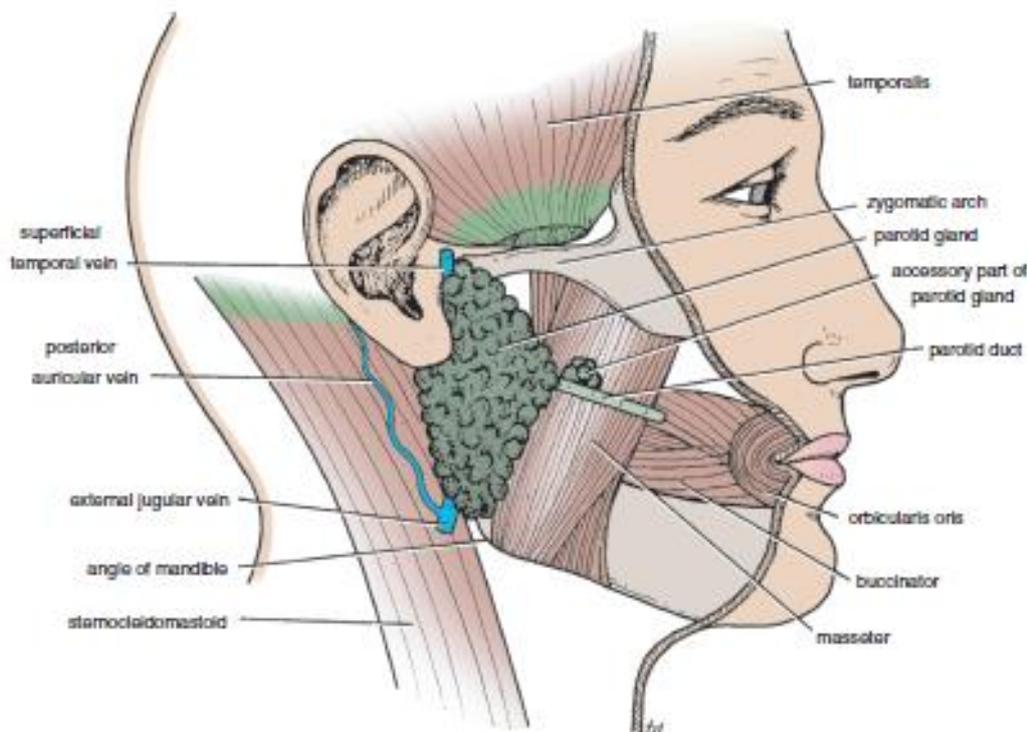


Parotid region

The parotid region is the region that located in the posterolateral part of the facial region, bounded by the:

- Zygomatic arch superiorly.
- External ear and anterior border of the sternocleidomastoid posteriorly.
- Ramus of the mandible medially.
- Anterior border of the masseter muscle anteriorly.
- Angle and inferior border of the mandible inferiorly.

The parotid region includes the parotid gland and duct, the facial nerve (CN VII), the retromandibular vein, the external carotid artery, and the masseter muscle.

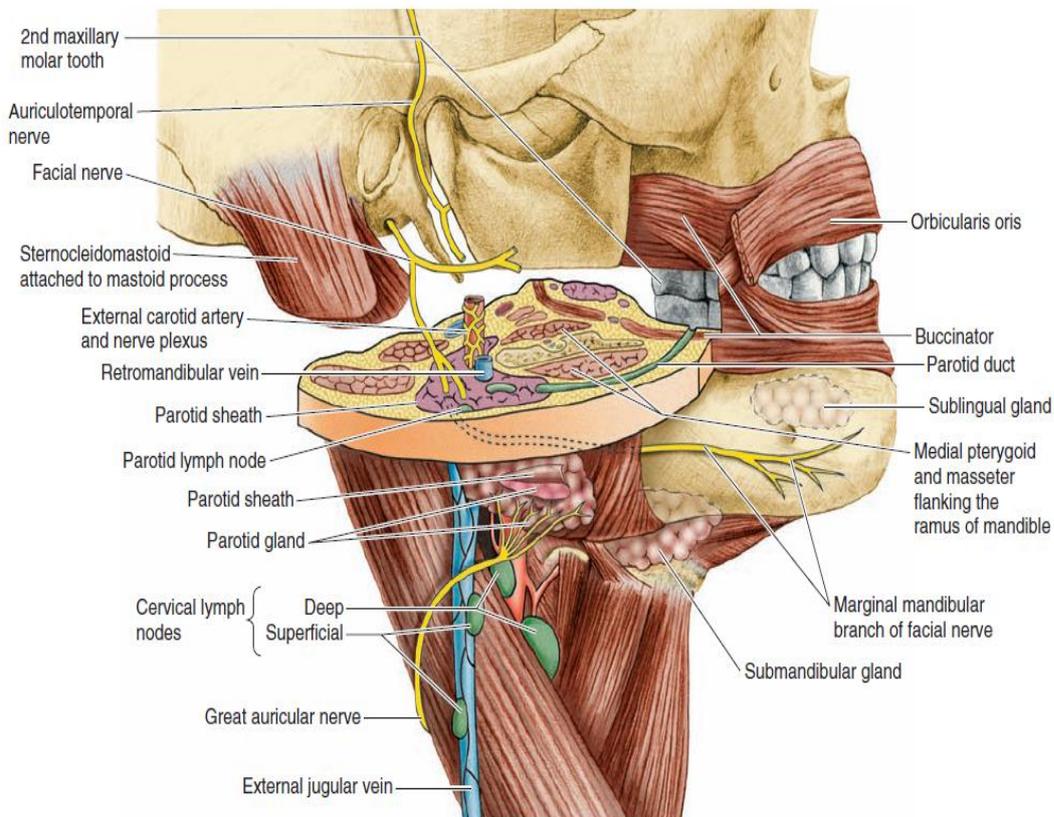


PAROTID GLAND

The parotid gland is the largest of three paired salivary glands. It is composed mostly of serous acini. Although the facial nerve (CN VII) is embedded within the parotid gland, the branches extending from the gland to innervate the muscles of facial expression are encountered during the dissection of the face. The facial nerve divides the gland into **superficial** and **deep lobes**.

The parotid gland is enclosed within a tough, unyielding, fascial capsule, the parotid sheath (capsule), derived from the investing layer of deep cervical fascia. The parotid gland has an irregular shape because the area occupied by the gland, the parotid bed, is anteroinferior to the external acoustic meatus, where it is wedged between the ramus of the mandible and the mastoid process.

The apex of the parotid gland is posterior to the angle of the mandible, and its base is related to the Zygomatic arch.

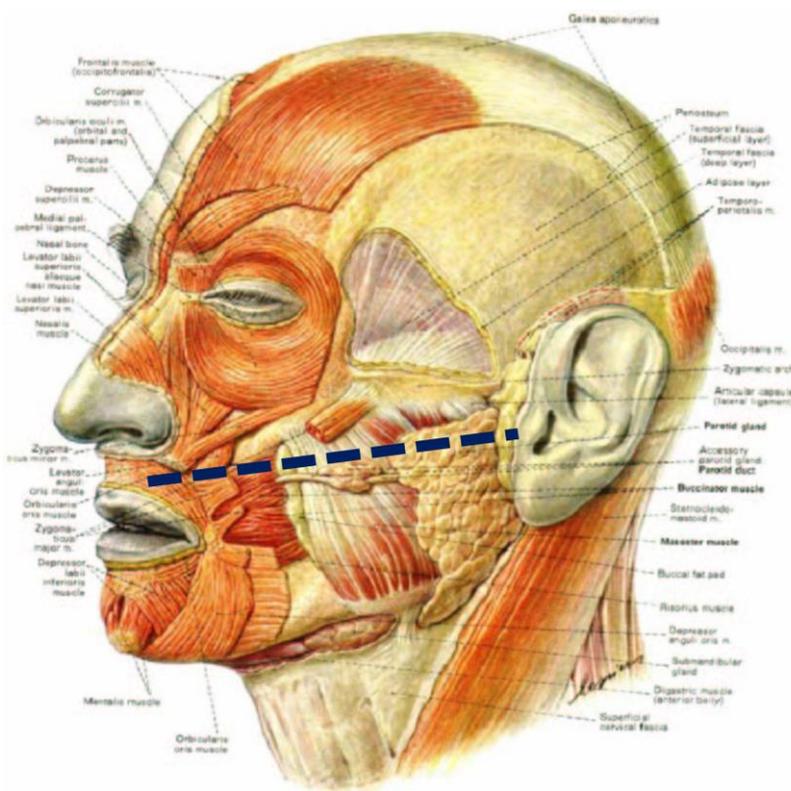


The parotid duct passes horizontally from the anterior edge of the gland. At the anterior border of the masseter, the duct turns

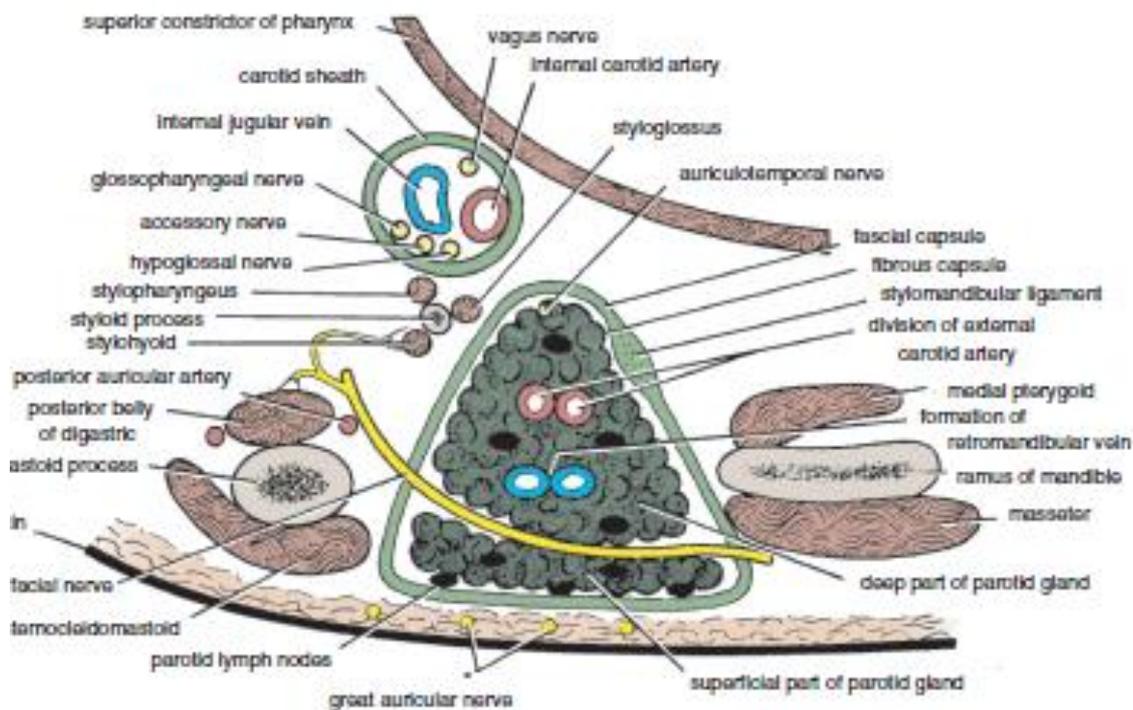
medially, pierces Buccal pad of fat, the buccinator muscle, Buccopharyngeal fascia and Buccal mucosa and enters the oral cavity through a small orifice opposite the 2nd maxillary molar tooth.

The oblique passage of the duct in the buccinator muscle acts as a valve-like mechanism & prevents inflation of the duct during blowing. About a fingerbreadth below the zygomatic arch the duct accompanied by the: transverse facial vessels above and buccal branch of facial nerve below

The duct is represented by the middle 1/3 of a line extending from the tragus of the auricle to a point midway between the ala of nose & upper lip



Embedded within the substance of the parotid gland, from superficial to deep, are the facial nerve (CN VII) and its branches, the retromandibular vein, and the external carotid artery. On the parotid sheath and within the gland are parotid lymph nodes.



Structures Present Within the Parotid Gland

1. Facial nerve and its branches: Facial nerve emerges from the stylomastoid foramen and enters the gland by piercing upper part of its posteromedial surface. It then divides into two trunks:

a. Temporo-facial trunk: This gives rise to:

- Temporal nerve
- Zygomatic nerve

b. Cervico-facial trunk: This further divides into three branches:

- Buccal
- Marginal mandibular
- Cervical

The five terminal branches leave through the anterior border of the gland in a radiating manner that resembles the foot of a goose. Hence, this pattern is known as pes anserinus

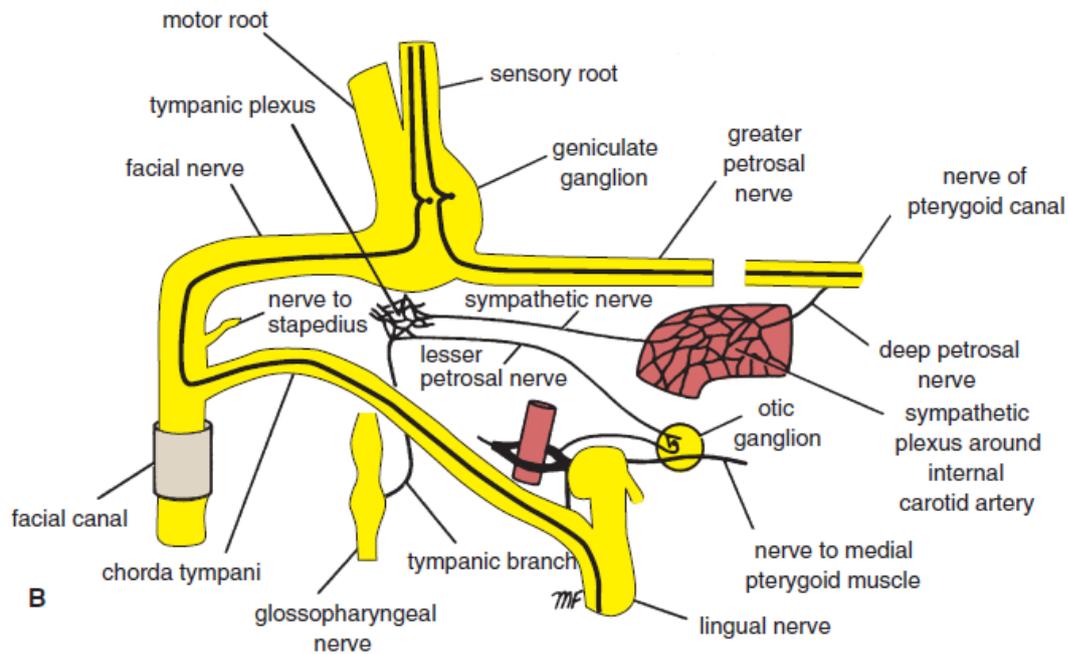
2. Retromandibular vein: It is formed within the substance of parotid gland by union of superficial temporal and maxillary veins, and lies below the facial nerve.
3. External carotid artery: It occupies the deep part of gland.
4. Deep parotid lymph nodes.

INNERVATION OF PAROTID GLAND AND RELATED STRUCTURES:

Although the CN VII is embedded within the gland the CN VII does not provide innervation to the gland. The auriculotemporal nerve, a branch of CN V3, is closely related to the parotid gland and passes superior to it with the superficial temporal vessels. The auriculotemporal nerve and the great auricular nerve, a branch of the cervical plexus composed of fibers from C2 and C3 spinal nerves, innervates the parotid sheath as well as the overlying skin.

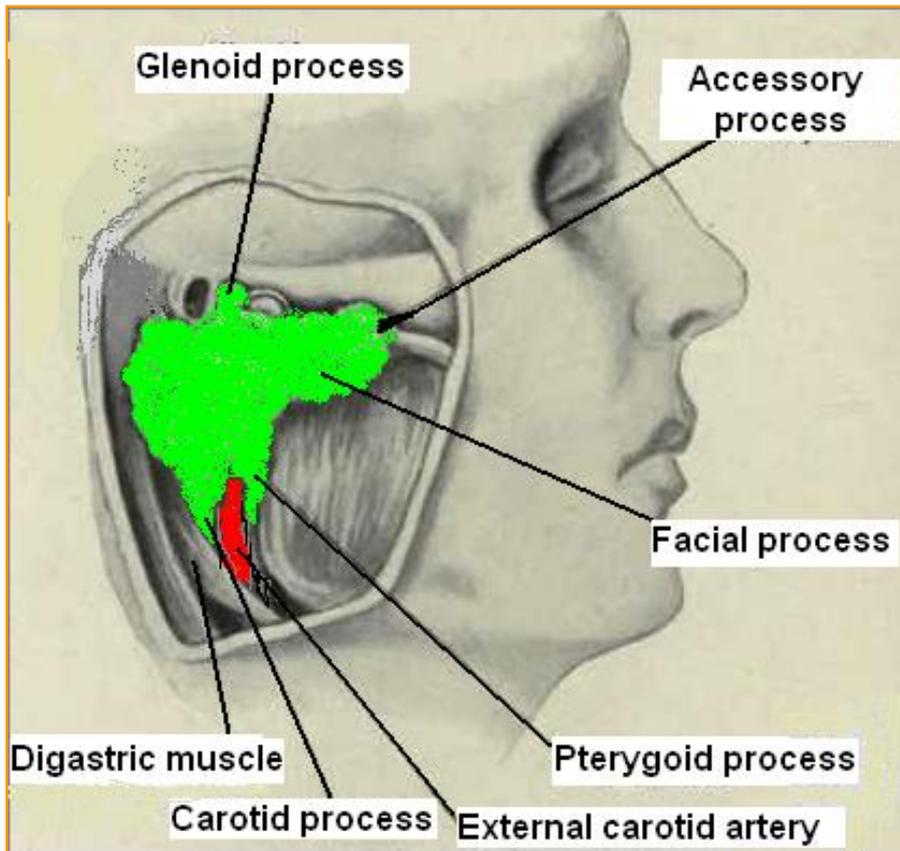
The parasympathetic component of the glossopharyngeal nerve (CN IX) supplies presynaptic secretory fibers to the otic ganglion. The postsynaptic parasympathetic fibers are conveyed from the ganglion to the gland by the auriculotemporal nerve (Parasympathetic secretomotor supply arises from the glossopharyngeal nerve. The nerves reach the gland via the tympanic branch, the lesser petrosal nerve, the otic ganglion, and the auriculotemporal nerve).

Stimulation of the parasympathetic fibers produces a thin, watery saliva. Sympathetic fibers are derived from the cervical ganglia through the external carotid nerve plexus on the external carotid artery. The vasomotor activity of these fibers may reduce secretion from the gland. Sensory nerve fibers pass to the gland through the great auricular and auriculotemporal nerves.



The gland is an irregular lobulated mass, sends 'processes' in various directions. These include:

1. **Glenoid process** that extends upward behind the temporomandibular joint, in front of external auditory meatus
2. **Facial process** that extends anteriorly onto the masseter muscle
3. **Accessory process** (part), small part of facial process lying along the parotid duct
4. **Pterygoid process** that extends forward from the deeper part, lies between the medial pterygoid muscle & the ramus of mandible
5. **Carotid process** that lies posterior to the external carotid artery



A portion of fascia extending from the styloid process to the angle of mandible is called stylomandibular ligament. It separates the parotid gland from the submandibular gland

Arterial supply: External carotid artery & its terminal branches

Venous drainage: Into the retro-mandibular vein

Lymph Drainage: Into the parotid & then into the deep cervical lymph nodes

The buccal pad of fat

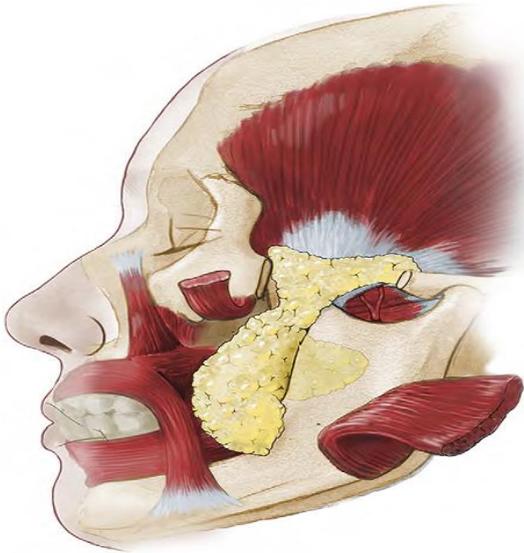
The buccal fat is one of several encapsulated fat masses in the cheek. It is a deep fat pad located on either side of the face between the buccinator muscle and several more superficial muscles (including the masseter, the zygomaticus major, and the zygomaticus minor). The inferior portion of the buccal fat pad is contained within the buccal space

The buccal fat pad formation begins at 3 months in utero, and the pad increases in size until birth. Its prominence in the midfacial region decreases with the changes in facial proportions brought by aging. Traditional anatomic descriptions state that the buccal fat pad has a central body and four processes: buccal, pterygoid, pterygopalatine and temporal.

The blood supply to the buccal fat pad originates from

1. the buccal and deep temporal branches of the maxillary artery
2. the transverse facial branch of the superficial temporal artery
3. branches of the facial artery. This rich vascularity allows a reliable long axial flap and explains the rapid surface re-epithelialization.

The buccal and zygomatic branches of the facial nerve and the parotid duct lie lateral to the fat pad and should not be injured during flap mobilization. The buccal process is located deep to the superficial musculoaponeurotic system at the anterior border of the masseter muscle. In children, this lobe may overlie the masseter muscle, producing the characteristic cherubic fullness.



Clinical consideration

Parotid Duct Injury

The parotid duct, which is a comparatively superficial structure on the face, may be damaged in injuries to the face or may be inadvertently cut during surgical operations on the face. The duct is about 2 inch (5 cm) long and passes forward across the masseter about a fingerbreadth below the Zygomatic arch. It then pierces the buccinator muscle to enter the mouth opposite the upper second molar tooth.

Parotid Salivary Gland and Lesions of the Facial Nerve

The parotid salivary gland consists essentially of superficial and deep parts, and the important facial nerve lies in the interval between these parts. A benign parotid neoplasm rarely, if ever, causes facial palsy. A malignant tumor of the parotid is usually highly invasive and quickly involves the facial nerve, causing unilateral facial paralysis.

Parotid Gland Infections

The parotid gland may become acutely inflamed as a result of retrograde bacterial infection from the mouth via the parotid duct. The gland may also become infected via the bloodstream, as in mumps. In both cases, the gland is swollen; it is painful because the

fascial capsule derived from the investing layer of deep cervical fascia is strong and limits the swelling of the gland. The swollen glenoid process, which extends medially behind the temporomandibular joint, is responsible for the pain experienced in acute parotitis when eating.

Frey's Syndrome

Frey's syndrome is an interesting complication that sometimes develops after penetrating wounds of the parotid gland.

When the patient eats, beads of perspiration appear on the skin covering the parotid. This condition is caused by damage to the auriculotemporal and great auricular nerves. During the process of healing, the parasympathetic secretomotor fibers in the auriculotemporal nerve grow out and join the distal end of the great auricular nerve. Eventually, these fibers reach the sweat glands in the facial skin. By this means, a stimulus intended for saliva production produces sweat secretion instead.