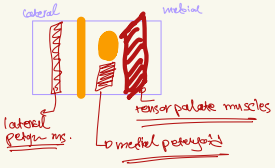
Mandibular Nerve (V3)

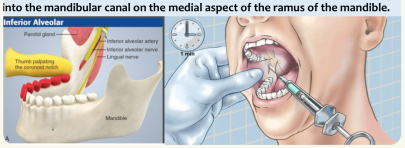
- Sensory root
- Motor root
- The main trunk (through the foramen ovale to reach the infratemporal fossa)
  - (1)Nervus spinosus (sensory): (the foramen spinosum) — it enters the cranial cavity through the foramen spinosum (with middle meningeal artery) to the meninges.
  - (2) Nerve to medial pterygoid (motor)
    - medial pterygoid muscle
    - otic ganglion without relay
      - tensor veli palatini
      - tensor tympani muscles
  - Anterior Division
    - Masseteric nerve
    - Deep temporal nerves
    - Nerve to the lateral pterygoid muscle
    - Buccal nerve
  - Posterior Division
    - Auriculotemporal nerve
    - Lingual nerve
    - Inferior alveolar nerve (Mixed nerve, motor and sensory)
      - Nerve to mylohyoid (motor)
      - Branches to the lower molar and premolar teeth.
      - Incisive nerve:
      - Mental nerve

Relations
- Laterally: lateral pterygoid muscle.
- Medially: otic ganglion; medial pterygoid; tensor palate muscles
- Posteriorly: middle meningealartery



Inferior Alveolar Nerve Block

An alveolar nerve block—commonly used by dentists when repairing mandibular teeth—anesthetizes the inferior alveolar nerve, a branch of CN V3. The anesthetic agent is injected around the mandibular foramen, the opening into the mandibular canal on the medial aspect of the ramus of the mandible.



The otic ganglion

- Relations:
  - ✓ Laterally: main trunk of mandibular nerve.
  - ✓ Medially: tensor palati muscle.
  - ✓ Posteriorly: middle meningeal artery.
- Roots:
  - Parasympathetic root:
    - (1) Parasympathetic root: Inferior salivary nucleus → glossopharyngeal nerve → tympanic branch → form the tympanic plexus in the middle ear → lesser superficial petrosal nerve → leaves the cranial cavity through the foramen ovale → relay in the otic ganglion→ postganalionic to parotid gland through the auriculotemporal nerve.
  - Sympathetic root: from the plexus around middle meningeal artery.
  - Sensory root: from mandibular nerve to the parotid gland.
  - Motor root: (passes without relay) arising from the nerve to medial pterygoid muscle
    - to tensor palati
    - tensor tympani muscles.
- Branches
  - Parasympathetic: to the parotid gland through the auriculotemporal nerve.
  - Motor: To tensor palati and tensor tympani muscles from the nerve to medial pterygoid

Testing the Integrity of the Trigeminal Nerve

The sensory function can be tested by using a cotton wisp over each area of the face supplied by the divisions of the trigeminal nerve

The motor function can be tested by asking the patient to clench the teeth. The masseter and the temporalis muscles, which are innervated by the mandibular division of the trigeminal nerve, can be palpated and felt to harden as they contract

Anterior Division

	Masseteric nerve	Deep temporal nerves	Nerve to the lateral pterygoid muscle	Buccal nerve
مُلصَق 1	To the masseter muscle	to the temporalis muscle		It supplies: A. the skin covering the buccinator. B. The mucous membrane of the cheek and gums
				does not supply the buccinator muscle (which is supplied by the facial nerve)
				it is the only sensory branch of the anterior division of the mandibular nerve
مُلصَق 2	passes above the upper border of lateral pterygoid muscle	enter the deep surface of the muscle.	pass above the upper border of lateral pterygoid	Passes between the 2 heads of the lateral pterygoid muscle.
	to the deep surface of the masseter muscle.		to the deep surface of the temporalis muscle.	Then it passes forward deep to the ramus of mandible till the anterior border of the masseter muscle.

Posterior Division

	Auriculotemporal nerve	Lingual nerve	Inferior alveolar nerve (Mixed nerve, motor and sensory)
Course	1-It arises by 2 roots which surround the middle meningeal artery X	Here it is joined by the chorda tympani nerve 1-it lies deep to the lateral pterygoid muscle.	1-It begins deep to the lateral pterygoid m muscle then emerges from its lower border.
	2-It passes backwards deep to the neck of the mandible	in front of the inferior alveolar nerve 2-It emerges from the lower border of lateral pterygoid muscle	2-It descends between - the ramus of the mandible (laterally) - medial pterygoid muscle (medially).
	3-then enters the parotid gland	3-it descends between - ramus of the mandible(laterally) - the medial pterygoid muscle (medially)	3-It enters the mandibular foramen and runs in the mandibular canal
	4-It appears at its upper pole behind the superficial temporal vessels (VAN)	(dangerous position during tooth extraction) 4-it passes along a groove on the inner surface of the socket of the last molar tooth ust undercover of the mucosa of the gum	4-Termination; It ends in the mandibular canal by dividing into 2 branches (mental and incisive nerves).
	5-It ascends in front of the auricle to terminate in the temporal fossa	The submandibular Ganglion hangs from it 5-Then, it crosses - superficial to the hyoglossusmuscle - deep to the superficial part of the submandibular salivary gland	
		6- Finally, it passes deep to the mylohyoid muscle. triple relation with the submandibular duct A. first it passes lateral to the duct B. Then it curves below to the duct C. Finally it ascends medial to the duct	
Branches	1) Posterior part of the temporal region (temple)	Types of fibers: - general sensations from anterior 2/3 of the tongue and floor of the mouth — relay in the trigeminal ganglia (1st order neuron). - taste sensations from anterior 2/3 of the tongue — ends in the solitary nucleus through chorda tympani nerve. - Parasympathetic fibers supply the submandibular and sublingual glands. — Parasympathetic fibers from the superior salivary nucleus→the facial nerve → chorda tympani (join the lingual nerve) to relay in the submandibular ganglion → postganglionic fibers supply the submandibular and sublingual glands	1- Nerve to mylohyoid (motor): - It arises before it enters the mandibular foramen - It runs in the mylohyoid groove to supply — Mylohyoidand; anterior belly of digastric muscles.
	2) Upper 1/2 of the outer surface of the auricle.		2- Branches to the lower molar and premolar teeth.
	3) Skin of the external auditory meatus and ear drum.		3- Incisive nerve: — to the lower canine and incisor teeth.
	4) Temporo-mandibular joint.		4- Mental nerve: — exits from the mental foramen and supplies the skin of the chin.
	5) Sensory and parasympathetic fibers to the Parotid gland.		