MANDIBULA

Lower Jaw

- Anatomy
- Clinical notes
- Dentoalveolar topography
- Nerve and blood supply

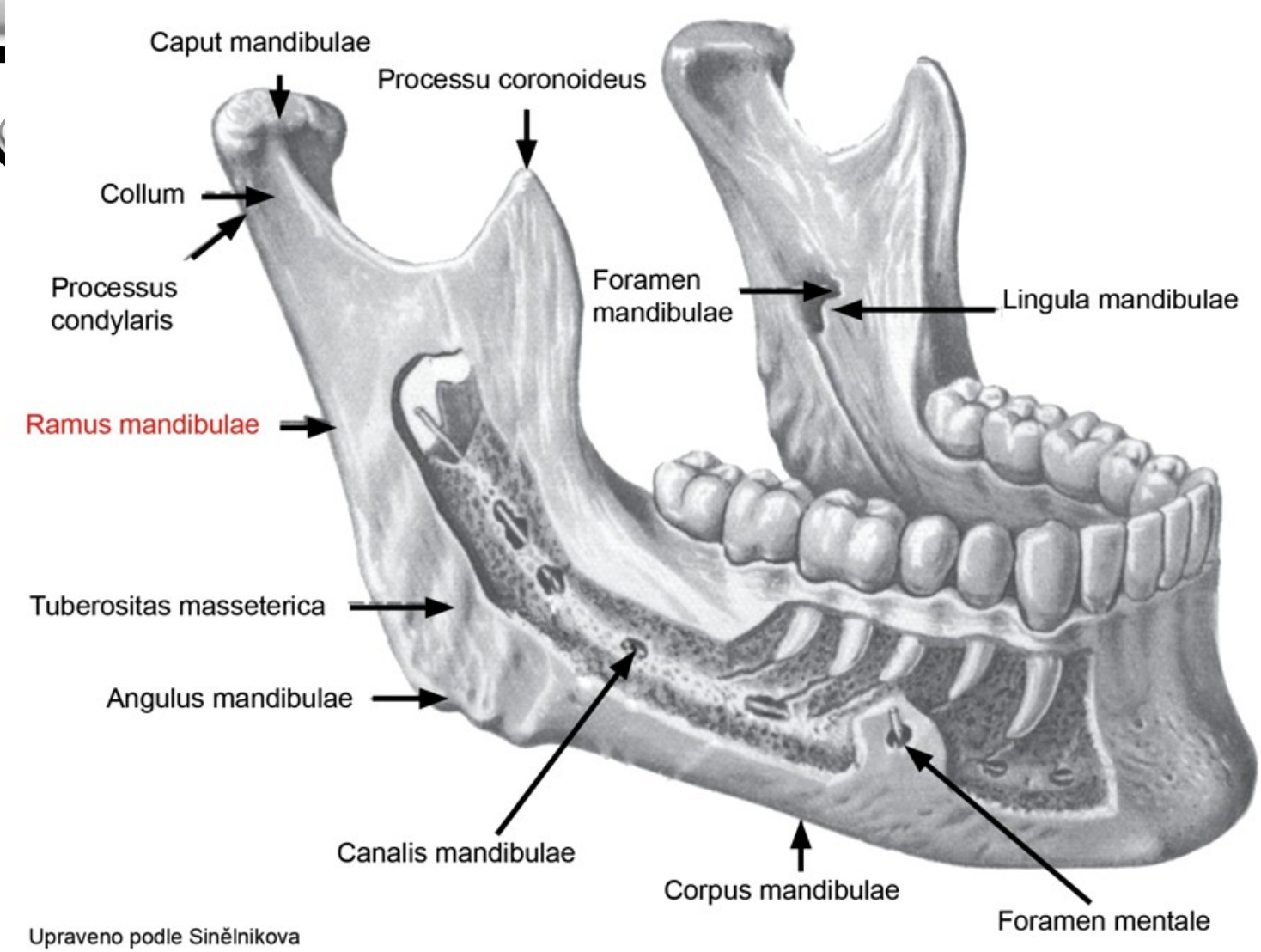
A SINGLE FACIAL BONE THAT IS THE ONLY FREELY MOVABLE

PART OF THE SKULL

DURING THE DEVELOPMENT THE MANDIBLE ORIGINATES

FROM TWO BONES WHICH UNITE TOGETHER AND FORM THE

LOWER JAW



Upraveno podle Sinělnikova

Childhood

- mandibular corpus is low
- the body contains the sockets of deciduous teeth
- the angle between corpus and ramus is 150
- mental foramen lies on the lower edge of

Adulthood

- the angle is much sharper – about 120°

- condylar process is higher than the coronoid process and the sigmoid notch becomes deeper

Old age

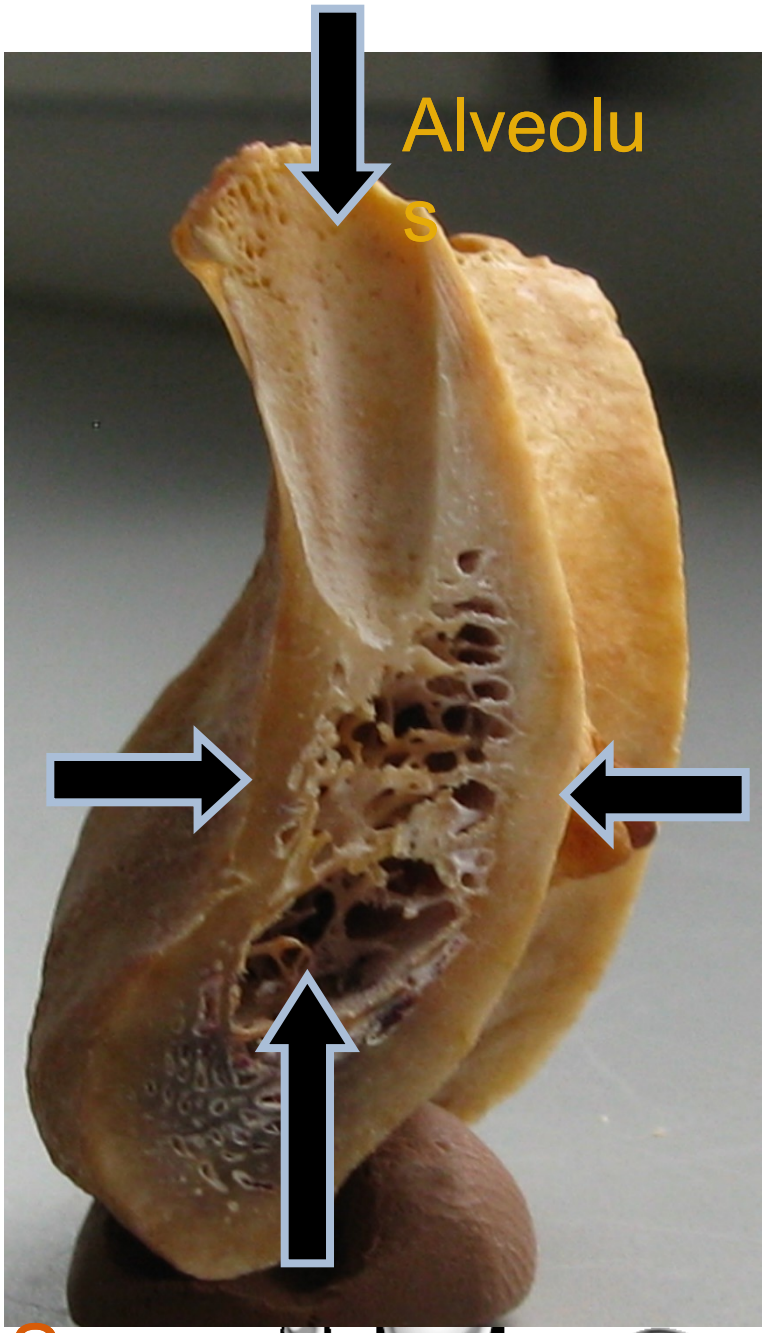
- after the loss of teeth, the body is reduced in volume (atrophy of the alveolar process) → mandibular foramen is closer to the alveolar border
- enlargement of the angle to 160°
- deepen pterygoid fovea → neck is tapered

Alveolar process

- The portion of the jawbone that contains the teeth and the alveoli in which they are suspended

- The development is dependent on tooth eruption and its maintenance on tooth retention

- Is composed of compact bone (0.1-0.8 mm) that enclose the spongiosa



Compact bone *(labial cortical plate)*

Compact bone *(lingual cortical plate)*

Spongy

Alveolus

- Is composed of a thin plate of **cortical bone** with numerous perforations (or cribriform plate) that allow the passage of blood vessels between the bone marrow spaces and the periodontal ligament

- The coronal rim of the alveolar bone forms the alveolar crest, which generally parallels the cemento-enamel junction at a distance of 1-2 mm apical to it

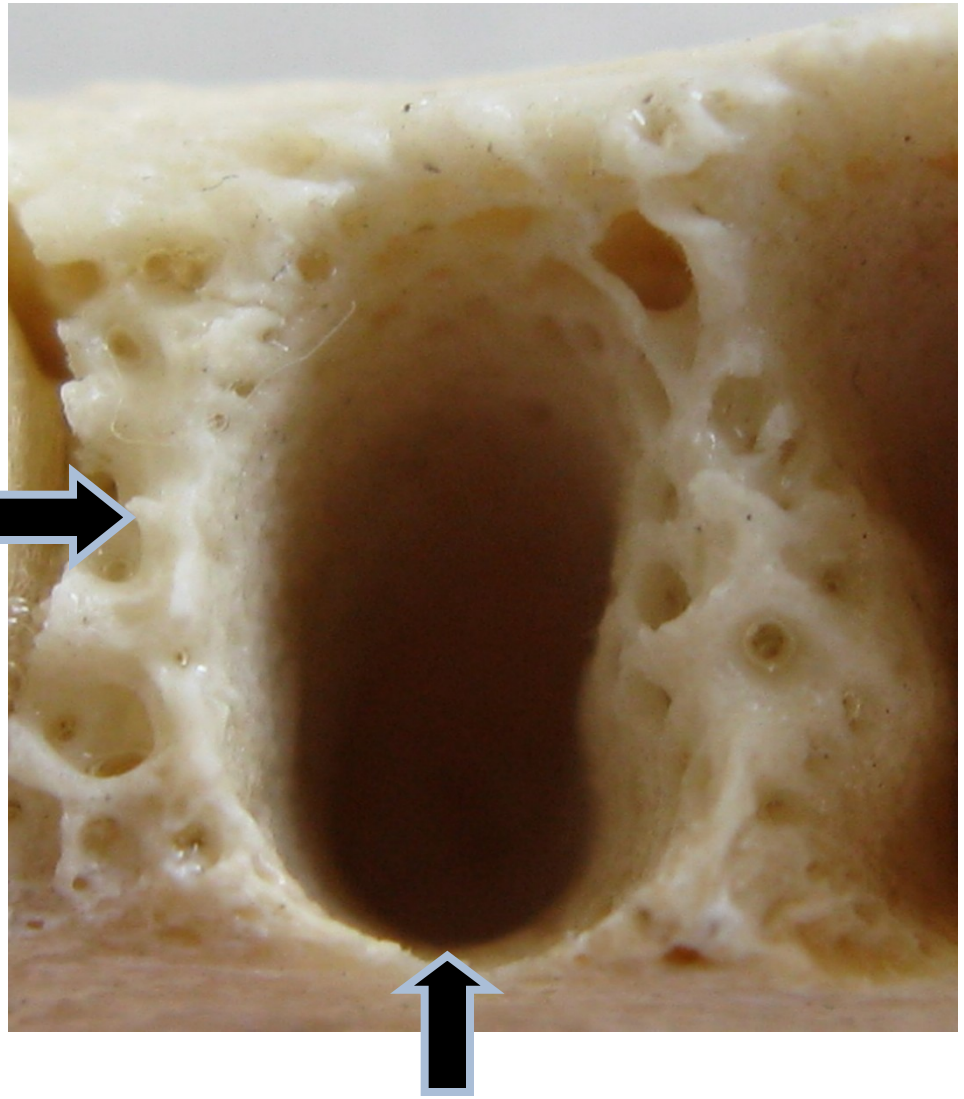
Bundle bone

= the inner portion of the bone of the alveolus that surrounds teeth and into which the collagen fibers of the periodontal ligament are embedded

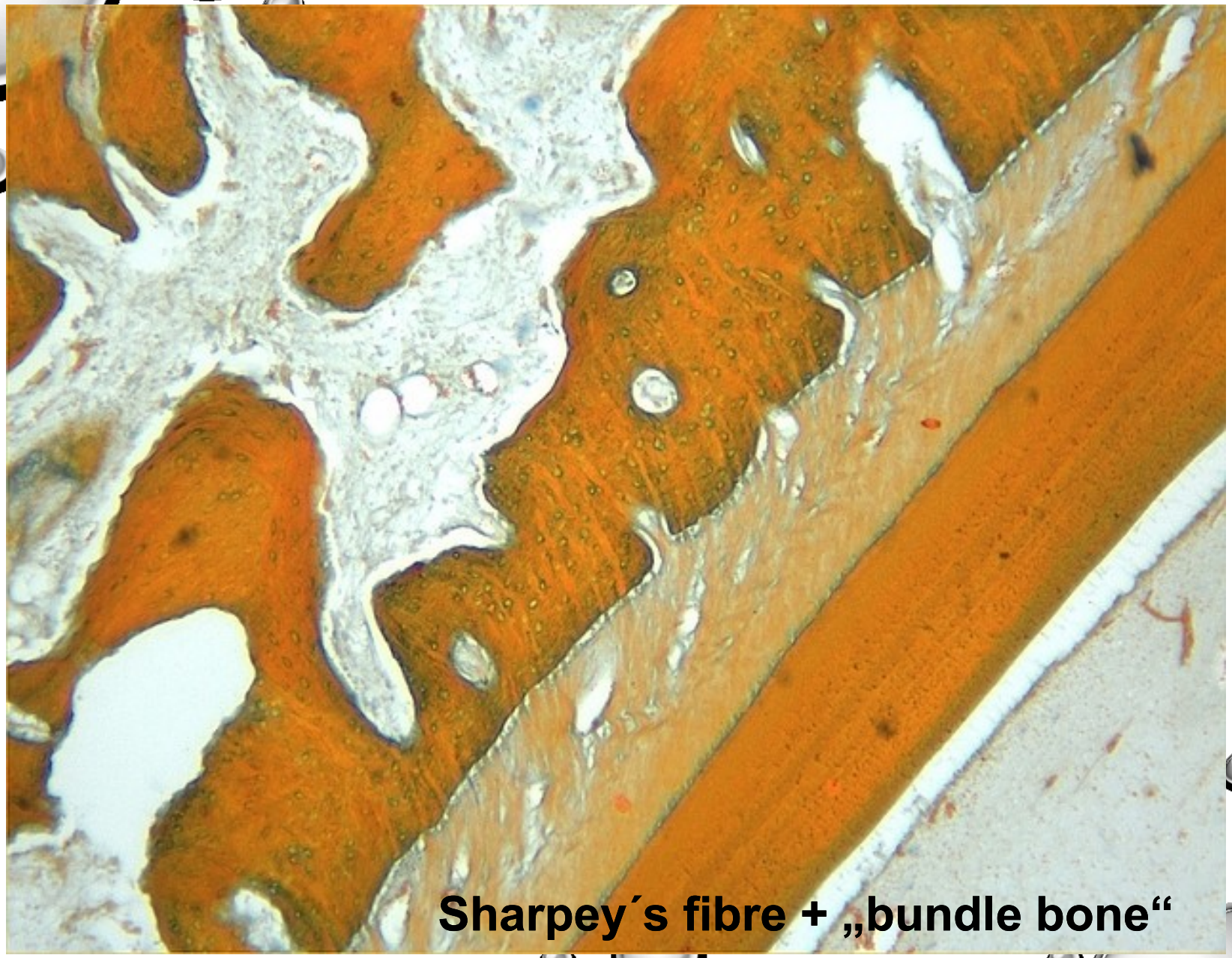
- Radiographically, the bundle bone is the **lamina dura**

Interalveolar septum *(spongy bone)*

0.7-14 mm



Alveolus *(compact bone)*


Sharpey´s fibre + „bundle bone“

Resorption of alveolar bone

Decreased bone (osteopenia) of alveolar process is noted when there is inactivity of tooth that does not have an antagonist

Reconstruction of alveolar bone

- The whole life the bone keep the potential to reconstruction

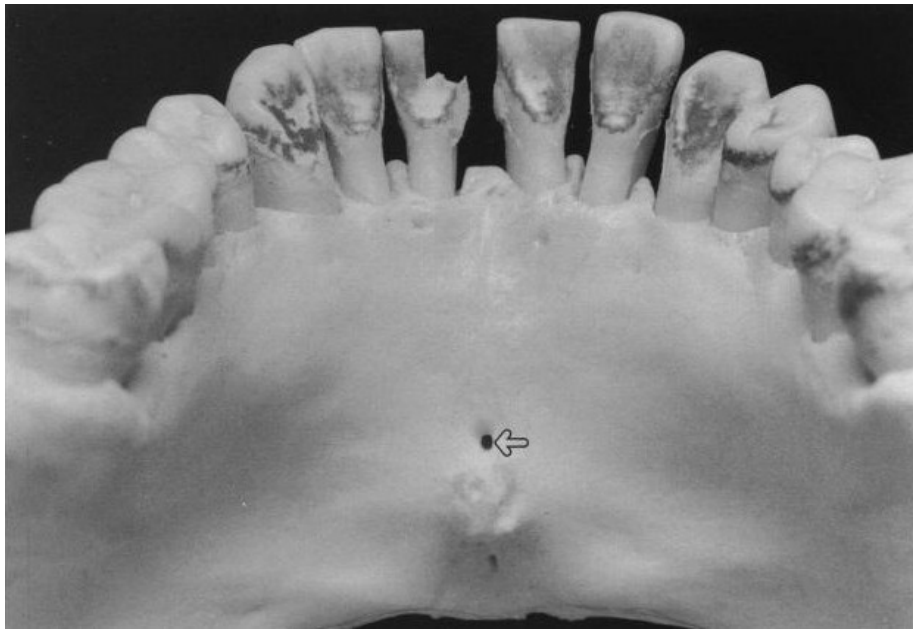
- Bone is resorbed on the side of pressure and opposed on the site of tension is regenerated

- Movement of a tooth by extrusion involves applying traction forces in all regions of the periodontal ligament to stimulate marginal apposition of crestal bone

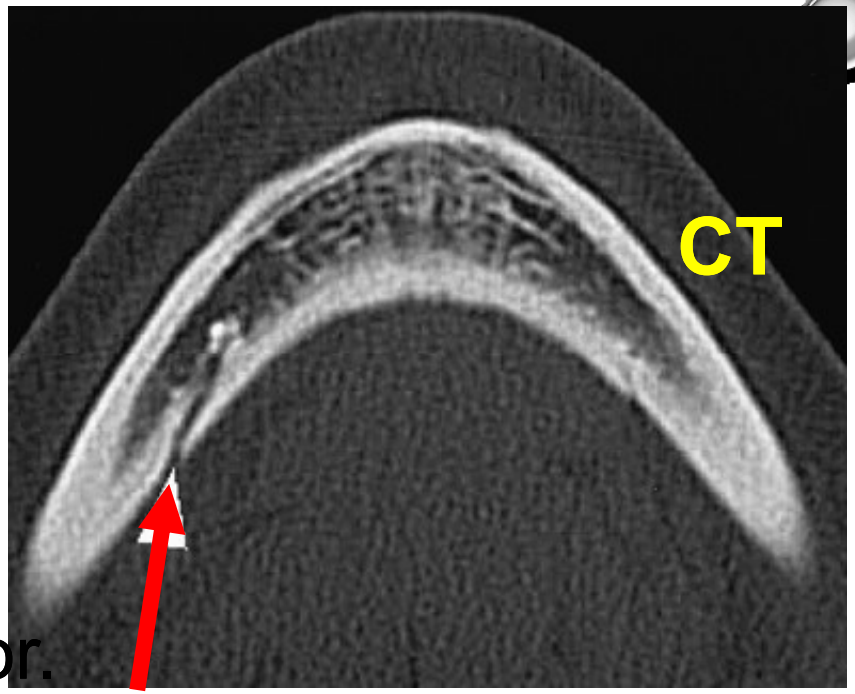
Lingual foramen (canal)

The contents of the foramen (foramina) were found to be an artery

Median



Lateral (orifices accessories)



- Inner area of mentum
- Sup. and inf. retromental for.
- Unilateral, bilateral or mutliple
- In neighbourhood of mylohyoid line

CAVE! Bleeding (implant placement)

Mandibular foramen

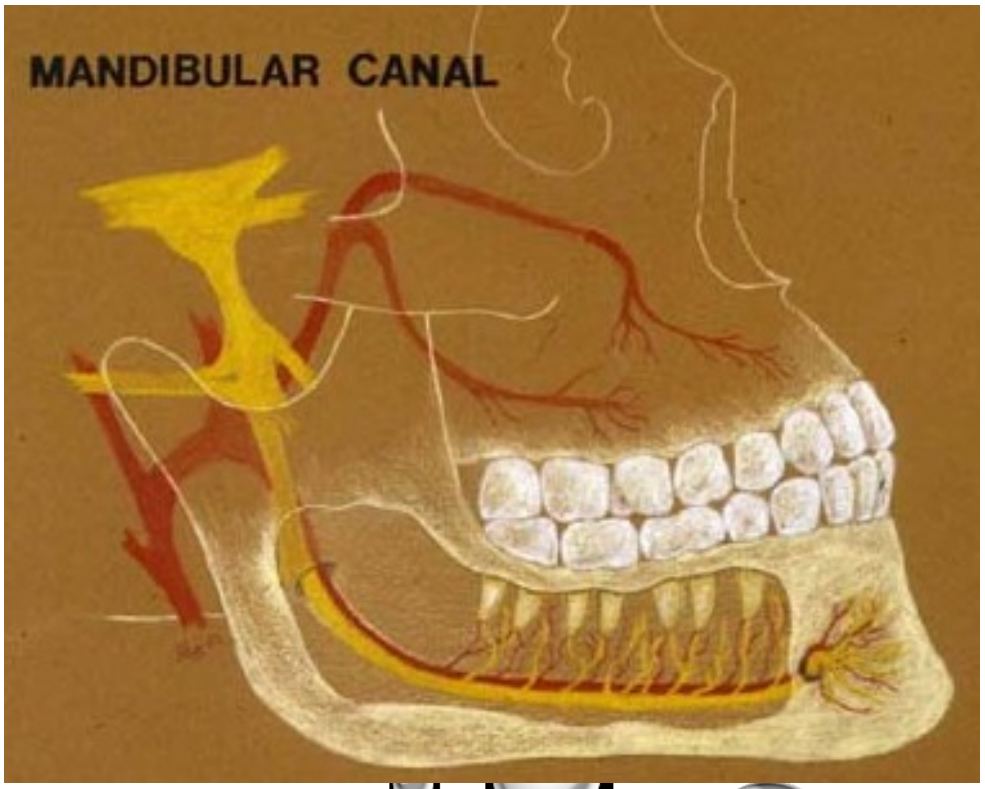
- Beginning of canalis mandibulae
- Inner surface of ramus mandibulae
- Middleline between anterior and posterior edge of ramus
- 1 cm above M3
- 2 cm behind M3

CAVE! Local anesthesy

Mandibular canal

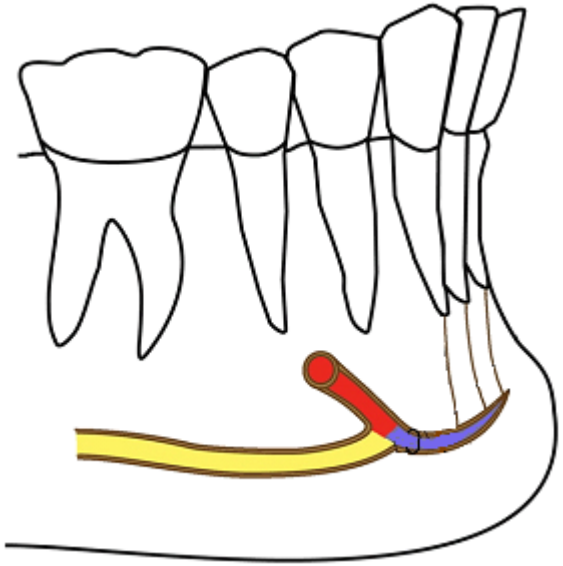
- Is placed under the alveoli and communicates with them by small openings

- Contains the inferior alveolar nerve, artery, vein

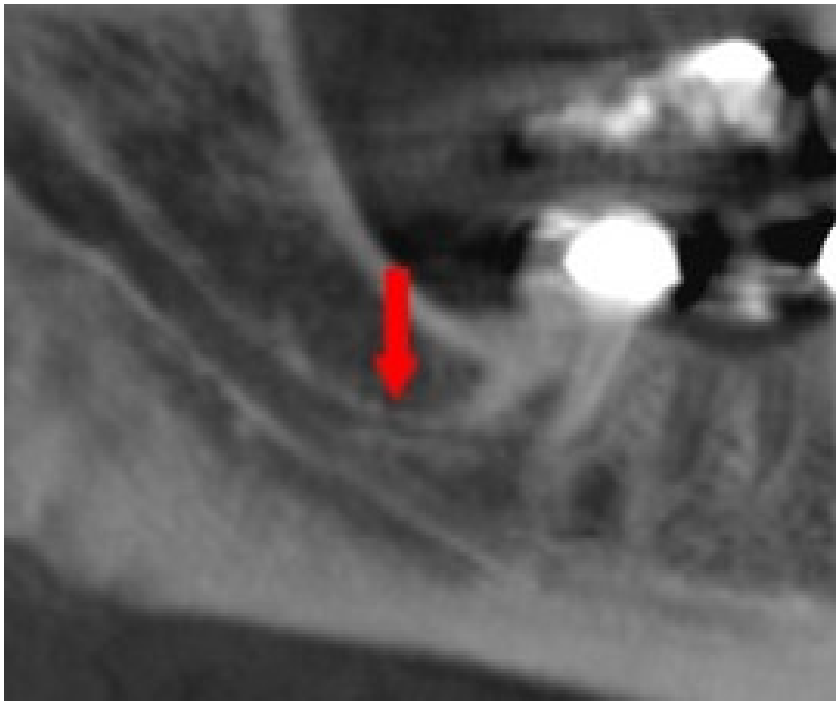


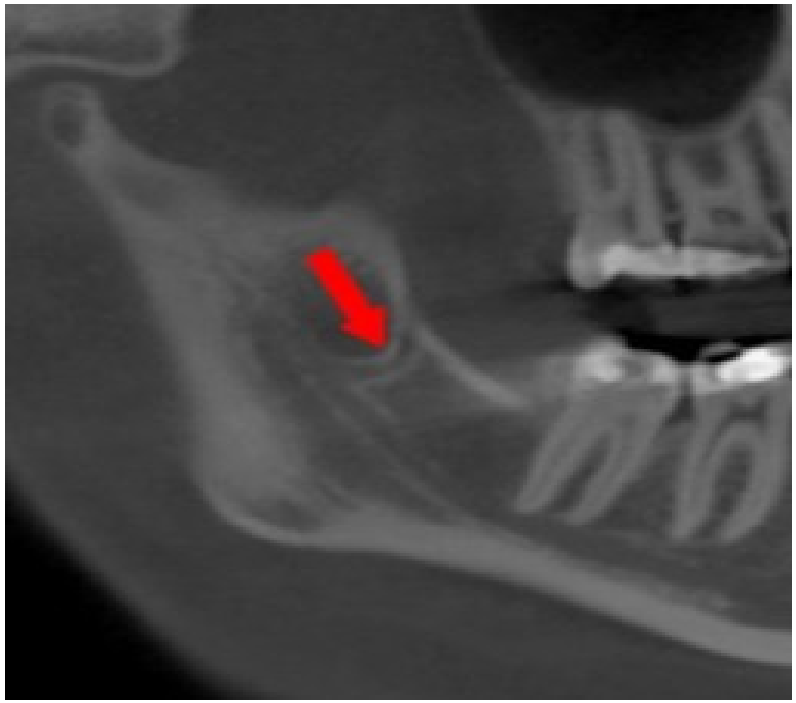
- Demarcate of the compact bone (noticeable to x-ray)

- On arriving at the incisor teeth, it turns back to communicate with the mental foramen, giving off a small canal known as the mandibular incisive canal



Canalis mandib. bifidus





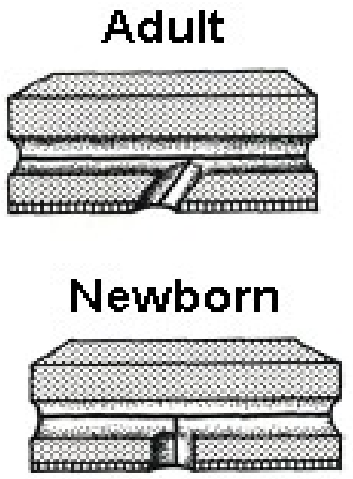
Summary 0.9%

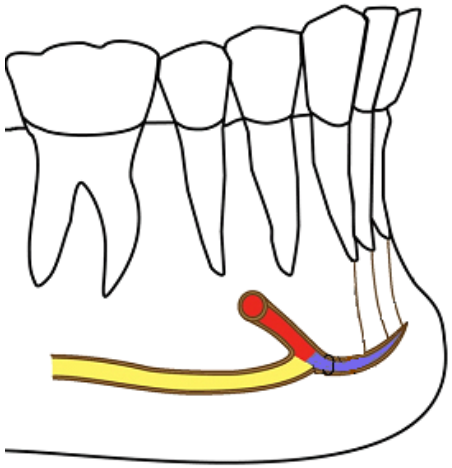
Mental foramen

- The position of this foramen is most frequently near the apex of the mandibular second premolar and rested between the premolars

- The foramen open upward and slightly posteriorly in adults

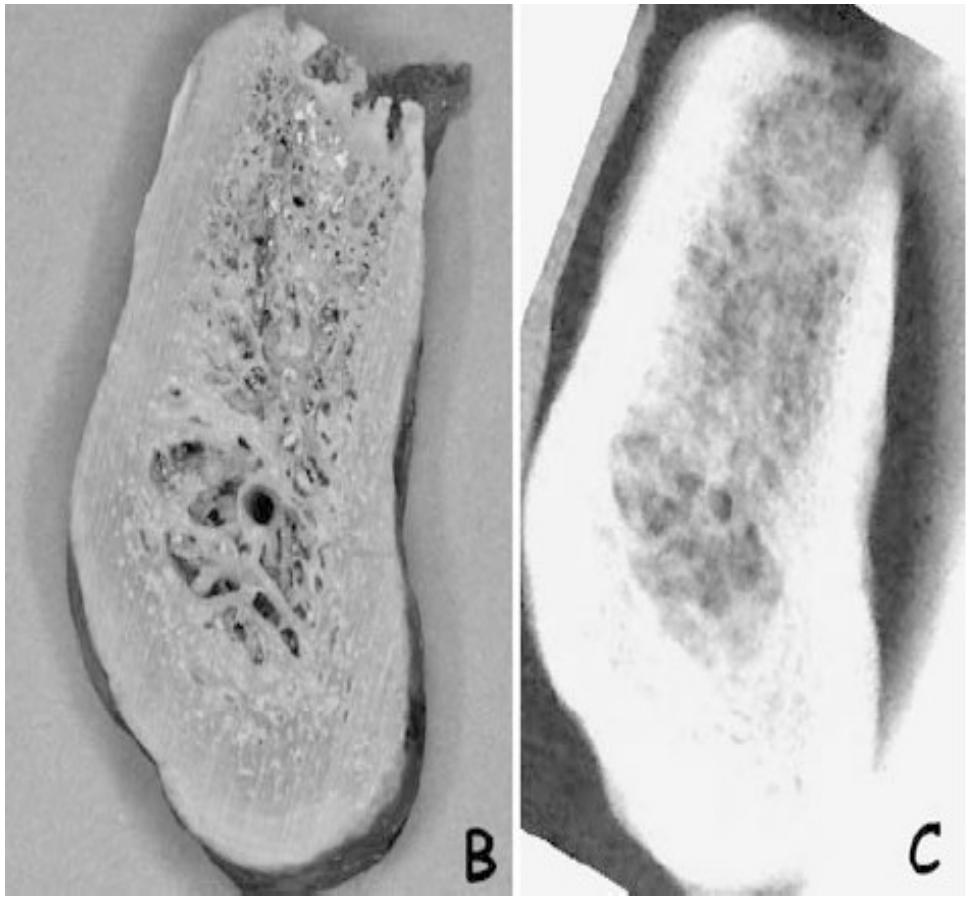
- The foramen open straight upward in newborns





CAVE ! Local anesthesy

Incisive canal



Summary 96%

Demarcate of the compact bone (noticeable to x-ray)

Dentoalveolar topography

Important for anesthesia, extraction, injury, implantology, endodontic treatment ...

1. The transverse asymmetry of alveolus
2. The rate of the spongy and the compact bone
3. The relationship the roots the lower jaw to neighbouring structures

1. The transverse asymmetry of alveolus

The dental and skeletal arch are asymmetric !

2. The rate of the spongy/compact bone

- The layer of compact bone is thicker than in the upper jaw

- Roots of the incisivi and canini teeth are surrounded by the compact bone

- Roots of the premolars and molars are surrounded by the pre- and retroalveolar spongy bone that is thin, fragible

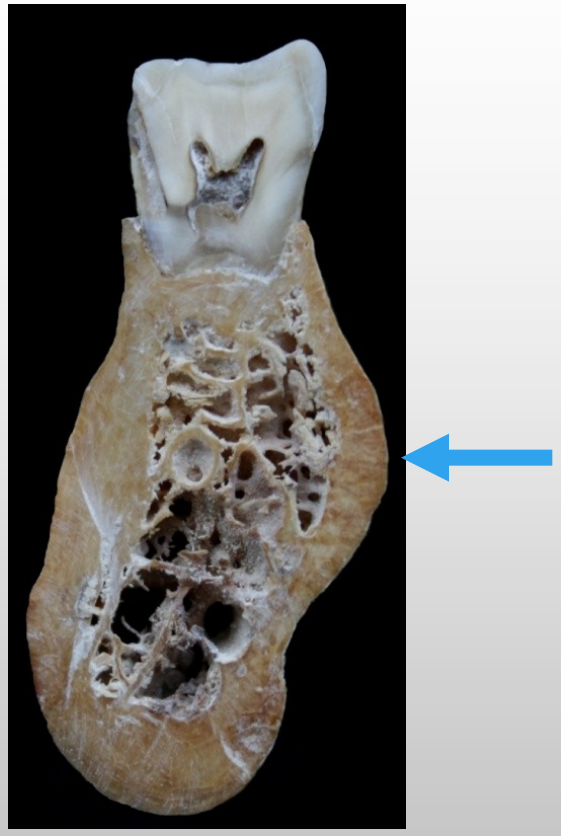
Incisivi,
Canini
Compact bone only

CAVE!

- Fractures by extraction !
- Root of the 3nd tooth – fracture of mandible !

Premolars

Molars

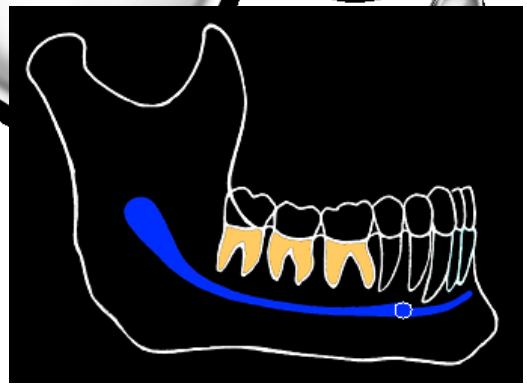


Compact bone and variable thickness of spongy bone bucally and lingually (linea mylohyoidea)

Spongy bone is distally to 8

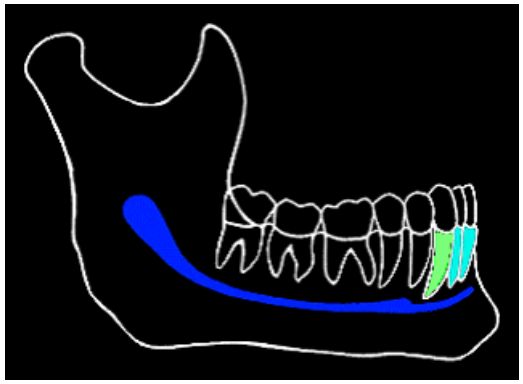
3. The relationship the roots the lower jaw to neighbouring structures

Canalis mandibulae (incisivus, mentalis)



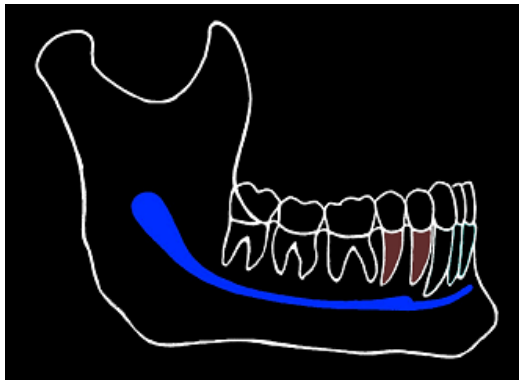
Canalis mandibulae

- variable layer of spongy bone
- dehiscence of the canal and the alv.



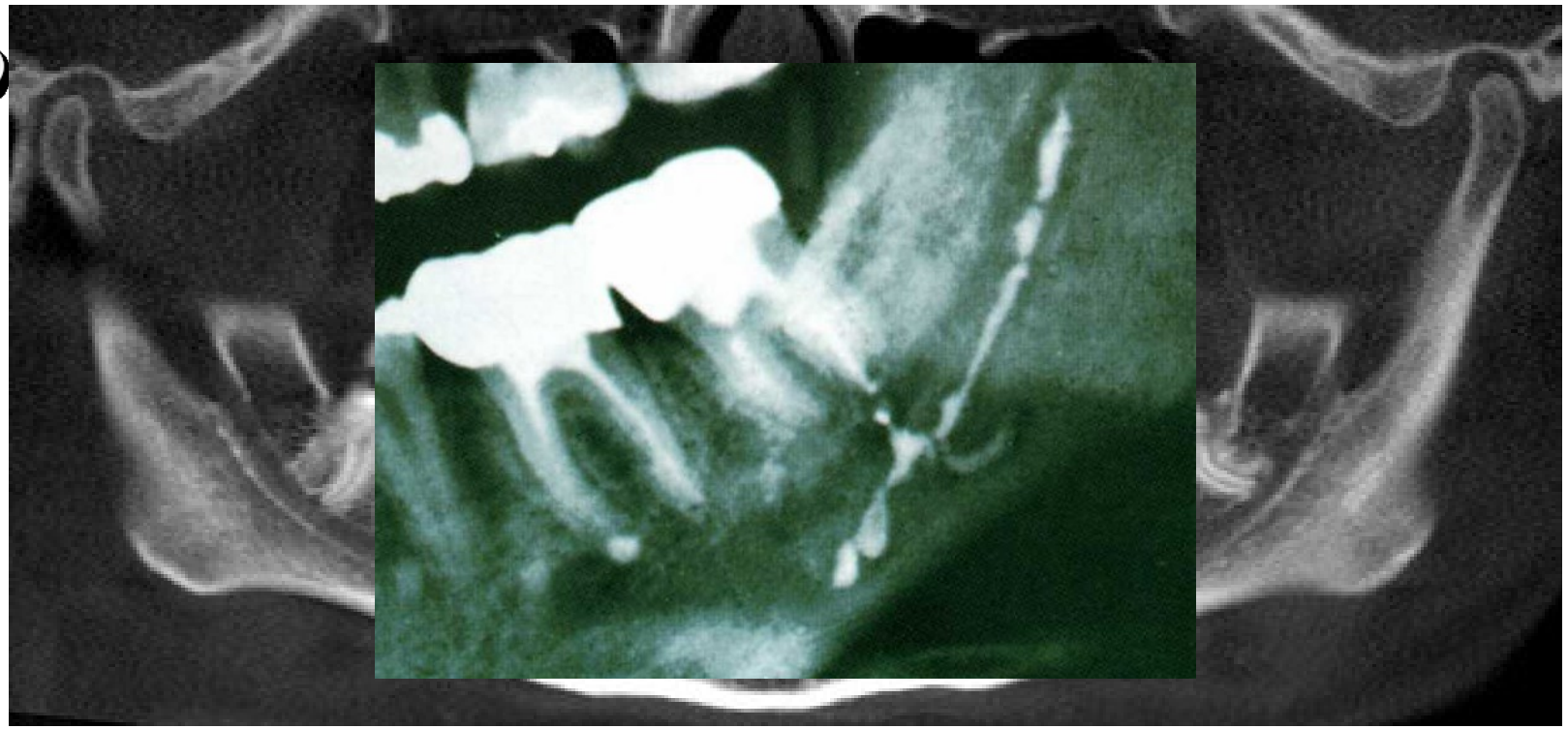
Canalis incisivus

- variable layer of spongy bone



Canalis mentalis

- variable layer of spongy bone
- beneath the mandibular 4, 5



CAVE! The endodontic treatment

Nerve and blood supply

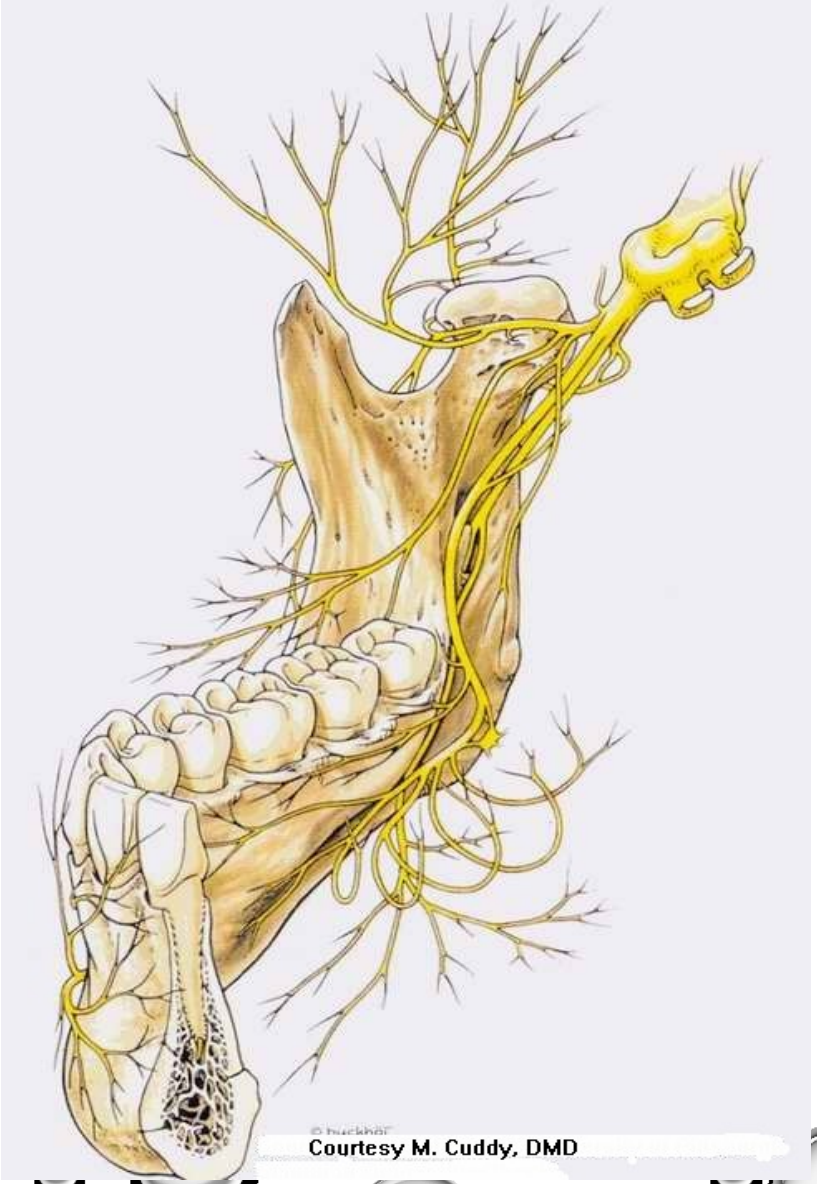
Trigeminal nerve

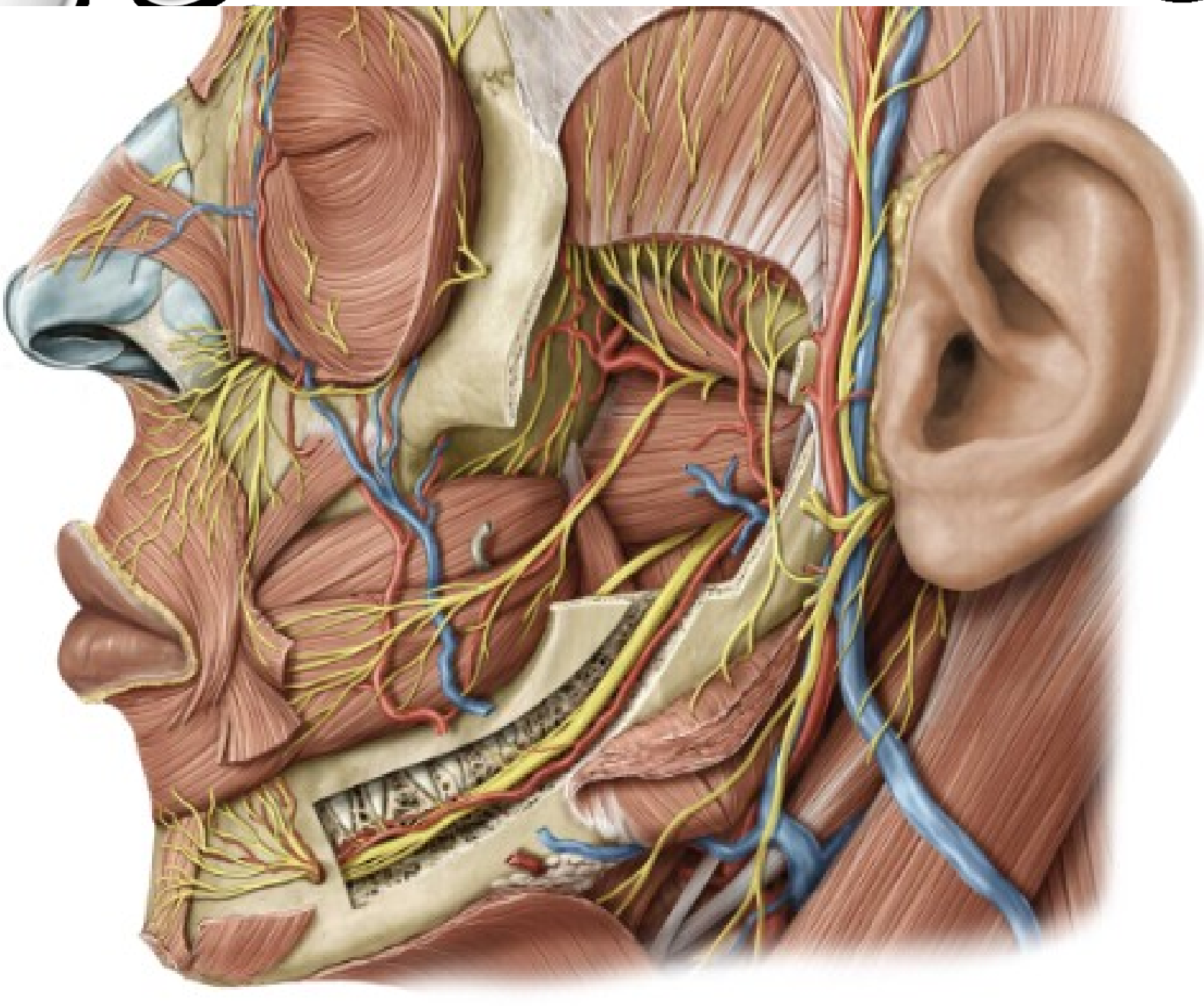
Alveolar inferior nerve
- mental nerve
- incisive nerves

Mylohyoid nerve

Buccal nerve

Lingual nerve



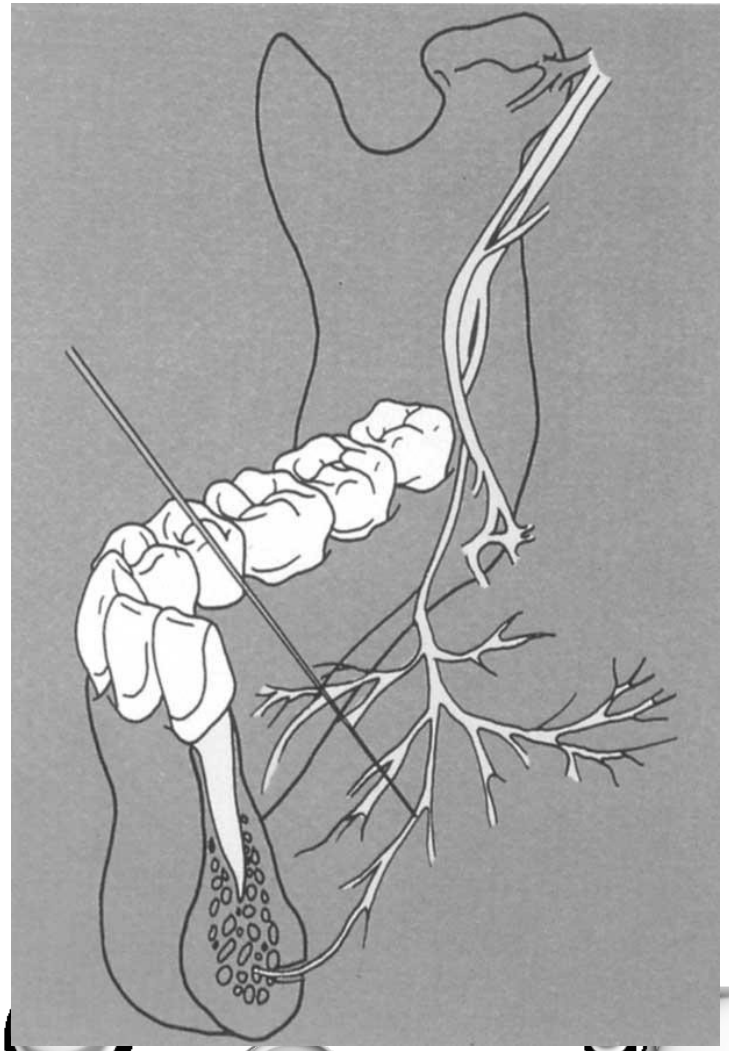


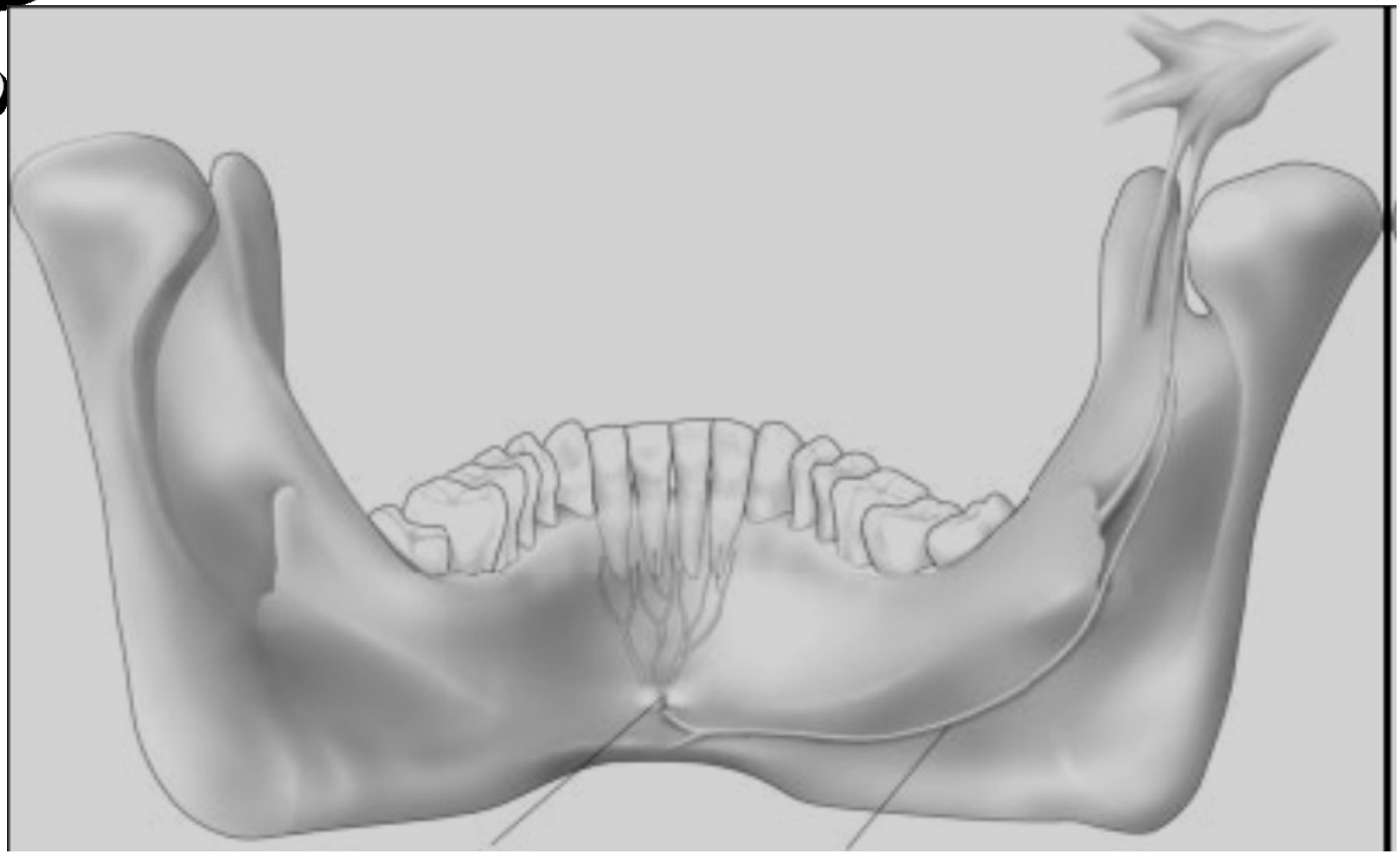
Variation

Important for anesthesy !

1. Mylohyoid nerve

Can conveys impulses from the incisive, canine and premolar teeth and gingiva !

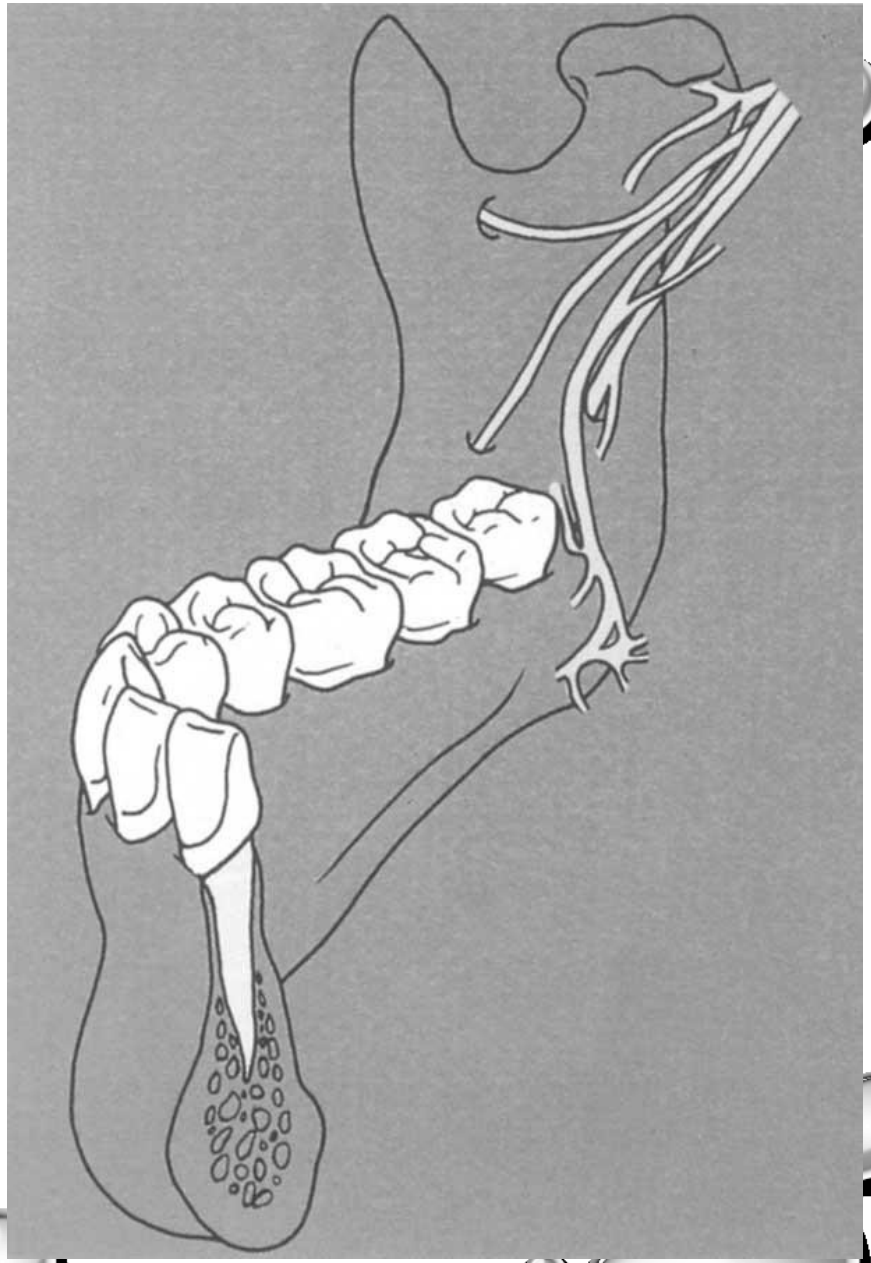




2.

Sometimes the branches entering separated bony channels laterocranial of mandible foramen and M3, M2

The nerves entering the mandible at the retromolar fossa



Maxillary artery

Inferior alveolar artery
mylohyoid a.
dent. et interalveolar a.
mental a.
incisive a.

Facial artery
submental a.

Lingual artery
sublingual a.