Endoscopic Anatomy Variation of the Medial Pterygopalatine Fossa structures and its surgical applications

Georgy Polev, MD
1 Russian Federal State Scientific-Research ENT Center

INTRODUCTION

Golding-Wood was first to introduce the concept of vidian neurectomy as a method of treatment of chronic sinusitis. Vidian nerve provides the parasympathetic innervation of nasal mucosa, thus transection of this nerve leads to reduction of mucus production and edema of the nasal mucosa. It is shown that vidian neurectomy leads to significant histologic changes in nasal mucosa, such as mast cells depletion, reduction of stromal edema and reduction of mucosal gland acini content. One of possible vidian neurectomy complications is the V2 neuralgia due to thermal damage to the maxillary nerve during vidian nerve stamp cautery. This is explained by the close proximity between vidian canal orifice and foramen rotundum, which is also individually variable. There are different approaches to the vidian nerve described in literature: transantral, transnasal, transpalatal and transsphenoidal, transsphenoidal being the most novel and less traumatic, but not always possible due to anatomical circumstances. The disadvantage of the transantral approach is the need to face the sphenopalatine artery branches, which could lead to postoperative bleeding.

MATERIALS AND METHODS

20 non-injected fresh cadaveric specimens were dissected bilaterally via the endonasal endoscopic approach. 40 medial PPF regions are described. The distances between the vidian canal (VC) and palatovaginal canal (PVC) orifices are measured and the mean length of the PVC is estimated. Also we measured the distances between VC orifice and foramen rotundum (FR) to estimate the risk of maxillary nerve lesion during the transnasal vidian neurectomy.

RESULTS

The mean distance between vidian canal (VC) and palatovaginal canal (PVC) was 3.0 mm (mean deviation 1.1 mm) (Fig. 3). To estimate the length of the palatovaginal canal the bone of the palatine bone sphenoid process was removed. Mean length of the PVC was 6.4 mm (standard deviation 1.4 mm). The distance between VC and foramen rotundum varied from 1.4 to 7.6 mm, the mean distance was 4.6 mm (Fig. 1, 2).

DISCUSSION

With the development of endoscopic sinus and skull base surgery there is a growing interest to the variations of the medial pterygopalatine fossa (PPF) structures. Vidian nerve has been shown as an important anatomical landmark in skull base surgery, especially in transsigmoid approach. At the same time newly described techniques of vidian neurectomy show the method being an alternative and effective way to control such symptoms as rhinorrhea and nasal congestion in patients with chronic rhinitis. Thus further investigation of anatomical variability of the medial PPF region along with the development of new approaches to the vidian canal orifice is essential.

CONCLUSIONS

Based upon this study, modified "retrograde" approach to the VC orifice from the choanal arch behind the middle turbinate tail via the palatine bone sphenoid process along the PVC is proposed. The peculiarity of this approach is the preservation of the PPF contents and sphenopalatine neurovascular bundle, which are moved aside laterally during the dissection. Further investigation is needed to establish the feasibility of this approach in vivo.

REFERENCES