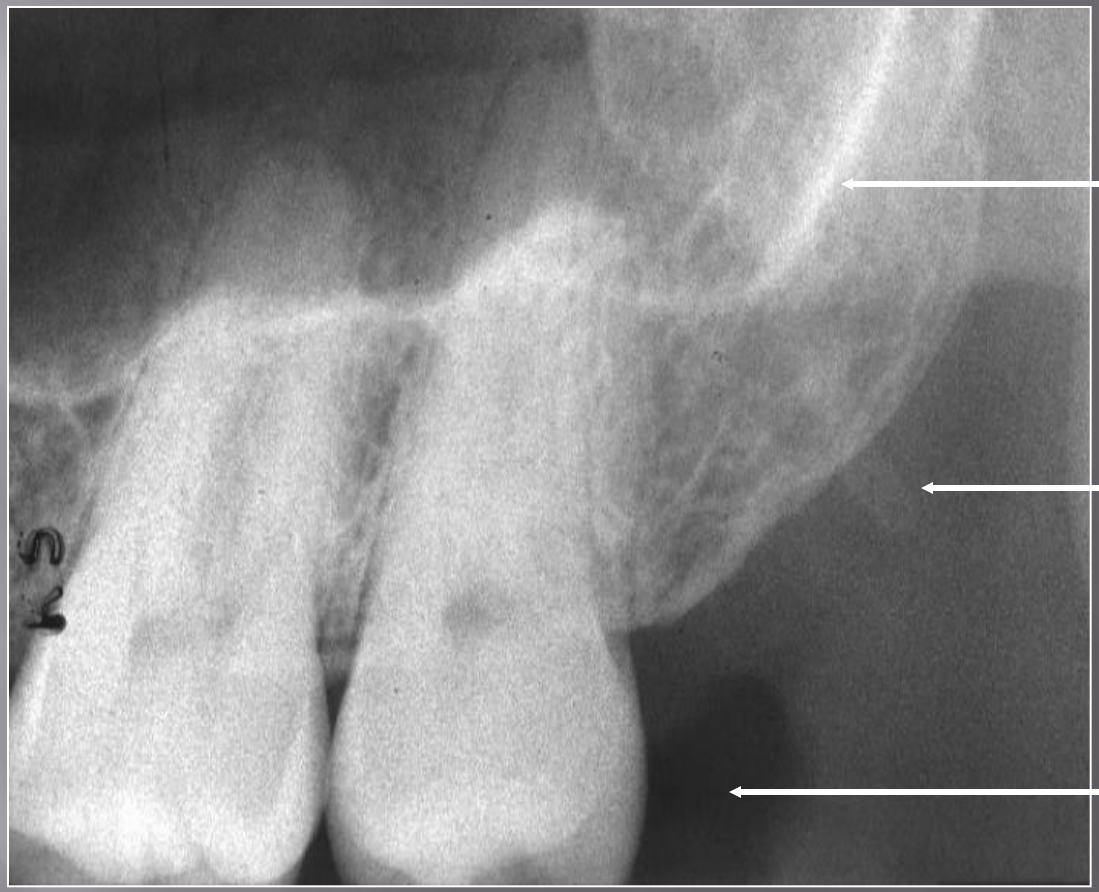




Pterygoid hamulus

PTERYGOID PLATES

-Posterior to the tuberosity of the maxilla
- radiopaque homogeneous shadow without any evidence of trabeculation.
- Extending inferiorly from the medial pterygoid plate is the hamular process which on close inspection can show trabeculae



Posterior wall of maxillary sinus

Pterygoid hamulus

Air space

Anatomic Landmarks

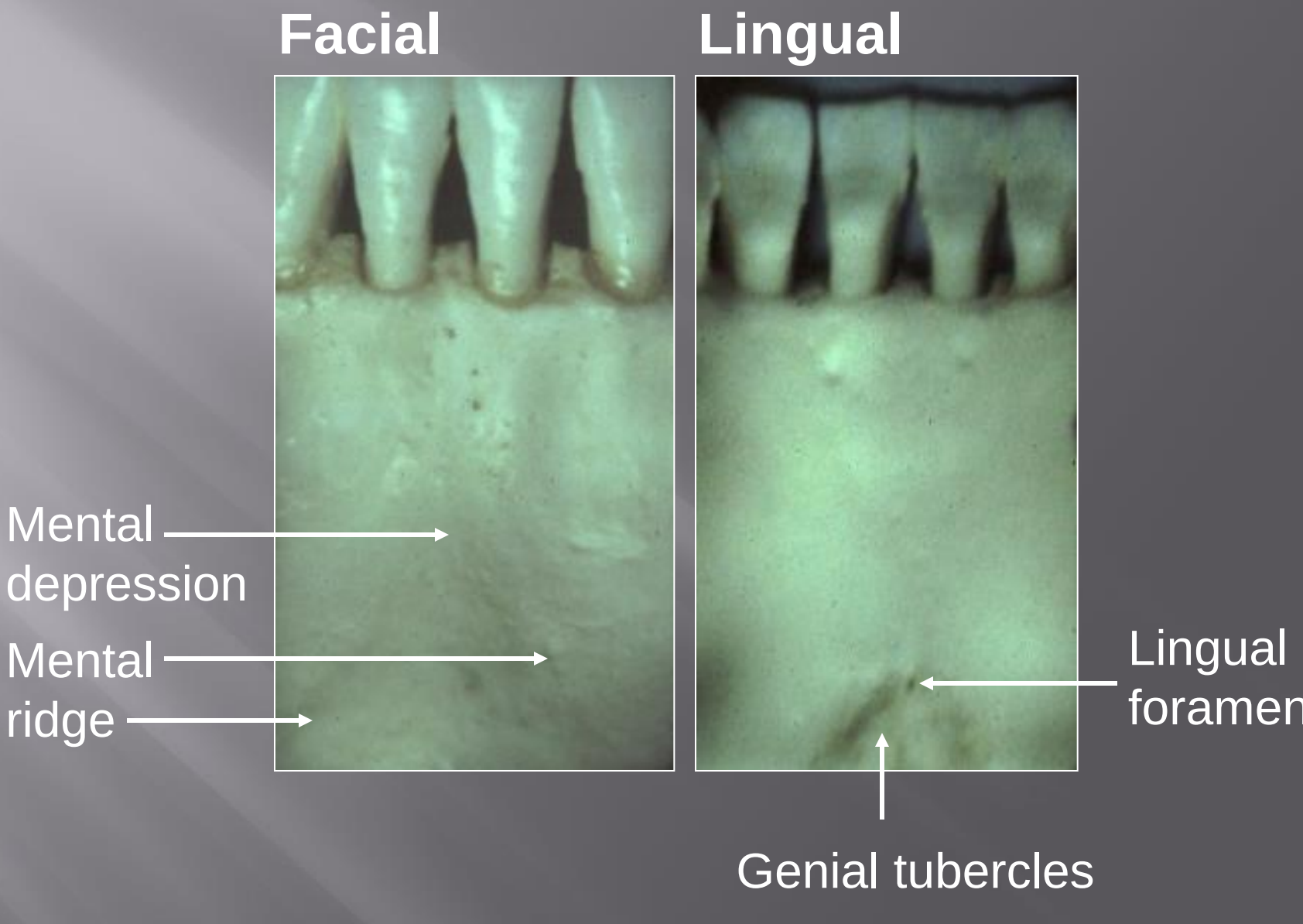
MANDIBLE

Incisors (Mandible)

- Symphysis
- Lingual foramen (radiolucent).
- Genial tubercles (radiopaque).
- Soft tissue shadow of lower lip (radiopaque).
- Mental ridges (radiopaque).
- Nutrient canals (radiolucent).

symphysis

- a radiolucent line through the midline of the jaw
- between the images of the forming deciduous central incisor
- fuses by the end of the fist year
- fracture
- cleft

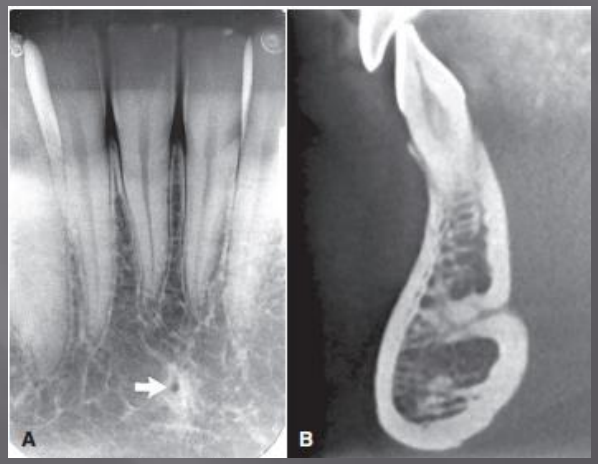

Facial
Lingual
Mental depression
Mental ridge
Lingual foramen
Genial tubercles

Genial tubercles

- lingual surface
- slightly above the inferior border and in the midline.
- Right and left- superior and inferior
- A single round radiolucent canal with a well-defied opaque border lying in the midline below the level of the apices of the incisors.

Lingual Foramen

- lingual surface
- midline
- two or even more
- A single round radiolucent canal with a well-defied opaque border



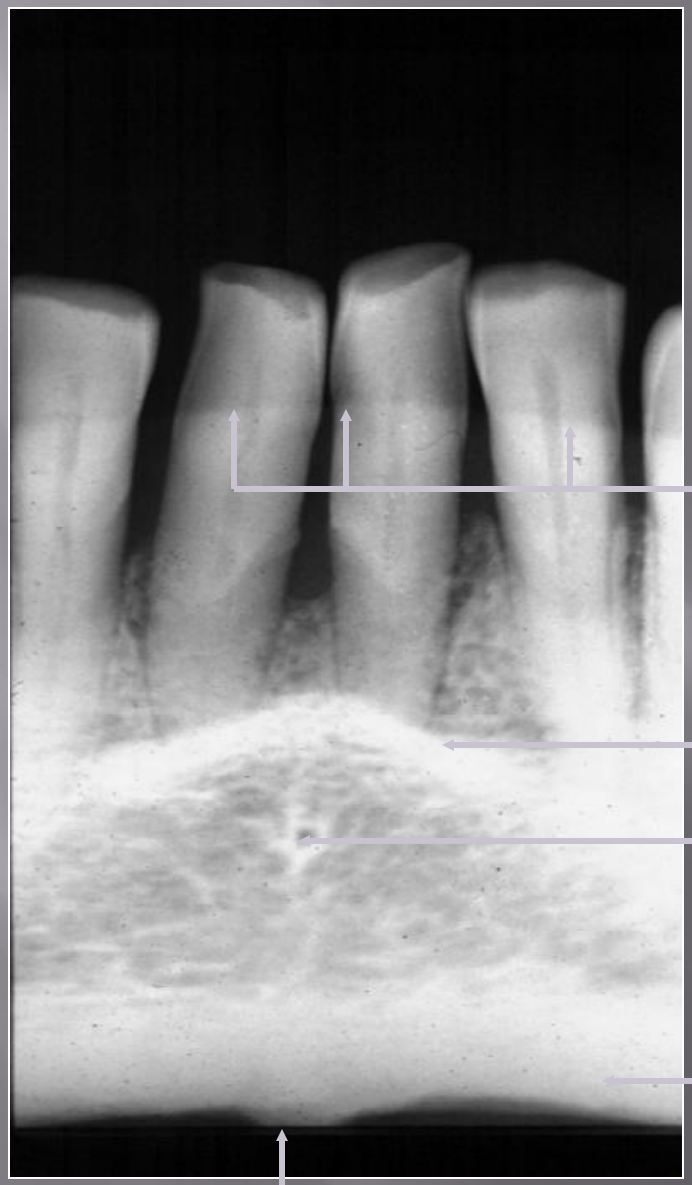

Embossed dot
Lingual foramen

Mental ridge

- two radiopaque lines sweeping bilaterally forward and upward toward the
  midline
- low in the premolar…… incisor tooth roots
- The image of the mental ridge is most prominent:
- 1. parallel with the surface of the mental tubercle
- 2.as when using the bisectingangle technique

Mental fossa

- a depression on the labial
- above the mental ridge
- thinness of jawbone in this area
- Mistaken for periapical disease



The occlusal wear on the incisive edges of the teeth is attrition. The patient also evidences moderate to severe periodontal bone loss.

Soft tissue shadow of lower lip

Mental ridge

Lingual foramen

Cortical plate of lower border of mandible

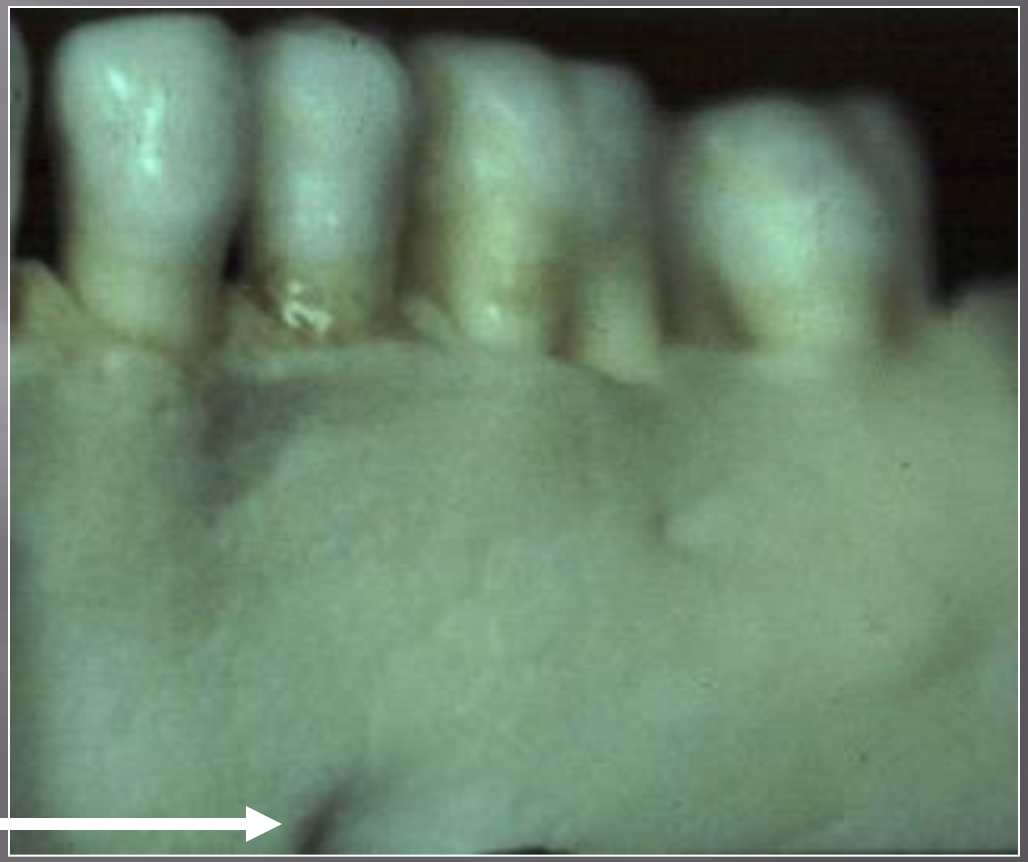
Genial tubercles

Nutrient canals

Canine/Premolars (Mandible)

- Mental foramen (radiolucent) - usually situated between and just beneath roots of the premolars.
- Soft tissue shadow of reflected cheek (radiopaque).
- Mandibular canal (radiolucent).

Mandibular premolar region



Mental foramen

• Mental Foramen

•anterior limit

•of IANC

•opening of the mental canal is directed superiorly and posteriorly

•about halfway between the lower border of the mandible and the crest of the alveolar process, usually in the region of the apex of the second premolar

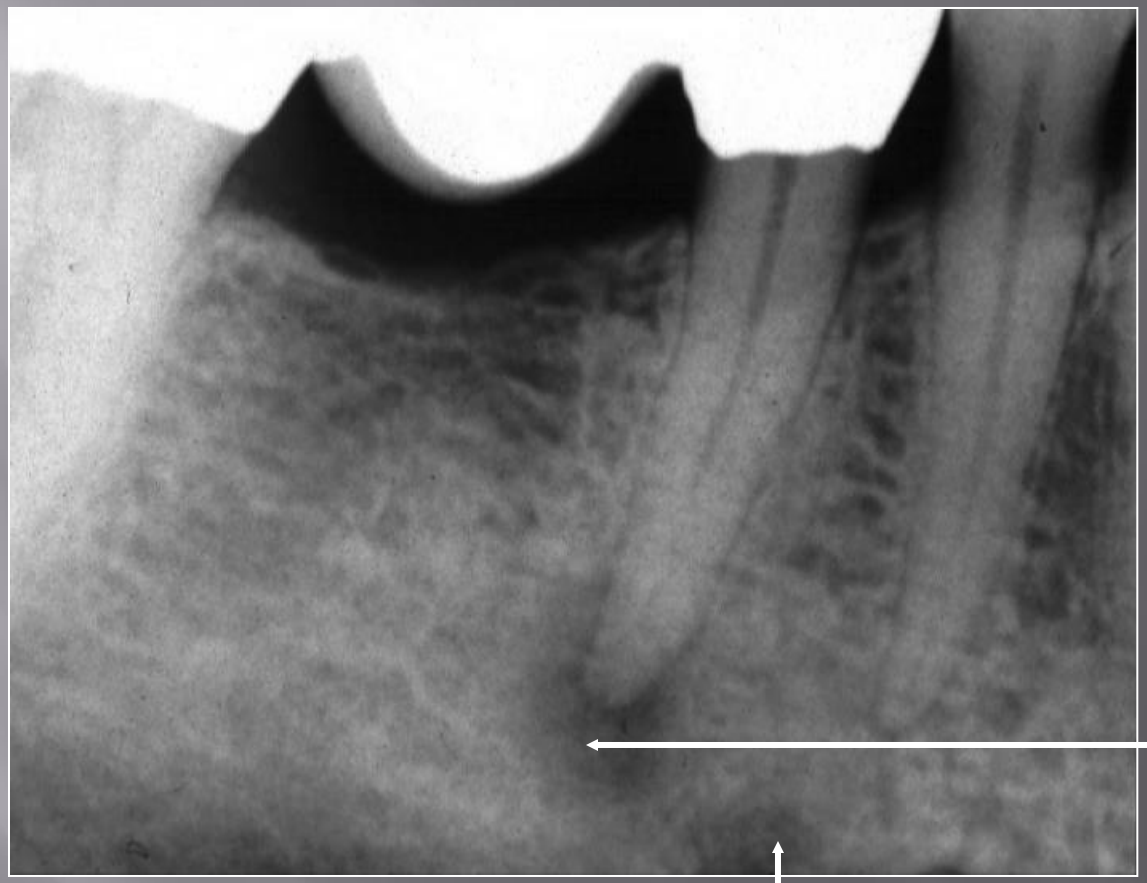
• mesial of the permanent fist molar roots to as far anterior as mesial of the fist premolar root

• periapical disease :

1. detectable LD

2.IANC

3. second radiograph from another angle



Periapical granuloma, abscess or cyst *(periodontal ligament space not intact)*

Mental foramen

MANDIBULAR CANAL

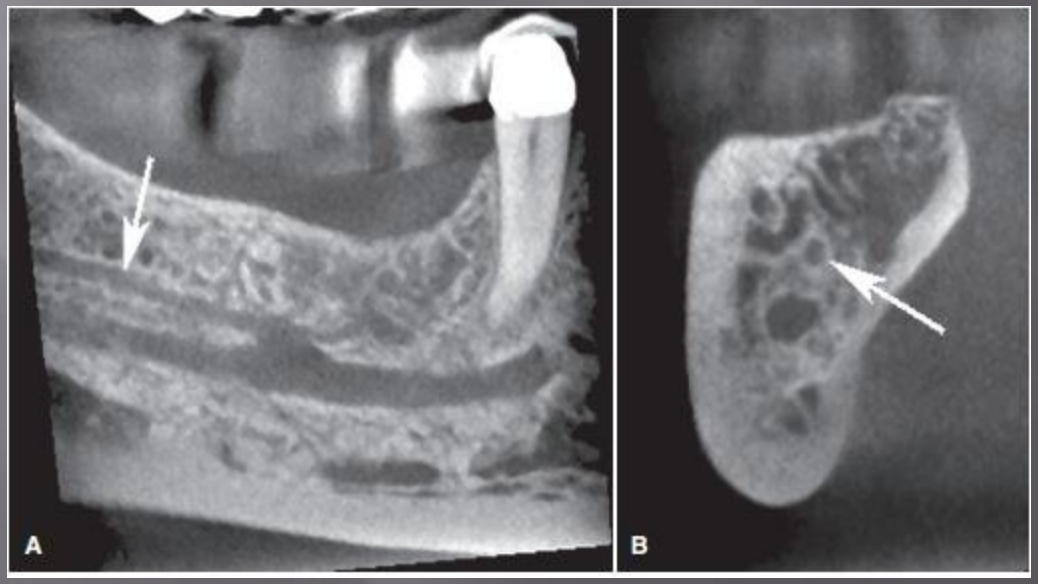
• a dark linear shadow with thin radiopaque superior and inferior borders
• The width of the canal shows some interpatient variability but is usually constant anterior to the third molar region.
• the canal is in contact with the apex of the third molar, and the distance between it and the other roots increases as it progresses anteriorly.
• When the apices of the molars are projected over the canal:

1. missing lamina
2. thickened PDL

*Vitality test
*Because the canal is usually located just inferior to the apices of the posterior teeth, altering the vertical angle for a second fim of the area is not likely to separate the images of the apices and canal

Bifid canal:

1. risk of inadequate anesthesia
2. diffiulties with jaw surgery, including implants, or trauma

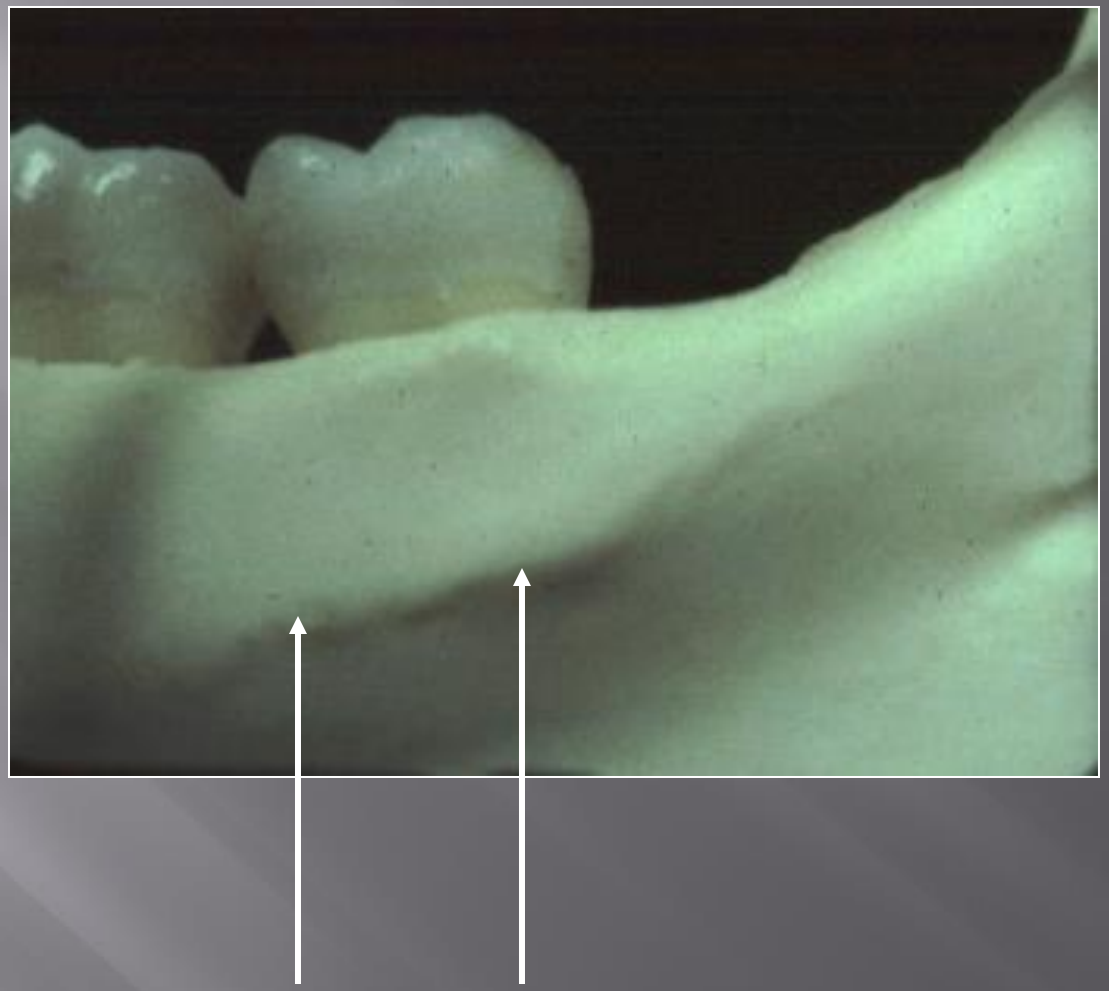


NUTRIENT CANALS

• radiolucent lines of fairly uniform width.

• vertically from the IANC to the apex of a tooth or into the interdental space between the mandibular incisors

• black patients; male patients; older patients; and patients with high blood pressure, diabetes mellitus, or advanced periodontal disease.



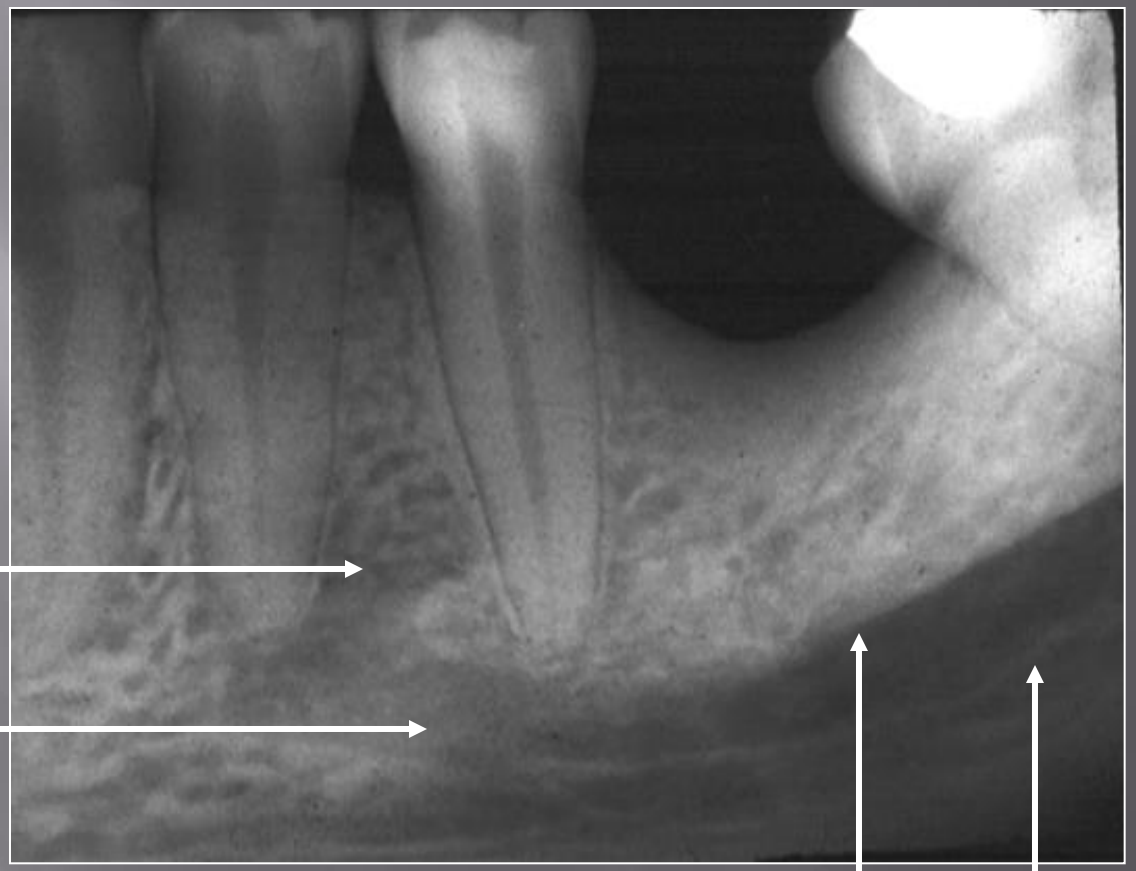
Internal oblique ridge (mylohyoid ridge)

MYLOHYOID RIDGE

- internal oblique ridge
- Lingual surface
- Third molar…. Midline
- mylohyoid muscle
- quite diffuse and of variable width

SUBMANDIBULAR GLAND FOSSA

- lingual surface
- below the mylohyoid ridge
- radiolucent (mylohyoid ridge and inferior border of the mandible)
- Ill defined+ sparse trabecular pattern
- Superiorlyby the mylohyoid ridge
- inferiorly by the lower border of the mandible
- anteriorly (in the premolar region)
- posteriorly (at about the ascending ramus).

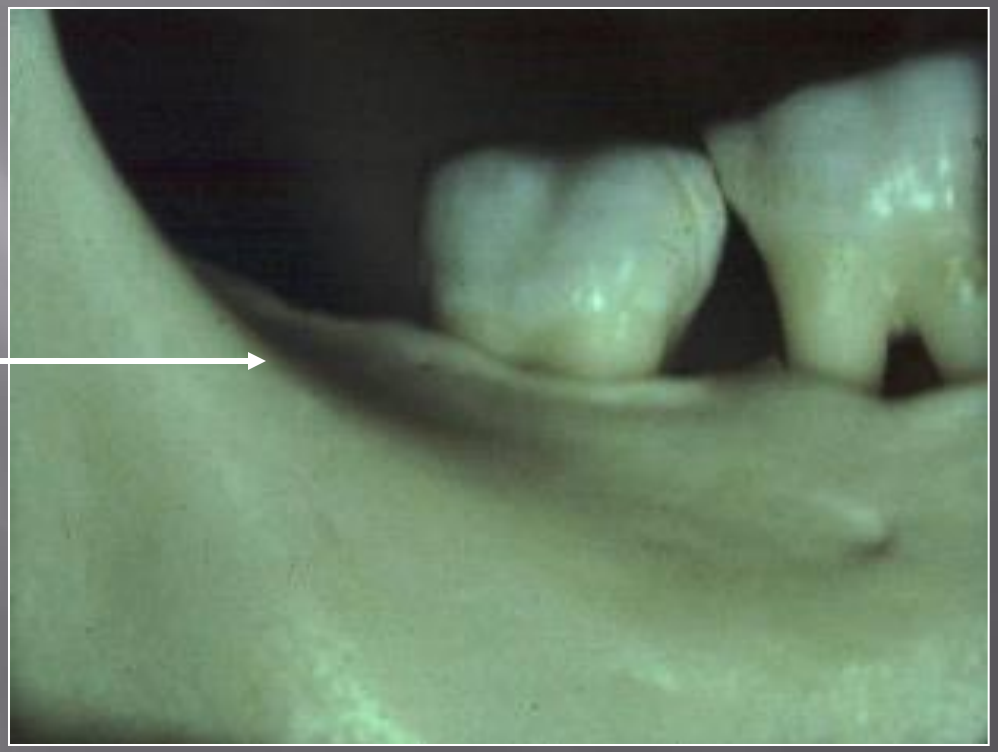

Mental foramen
Mandibular canal
Mylohyoid ridge
Submandibular fossa


Mylohyoid ridge
Submandibular fossa
Mental foramen

Molars (Mandible)

- Mandibular canal (radiolucent).
- External oblique ridge (radiopaque).
- Mylohyoid ridge - also known as internal oblique ridge (radiopaque).
- Submandibular fossa (radiolucent).
- Cortex of lower border (radiopaque).

External oblique ridge of mandible

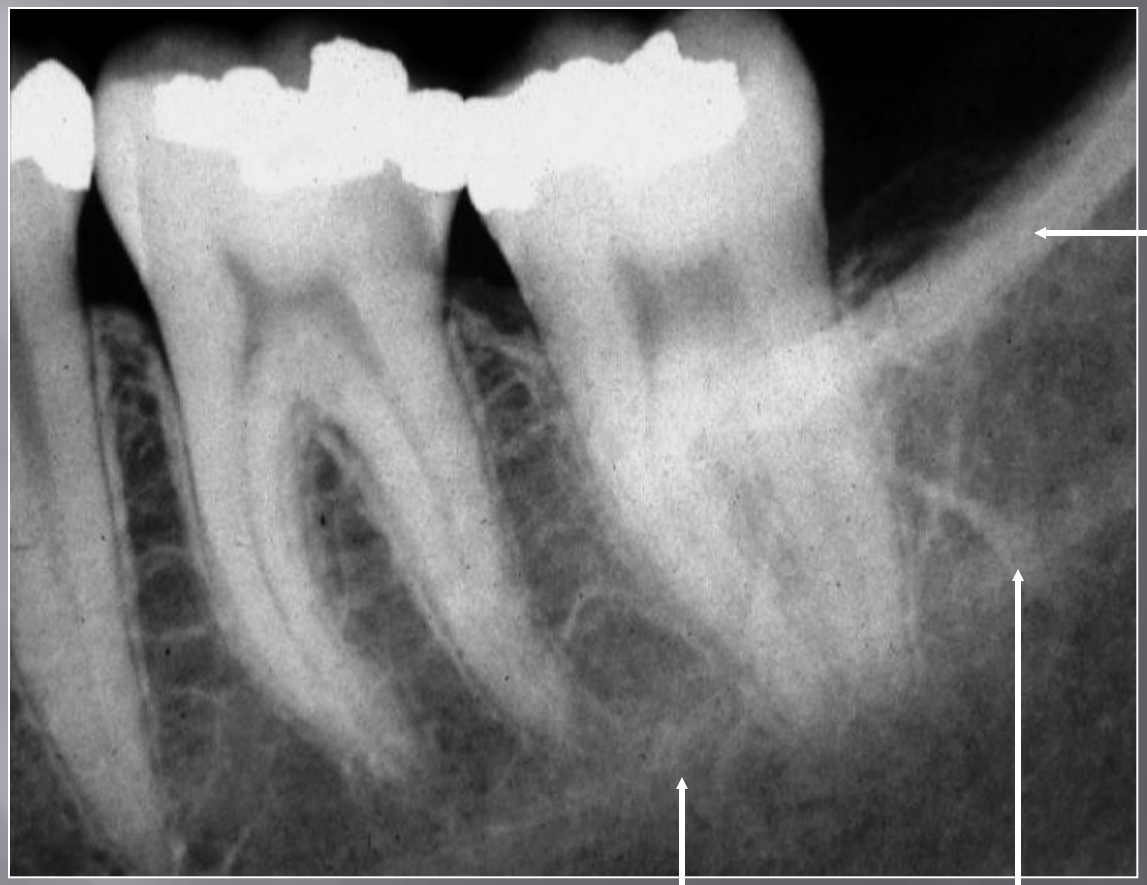


External oblique ridge

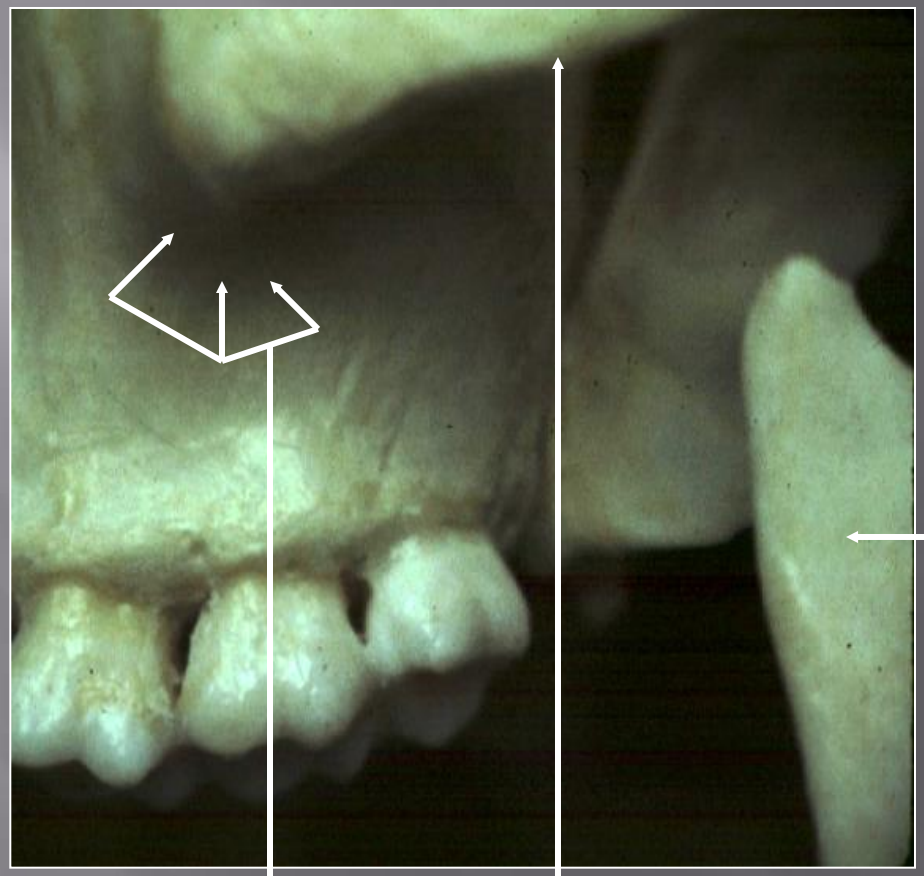
- continuation of the anterior border of the mandibular ramus
- Disappear below the fist molar
- buccinator muscle
- superior to the mylohyoid ridge- paralel
- radiopaque line of varying width , density, and length,
- blending at its anterior end with the shadow of the alveolar bone

INFERIOR BORDER OF THE MANDIBLE

dense, broad radiopaque band of bone


External oblique ridge
Internal oblique (mylohyoid) ridge


External oblique ridge
Internal oblique ridge
Lower cortex of mandible
Submandibular fossa



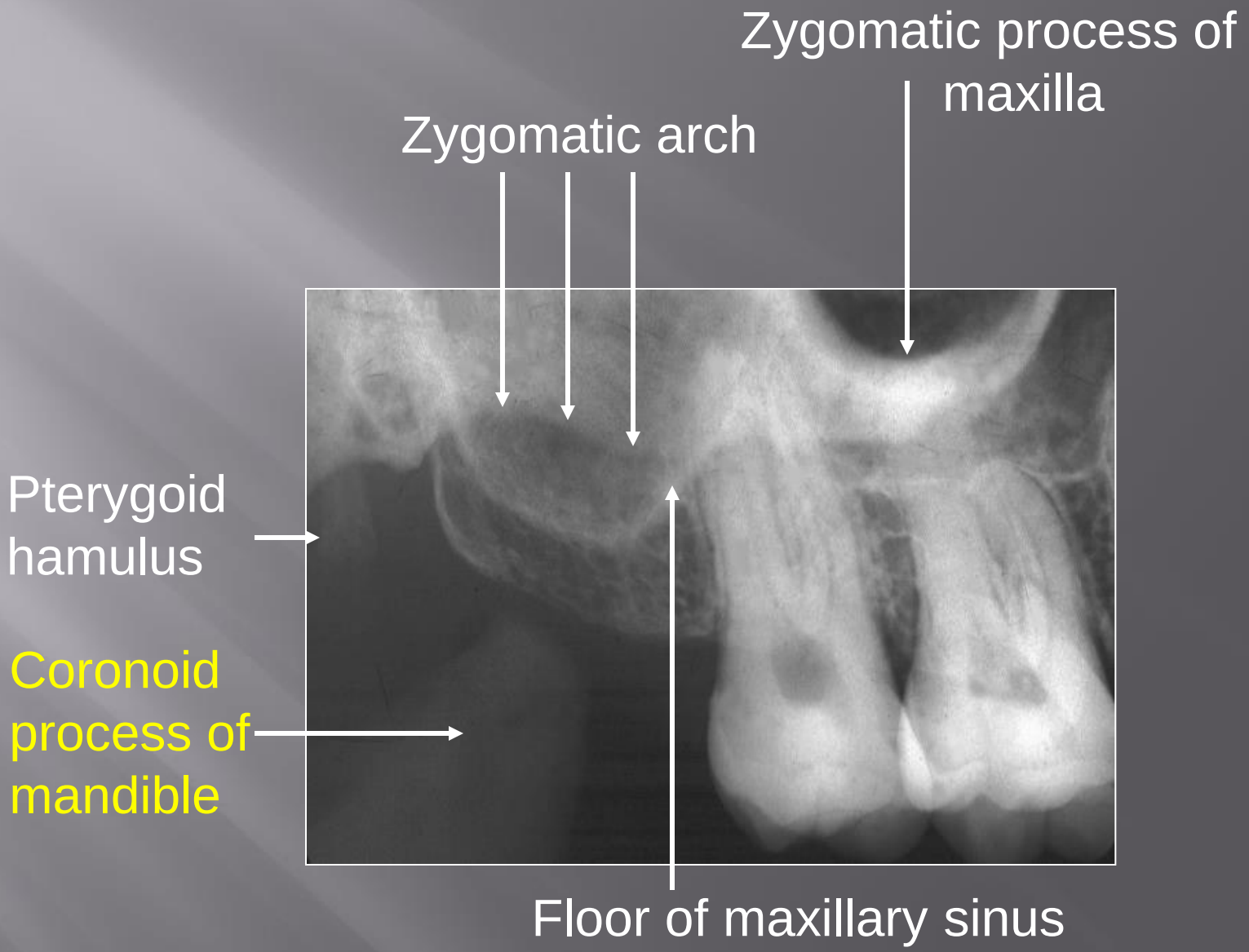
Coronoid process of mandible

Zygomatic process of maxilla

Zygomatic arch

CORONOID PROCESS

- periapical radiographs of the maxillary molar region
- a triangular radiopacity, with its apex directed superiorly and anteriorly
- superimposed on the region of the third molar
- Homogeneous,although internal trabeculation
- results from the downward and forward movement of the mandible when the mouth is open.
- mouth minimally open
- root fragment


Zygomatic process of maxilla
Zygomatic arch
Pterygoid hamulus
Coronoid process of mandible
Floor of maxillary sinus