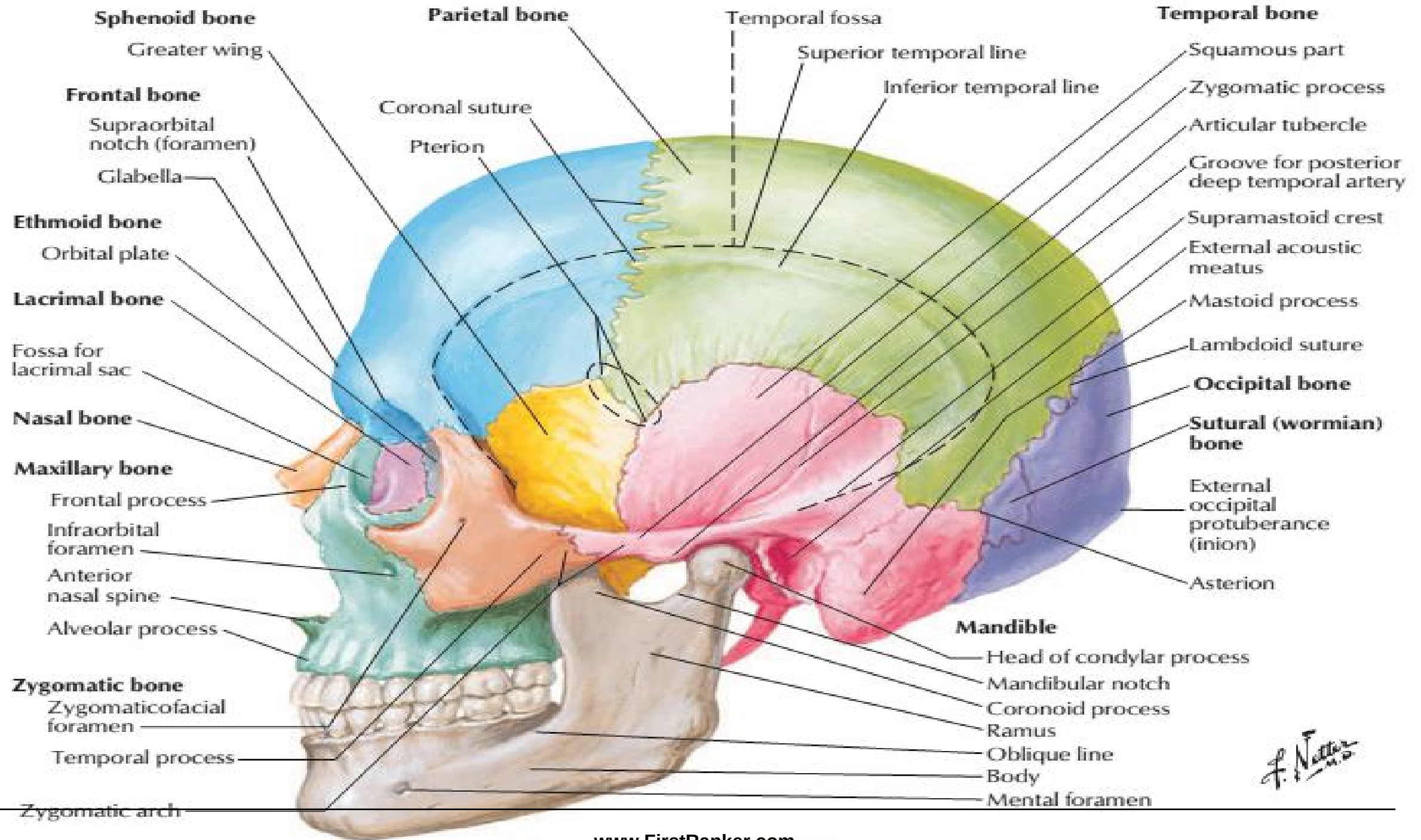


NORMA LATERALIS

- The skull is viewed from the sides.
- It is demarcated from other views by the temporal lines.
- **Bones viewed in Norma lateralis:**
- Frontal bone
- Parietal bone
- Sphenoid: a) *Greater wing* b) *Lateral pterygoid plate*
- Temporal bone: a) *Squamous part* b) *Styloid process* c) *Mastoid part*
- Zygomatic bone
- Maxilla
- Occipital bone
- Nasal bone

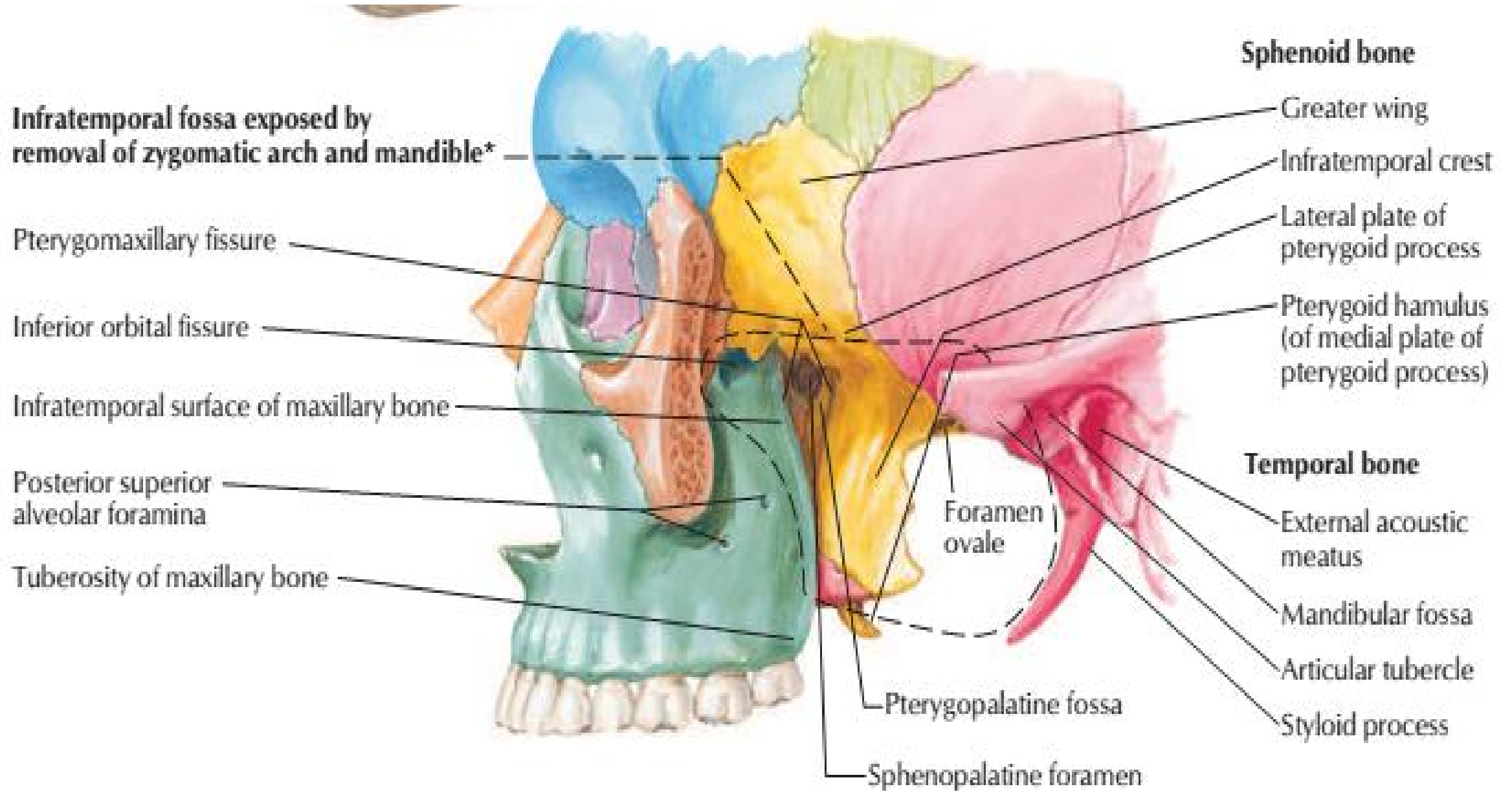


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NORMA LATERALIS

• Important structures to be identified are:

- | | |
|-----------------------------|----------------------------|
| 1. Temporal lines | 11. Mastoid foramen |
| 2. Supra mastoid crest | 12. Temporal fossa |
| 3. Zygomatic arch | 13. Styloid process |
| 4. External auditory meatus | 14. Infra temporal fossa |
| 5. Squamo-tympanic suture | 15. Pterygopalatine fossa |
| 6. Supra meatal spine | 16. Sphenopalatine foramen |
| 7. Supra meatal triangle | 17. Greater palatine canal |
| 8. Parieto-mastoid suture | |
| 9. Occipito-mastoid suture | |
| 10. Mastoid process | |

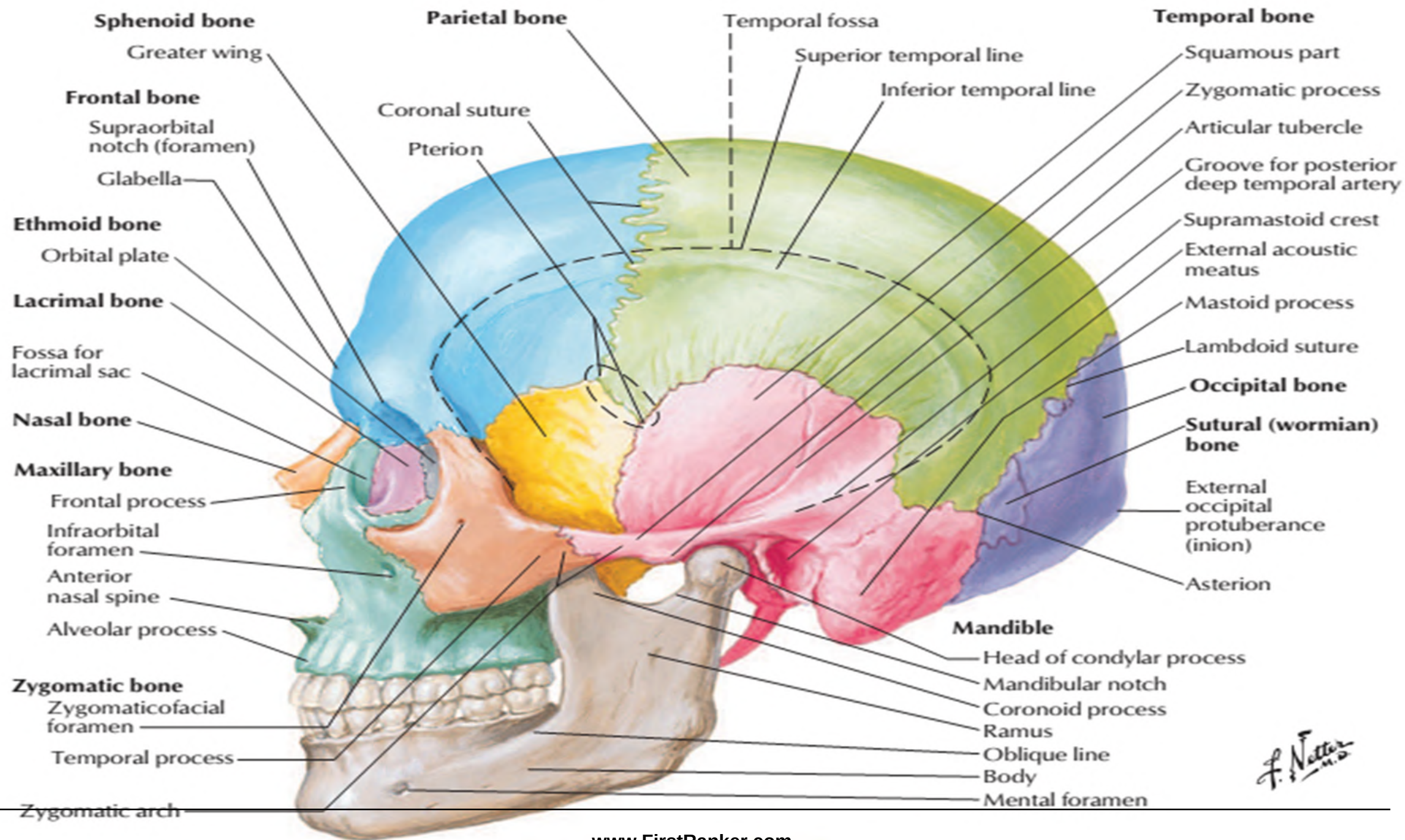


**Superficially, mastoid process forms posterior boundary.*

NORMA LATERALIS

TEMPORAL FOSSA:

- Depressed area below the temporal lines.
- **Boundaries:**
 - Anteriorly:
 - i. Temporal surface of zygomatic process of frontal.
 - ii. Frontal process of zygomatic.
 - iii. Greater wing of sphenoid.
 - Posteriorly:
 - i. Posterior part of superior temporal line.
 - ii. Supra mastoid crest.
 - Superiorly: superior temporal line.
 - Inferiorly:
 - i. Laterally: zygomatic arch.
 - ii. Medially: infratemporal crest.
- Floor gives origin to temporalis muscle.



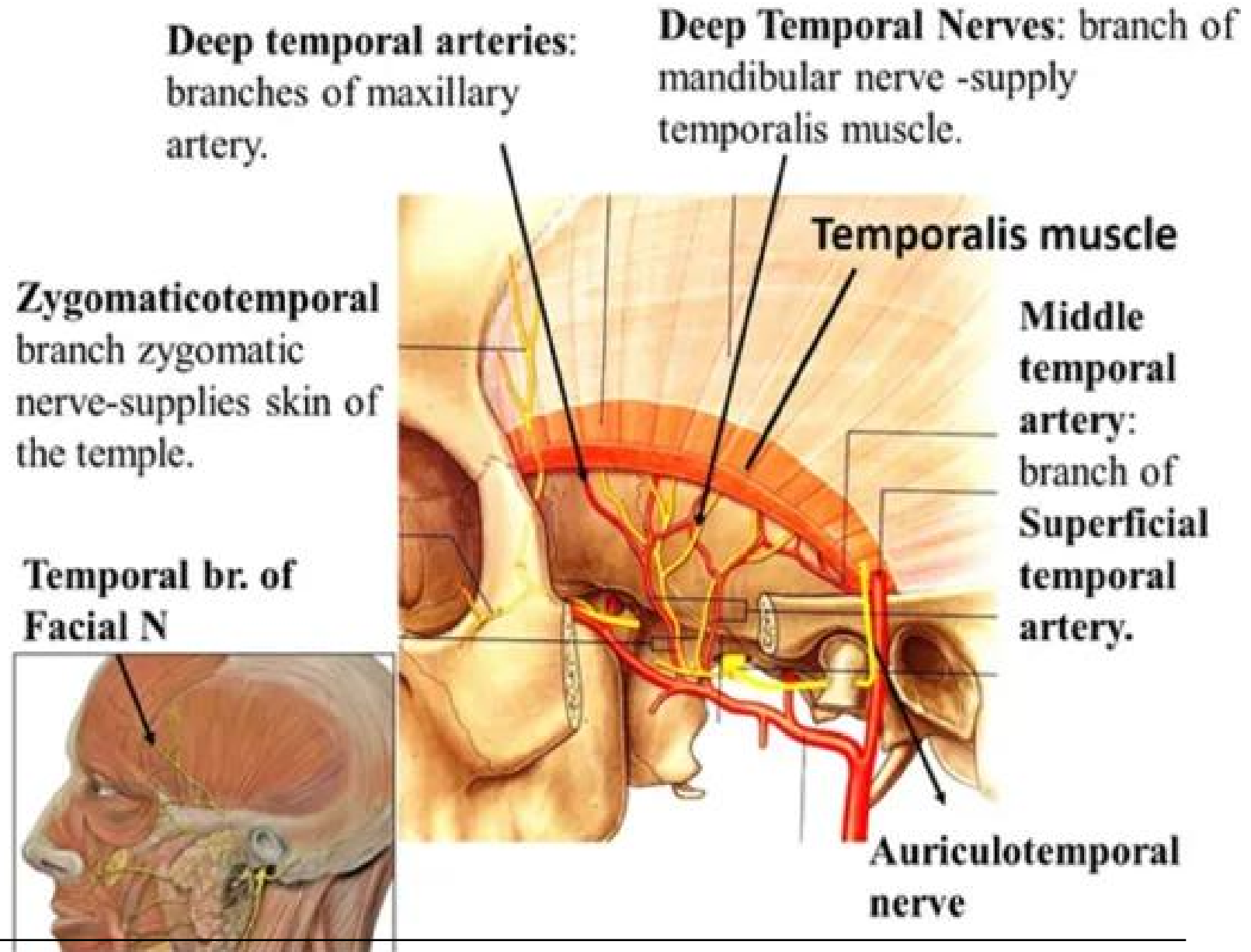
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NORMA LATERALIS

TEMPORAL FOSSA

• Contents:

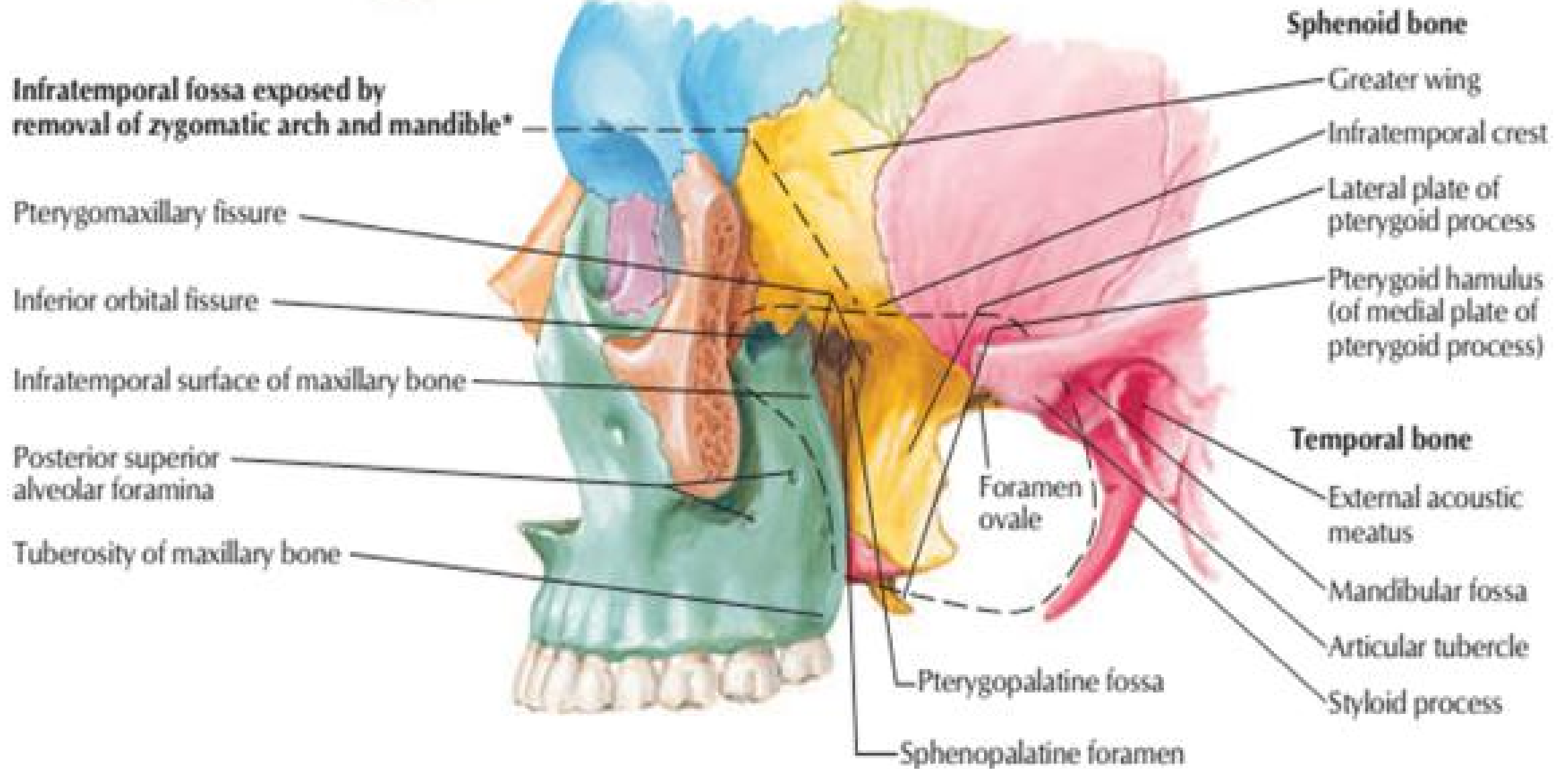
1. Temporalis muscle with its fascia.
2. Two deep temporal nerves.
3. Temporal branches of maxillary artery.
4. Zygomatico-temporal nerves.



NORMA LATERALIS

INFRA TEMPORAL FOSSA

- Irregular space situated behind the maxilla and below the zygomatic arch.
- Boundaries:
 - Medially:
 - i. Lateral pterygoid plate.
 - ii. Pyramidal process of palatine bone
 - Anteriorly:
 - i. Posterior surface of maxilla.
 - ii. Medial surface of zygomatic bone.
 - Roof:
 - i. Infra temporal surface of greater wing to sphenoid.
 - ii. Squamous part of temporal bone.



*Superficially, mastoid process forms posterior boundary.

NORMA LATERALIS

INFRA TEMPORAL FOSSA:

- Above it communicates with temporal fossa.
- It is open on its posterior, lateral and inferior aspects.
- Laterally ramus of mandible forms its boundary.
- Anterior and medial walls are separated in the upper part by pterygomaxillary fissure, while they meet below.
- Through pterygomaxillary fissure, this fossa communicates with the pterygopalatine fossa.

NORMA LATERALIS

INFRA TEMPORAL FOSSA:

• Contents:

1. Muscles:

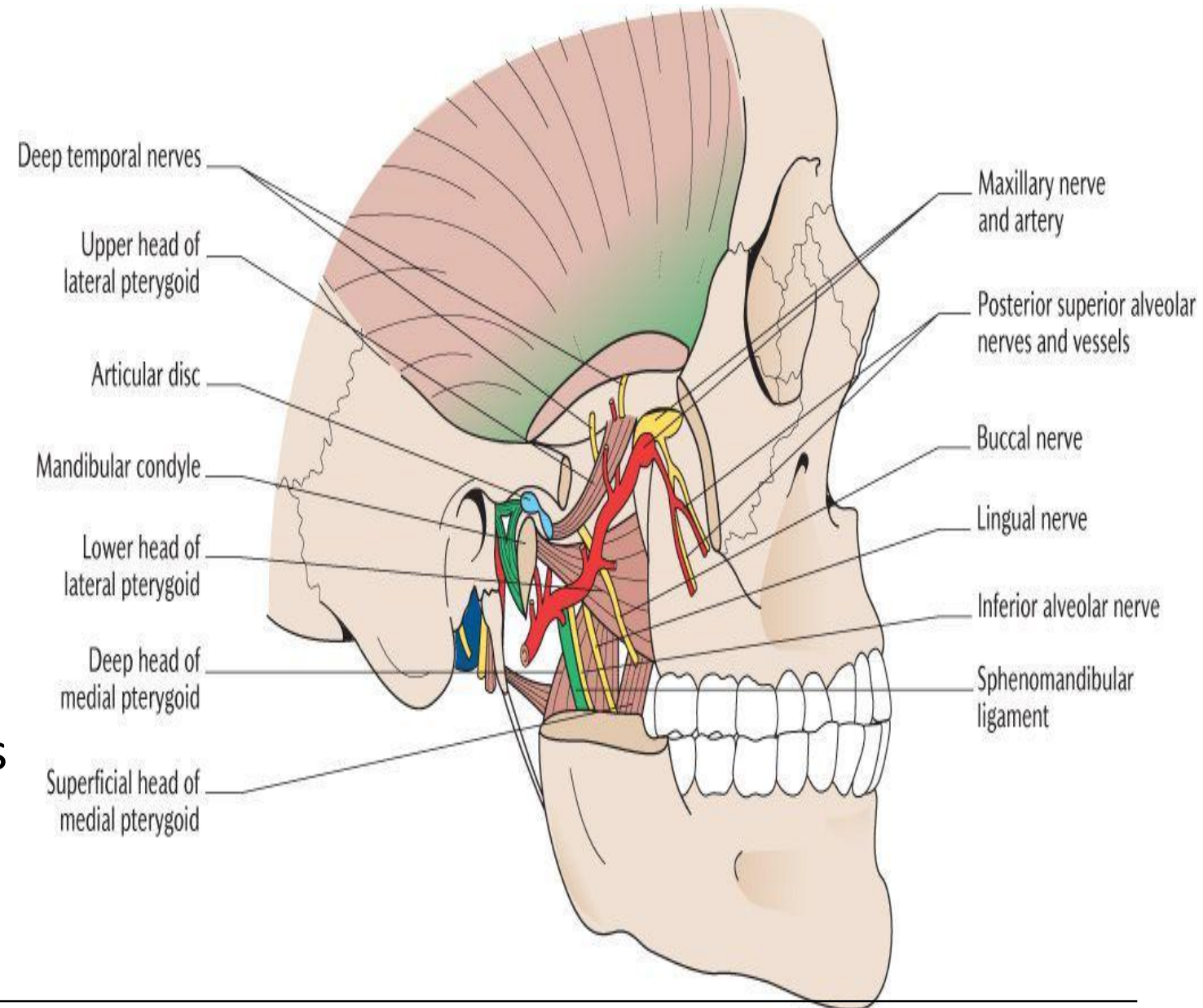
- a) Lateral pterygoid
- b) Medial pterygoid

2. Nerves:

- a) Mandibular and its branches
- b) Corda tympani
- c) Maxillary

3. Vessels:

- a) Maxillary artery and its branches
- b) Middle meningeal artery
- c) Maxillary vein.
- d) Pterygoid plexus of veins.



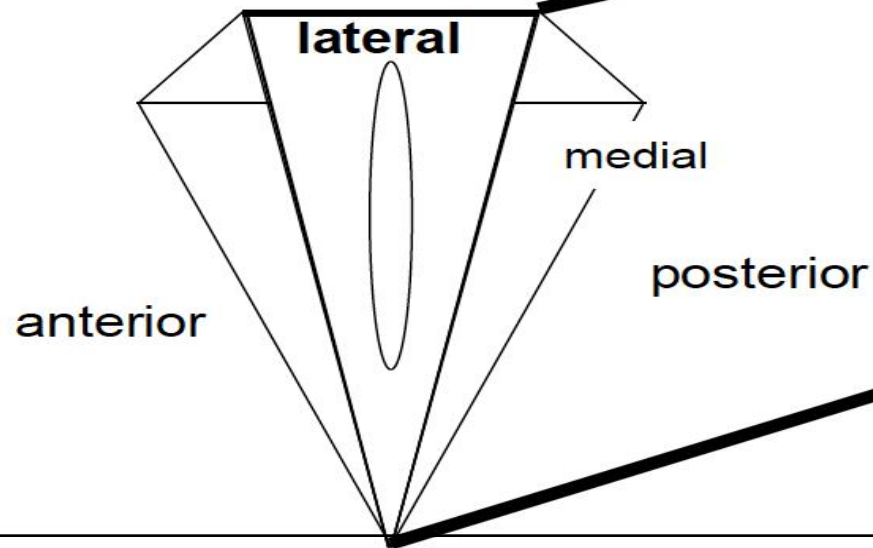
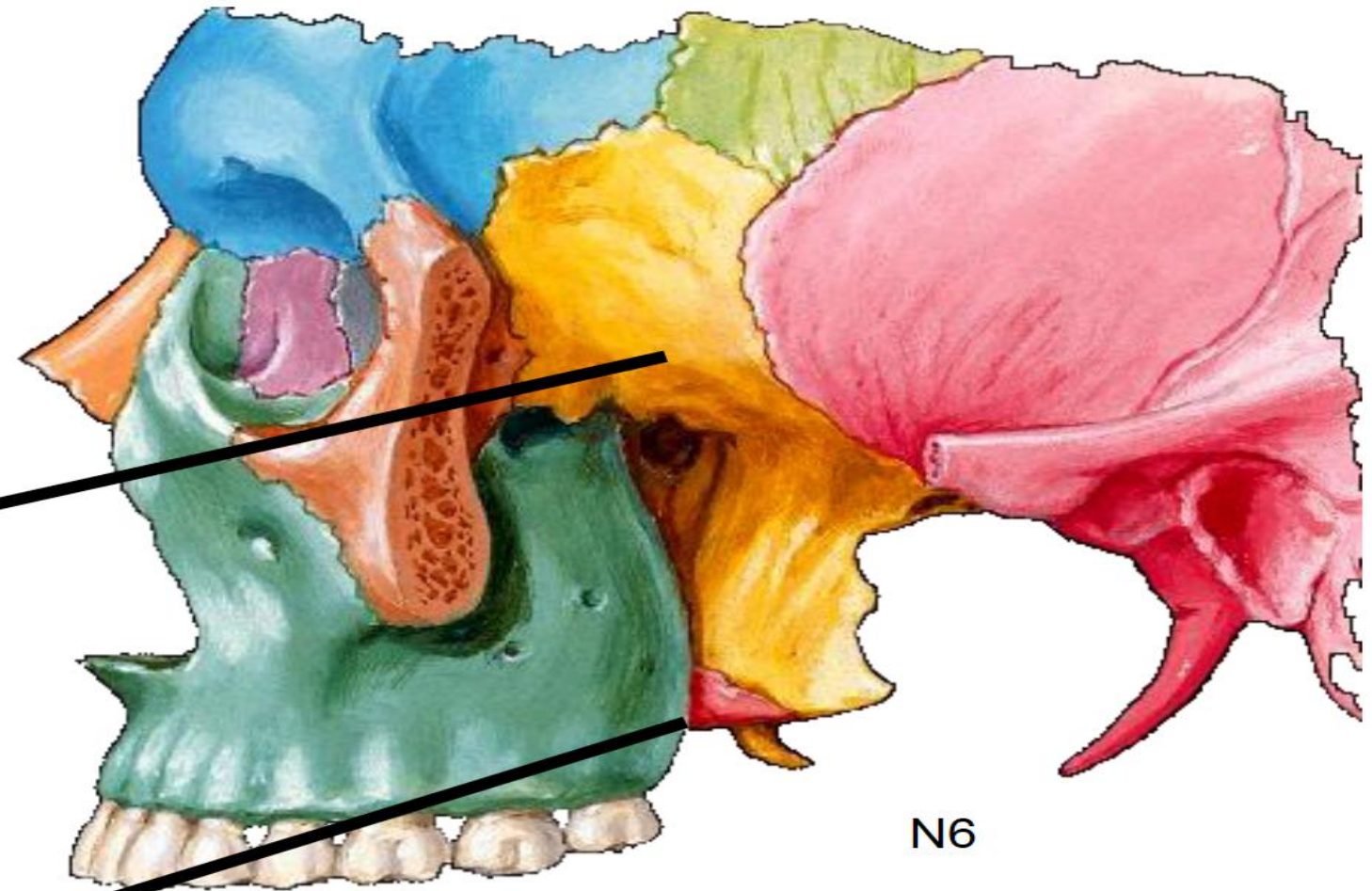
NORMA LATERALIS

PTERYGOPALATINE FOSSA:

- Small pyramidal space lying below the apex of the orbit.
- **Boundaries:**
 - **Anteriorly:** supero-medial part of posterior surface of maxilla.
 - **Posteriorly:** root of pterygoid process and adjoining part of greater wing of sphenoid.
 - **Medially:** upper part of lateral surface of perpendicular plate of palatine bone with its orbital and sphenoidal process.
 - **Roof:** formed by under surface of body of sphenoid.
 - **Floor:** formed by meeting of anterior and posterior walls.
 - **Laterally:** It communicates with the infra temporal fossa through pterygomaxillary fissure.

Pterygopalatine fossa

- Roof**—Greater wing of sphenoid
- Anterior**—Maxilla
- Posterolateral**—pterygoid process of sphenoid
- Medial**—vertical plate of palatine bone
- “Floor”**—horizontal plate of palatine bone



NORMA LATERALIS

PTERYGOPALATINE FOSSA:

- **Communications:**

- 5 Openings and 2 fissures in this fossa.
- 3 openings in the posterior wall. They are:
 1. Foramen rotundum
 2. Pterygoid canal
 3. Palato-vaginal canal
- On the medial wall is the opening of **spheno-platine foramen**.
- **Greater palatine foramen** opens at the place where anterior and posterior walls meet.
- Fissures are: **pterygomaxillary fissure** and **inferior orbital fissure**.

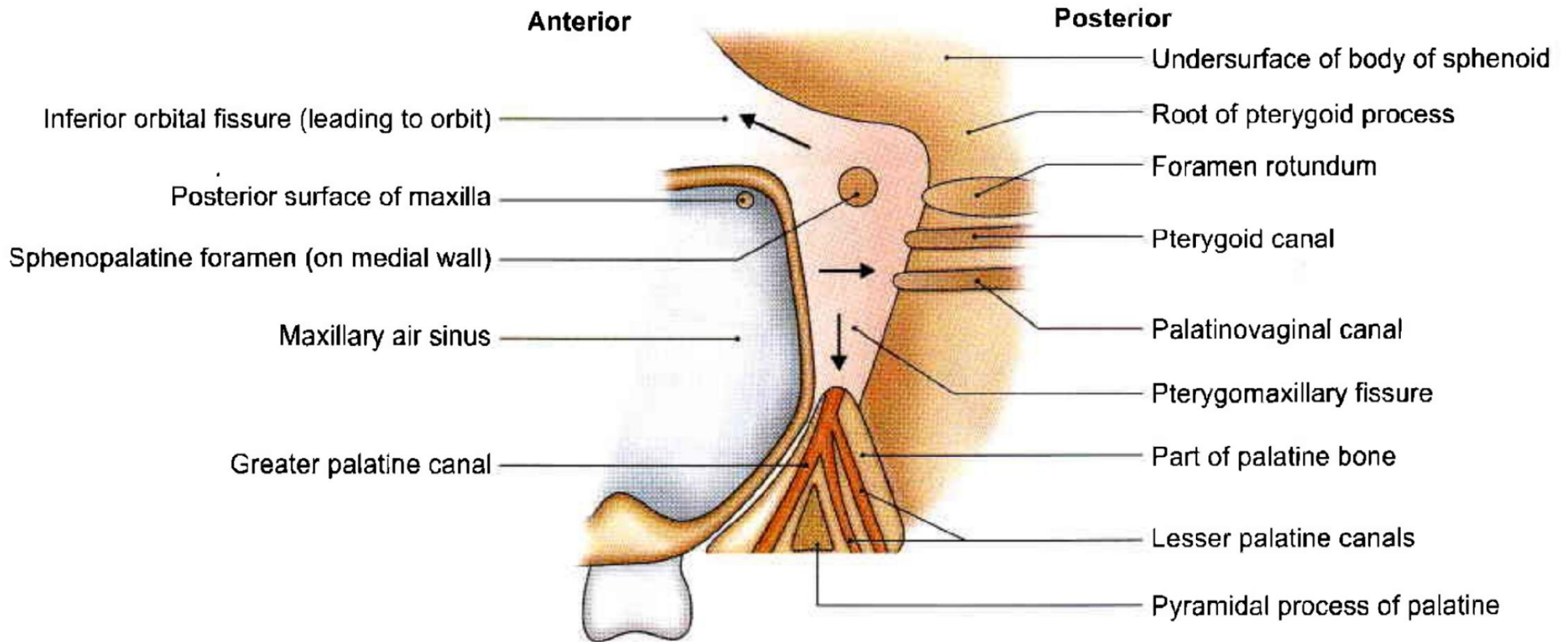
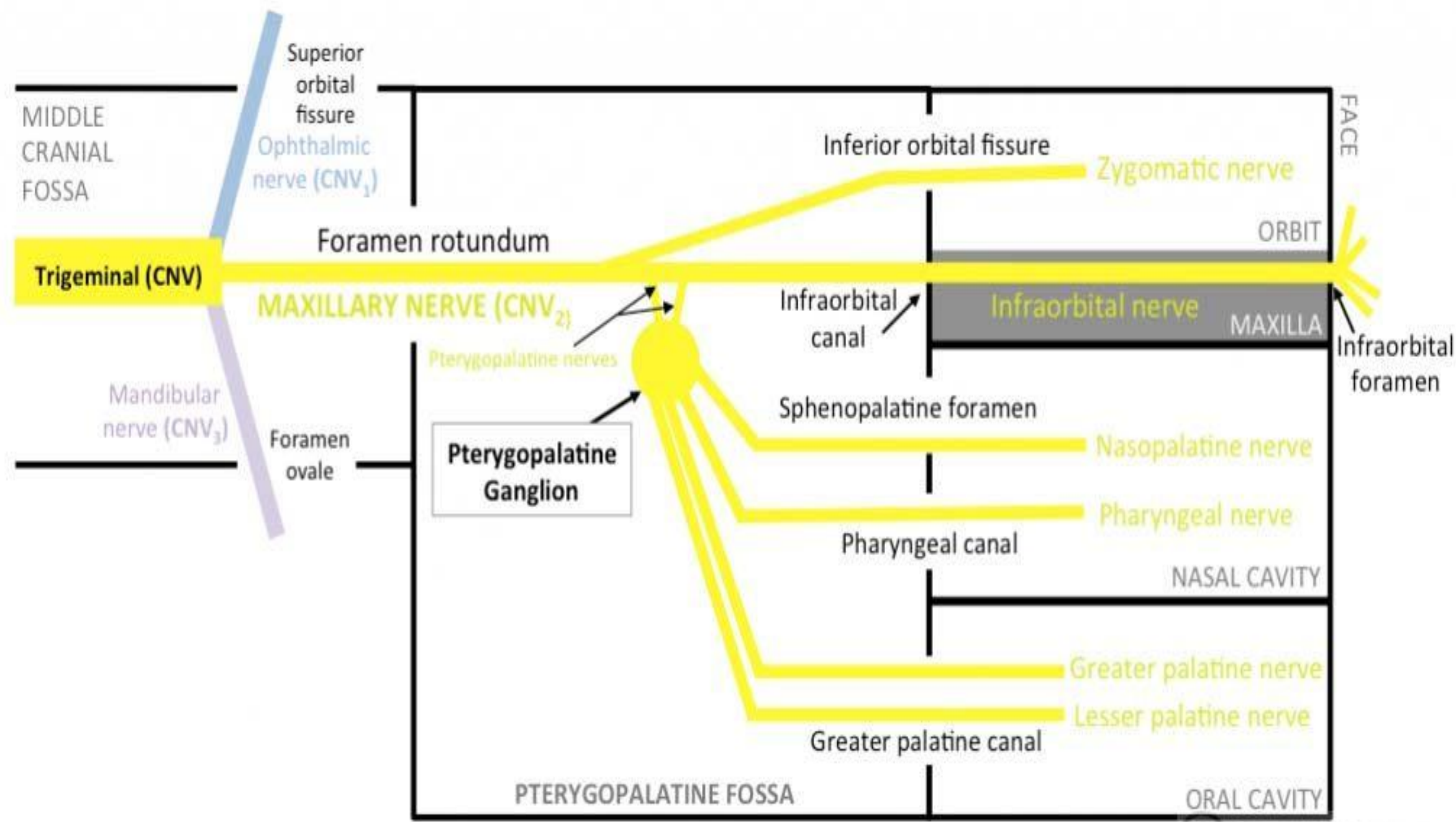


Fig. 15.14: Scheme to show the pterygopalatine fossa and its communications

NORMA LATERALIS

PTERYGOPALATINE FOSSA:

- The fossa communicates with:
 1. Infra temporal fossa through pterygomaxillary fissure.
 2. Orbital cavity through inferior orbital fissure.
 3. Middle cranial fossa through foramen rotundum.
 4. Roof of nasal cavity and pharynx through palate-vaginal canal.
 5. Nasal cavity through sphenopalatine foramen.
 6. Roof of oral cavity through greater palatine foramen.



NORMA LATERALIS

PTERYGOPALATINE FOSSA:

•Contents:

1. Maxillary artery and its branches.
2. Maxillary nerve in its course to the orbit. The nerve enters the fossa through foramen rotundum.
3. Pterygopalatine/sphenopalatine ganglion with its branches (orbital, palatine, nasal and pharyngeal)
4. Pterygoid nerve.



NORMA OCCIPITALIS

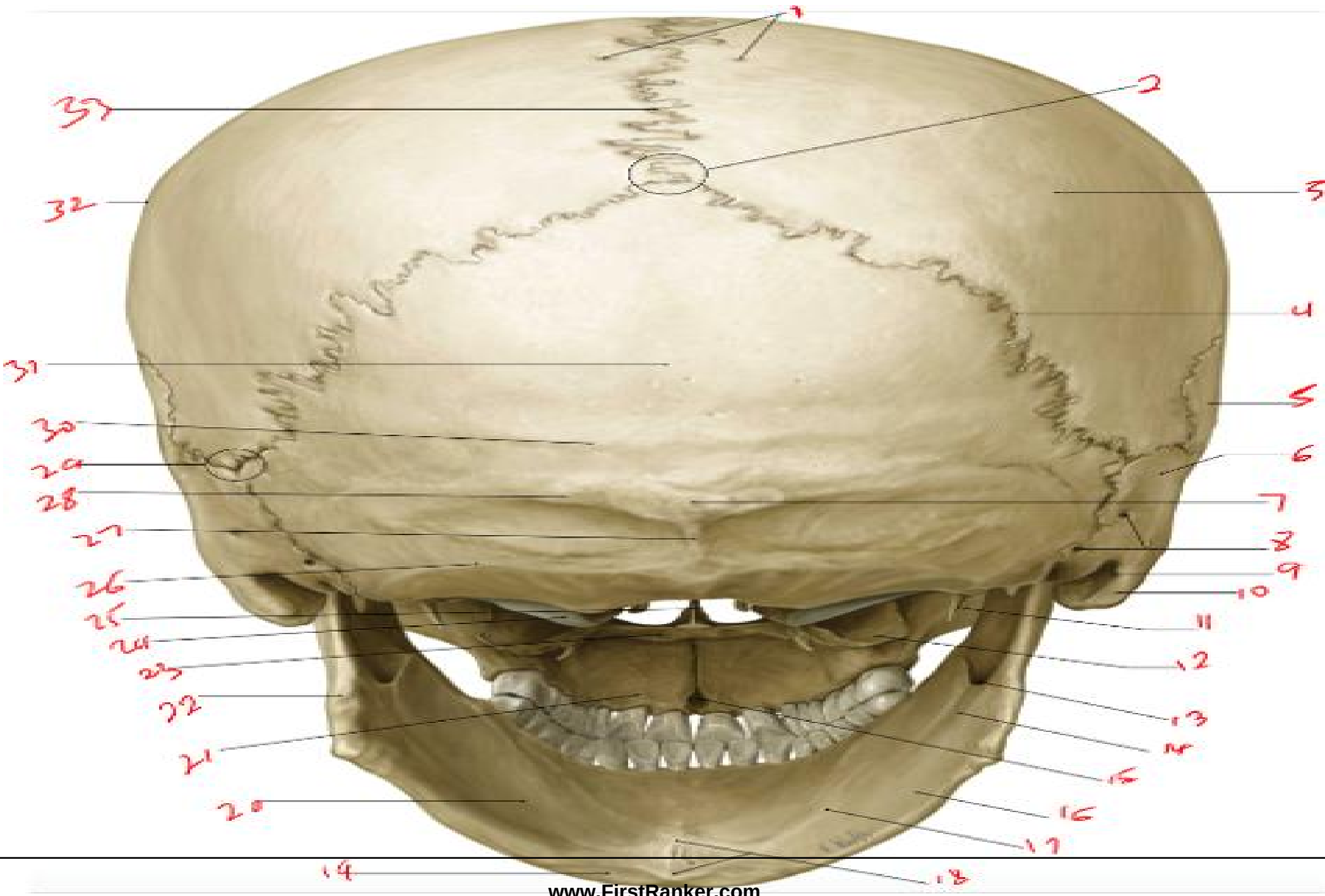
NORMA OCCIPITALIS

- Norma occipitalis is convex upwards and on each side, and is flattened below.
- **Bones seen are:**
 1. Posterior part of parietal bones, above.
 2. Upper part of squamous part of the occipital bone below.
 3. Mastoid part of the temporal bone, on each side.

NORMA OCCIPITALIS

- **Sutures seen are:**

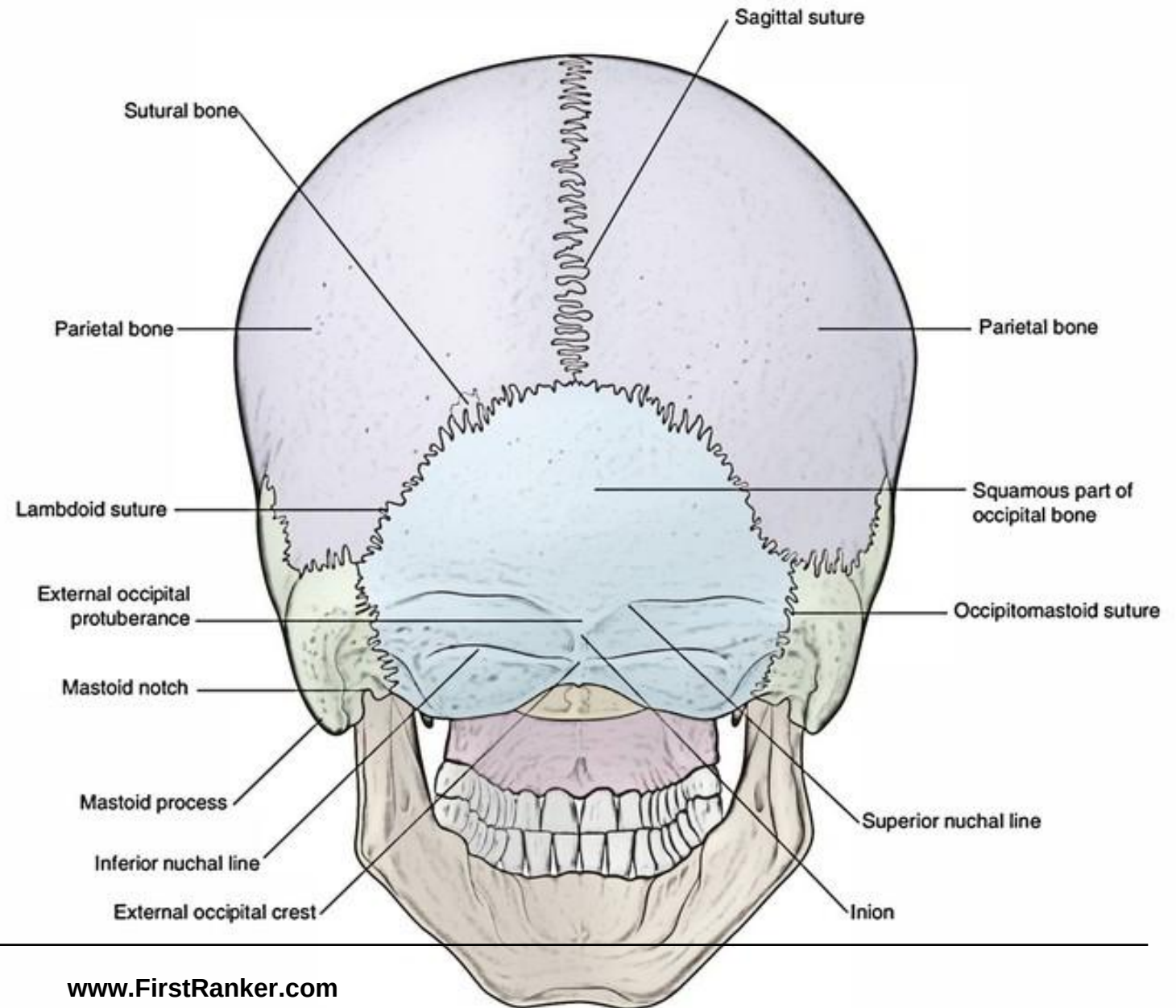
- 1. LAMBDROID SUTURE:** between the occipital and two parietal bones.
- 2. OCCIPITO MASTOID SUTURE:** between the occipital and mastoid part of temporal bone.
- 3. PARIETOMASTOID SUTURE:** between the parietal bone and mastoid part of temporal bone.
- 4. SAGITTAL SUTURE:** the posterior part is also seen.



NORMA OCCIPITALIS

EXTERNAL OCCIPITAL PROTUBERANCE:

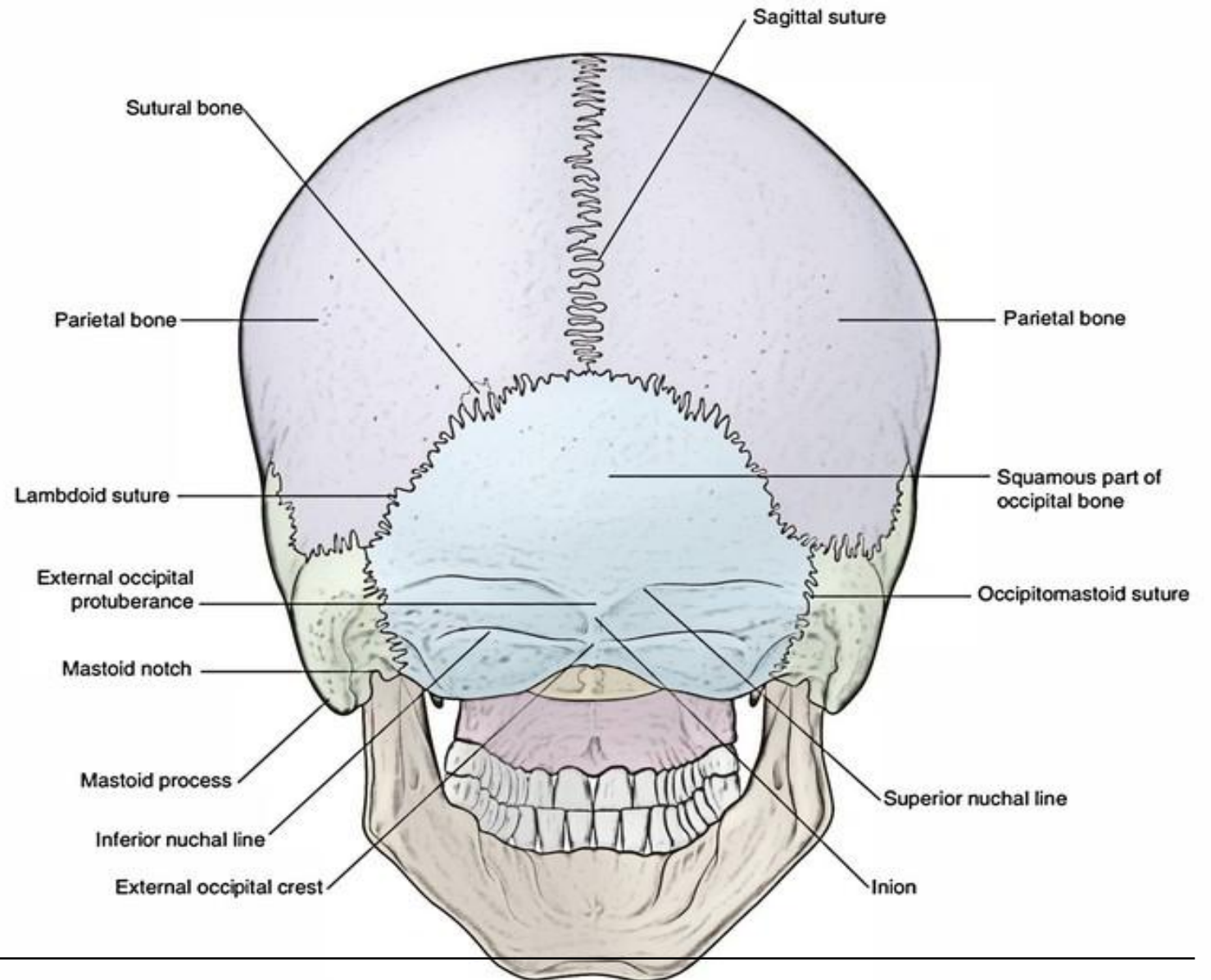
- Is a median prominence in the lower part of this norma.
- It marks the junction of the head and the neck.
- The most prominent point on this protuberance is called the **inion**.



NORMA OCCIPITALIS

SUPERIOR NUCHAL LINES:

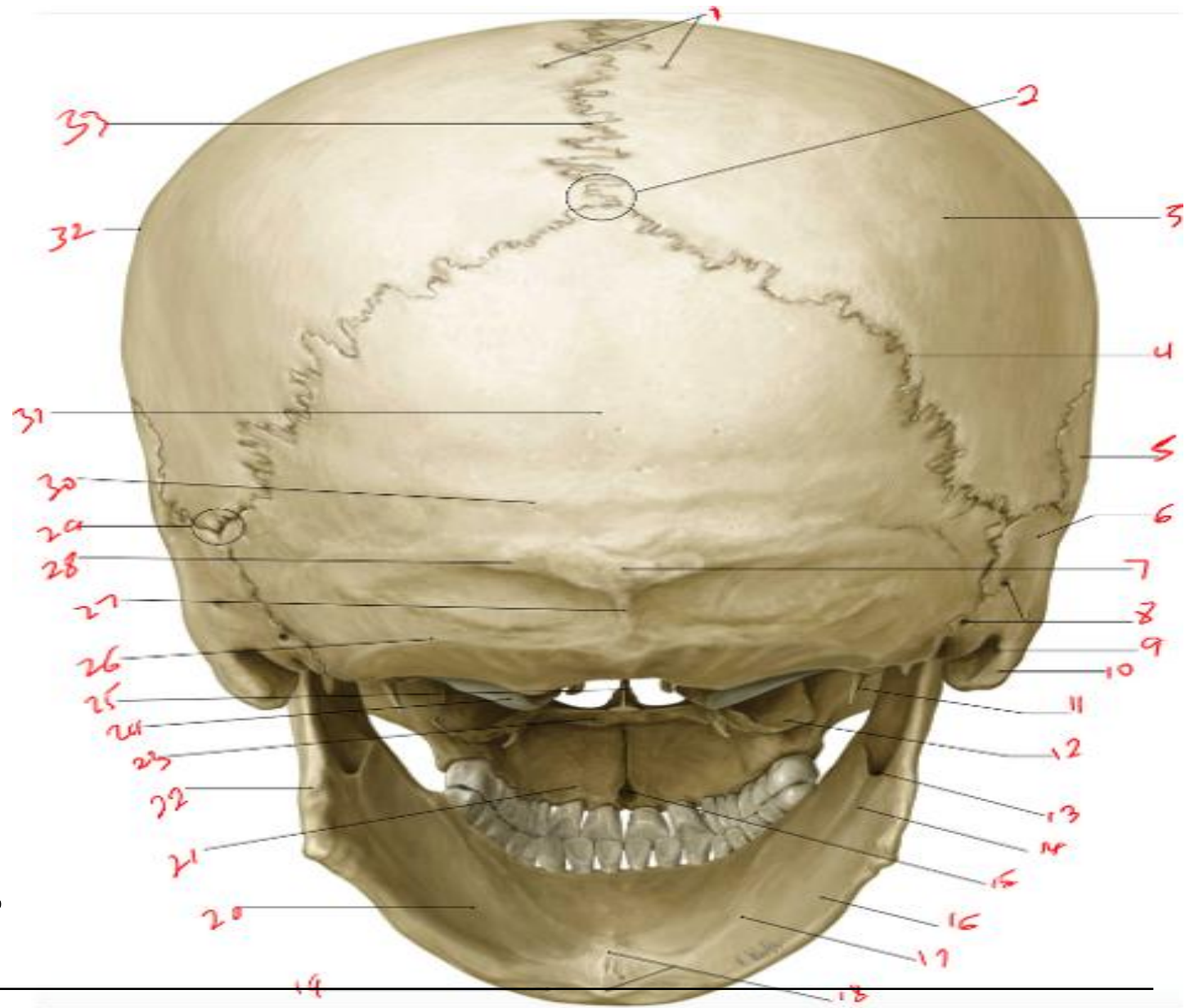
- Are curved bony ridges passing laterally from the protuberance.
- These also mark the junction of the head and the neck.



NORMA OCCIPITALIS

HIGHEST NUCHAL LINES:

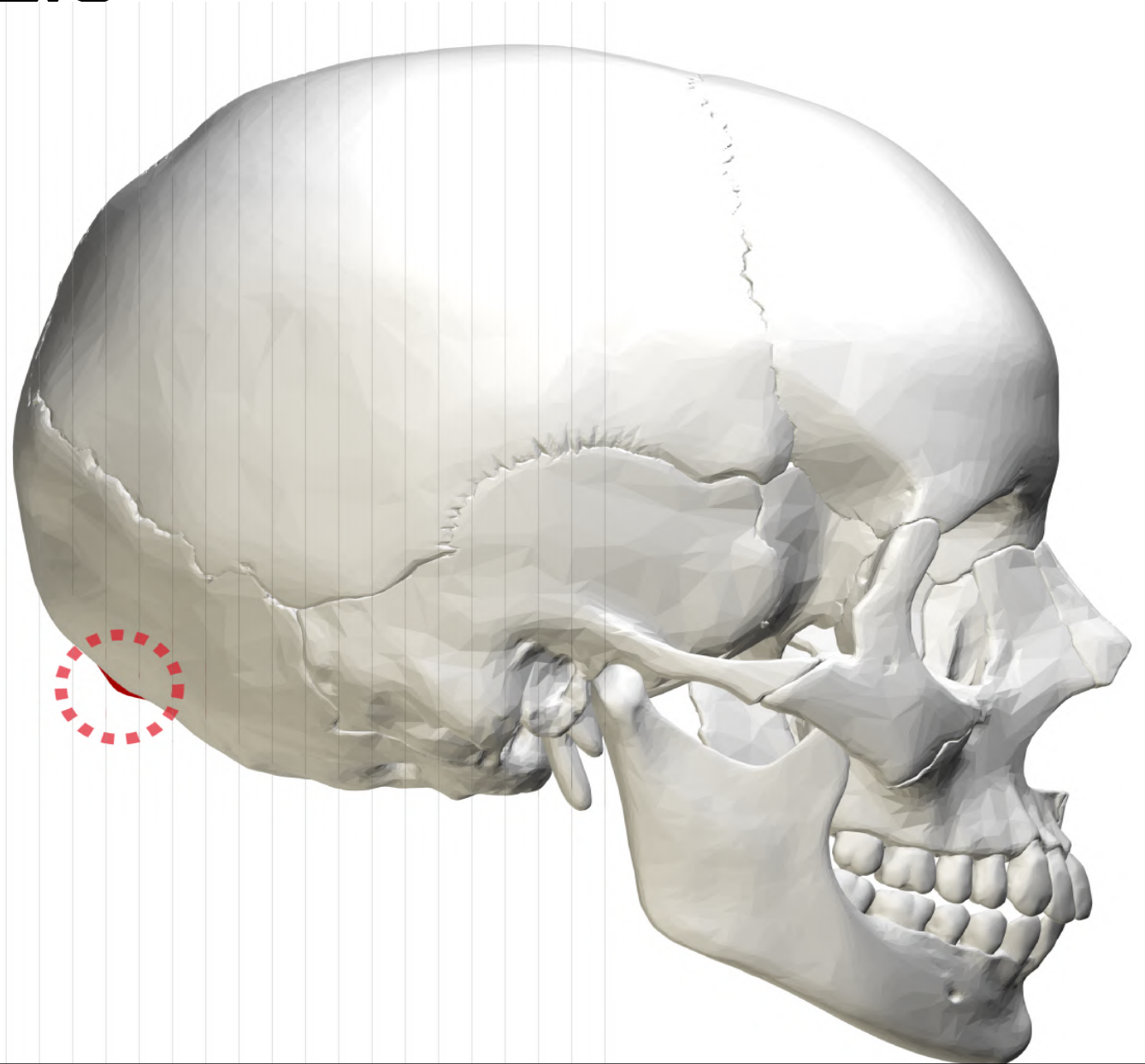
- Are not always present.
- They are curved bony ridges situated 1 cm above the superior nuchal lines.
- They begin from the upper part of the external occipital protuberance.
- Are more arched than the superior nuchal lines.



NORMA OCCIPITALIS

OCCIPITAL POINT:

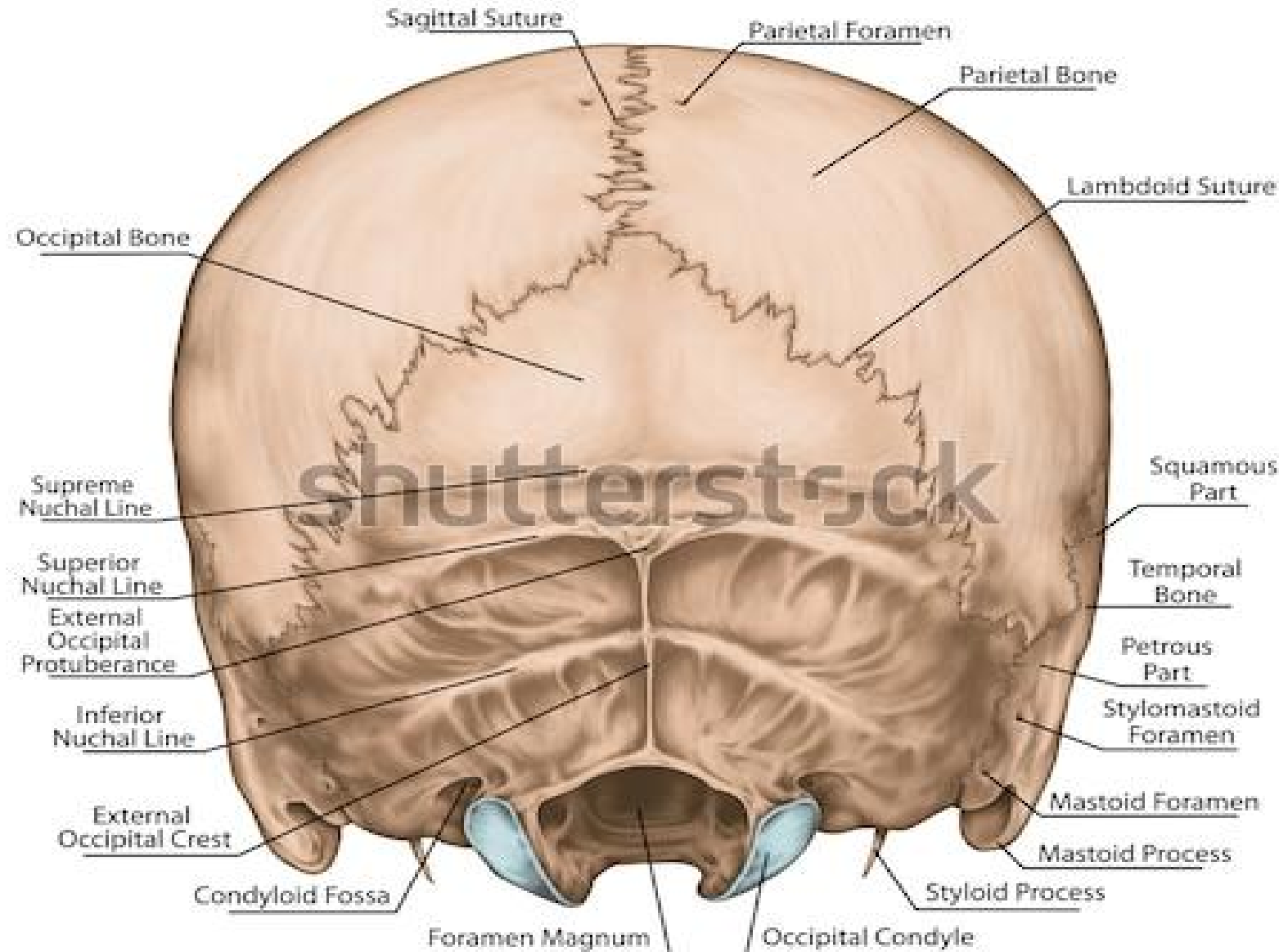
- It is a median point a little above the inion.
- It is the point farthest from the glabella.



NORMA OCCIPITALIS

THE MASTOID FORAMEN:

- Located on the mastoid part of temporal bone at or near the occipitomastoid suture.
- Internally, it opens at the sigmoid sulcus.
- The mastoid foramen transmits an emissary vein and the meningeal branch of occipital artery.



NORMA OCCIPITALIS

ATTACHMENTS:

1. External occipital protuberance:

- a) Upper part gives origin to the trapezius
- b) Lower part gives attachment to upper end of the ligamentum nuchae.

2. Superior nuchal lines:

- a) Medial 1/3- gives origin to trapezius.
- b) Lateral part provides insertion to sternocleidomastoid above and splenius capitis below.

3. Highest nuchal lines: (if present)

- a) Provides attachment to epicranial aponeurosis medially.
- b) Gives origin to occipitalis or occipital belly of occipitofrontalis muscle laterally.

*** In case the highest nuchal lines are absent, these structures are attached to the superior nuchal lines.**

NORMA OCCIPITALIS

