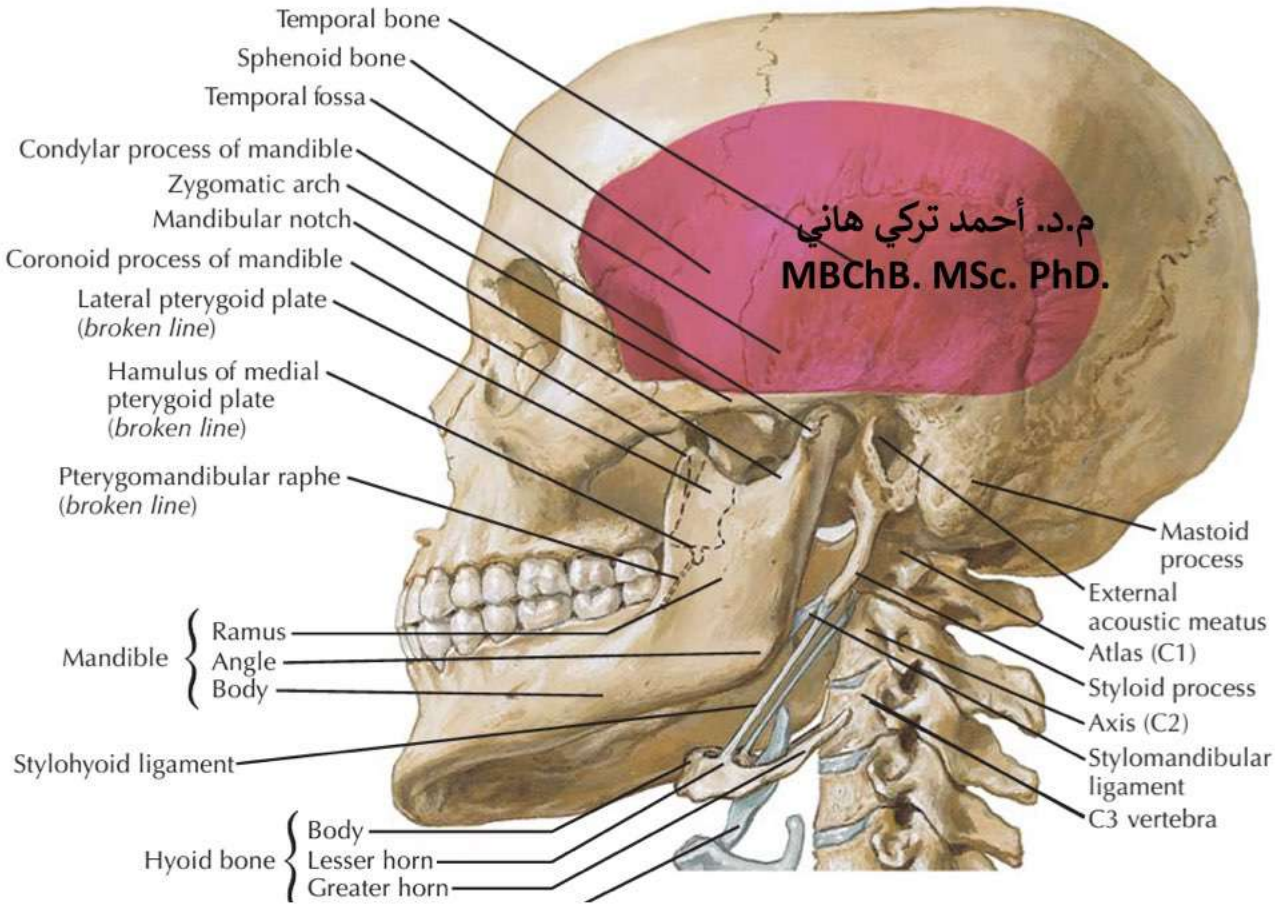
The temporal and infratemporal fossae are interconnected spaces on the lateral side of the head that serve as attachment sites for the muscles of mastication and as pathways for major neurovascular structures.

The Temporal Fossa Anatomy

The temporal fossa is a shallow space on the side of the skull, superior to the zygomatic arch.



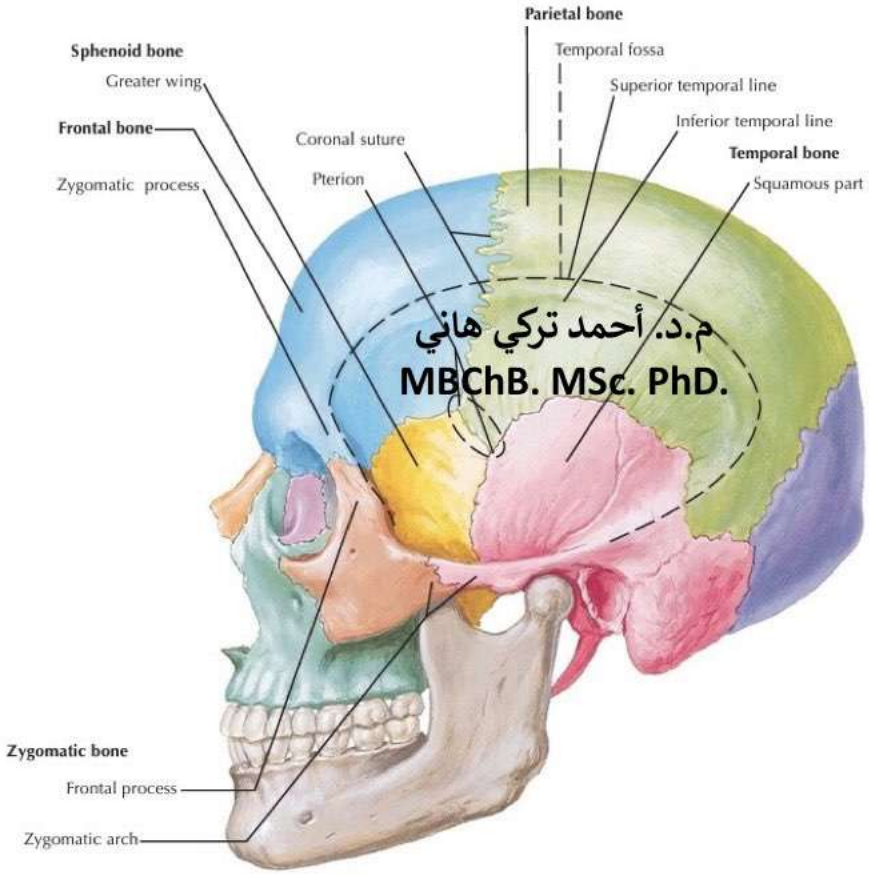
Boundaries

Superior & Posterior: The superior and inferior temporal lines on the frontal and parietal bones.

Anterior: Frontal process of the zygomatic bone and the zygomatic process of the frontal bone.

Inferior & Lateral: The zygomatic arch.

Medial/Floor (Bony Walls): Formed by parts of the frontal, parietal, squamous temporal, and greater wing of the sphenoid bones. The meeting point of these four bones is the pterion (a clinically important weak area of the skull).



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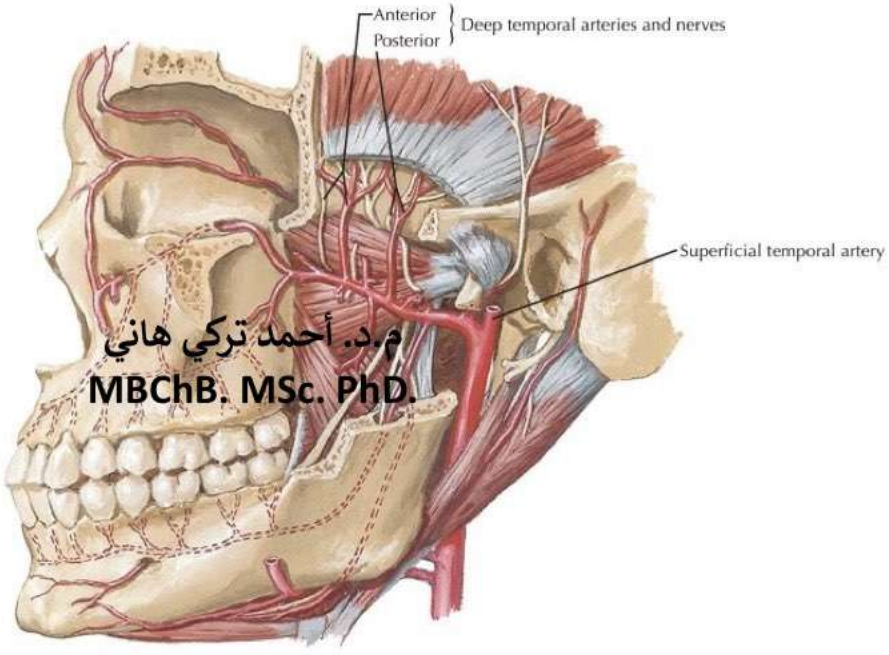
Contents

Temporalis muscle (largest muscle of mastication).

Deep temporal nerves (from the mandibular nerve, V3).

Deep temporal arteries (from the maxillary artery) and Middle temporal artery (from the superficial temporal artery).

Temporal fascia: A strong membrane covering the temporalis muscle, attached superiorly to the temporal lines and inferiorly to the zygomatic arch (splitting into two layers).



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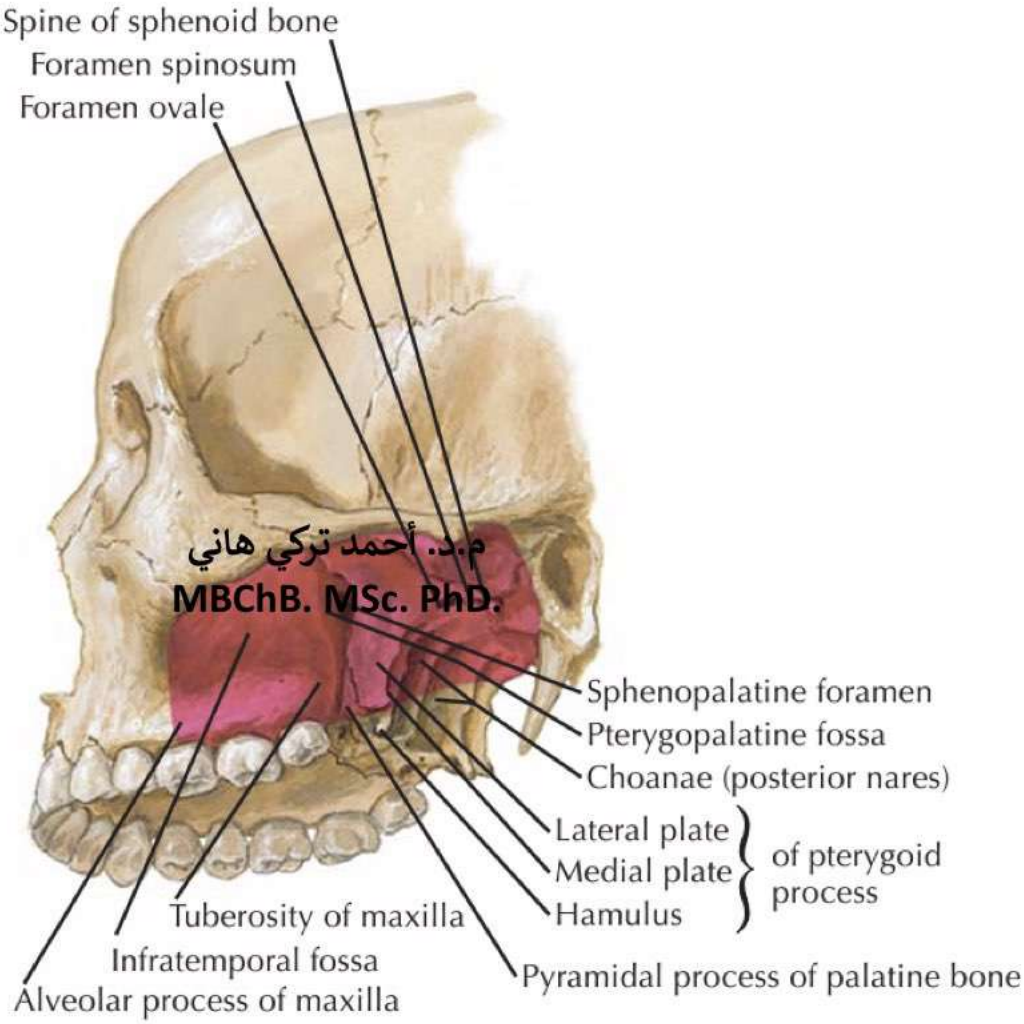
The Infratemporal Fossa

The infratemporal fossa is an irregularly shaped, wedge-like space located inferior and medial to the zygomatic arch, deep to the ramus of the mandible.



Boundaries

Anterior: Posterior (infratemporal) surface of the maxilla.

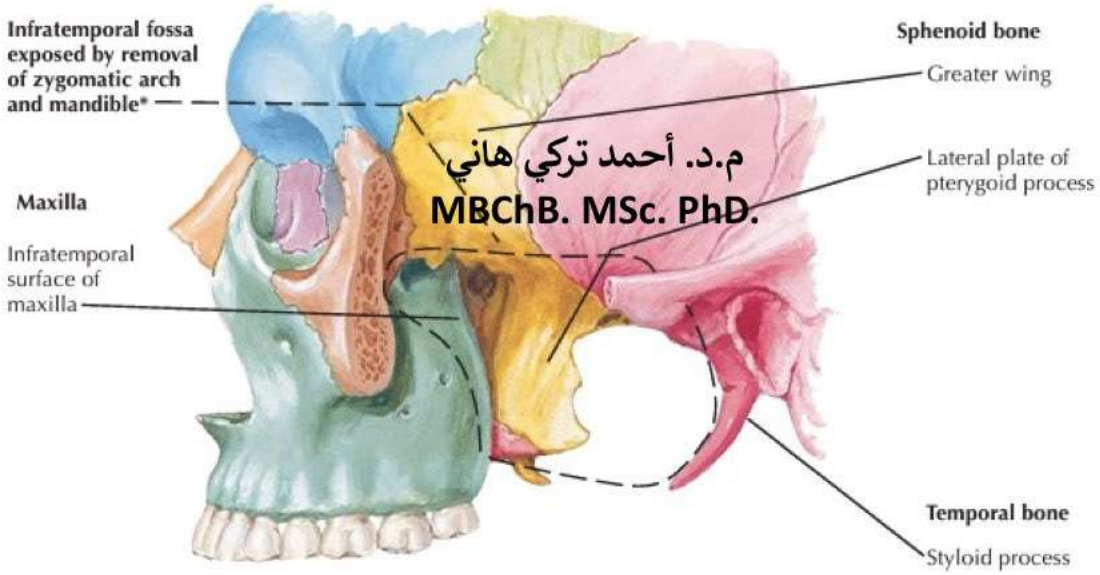
Posterior: Tympanic plate of the temporal bone, mastoid and styloid processes of the temporal bone.

Superior (Roof): Inferior surface of the greater wing of the sphenoid bone (containing the Foramen Ovale and Foramen Spinosum) and the undersurface of the temporal squama.

Inferior: Open, but often considered the attachment of the medial pterygoid muscle to the mandible near the angle.

Medial: Lateral pterygoid plate of the sphenoid bone.

Lateral: Ramus of the mandible and the zygomatic arch (with the masseter muscle).



Contents

Muscles of Mastication (part of): Medial Pterygoid, Lateral Pterygoid, and the inferior part of the Temporalis muscle.

Nerves:

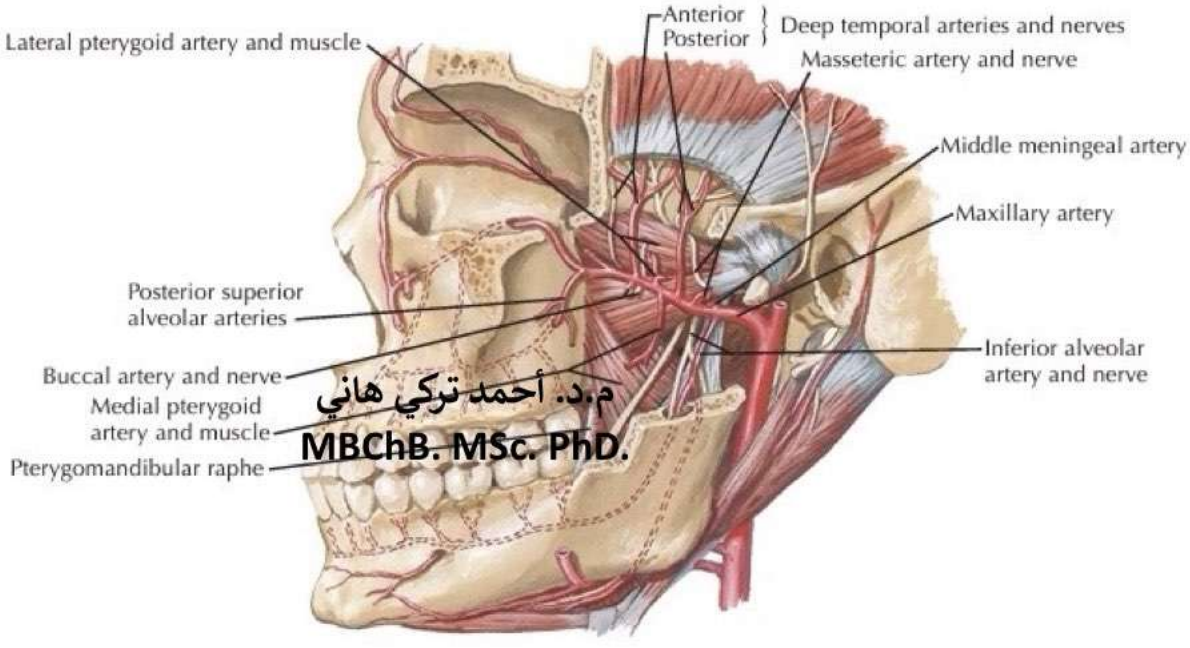
Mandibular nerve (V3): Enters via the foramen ovale, giving off its branches (motor for muscles of mastication, sensory branches like the inferior alveolar, lingual, and buccal nerves).

Chorda Tympani (a branch of the facial nerve, VII).

Vessels:

Maxillary Artery: A major artery (terminal branch of the external carotid) that courses through the fossa and gives off branches like the middle meningeal artery.

Pterygoid Venous Plexus: A network of veins.



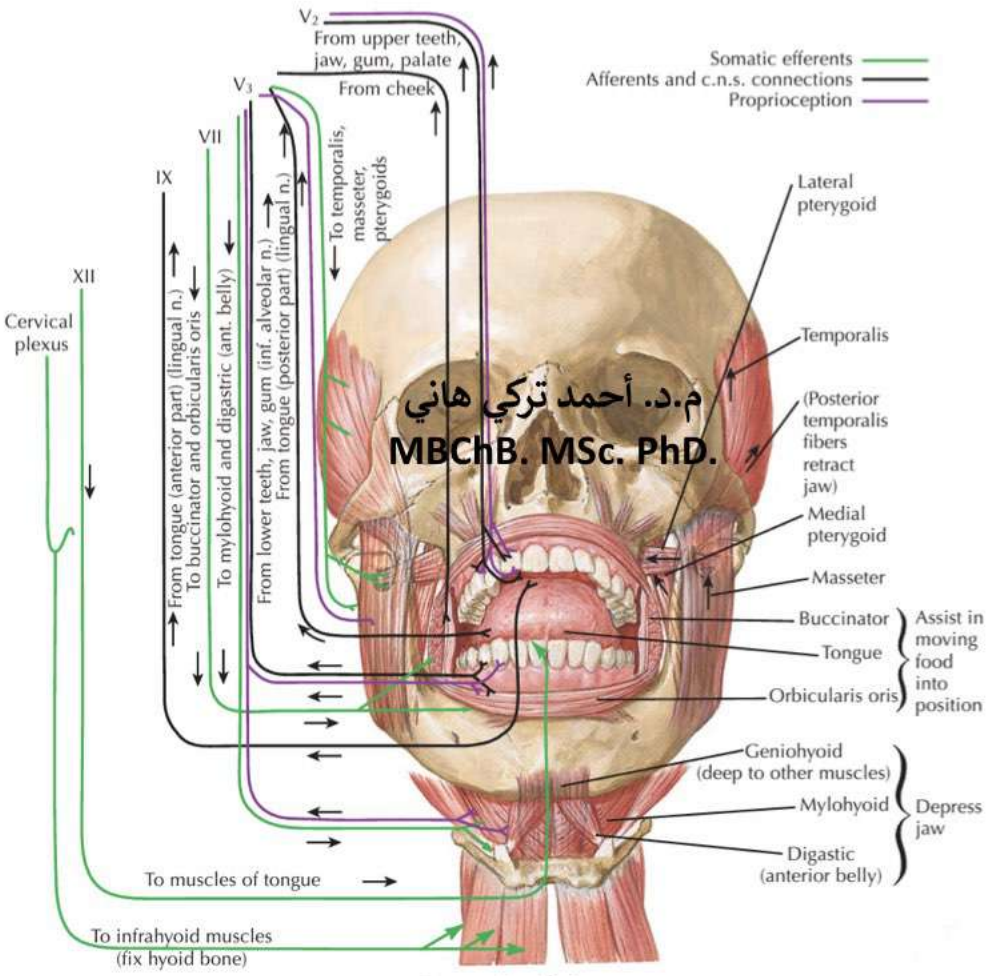
Communications

The fossae serve as important passageways, connecting the region to several other major structures:

Destination	Communication Route
Temporal Fossa	Gap deep to the zygomatic arch (between the arch and the infratemporal crest).
Middle Cranial Fossa	Foramen Ovale (Mandibular Nerve - V3) and Foramen Spinosum (Middle Meningeal Artery).
Pterygopalatine Fossa	Pterygomaxillary Fissure.
Orbit	Inferior Orbital Fissure.
Oral Cavity	Via structures running alongside the mandible and through the mandibular foramen (Inferior Alveolar Nerve).

Muscles of Mastication

The four primary muscles of mastication develop from the First Pharyngeal Arch and are all innervated by the Mandibular Nerve (V3).



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Muscle	Origin	Insertion	Action
Temporalis	Temporal fossa and fascia	Coronoid process and anterior border of the mandibular ramus	Elevates (closes) and retracts the mandible.
Masseter	Zygomatic arch (superficial & deep parts)	Lateral surface of the mandibular ramus and angle	Elevates (closes) the mandible; superficial fibers aid in protraction.
Medial Pterygoid	Deep head: Medial surface of the lateral pterygoid plate Superficial head: Maxillary tuberosity	Medial surface of the mandibular ramus and angle	Elevates (closes) and protrudes the mandible; helps with side-to-side grinding.
Lateral Pterygoid	Superior head: Infratemporal surface of greater wing of sphenoid Inferior head: Lateral surface of the lateral pterygoid plate	Neck of the mandible (pterygoid fovea) and the TMJ capsule/disc	Depresses (opens) and protrudes the mandible; side-to-side movements.

The Lateral Pterygoid is the only primary muscle of mastication that depresses (opens) the mandible (along with gravity and accessory muscles like the digastric). The others primarily elevate (close) the mandible.