

Pterygopalatine Fossa

The pterygopalatine fossa (PPF) is a pyramidal-shaped region located immediately below the apex of the orbit and medial to the infratemporal fossa. This small space is often referred to as the shape of an inverted cone, with the tapering portion of the cone pointed inferiorly toward the oral cavity. The PPF contains the maxillary nerve (V2), the pterygopalatine portion of the maxillary artery, and the pterygopalatine ganglion. This small space communicates with the orbit, cranial cavity, infratemporal fossa, nasal cavity, and oral cavity.

Osseus Boundaries:

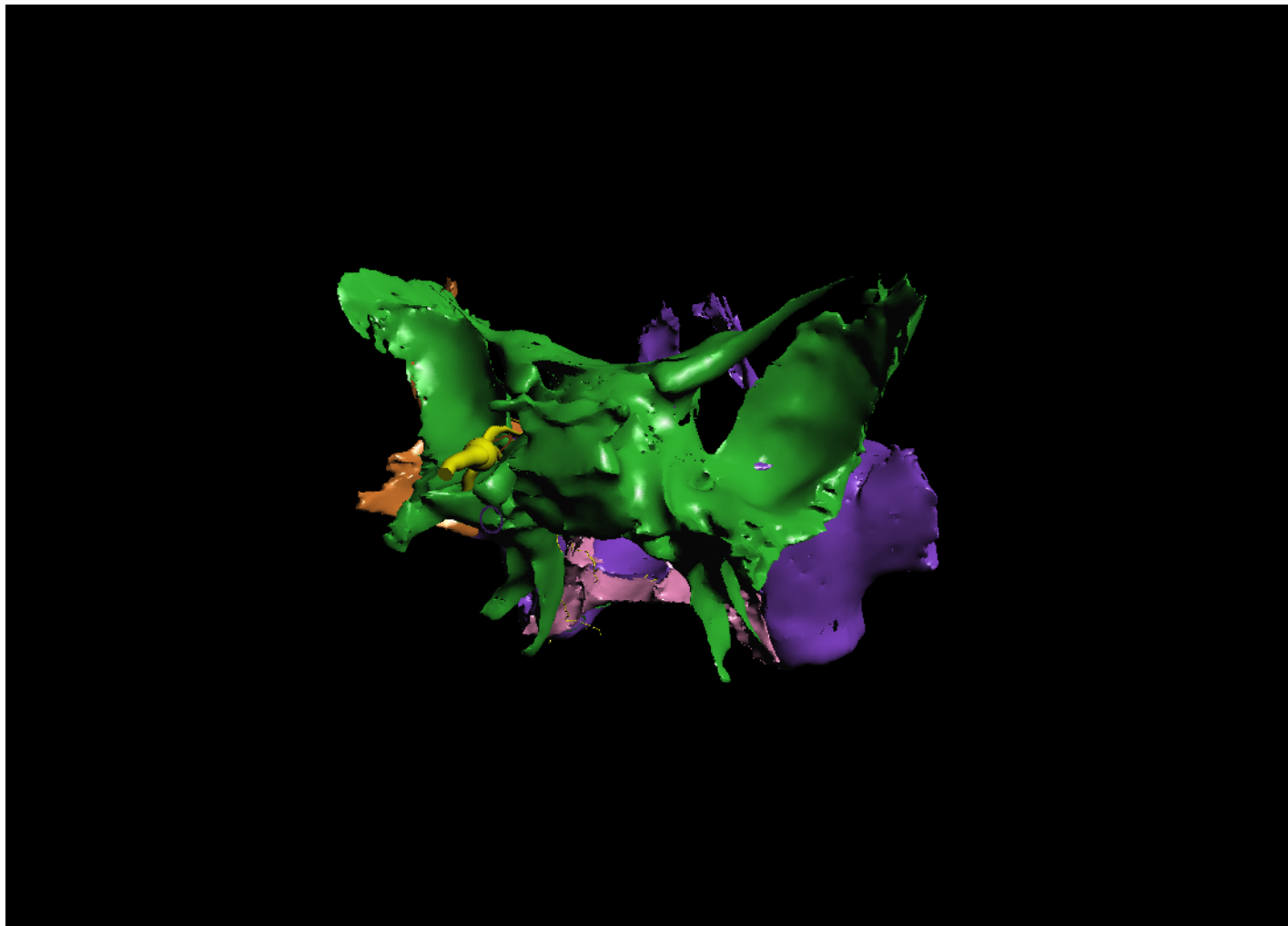
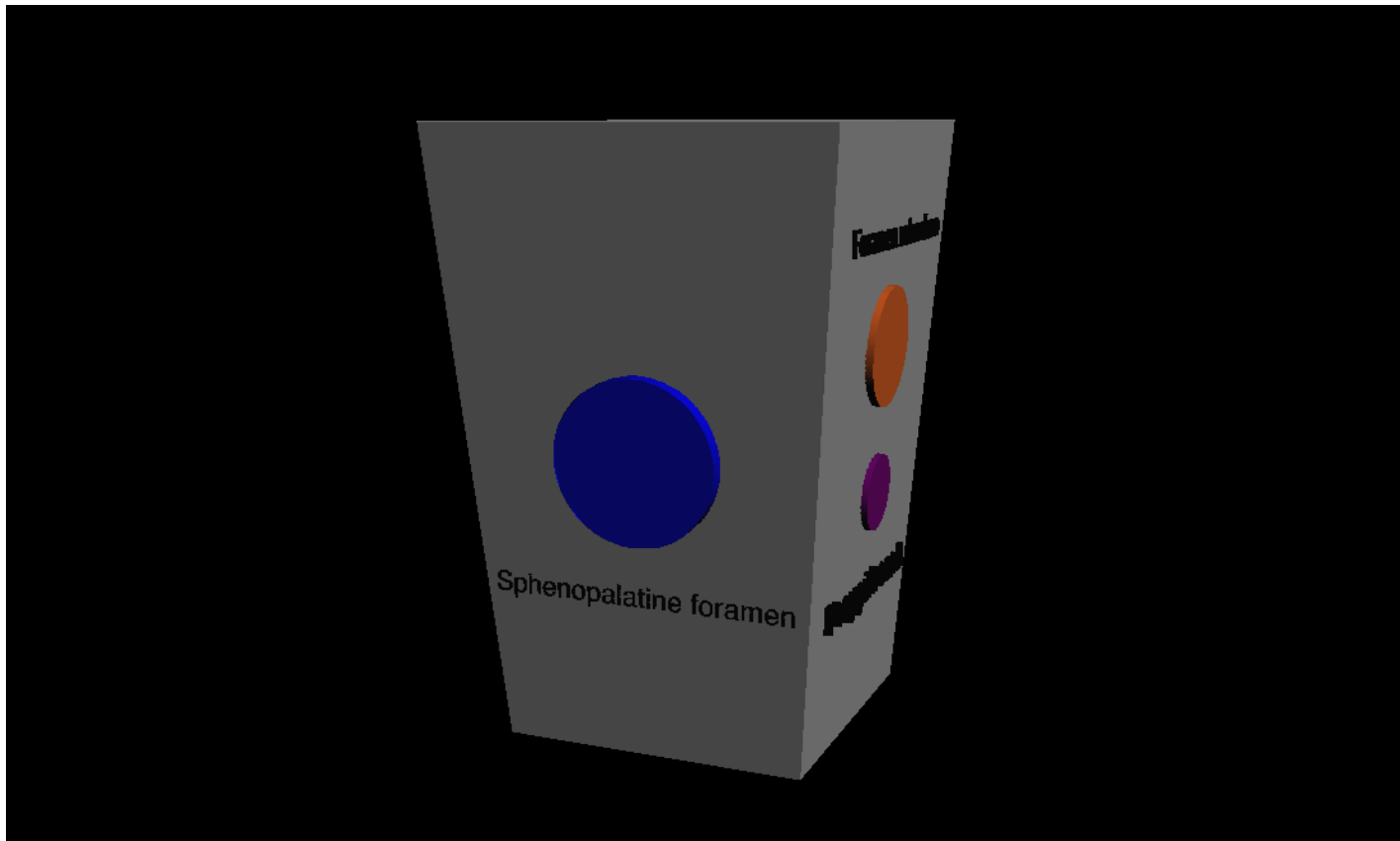
Anterior	Maxilla and maxillary sinus
Posterior	Pterygoid process (lateral plate)
Medial	Perpendicular plate of the palatine bone, nasal cavity
Superior	Greater wing of sphenoid bone, orbit

The lateral and inferior boundaries of the PPF include the infratemporal fossa and oral cavity, respectively, and are not osseus.

The borders of the PPF contain foramina/canals that allow this region to communicate with various spaces within the head. Specific branches of V2 are transmitted through these openings to provide sensory innervations for their respective regions. The following table correlates these openings to the specific sides of the inverted cone, which represents the direction in which these openings are found within the PPF.

Boundary	Cavity	Opening to/from PPF	Transmitted nerve(s)
Anterior, Superior	Orbit	Infraorbital fissure (onto face via infraorbital foramen)	Infraorbital n.
Posterior	Cranial cavity	Foramen rotundum, Pterygoid canal	Maxillary n. *Nerve of the pterygoid canal (Vidian n.)
Lateral	Infratemporal fossa	Pterygomaxillary fissure	-
Medial	Nasal cavity	Sphenopalatine foramen	Nasopalatine n.
Inferior	Oral cavity	Greater/lesser palatine canals, (into oral cavity via Greater/lesser palatine foramina)	Greater/lesser palatine nn.

*This nerve is not a branch of V2, as it forms from the junction of the greater petrosal nerve (pre-ganglionic parasympathetic fibers from CN VII) and the deep petrosal nerve (post-ganglionic sympathetic fibers) to provide autonomic innervation to the mucosal glands in the nasal/oral cavities and to the lacrimal gland (via a communicating branch from the zygomatic nerve of V2 to the lacrimal nerve of V1).



Vasculature of the PPF

The pterygopalatine portion of the maxillary artery includes the following branches and their distributions:

Descending palatine a. (greater & lesser palatine aa.) descends in the palatine canals to supply the hard and soft palate.

Posterior superior alveolar a. pierces the posterior maxilla to supply the maxillary molars.

Infraorbital artery branches as the maxillary artery enters the pterygomaxillary fissure and travels superiorly through the infraorbital fissure, along the infraorbital groove, and terminates onto the face via the infraorbital foramen to supply the region of the face below the eye. The infraorbital artery also gives branches to the anterior maxillary teeth via the *anterior and middle (if present) superior alveolar aa.*

Sphenopalatine artery enters the sphenopalatine foramen to supply the lateral wall of the nasal cavity and the nasal septum.

The **veins** of the PPF follow the arteries and drain into the **pterygoid plexus of veins** located within the infratemporal fossa. These veins coalesce into the **maxillary vein**, which drains directly back to the **retromandibular vein** and into the **internal jugular vein**. The pterygoid plexus communicates with facial vein anteriorly and the cavernous sinus posteriorly, thereby providing a potential route for infection to spread from superficial to deep areas of the face/neck.