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LETTER TO THE EDITOR

A few points regarding recent studies on stapedius muscle anatomy

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Dear Sir,

It was happily surprising to encounter the article "Evaluation of the stapedial tendon growth dynamic in human fetuses" published by Beger et al. [2] lately in *Surgical and Radiologic Anatomy*. We hope it may be a proof of ongoing investigations in this largely neglected topic.

This article brings a new light to the matter of development of stapedius muscle tendon as professional literature lacks precise data in this field. As the authors have stated in their publication, these information may be of use in further research, either anatomic or otosurgical.

The same goal was our aim when we have conducted imaging study of 16 fresh adult temporal bones achieving exact measurements of stapedius muscle. In the next studies, we encourage that the name 'stapedius muscle complex' should be used when referring to the belly and tendon of stapedius muscle together. The data obtained by Beger et al. [2] (tendon length: 1.27 ± 0.3 mm, width: 0.45 ± 0.08 mm) are comparable to our data gathered with use of microCT (voxel dimensions $0.07 \times 0.07 \times 0.07$ mm; tendon length: 1.29 ± 0.5 mm, width: 0.35 ± 0.12 mm) [5]. Comparing the length of stapedial tendon in both fetal and adult group it may seem that the distance between the pyramidal eminence and the neck of stapes remains constant throughout life and probably reflects the dimensions of the whole stapedius muscle complex (Fig. 1a). This finding brings a new insight into the topic of spatial relations of the tympanic cavity, what may be of concern for further topographic studies and has already been pointed in a recent article by Baklaci et al. [1].

We also encourage the authors to share the results of stapedius muscle belly description, as to our knowledge there is only one article which provides such a classification. Fang et al. [3] have identified five subtypes of stapedius muscle—the typical single canal was labeled as 'general type'. In our material, we could not confirm the presence of the given variations besides a typical single canal located medially to the mastoid portion of facial canal. What is more, the variations of the stapedius tendon that have been reported by a few authors seem to be the developmental problem rarely seen as a cause of hearing disorders in adults.

Although modern stapes surgery is relatively young discipline, it is still under ongoing improvement. As the area of the oval window-stapes junction was no go zone for many years, it has changed after Shea [4] introduced new method of otosclerosis management called stapedectomy. Nowadays, this procedure with slight modifications (stapedotomy instead of stapedectomy) may be performed with assistance of CO_2 laser. The detailed morphometry of stapedius muscle complex and its relationship with facial canal may be of use when approaching the problem of overhanging facial nerve (Fig. 1b).

Considering these facts, there is need for further studies of stapedius muscle complex development and imaging, especially on larger groups with use of either microCT or classic anatomic dissection techniques.

Yours sincerely,
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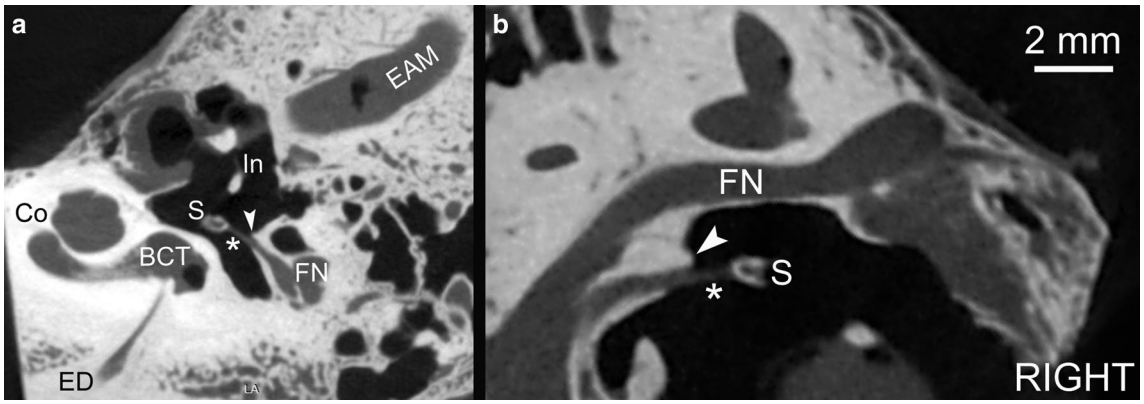

Fig. 1 **a** Topographic relationships of right stapedius muscle complex and adjacent structures; **b** the anatomical relation of the stapedius muscle and facial nerve; *asterisk* stapedial tendon, *white arrowhead* pyramidal eminence, *Co* cochlea, *BCT* basal cochlear turn, *ED* endolymphatic duct, *EAM* external acoustic meatus, *FN* facial nerve, *In* long crus of incus, *S* neck of stapes

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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