

Facial nerve

The segment of the facial [nerve](#) (FN) between its emergence from the skull through the [stylomastoid foramen](#) and its bifurcation at the parotid area is referred to as the [Facial nerve trunk](#) (FNT).

Function

The facial nerve performs these motor (movement) and sensory functions:

Controls the muscles that make your facial expressions. Controls muscle in your inner ear that moderates the loudness of sound. Helps make tears. Sends information about tastes from your tongue to your brain.

Segments

Intracranial (cisternal) segment

The nerve emerges immediately beneath the pons, lateral to the abducens nerve and medial to the vestibulocochlear nerve and is joined by the nervus intermedius, which has emerged lateral to the main trunk. Together the two travel through the cerebellopontine angle to the internal acoustic meatus.

Meatal segment

Having been joined by the nervus intermedius, they are located in the anterior superior quadrant, above the falciform crest and anterior to Bill's bar.

Labyrinthine segment

see [Labyrinthine segment of the facial nerve](#).

Tympanic segment

As the nerve passes posteriorly from the geniculate ganglion it becomes the tympanic segment (8-11 mm in length) and is immediately beneath the lateral semicircular canal in the medial wall of the middle ear cavity. The bone of the Fallopi canal is often dehiscent in the area of the oval window in 25-55% of postmortem specimens, having mucosa in direct contact with the nerve. The nerve passes posterior to the cochleariform process, tensor tympani and oval window. Just distal to the pyramidal eminence the nerve makes a second turn (second genu) passing vertically downwards as the mastoid segment.

The tympanic segment has no branches.

Mastoid segment

The mastoid segment, measuring 8-14 mm in length, extends from the second genu to the stylomastoid foramen, through what is confusingly referred to as the Fallopian canal. It gives off three branches:

nerve to stapedius

chorda tympani: terminal branch of the nervus intermedius carrying both secretomotor fibres to the submandibular gland and sublingual gland and taste to the anterior two thirds of the tongue

nerve from the auricular branch of the vagus nerve (CN X): pain fibers to the posterior part of the external acoustic meatus hitchhike from the jugular foramen

Extra-temporal segment

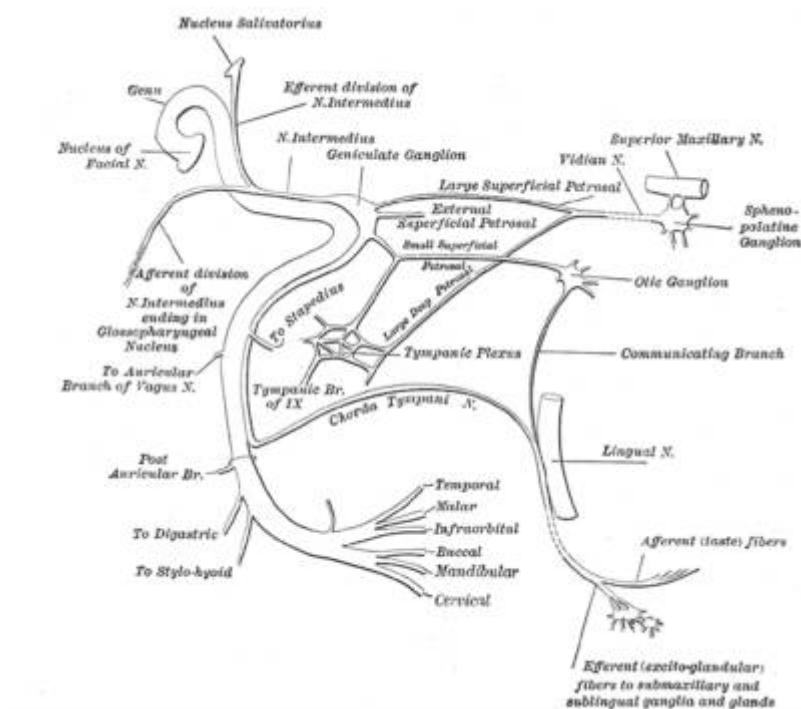
As the nerve exits the stylomastoid foramen, it gives off a sensory branch that supplies part of the external acoustic meatus and tympanic membrane. It then passes between the posterior belly of the digastric muscle and the stylohyoid muscle and enters the parotid gland. Lying between the deep and superficial lobes of the gland the nerve divides into two main branches at the pes anserinus (Latin: duck foot) - a superior temporofacial and an inferior cervicofacial branches. From the anterior border of the gland, five branches emerge; temporal, zygomatic, buccal, mandibular (marginal) and cervical (see facial nerve branches mnemonic here).

The temporal branch runs with the superficial musculoaponeurotic system (SMAS) over the zygomatic arch. This branch is at risk during surgery in this region. To avoid damage procedures should be deep to the SMAS (e.g. zygomatic fracture repairs).

The mandibular branch, in 80% of cases, runs along the lower border of the mandible (thus also referred to as marginal branch). In 20% of cases however it can be up to 2 cm below the margin of the mandible. It is crucial to be aware of this if surgery in the submandibular region is being performed. Injury to this branch will result in paralysis of mouth depressors.

Facial motor nucleus

see [Facial motor nucleus](#)



Intracranial branches

Greater petrosal nerve

Communicating branch to the otic ganglion - It arises at the geniculate ganglion and joins the lesser petrosal nerve to reach the otic ganglion.

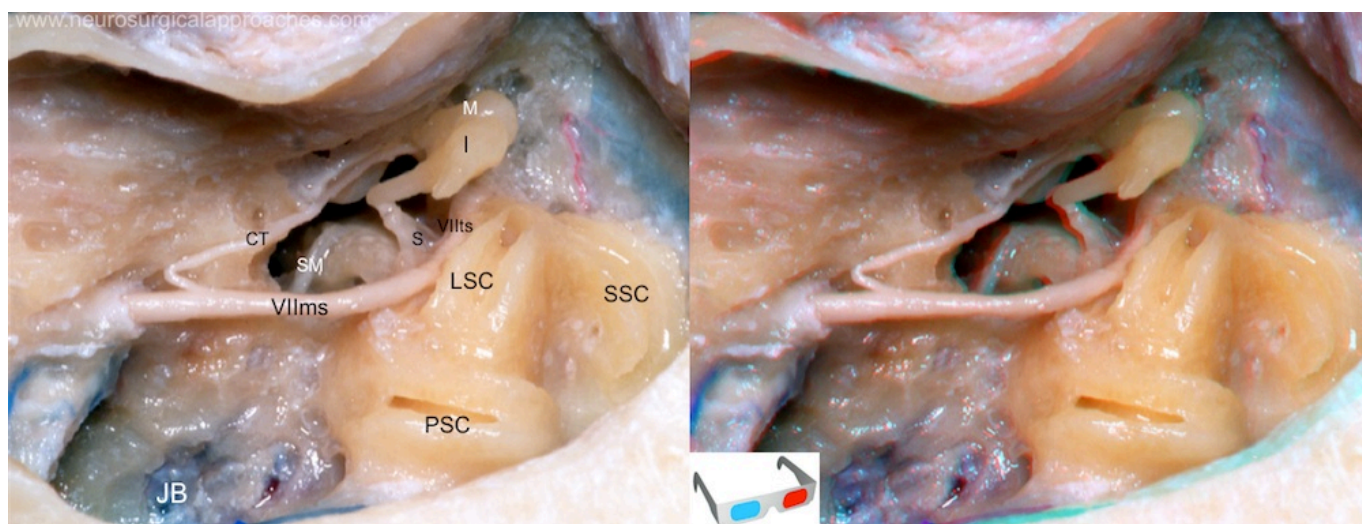
Nerve to stapedius - provides motor innervation for stapedius muscle in middle ear

Chorda tympani

Submandibular gland

Sublingual gland

Special sensory taste fibers for the anterior 2/3 of the tongue.



CT: [Chorda tympani](#); I: [Incus](#); JB: [Jugular bulb](#); LSC: [Lateral semicircular canal](#); M: [Malleus](#); PSC: [Posterior semicircular canal](#); S: [Stapes](#); SM: [Stapedius muscle](#); SSC: [Superior semicircular canal](#); VIIms: mastoid segment of [VII cranial nerve](#); VIIts: tympanic segment of VII cranial nerve.

Extracranial branches

Distal to stylomastoid foramen, the following nerves branch off the facial nerve:

Posterior auricular nerve - controls movements of some of the scalp muscles around the ear

Branch to Posterior belly of Digastric muscle as well as the Stylohyoid muscle

Five major facial branches (in parotid gland) - from top to bottom:

[Temporal branches of the facial nerve](#)

Zygomatic branch

Buccal branch

Marginal mandibular branch

Cervical branch

see also [Facial nerve frontal branch](#).

The temporal branch of the facial nerve pierces the parotidomasseteric fascia below the [zygomatic arch](#).

This branch travels first in the [subcutaneous tissue](#) and then, above the [zygomatic arch](#), in the subgaleal space. The temporal branch divides into an anterior, a middle (frontal), and a posterior ramus soon after it pierces the parotid fascia. The course of the terminal twigs of the temporal branch of the facial nerve in the subgaleal space is extremely variable, with their location being at times posterior to the anterior one-fourth of the temporalis muscle. Occasionally, a twig for the frontalis muscle may run in between the two layers of the superficial temporal fascia. Because of these findings (anteroposterior variability of temporal branch twigs and recurrent intrafascial twig), Yasargil's interfascial dissection may at times fail. A combined frontotemporal scalp/superficial temporal fascia dissection is anatomically suited to preserve the temporal branch of the facial nerve¹⁾.

Facial nerve monitoring

see [Facial nerve preservation](#)

see [Facial palsy](#)

Books

Atlas of the Facial Nerve and Related Structures

¹⁾

Ammirati M, Spallone A, Ma J, Cheatham M, Becker D. An anatomical study of the temporal branch of the facial nerve. *Neurosurgery*. 1993 Dec;33(6):1038-43; discussion 1044. PubMed PMID: 8133989.

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