Case 1070

Anatomy of the pterygopalatine fossa
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Section: Head & neck imaging
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Imaging Technique: MR
Case Type: Anatomy and Functional Imaging
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Clinical History:
Anatomy of the pterygopalatine fossa
Imaging Findings:
Not relevant
Discussion:

The pterygopalatine fossa (PPF), is an important small anatomic space which communicate the middle cranial fossa, orbital, nasal and oral cavities, pharynx, foramen lacerum and the infratemporal fossa. Represents a major pathway of spread of malignancy and infection in the deep face. It is a pyramidal space with an upper base, located down the orbital apex. The bony structure which delimited the PPF are: - Anterior wall: Maxillary tuberosity. - Posterior wall: the anterior face of the pterygoid apophysis. - Medial wall: vertical lamina of the palatine. - Lateral wall: free. - Superior wall: great wing of the sphenoid. - Inferior wall: is represented by the apex of the pyramid, shaped by the union of the maxillary tuberosity and the pterygoid apophysis. The PPF has 8 communications in form of orifices or osseous ducts. - Anterosuperiorly: communicates with the orbit through the inferior orbital fissure. - Posterosuperiorly: Foramen rotundum and Vidian canal communicates with the middle cranial fossa. - Medial: sphenopalatine foramen, which leads with the posterior aspect of the superior meatus of the nasal cavity. - Lateral: the pterygomaxillary fissure, which leads to the infratemporal fossa. - Inferiorly: Great and lesser Pterigopalatine canals, which leads to the oral cavity.(1)(2)(3) Contents: The internal maxillary artery, the V2 of the cranial nerve and the sphenopalatine ganglion are the main structures in the PPF. The maxillary artery (branch of the external carotid artery) arrives in the PPF from the infratemporal fossa along the pterigomaxillary fissure. At this point many different branches arise: Posterior branches: 1- Artery of the foramen rotundum. 2- Artery of the pterygoid canal (Vidian artery) runs posteriorly through the pterygoid canal towards the foramen lacerum. Anterior branches: 1- Posterior superior alveolar artery course along the posterior and lateral walls of the maxillary sinus and runs through the alveolar foramina. 2- Infraorbital artery, runs anteriorly along the roof of the maxillary sinus in the infraorbital canal. 3- The greater palatine artery runs through the greater palatine canal. 4- Sphenopalatine artery runs through the sphenopalatine canal toward to the nasal fossa.(4) The second branch of the trigeminal nerve arise in the Gasser ganglion, then runs along the inferior part of the cavernous sinus and came out of the cranial fossa through the foramen rotundum arriving to the PPF. In the PPF gives off several branches, including zygomatic, pterygopalatine and superior alveolar nerves. The main trunk of branch V2 continues anteriorly on the infraorbital nerve in the inferior orbital fissure. The greater superficial petrosal nerve (GSPN) branch of the facial nerve arise at the geniculate ganglion, it courses anteromedially along the anterior margin of the temporal bones, first in the foramen...
lacerum and then in the Vidian canal, where the GSPN joins the profound petrosal nerve forming the Pterygoid nerve which continues to the PPF. Where the Pterygoid nerve break into the pterygopalatine ganglion, then continue with many branches in direction to the palate, nasal cavity, nasopharynx and the lacrimal gland. The truss of structures that pass for the PPF, this turn it into a strategic space, which can be affected in many pathologic conditions, consequently, the detailed knowledge off PPF anatomy and its recognition for the techniques of image is necessary in the study of the deep structures of the face.

**Differential Diagnosis List:** Pterygopalatine fossa anatomy

**Final Diagnosis:** Pterygopalatine fossa anatomy

**References:**


Osborn AG.

External carotid artery.
in Osborn AG (ed) Introduction to the cerebral angiography.

Figure 1

Description: 1-Pterygopalatine fossa 2-Maxillary bone 3-Pterygoid apophysis 4-Great wing of the sphenoid 5-Zygomatic arc 6-Temporal bone 7-External auditory canal 8-Palatine bone 9-Ovale foramen

Origin:
**Figure 2**

*Description:* 1-Pterygopalatine fossa. 2-Maxillary sinus. 3-Great wing of sphenoid. 4-Inferior orbital fissure. 5-Foramen rotundum. 6-Pterygomaxillary fissure. 7-Palatine bone. 8-Vidian canal. 9-Foramen lacerum. 10-Carotid canal. 11-Foramen ovale. 12-Foramen of Vesalius. 13-Anterior genu of the facial canal. 14-Shenopalatine foramen. 15-Internal auditory canal. 16-Sphenoidal sinus. 17-Greater palatine canal. 18-Sphenoidal sinus. 19-Pterygoid apophysis. 20-Optic canal. 21-Superior orbital fissure. 22-Inferior orbital fissure. 23-Maxillary artery. 24-Mandible condyle. 25-Coronoid apophysis. 26-Frontal sinus. 27-Orbita. 28-Lesser palatine canal. 29-Right pterygoid apophysis (pneumatized).

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Origin:
Figure 3

Description: 1-Pterygopalatine fossa. 2-Maxillary sinus. 3-Great wing of sphenoid. 4-Inferior orbital fissure. 5-Foramen rotundum. 6-Pterygomaxillary fissure. 7-Palatine bone. 8-Vidian canal. 9-Foramen lacerum. 10-Carotid canal. 11-Foramen ovale. 12-Foramen of Vesalius. 13-Anterior genu of the facial canal. 14-Shenopalatine foramen. 15-Internal auditory conduct. 16-Sphenoidal sinus. 17-Greater palatine canal. 18-Sphenoidal sinus. 19-Pterygoid apophysis. 20-Optic canal. 21-Superior orbital fissure. 22-Inferior orbital fissure. 23-Maxillary artery. 24-Mandible condyle. 25-Coronoid apophysis. 26-Frontal sinus. 27-Orbita. 28-Lesser palatine canal. 29-Right pterygoid apophysis (pneumatized).

Origin:
Description: 17-Greater palatine canal. Origin:

Description: 28-Lesser palatine canal. Origin:
Figure 4

Description: 1-Pterygopalatine fossa. 2-Maxillary sinus. 23-Maxillary artery. 24-Mandible condyle. 25-Coronoid apophysis. 30-Right pterygoid apophysis (pneumatized) 

Origin:
Description: 1- Pterygopalatine fossa 2- Foramen rotundum 3- Vidian canal 4- Sphenoidal sinus 5- Apophysis pterygoid 6- Medial pterygoid muscle. 7- Lateral pterygoid muscle. 8- Vomer. 9- Internal carotid 10- Meckel cavum. 11- Maxillary sinus 12- Maxillary artery Origin:
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