

Spinal Trigeminal Nucleus

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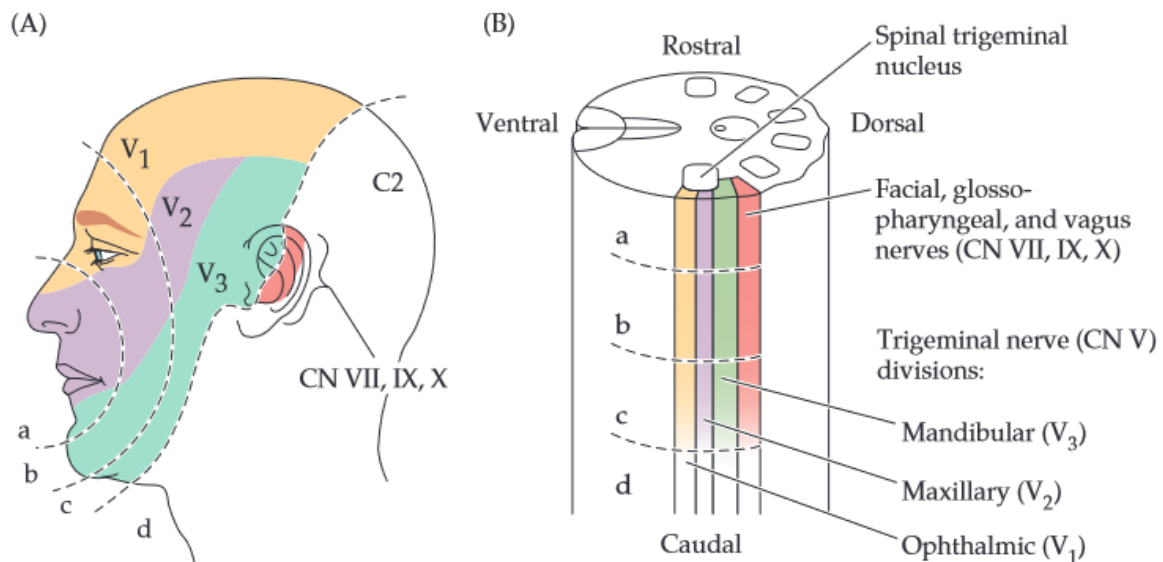


Figure 1: Somatotopic maps of the spinal trigeminal nucleus (See Blumenfeld figure 12.9¹)

1 Overview

The spinal trigeminal nucleus is a sensory nucleus of the [CN V Trigeminal Nerve](#).

The spinal trigeminal nucleus is part of a sensory tract located in the lateral medulla of the brain stem whose principal function is relaying pain and temperature sensations from the oral cavity and the surface of the face. It is subdivided into three segments representing topographical regions of the face in an inverted fashion; the forehead is represented ventrally (distally), and the oral region is represented dorsally (proximally). Lesions of the SN cause important clinical syndromes owing to the crucial utility in the daily life of the orofacial region²

The spinal trigeminal nucleus is found in the lateral medulla of the brain stem^{1,2}.

spinal trigeminal nucleus is the rostral extension of the dorsal horn¹

2 Anatomy

- “It extends from the midpons to the cervical cord at the level C2C4 and lies anterolateral to the fourth ventricle”³
- “Root fibers entering the spinal trigeminal tract and nucleus have a definite topographical organization caused by medial rotation of the sensory root as it enters the pons”³
- “Fibers of the ophthalmic division are most ventral, fibers of the mandibular division are most dorsal, and those of the maxillary division are intermediate and descend less far caudally than the other divisions”³

Note

“This topographic anatomy of the spinotrigeminal pathway may explain the onion peel representation of the face in the descending spinotrigeminal tract”³

2.1 Three parts

“The spinal trigeminal nucleus consists of three parts: (1) a pars oralis, (2) a pars interpolaris, and (3) a pars caudalis”³

2.1.1 Pars Oralis

The pars oralis receives impulses predominantly from internal structures of the nose and mouth.

2.1.2 Pars Interpolaris

The pars interpolaris is related mainly to cutaneous facial regions

2.1.3 Pars Caudalis

pars caudalis has large receptive field over the forehead, cheek, and jaw.

3 Function

“The spinal trigeminal tract and nucleus relays the sensory modalities of pain and temperature”³

1. Blumenfeld H. *Neuroanatomy Through Clinical Cases*. 3rd ed. Oxford university press; 2022.
2. Patel NM, Jozsa F, M Das J. Neuroanatomy, Spinal Trigeminal Nucleus. In: *StatPearls*. StatPearls Publishing; 2023. Accessed January 10, 2024. <http://www.ncbi.nlm.nih.gov/books/NBK539729/>
3. Joo W, Yoshioka F, Funaki T, Mizokami K, Rhoton AL. Microsurgical anatomy of the trigeminal nerve. *Clinical Anatomy*. 2014;27(1):61-88. doi:[10.1002/ca.22330](https://doi.org/10.1002/ca.22330)