THE PALATOVOVAGINAL CANAL

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Why?

- It is rarely mentioned in the medical literature and is even omitted in articles and textbook chapters describing the anatomy of the pterygopalatine fossa.

- Also a group of researchers concluded that the palatovaginal canal cannot be visualized because of its small size, and some describes it as duplication of vidian canal.
**Importance:**

- Major pathway for spread of malignant, tumors and infections.
- Could be cause of epistaxis.
- Landmark in base of skull surgery.
- Pharyngeal artery used for flap.
- Not to be mistaken with vidian.
Introduction:

- The palatovaginal canal (PVC) is a short bone tunnel that extends from the pterygopalatine fossa to the roof of the pharynx.
- PVC is found inferomedially on the posterior wall of the pterygopalatine fossa, in the roof of the nasopharynx.
PVC is formed by the application of:
- The sphenoid process of the palatine bone.
- The vaginal process of the sphenoid bone. (ant inf, med wall of sphenoid).
Fig. 1.30. Right palatine bone (Viewed from behind).
Since the palatine bone does not articulate with the vaginal process of the sphenoid bone, Pinheiro-Neto et al, in their anatomical study, suggested that the term palatovaginal is a misnomer and the canal containing the pharyngeal artery should be named *palatosphenoidal canal*. 
The canal transmits:

- The palatovaginal artery.

The pharyngeal nerve:

- from the pterygopalatine ganglion to the pharyngeal orifice of the auditory tube, to supply the mucosa of nasopharynx behind the auditory tube.
The pterygovaginal artery (pharyngeal artery), is a posterior branch of the internal maxillary artery, in PPF.

In some variation: arising early from the internal maxillary artery lateral to the pterygomaxillary fissure then coursed medially across the posterior wall of the pterygopalatine fossa and posterior to the plane of the nerves.

In fact, the PA can be of considerable size, equal to that of the SPA.
Once in the canal, the artery courses posteriorly and emerges from the PVC in the nasopharynx to enter in an area of rich anastomoses in the region of the Eustachian tube.
Although rare, the pharyngeal artery may be an anastomotic artery between the distal IMA and the ascending pharyngeal artery (APhA).

This anastomosis takes place in the region of the Eustachian tube, where both the (PhA) and (APhA) supply, and the blood is carried in a retrograde fashion from the APhA to the IMA through the PhA.

Even rarer with the accessory meningeal artery, or the (APhA).
The average diameter of the palatovaginal canals was 0.9 mm (range, 0.5–2.5 mm)
How can be identified on CT scan?
Large PVC:
2 case reports:


The posterior groove as a landmark for location of the palatovaginal canal in axial computed tomography.

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\textbf{Abstract}

\textbf{PURPOSE:} To investigate use of posterior groove of palatovaginal (PV) canal as an anatomic landmark in determining the location of PV canal in axial computed tomography (CT) images of pterygopalatine fossa (PPF).

\textbf{METHODS:} A total of 20 skull specimens were examined in this analysis. Each skull was scanned by CT with and without a probe inserted through PV canal to measure the anatomic structures. CT images of 70 patients were used for comparing the rate of correct location of PV canal between the conventional method (using the vidian canal as a landmark) and the method of using the posterior groove as a landmark. Two skulls were dissected using endoscopy to further reveal the advantage of the posterior groove as a landmark.

\textbf{RESULTS:} In all 20 skull specimens, the groove showed the morphology of a narrow groove and elliptical fossa in 24 and 16 sides, respectively. In CT images, the angle from PV canal and the posterior groove to the hard palate was 53.14° ± 5.48° and 20.93° ± 6.28°, respectively, which was significantly different (P ≤ 0.05). The rate of correct location of PV canal was statistically significantly higher with the method of posterior groove as a landmark than the conventional method (70.7 vs 49.3 %, P < 0.05). The endoscopic anatomy of the posterior groove and its use in locating the PV canal were described.

\textbf{CONCLUSION:} The posterior groove can be used as an anatomic landmark in correctly locating PV canal in the axial CT image of the PPF.

\textbf{KEYWORDS:} Palatovaginal canal; Posterior groove; Pterygopalatine fossa; Vidian canal; Vomerovaginal canal
Using the posterior groove, the PV canal was correctly identified in 99 sides (70.7 %).

Using the conventional method, the PV canal was correctly identified in 69 sides (49.3 %).
Endoscopic Identification of the Pharyngeal (Palatovaginal) Canal: An Overlooked Area

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Abstract
Objective The pharyngeal or palatovaginal canal (PC) is a small tunnel that lies between the sphenoid process of the palatine bone and the vaginal process of the sphenoid bone. Currently, little endoscopic information is available about this region.

Design and Setting Endoscopic endonasal cadaveric study.

Subjects and Methods Twenty sides in 10 adult cadaver heads were studied endoscopically. The sphenopalatine foramen (SPF) and the adjacent pterygopalatine fossa were exposed. Dissection medial to the vidian canal demonstrated a tunnel that runs posteromedially in the sphenoid floor. Endoscopic data were documented. Additionally, canal measurements were obtained on 20 sides from coronal CT scans of paranasal sinuses.

Keywords pharyngeal canal, palatovaginal canal, pharyngeal artery, pterygopalatine fossa, sphenopalatine foramen, vidian canal, epistaxis, endoscopic sinus surgery

Results The PC was identifiable in 85% of the sides, although thickness of its bony wall was variable. The endoscopic relationship of the canal and its artery with other landmarks is described. Radiologically, the diameter of the PC averaged 1.7 mm, and the mean distance from the PC to the vidian canal was 3.78 mm.

Conclusion The current study provides a novel endoscopic identification of an overlooked canal. The pharyngeal artery can be a source of bleeding during extended endoscopic procedures. The PC itself could be a place for finger-like projections of anatomically related neoplasms.
The PA was found to arise from the proximal portion of the SPA (or the distal portion of internal maxillary artery) within the pterygopalatine fossa.

Inferomedial wall thickness in quite variable.

In endoscopic procedures that involve drilling of the sphenoid floor, the PA was identified as a source of intraoperative bleeding.
Endoscopic anatomy of the palatovaginal canal (palatosphenoidal canal): a landmark for dissection of the vidian nerve during endonasal transpterygoid approaches.

Pinheiro-Neto CD¹, Fernandez-Miranda JC, Rivera-Serrano CM, Paluzzi A, Snyderman CH, Gardner PA, Sennes LU

Abstract

OBJECTIVES/HYPOTHESIS: Demonstrate the endoscopic anatomy of the palatovaginal (PV) canal and artery for identification and dissection of the vidian nerve during endoscopic transpterygoid approaches. Evaluate the length of the PV canal and its relation with the vidian nerve. Show that the traditionally known PV canal is a misnomer and should be renamed.

STUDY DESIGN: Experimental study: anatomical and radiological.

METHODS: Dissection of eight cadaveric heads was performed to demonstrate the endoscopic anatomy of the PV canal. Computed tomography scan analysis of 20 patients was used to evaluate the length of the PV canal, the angle formed between this canal and the vidian nerve, and the distance between the vidian canal and the PV canal. Study of 10 dry skull bases was performed to verify the structures involved in the formation of the PV canal.

RESULTS: Anatomic steps and foundations for dissection of the vidian nerve using the PV canal as a landmark were described. The mean length of the PV canal was 7.15 mm. The mean proximal distance between the vidian and the PV canal was 1.95 mm, and the mean distal distance was 4.14 mm. The mean angle between those canals was 48 degrees. The osteology study showed the vaginal process of the sphenoid bone did not contribute to the formation of the PV canal.

CONCLUSIONS: Our anatomic investigations, radiologic studies, and surgical experience demonstrate the important anatomic relationship of the PV canal with the vidian canal and the relevance of the PV canal as a surgical landmark in endoscopic endonasal transpterygoid approaches. Anatomically, PV canal is a misnomer and should be replaced with palatosphenoidal canal.

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