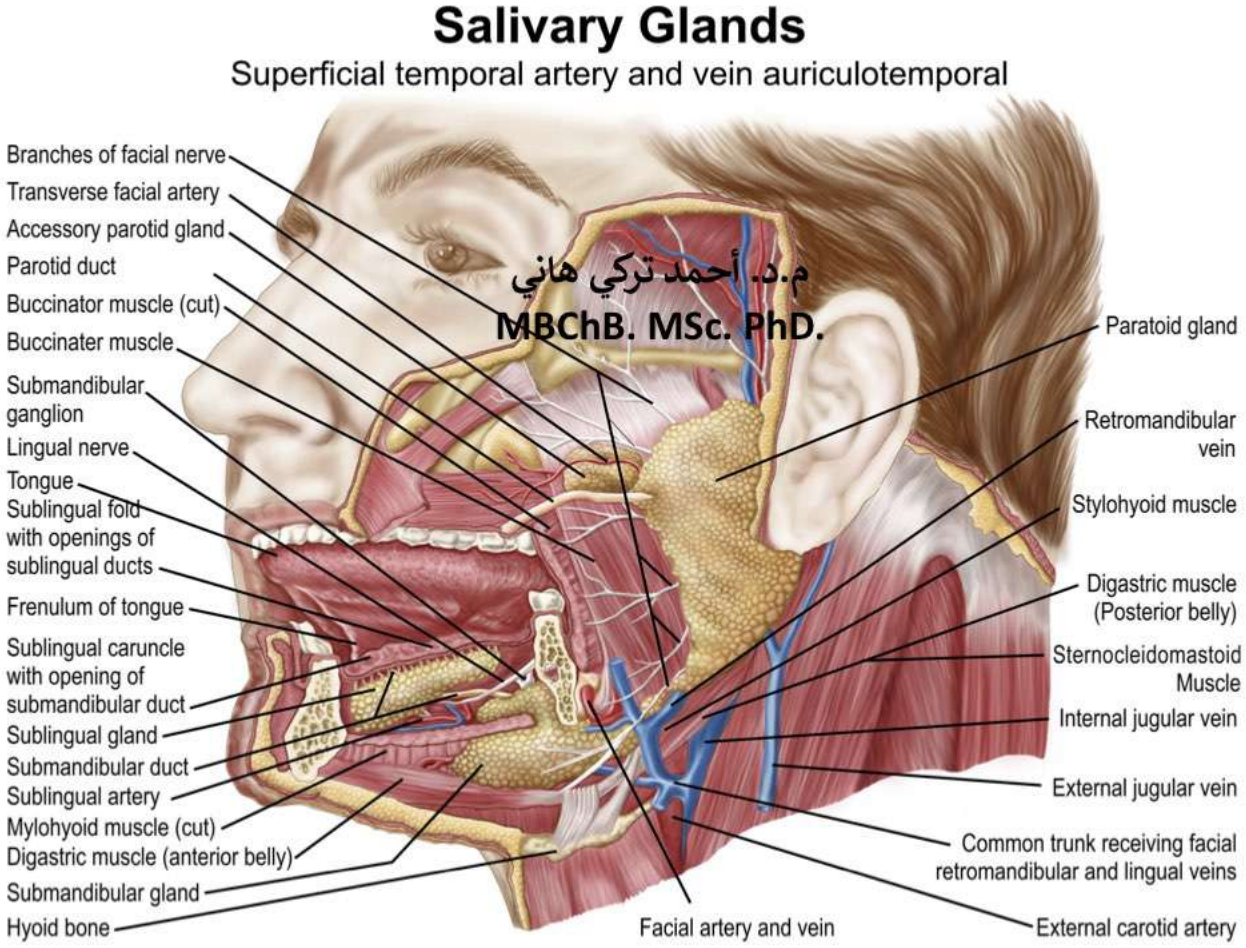
Parotid Region

Definition: The postero-lateral part of the facial region.

Boundaries:

Superiorly: Zygomatic arch.
Inferiorly: Angle and inferior border of the mandible.
Anteriorly: Anterior border of the masseter muscle.
Posteriorly: External ear and anterior border of the sternocleidomastoid muscle.
Medially/Deeply: Ramus of the mandible.

Contents: Parotid gland and duct, Facial Nerve (CN VII) and its branches, Retromandibular vein, External Carotid Artery and its terminal branches, Parotid lymph nodes, and Masseter muscle.



Parotid Gland

Type & Size: Largest of the three paired major salivary glands; purely serous secretion.

Location: Occupies the retromandibular fossa (deep hollow below the external auditory meatus, behind the ramus of the mandible).

Shape: Irregular, roughly triangular/pyramidal.

Base: Superiorly, related to the zygomatic arch.
Apex (Tail): Inferiorly, posterior to the angle of the mandible.
Capsule: Enclosed by the tough, unyielding Parotid Sheath (derived from the investing layer of deep cervical fascia). A thickened part forms the stylomandibular ligament, separating it from the submandibular gland.

Lobes & Structures within the Gland:
The gland is typically divided into a Superficial Lobe and a Deep Lobe by the structures passing through it, most importantly the Facial Nerve (CN VII).
The three main structures passing within the gland, from superficial to deep, are:
Facial Nerve (CN VII) (forming the parotid plexus).
Retromandibular Vein (formed by the union of the maxillary and superficial temporal veins).
External Carotid Artery (divides into its terminal branches: Maxillary and Superficial Temporal arteries).

Parotid Duct (Stensen's Duct)
Length & Caliber: approx 5 cm long, approx 3 mm wide.
Course:
Emerges from the anterior border of the gland.
Passes horizontally across the lateral surface of the Masseter muscle (about a fingerbreadth below the zygomatic arch).
At the anterior border of the Masseter, it turns medially, pierces the Buccinator muscle (passing through the Buccal Pad of Fat).
Runs obliquely forwards for a short distance in the submucosa.
Opening: Opens into the vestibule of the mouth on a small elevation called the Parotid Papilla, opposite the crown of the upper second molar tooth.
Surface Anatomy: Corresponds roughly to the middle one-third of a line from the tragus of the auricle to a point midway between the ala of the nose and the upper lip.

Innervation of Parotid Gland and Related Structures

Type of Innervation	Source & Pathway	Function
Secretomotor (Parasympathetic)	Glossopharyngeal Nerve (CN IX) \to Lesser Petrosal Nerve \to Otic Ganglion (synapse) \to Auriculotemporal Nerve (V3 branch) \to Gland	Stimulates copious, watery saliva secretion.
Vasomotor (Sympathetic)	Nerves from the Superior Cervical Ganglion \to External Carotid Plexus	Regulates blood flow (vasoconstriction) to the gland.

Type of Innervation	Source & Pathway	Function
Sensory	Auriculotemporal Nerve (V3 branch)	Supplies the gland, its capsule, and the overlying skin.
Motor (CN VII)	Facial Nerve (CN VII) (passes through the gland)	Provides no motor or secretomotor innervation to the gland itself. Supplies muscles of facial expression (e.g., buccinator, masseter is CN V3).

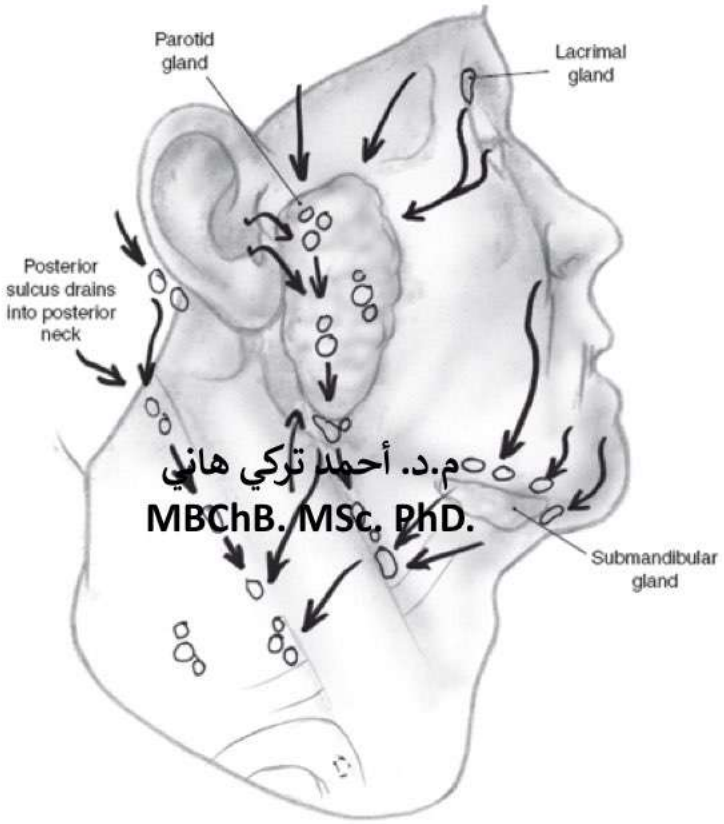
Arterial Supply
Mainly from the branches of the External Carotid Artery (ECA) which pass through the gland.
Superficial Temporal Artery (terminal branch of ECA).
Maxillary Artery (terminal branch of ECA).
Posterior Auricular Artery (branch of ECA).
Transverse Facial Artery (branch of Superficial Temporal Artery, runs with the parotid duct).

Venous Drainage
The veins drain into the Retromandibular Vein, which is formed within the gland by the union of the Superficial Temporal and Maxillary Veins.
The Retromandibular Vein divides into two trunks below the gland:
Anterior division: Joins the Facial Vein to form the Common Facial Vein.
Posterior division: Joins the Posterior Auricular Vein to form the External Jugular Vein.

Lymph Drainage
Lymph first drains into the Parotid (Intraglandular and Extraglandular) Lymph Nodes.
Efferent vessels then drain into the Deep Cervical Lymph Nodes (specifically the upper jugular nodes/Level II).

The Buccal Pad of Fat (Bichat's Fat Pad)
Location: A encapsulated mass of adipose tissue in the cheek, deep to the anterior part of the parotid duct, separating the masseter from the buccinator muscle.

Function:
In infants, it is prominent, supporting the cheek during suckling.
In adults, it facilitates the gliding motion of the muscles of mastication and provides cushioning.



Lymph drainage

Clinical Notes

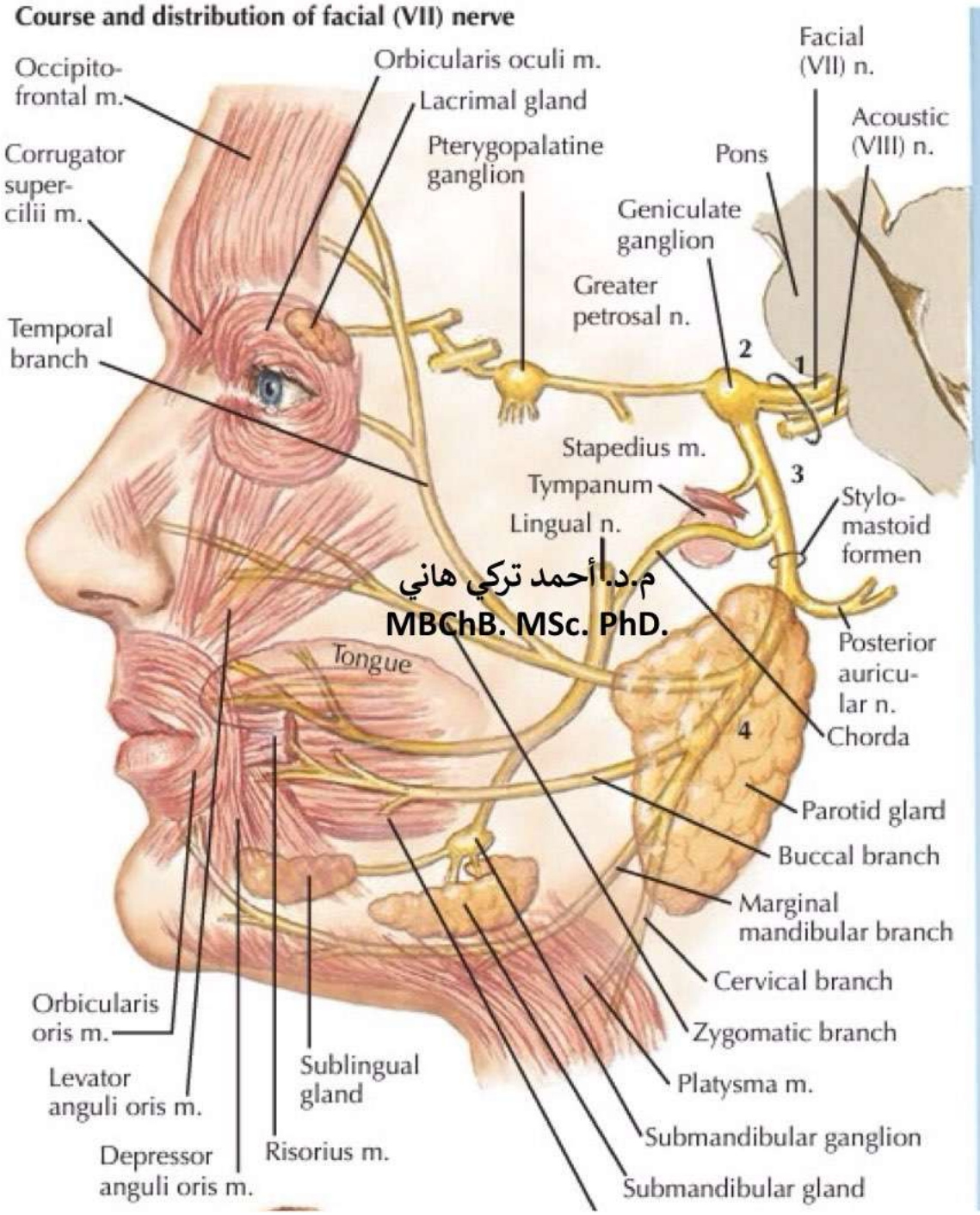
Parotitis (Mumps): A viral infection (paramyxovirus) causing inflammation and swelling of the parotid gland. The unyielding parotid sheath causes significant pain and swelling.

Parotid Gland Tumors: \approx 80\% of parotid tumors are benign. Due to the proximity of the Facial Nerve (CN VII), surgery (parotidectomy) carries a high risk of facial nerve injury, leading to facial paralysis. The facial nerve is the most important structure in parotid surgery.

Frey's Syndrome (Auriculotemporal Syndrome): An abnormal regeneration of parasympathetic fibers (intended for the parotid gland) which mistakenly connect to the sweat glands in the overlying skin. This results in sweating and flushing in the parotid region during chewing (gustatory sweating).

Parotid Duct Obstruction (Sialolithiasis): Stones (calculi) in the parotid duct can obstruct saliva flow, causing painful swelling of the gland, especially noticeable before or during meals.

Bell's Palsy



Sites of lesions and their manifestations

1. Intracranial and/or internal auditory meatus. All symptoms of 2, 3, and 4, plus deafness due to involvement of eighth cranial nerve.

2. Geniculate ganglion. All symptoms of 3 and 4, plus pain behind ear. Herpes of tympanum and of external auditory meatus may occur.

3. Facial canal. All symptoms of 4, plus loss of taste in anterior tongue and decreased salivation on affected side due to chorda tympani involvement. Hyperacusis due to effect on nerve branch to stapedius muscle.

4. Below stylomastoid foramen (parotid gland tumor, trauma) Facial paralysis (mouth draws to opposite side; on affected side, patient unable to close eye or wrinkle forehead; food collects between teeth and cheek due to paralysis of buccinator muscle).