

# Head & Neck skull

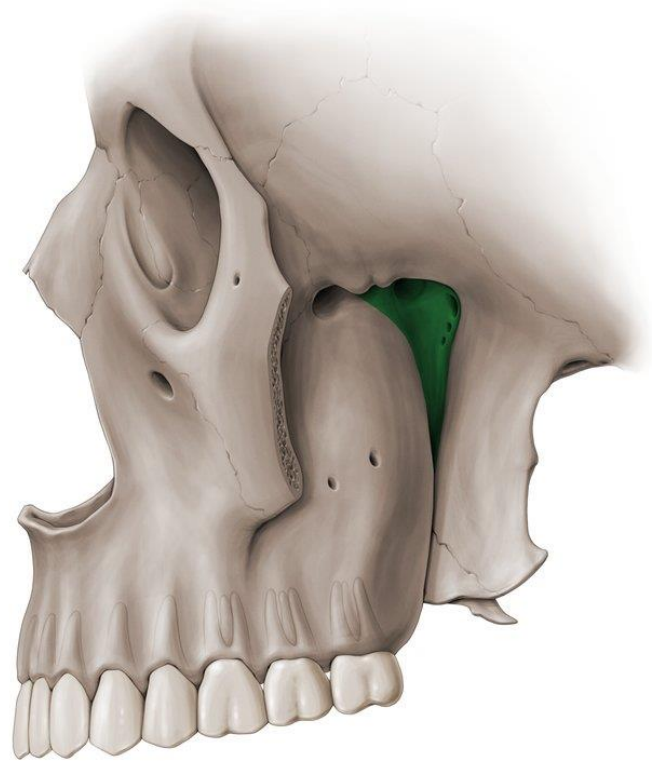


Talib Jawad 11 \ 4  
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Pterygopalatine  
fossa

# Pterygopalatine fossa

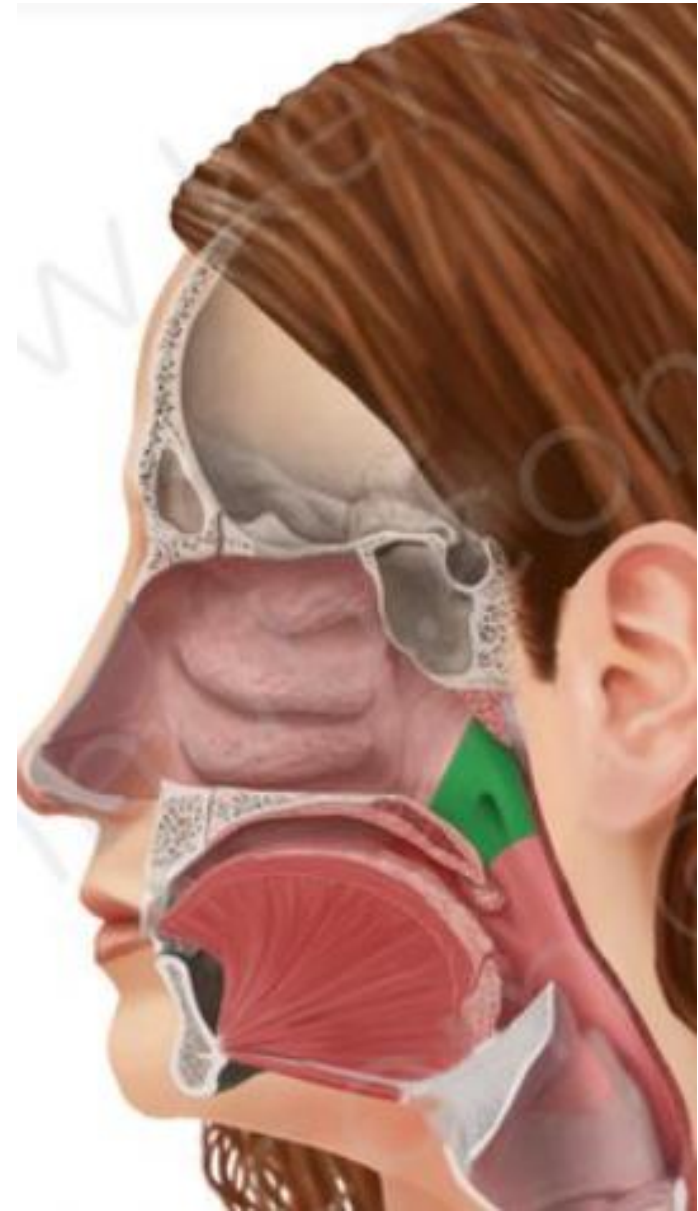
The pterygopalatine fossa is an inverted pyramidal-shaped, fat-filled space located on the lateral side of [the skull](#), between the infratemporal fossa and the [nasopharynx](#).



# The student must focus the followings

- Definition
- Location
- Skeletal framework
- Contents of the pterygopalatine fossa,
- Connection and how it serves as a gateway to other regions of the skull.
- Anatomy of the pterygopalatine fossa will give you a better understanding of its involvement in major pathological conditions.
- Pterygopalatine ganglia

- The **nasopharynx** is the uppermost region of the pharynx located directly behind the posterior nasal apertures (choanae) and superior to the level of the soft palate. Its roof and posterior wall are formed by mucosa overlying the base of the skull, specifically the body of sphenoid bone and the basal part of the occipital bone.

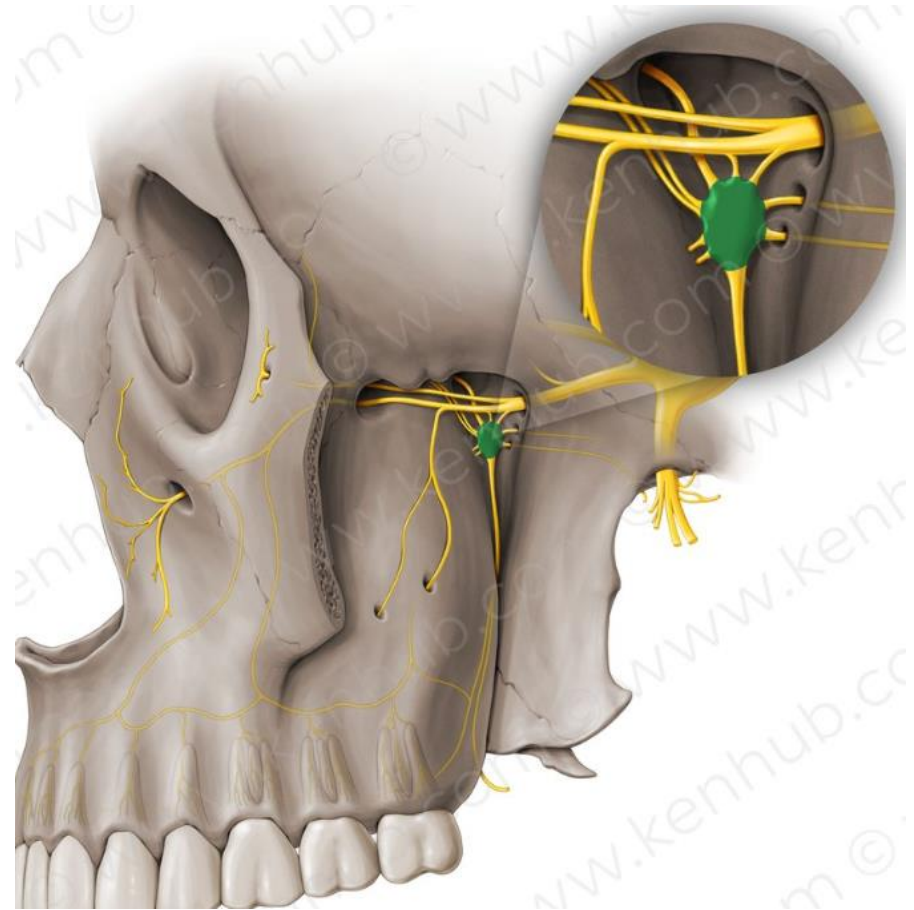


- It is known as a major ***neurovascular crossroad between***;
- the orbit, \
- the nasal cavity,
- the nasopharynx,
- the oral cavity,
- the infratemporal fossa,
- and the cranial fossa.

**the pterygopalatine fossa can act as a natural conduit for the spread of inflammatory and neoplastic diseases in the head and neck.**

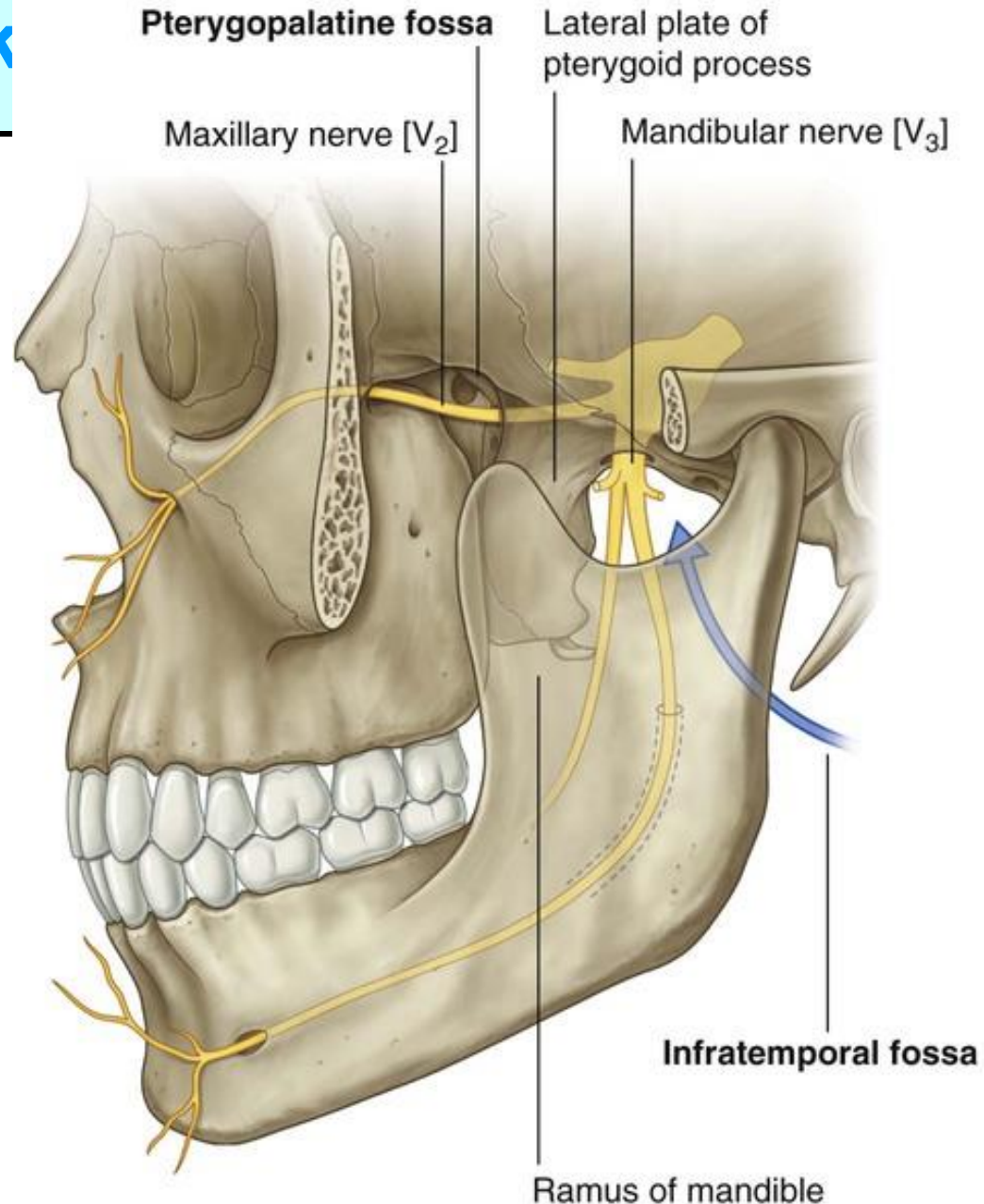
# Contents

1. Skeletal framework
2. Contents
  1. Maxillary nerve (V2)
  2. Pterygopalatine ganglion
  3. Maxillary artery
  4. Veins



# Skeletal framework

- The walls of the pterygopalatine fossa are formed by three bones of the skull:
  - maxilla
  - palatine bone
  - sphenoid bone

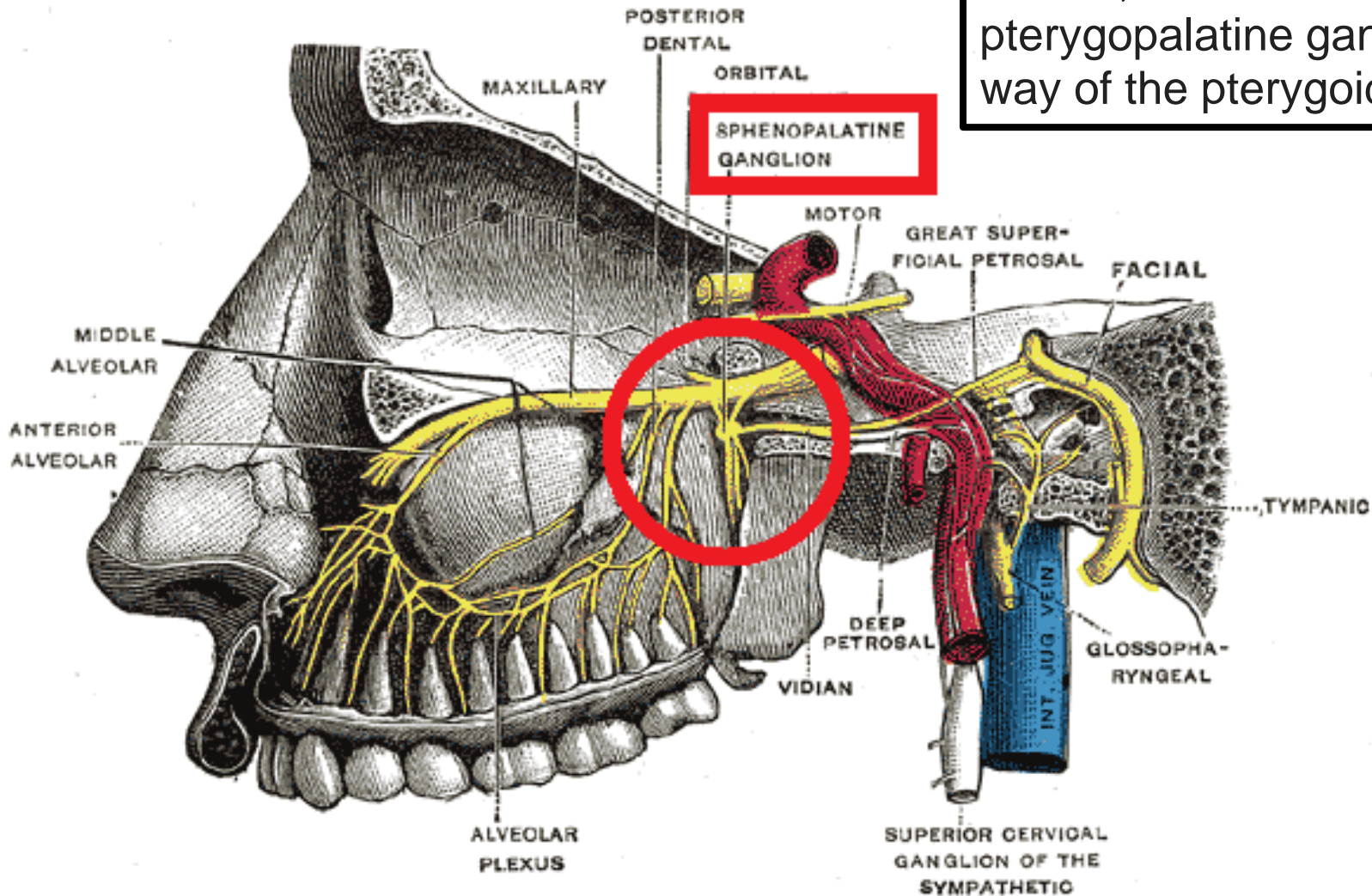


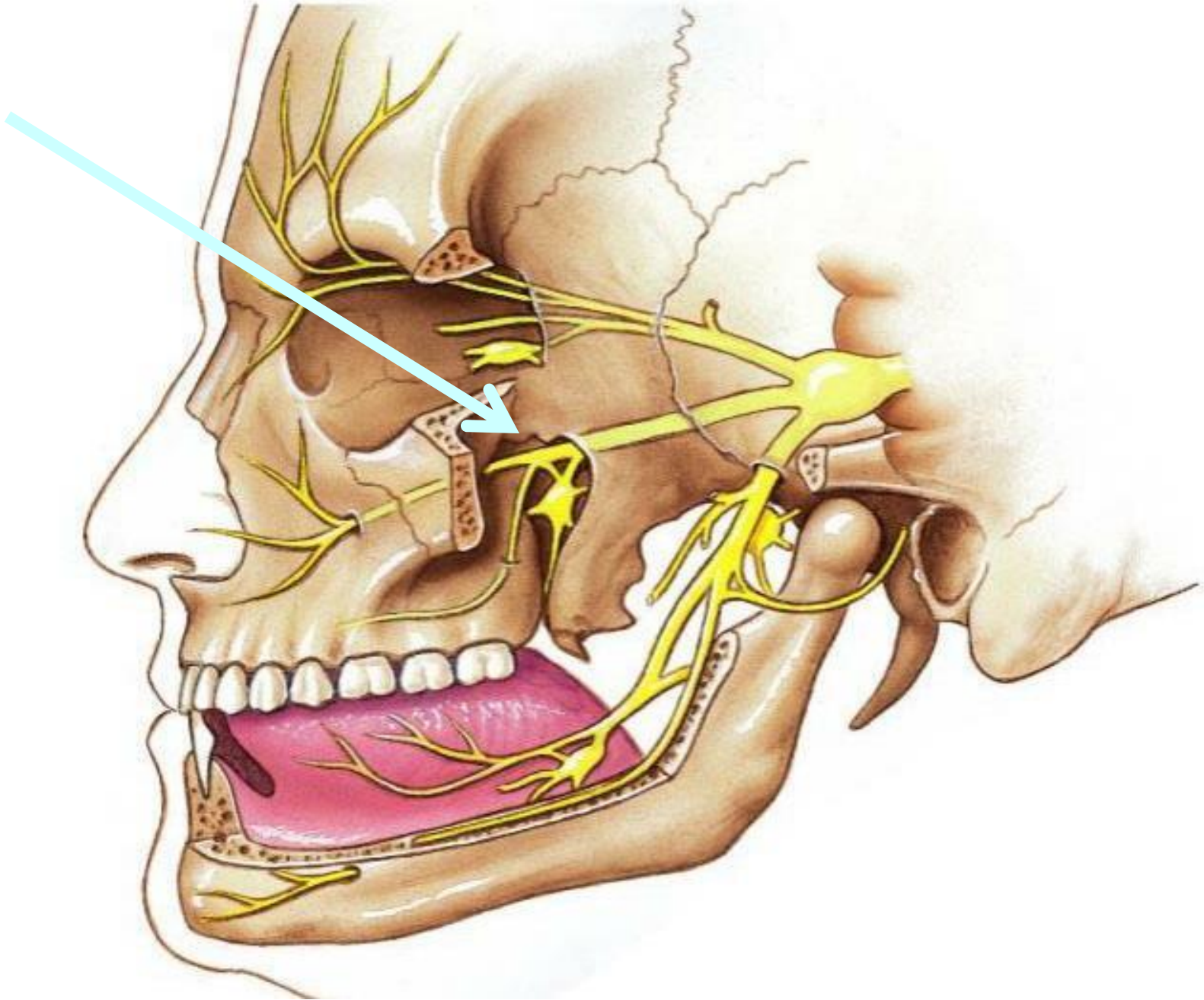
# Walls of the pterygopalatine fossa

- Anterior wall: posterior surface of the **maxilla**.
- Medial wall: lateral surface of the **palatine**.
- Roof and the posterior wall: **sphenoid**, specifically the anterosuperior surface of its pterygoid process.



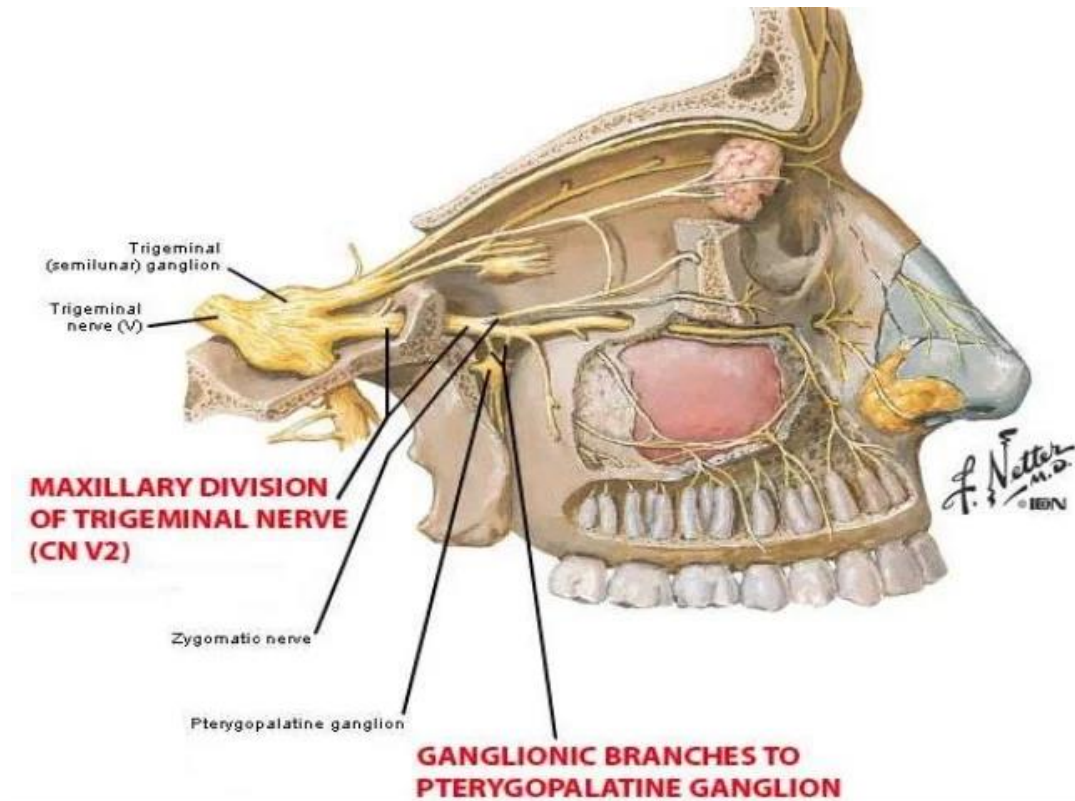
The **Vidian nerve** is a combination of the greater petrosal and deep petrosal nerves, and it arrives at the pterygopalatine ganglion by way of the pterygoid canal.





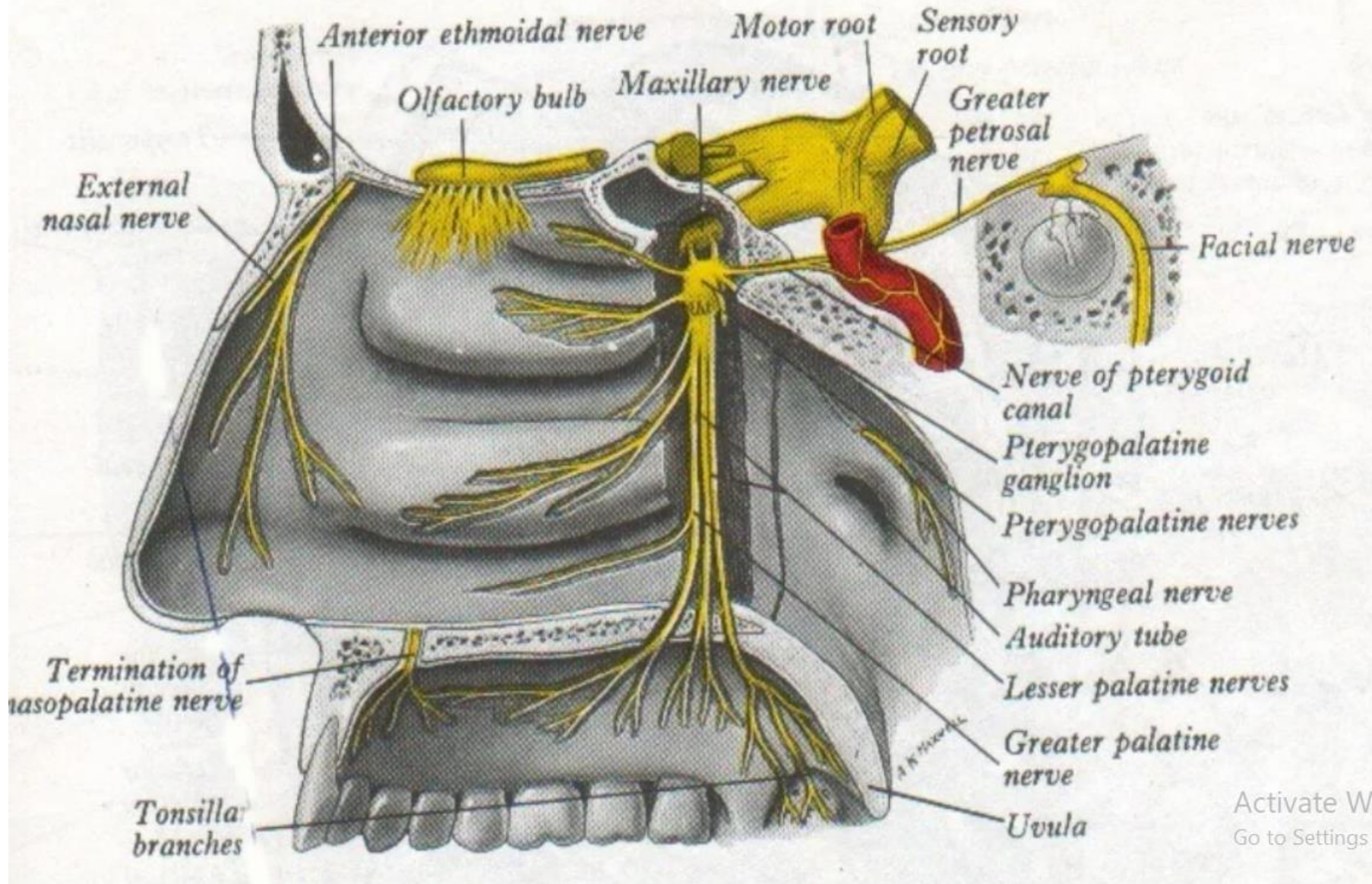
The maxillary nerve (V2) is purely sensory. It originates as the second division of the trigeminal ganglion in the cranial cavity, travels through the **foramen rotundum**, and enters the pterygopalatine fossa.

At the pterygopalatine fossa, the maxillary nerve (V2) gives rise to the zygomatic nerve, the posterior superior alveolar nerve, and two ganglionic branches, while its main trunk continues into the inferior orbital fissure as the infraorbital nerve.



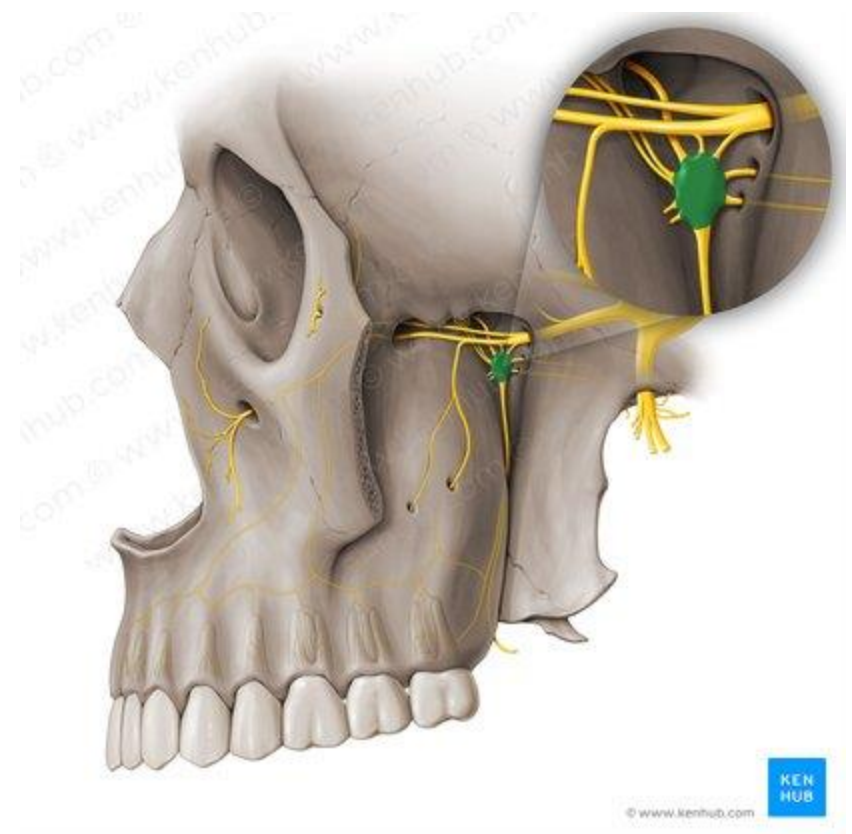
- The **ganglionic branches** allow the maxillary nerve (V2) to communicate with the **pterygopalatine ganglion**, thus serving as a conduit for **parasympathetic and sympathetic postganglionic fibers to travel through**.
- Along with the **sensory fibers of the maxillary nerve (V2)**, these fibers (sympathetic and parasympathetic) **either** leave directly from the pterygopalatine ganglion as : **orbital, palatine, nasal, and pharyngeal branches**, **or from** the maxillary nerve (V2) along with its associated branches **(sensory)**.

# Pterygopalatine ganglia



# Definition of PT.P.G

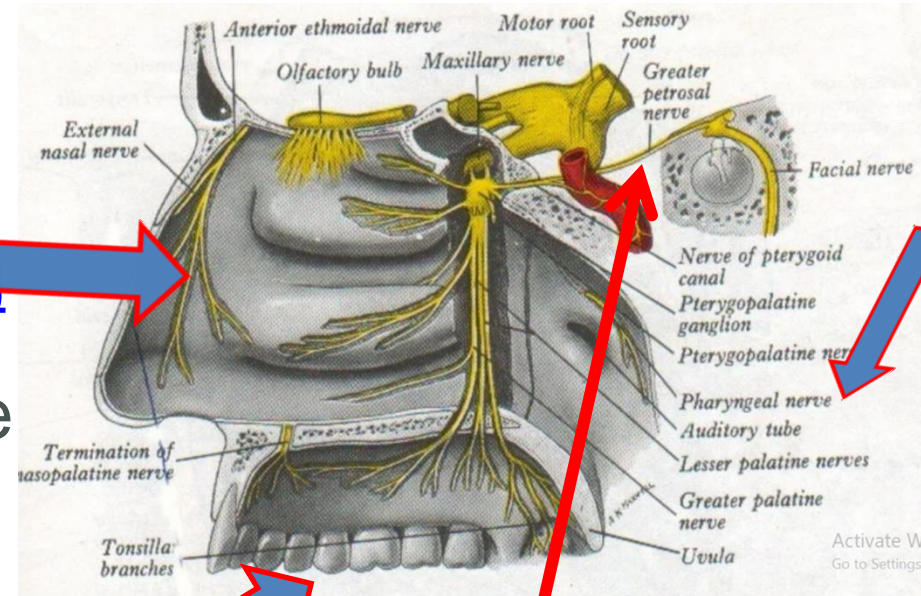
- The pterygopalatine (sphenopalatine) ganglion is one of four small [parasympathetic ganglia](#) found in the [head](#).
- It resides in the [pterygopalatine fossa](#), which is located in the superior pterygomaxillary fissure, in the anterosuperior part of the [infratemporal fossa](#) (medial to the zygomatic arch and the coronoid process of the [mandible](#)).



Synonyms: Sphenopalatine ganglion,

# Function of the Pt. p.g

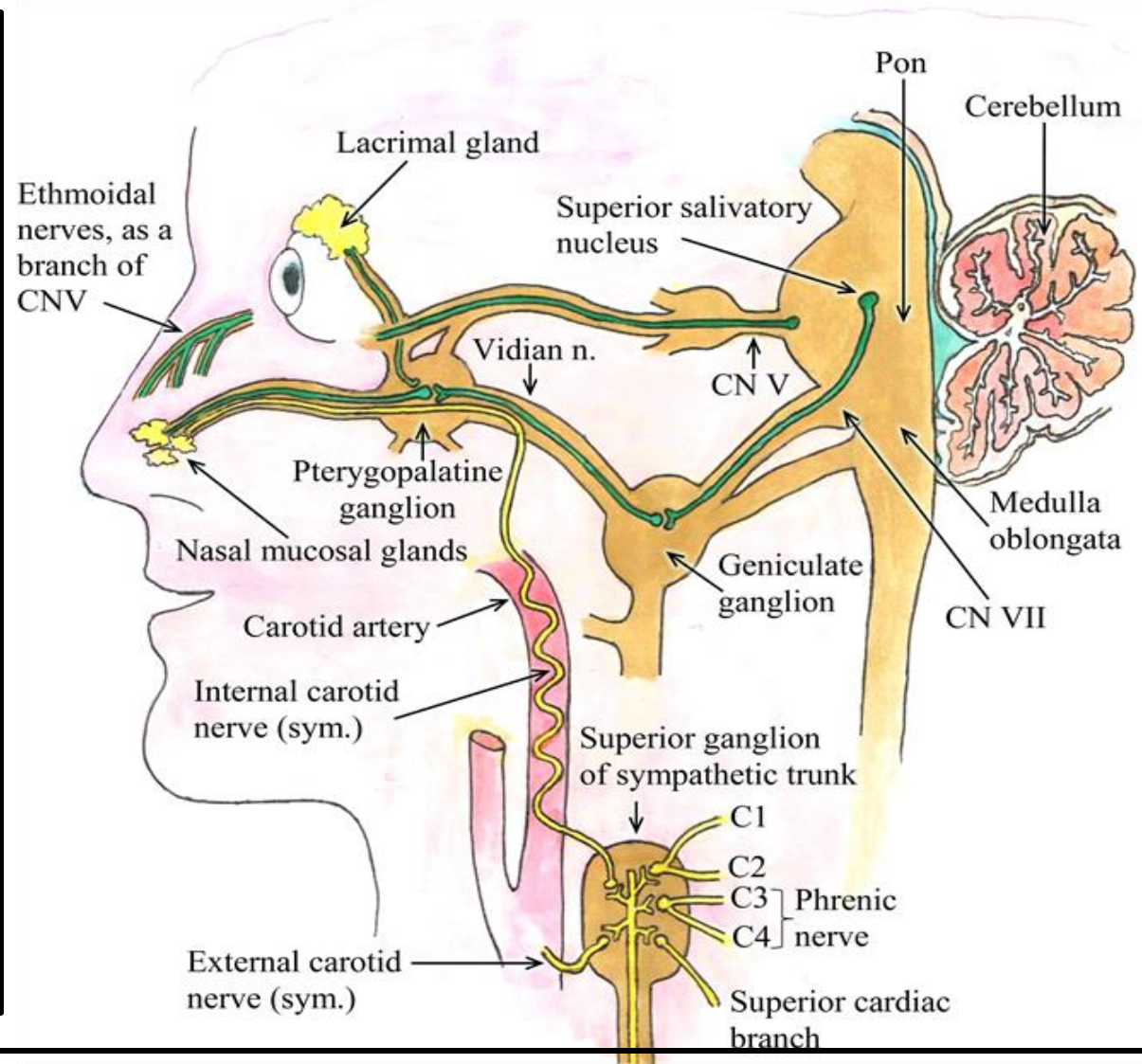
- Although it is described as being a parasympathetic ganglion, **it also carries sympathetic and sensory fibers** to the nasal, oral and pharyngeal regions of the head. This article will focus on the formation of the pterygopalatine ganglion, the structures it innervates and associated pathologies.



Most of the nerve fibers in the ganglion come from the **greater petrosal branch of the facial nerve** (the seventh cranial nerve or CN VII)

- After the nerve fibers pass through the ganglion, they leave to form multiple branches:

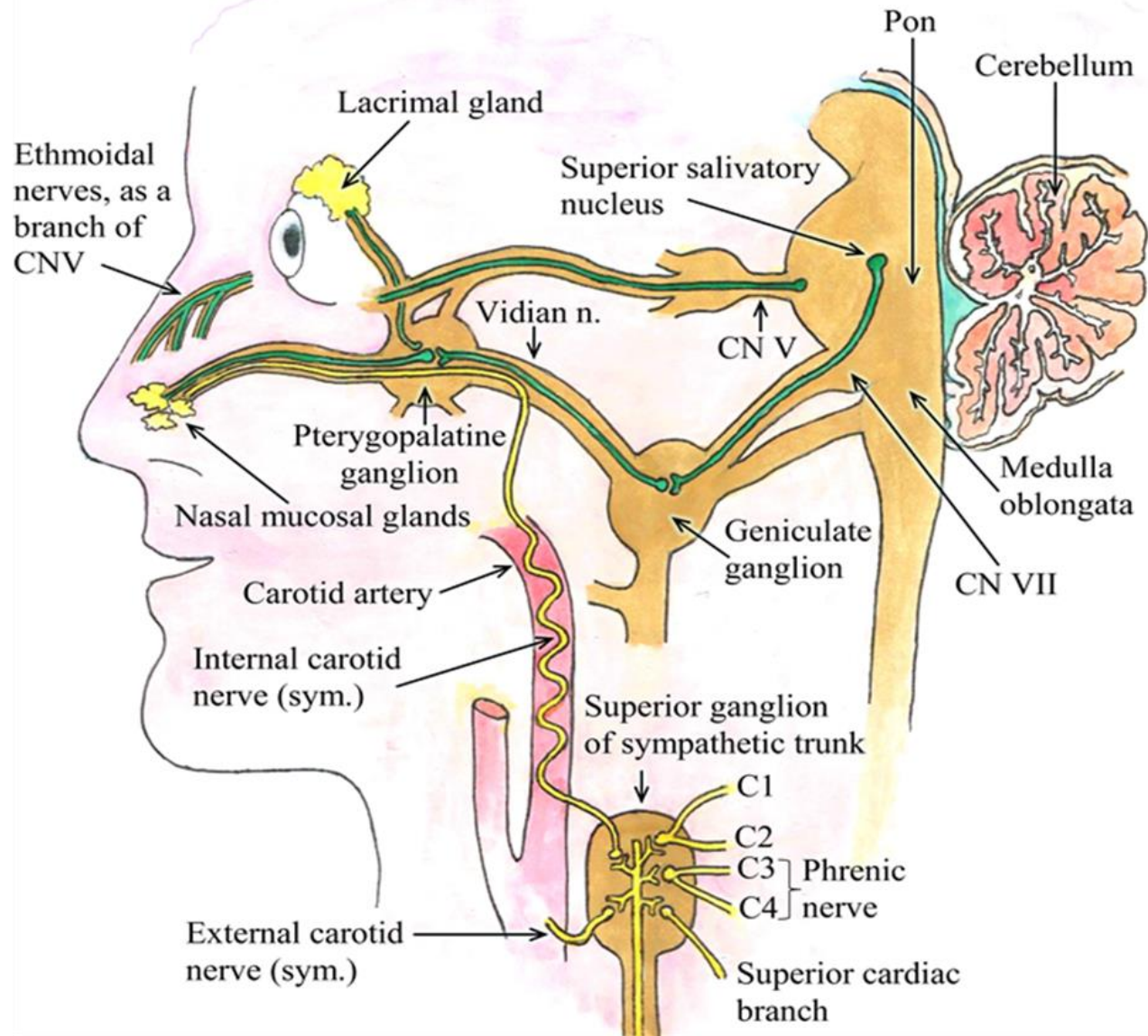
- Orbital branches
- Nasopalatine nerve
- Greater palatine nerve



- Lesser palatine nerve
- Nasal branches (medial, lateral posterior superior, and posterior inferior) Pharyngeal branch of the maxillary nerve



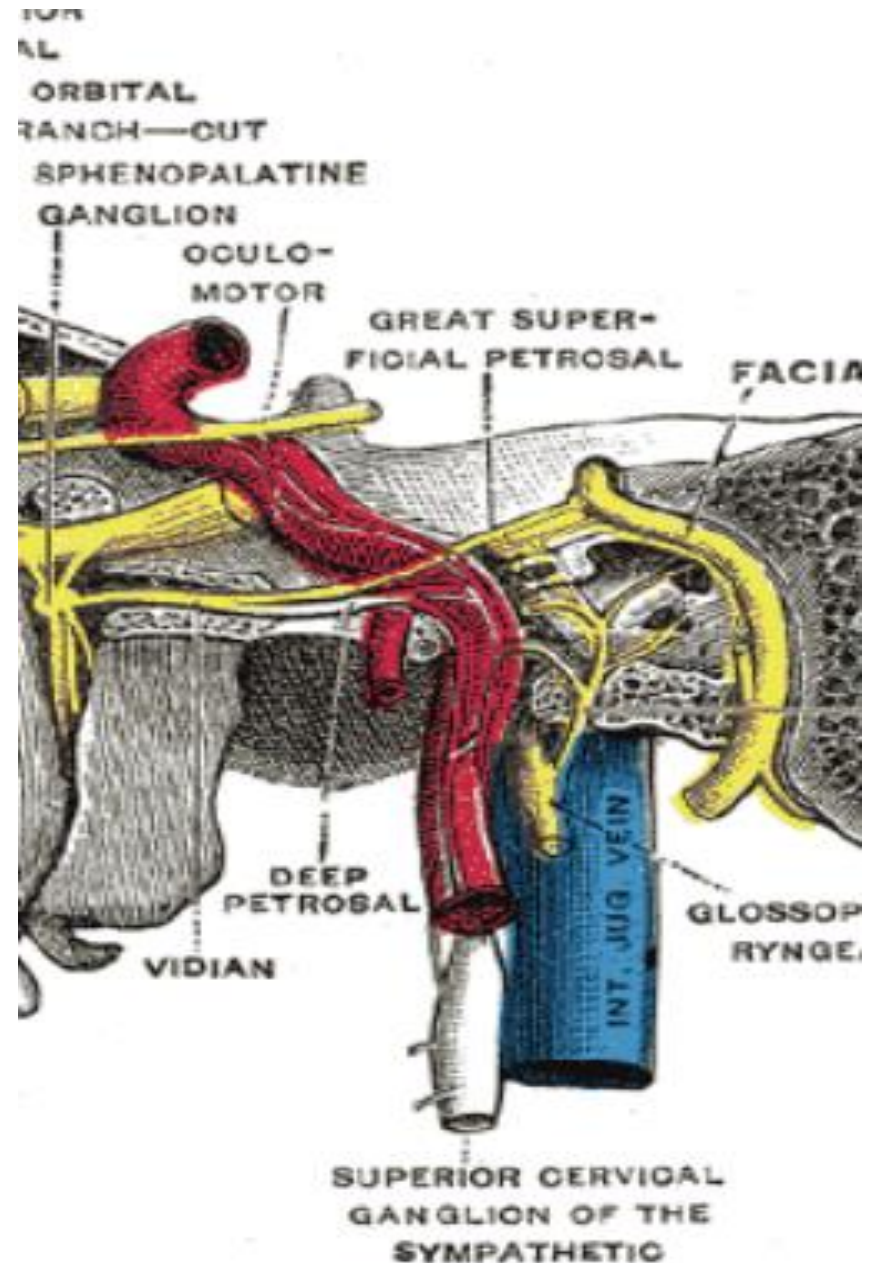
The **Vidian nerve** is a combination of the **greater petrosal** and deep petrosal nerves, and it arrives at the pterygopalatine ganglion by way of the pterygoid canal.

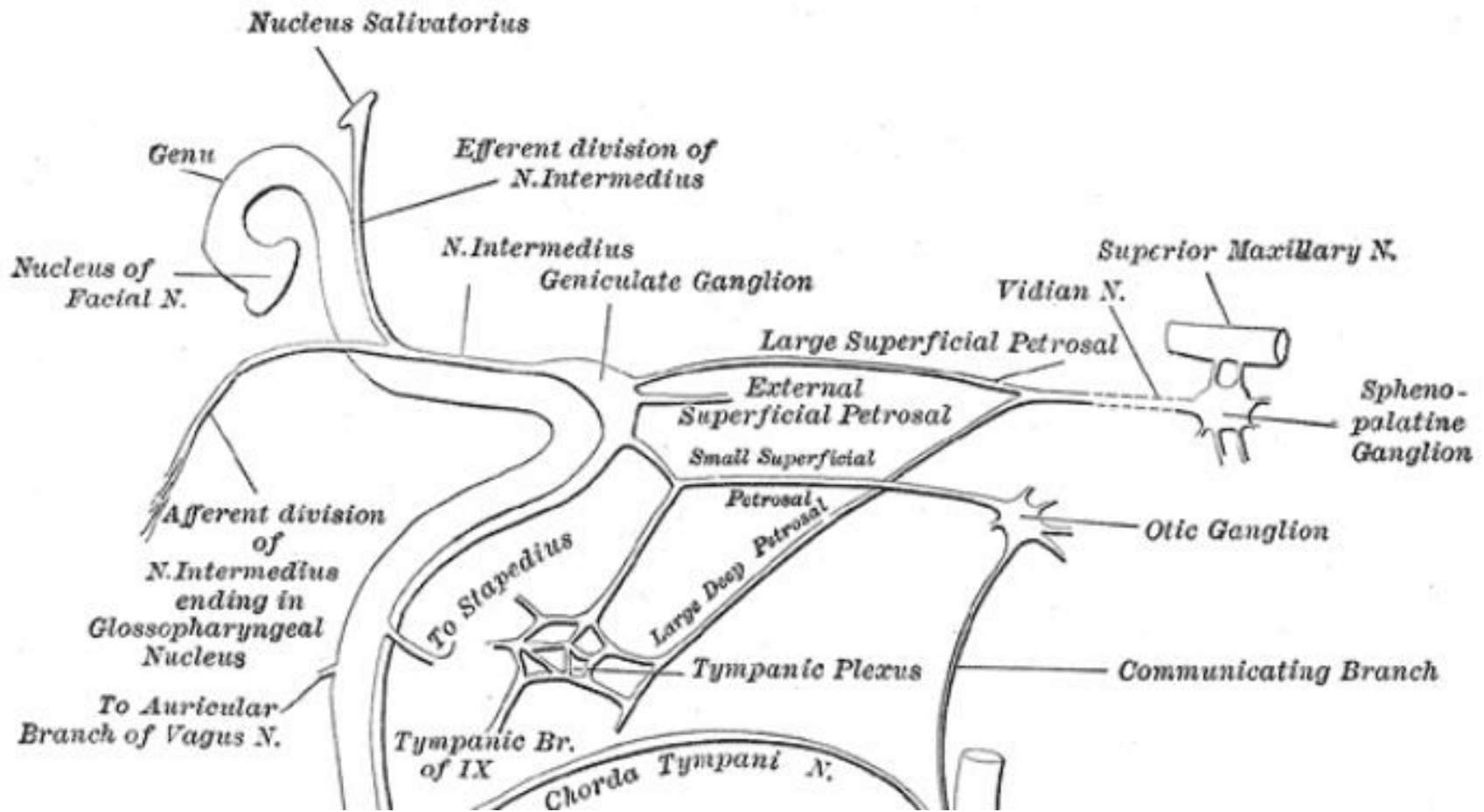


# Deep petrosal nerve

- The **deep petrosal nerve** is a branch of the internal carotid plexus which runs through the carotid canal lateral to the internal carotid artery. It enters the cartilaginous substance which fills the foramen lacerum, and joins with the greater petrosal nerve to form the nerve of the pterygoid canal, **((also known as the Vidian nerve))**.

- The deep petrosal nerve carries postganglionic [sympathetic](#) [ic](#) axons to the [pterygopalatine ganglion](#), which pass through **without** synapsing. These axons innervate [blood vessels](#) and [mucous glands](#) of the head and neck. The neuron cell bodies of the axons which form the deep petrosal nerve are found in the [superior cervical ganglion](#).

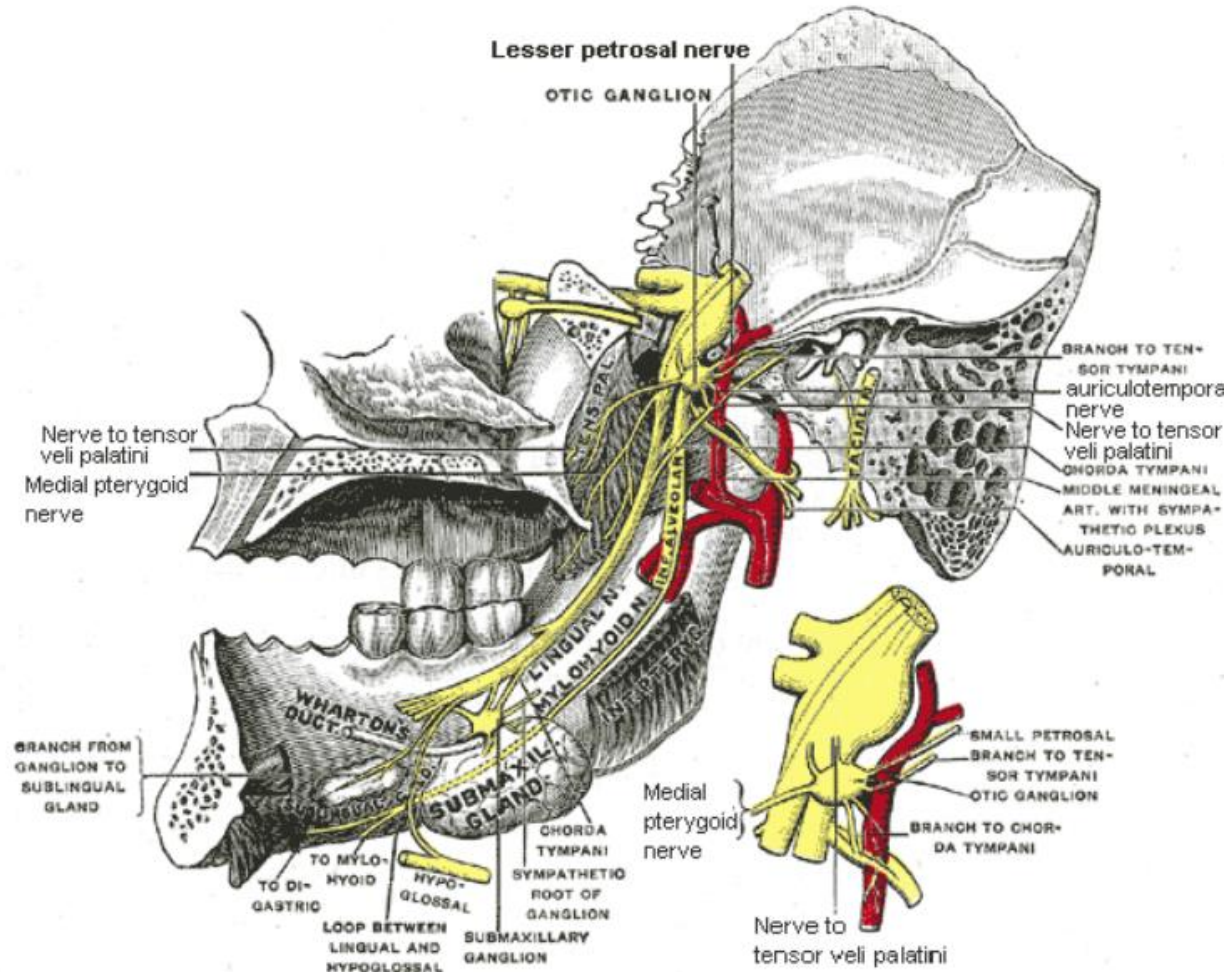




The **lesser petrosal nerve** (also known as the **small superficial petrosal nerve**) is the [general visceral efferent](#) (GVE) component of the [glossopharyngeal nerve](#) (CN IX), carrying [parasympathetic](#) preganglionic fibers from the [tympanic plexus](#) to the [parotid gland](#). It synapses in the [otic ganglion](#), from where its postganglionic fibers emerge.

# The four paired parasympathetic ganglia in your head are the:

- Submandibular ganglion in your lower jaw
- Otic ganglion behind your ear
- Ciliary ganglion behind your eye
- Pterygopalatine ganglion behind your cheekbone



# Cluster headache disorders

- Nerves from this ganglion are associated with a group of cluster headache disorders (**A debilitating disorder characterized by grouped attacks of severe headaches**) called trigeminal autonomic cephalalgias (TACs).
- **The direct cause of a cluster headache is dilation of vessels, which puts pressure on the trigeminal nerve**, a nerve associated with facial sensation and movement. Cluster headache is a primary headache disorder, which means that the reason it occurs is unknown.
- very severe burning, poking **نقطي** , or piercing (as opposed to throbbing **خفقان** ).

# Summary

- The pterygopalatine ganglion is a cluster of nerves behind your cheekbone that is important to the normal functioning of several parts of your face, including your nose, mouth, and throat. It plays a role in several pain conditions, **such as cluster headaches.**

Thanks

