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Case Report / Olgu Sunumu

A rare anatomic variation of the chorda tympani

Korda timpaninin nadir bir anatomik varyasyonu

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The chorda tympani is an important anatomical structure in the tympanic cavity. It may have some anatomic variations. Its anatomic variations are of interest in certain otologic surgical procedures. There are limited reports in the literature about the variations of the chorda tympani. A 49-year-old female patient was refered to our clinic because of conductive hearing loss and tympanic membran perforation in the right ear. During the tympanoplasty surgery, when the tympanomastoid flap was elevated, the chorda tympani was seen between flap and bone as a non-described anatomic variation. This article presents a non-described anatomic variation of the chorda tympani.

Key Words: Anatomy; chorda tympani; variation.

Korda timpani, timpanik kavitenin önemli anatomik yapılarından biridir. Bazı anatomik varyasyonları olabilir. Bu anatomik varyasyonlar belirli otolojik cerrahi işlemlerde önem taşımaktadır. Literatürde korda timpaninin anatomik varyasyonlarıyla ilgili sınırlı sayıda yayın bulunmaktadır. Kırk dokuz yaşında kadın hasta sağ kulakta iletim tipi işitme kaybı ve kulak zarı perforasyonu nedeniyle kliniğimize sevk edildi. Timpanoplasti ameliyatı sırasında timpanomastoid flep eleve edildiği sırada, daha önce tanımlanmamış bir anatomik varyasyon olarak korda timpaninin flep ile kemik arasında seyrettiği görüldü. Bu yazıda korda timpaninin tanımlanmamış bir anatomik varyasyonu sunuldu.

Anahtar Sözcükler: Anatomi; korda timpani; varyasyon.

The chorda tympani originates from the facial nerve 5 mm above the stylomastoid foramen and runs anterosuperiorly through a bony canal to enter the tympanic cavity via the posterior canaliculus. It crosses medially toward the upper part of the handle of the malleus to the anterior wall, where it enters the anterior canaliculus. It exits the skull at the petrotympanic fissure and joins the lingual nerve. It carries taste fibers for the anterior two-thirds of the tongue and efferent preganglionic parasympathetic fibers, which supply the submandibular and sublingual salivary glands.[1,2] We report an abnormal course of the chorda tympani nerve.

CASE REPORT

A 49-year-old female consulted at the otorhinolaryngology department of the İnönü University Medical Faculty because of hearing loss of several years. On examination, there was a large perforation of the right tympanic membrane with 30 dB hearing loss. Chronic otitis media surgery was performed. When the tympanomastoid flap was elevated from the posterior wall of the external ear canal, the chorda tympani was seen between flap and bone (Figure 1). It emerged from the inferior part of the mastoid bone approximately 6 mm lateral to the annulus of the tympanic membrane without a bony canaliculus and lay anteroinferior

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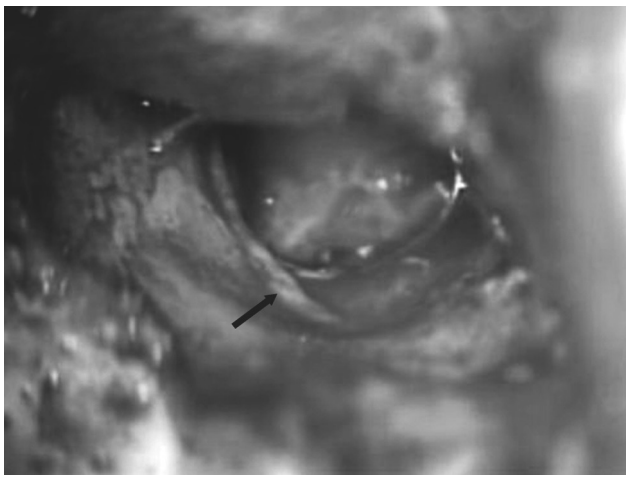

Figure 1. *Chorda tympani is seen between flap and bone of the right external ear canal.*

to the incus as it entered the tympanic cavity. It was diligently preserved and the surgical procedure was successfully completed.

DISCUSSION

The facial nerve is a most important structure both in middle ear and inner ear surgery. In middle ear surgery the horizontal (tympanic) and vertical (mastoid) parts of the nerve are always related to the surgical zone, especially the vertical part. The chorda tympani is a branch of the facial nerve that originates from its mastoid segment an average of 5 mm above the stylomastoid foramen.[3-5] In its normal course, the chorda tympani upon leaving the facial nerve passes from the facial canal to the middle ear through the tympanic canaliculus. It emerges from the canaliculus at the chordae posterius.[3] In crossing the tympanic cavity, the chorda, invested by mucous membrane, passes between the long crus of the incus and the manubrium of the malleus.[3] The chorda tympani is encountered on elevating the annulus of the tympanic membrane. The chorda tympani exits the tympanic cavity through the petrotympanic fissure, appears in the mandibular fossa and than joins to lingual nerve.[6]

The chorda tympani is an important anatomical structure in the tympanic cavity and there are limited reports in the literature about variations in its anatomy. Its anatomic variations are of interest in otologic surgical procedures.

Even though the chorda tympani originates from the facial nerve average an 5 mm above the stylomastoid foramen, this may vary from 1.2 to 10.9 mm.[5] According to Kulczyński and Woźniak's[7] study performed on 78 adult temporal bones, in most cases the chorda tympani originated from the facial nerve 3.9 to 6.7 mm above the stylomastoid foramen. It may also originate at the level of the lateral semicircular canal or geniculate ganglion.[7] Kullman et al.[5] reported a rare extra-temporal origin of the chorda with its own separate bony canaliculus parallel to the facial canal. Kulczyński and Woźniak[7] reported that it originated from the facial nerve 0.8 to 1.2 mms below the stylomastoid foramen in four of 78 cases.

The chorda tympani may be three or four times larger than its normal diameter and may be divided into two parts.[3,8] Another variation as a rare middle ear malformation, the chorda tympani may join the facial nerve in its tympanic segment at the cochleariform process.[8]

In our case the chorda tympani was found in a previously undescribed anatomic variation. It was found between the tympanomastoid flap and mastoid bone and emerging from the inferior part of the mastoid bone approximately 6 mm lateral to the annulus of the tympanic membrane without a bony canaliculus and lying anterosuperiorly to the incus as it entered the tympanic cavity. This rare anatomic variation shows us that we should be careful due to the possibility of abnormal chorda tympani during tympanomastoid flap elevation.

REFERENCES

1. Clark MP, O'Malley S. Chorda tympani nerve function after middle ear surgery. Otol Neurotol 2007;28:335-40.
2. Berkowitz BK. External and middle ear. In: Standring S, editor. Gray's anatomy: the anatomical basis of clinical practice. 39th ed. Edinburgh: Elsevier Churchill Livingstone; 2005. p. 660-1.
3. Anson BJ, Donaldson JA, Shilling BB. Surgical anatomy of the chorda tympani. Ann Otol Rhinol Laryngol 1972;81:616-31.
4. Muren C, Wadin K, Wilbrand HF. Anatomic variations of the chorda tympani canal. Acta Otolaryngol 1990;110:262-5.
5. Kullman GL, Dyck PJ, Cody DT. Anatomy of the mastoid portion of the facial nerve. Arch Otolaryngol 1971;93:29-33.
6. Tóth M, Moser G, Patonay L, Oláh I. Development of the anterior chordal canal. Ann Anat 2006;188:7-11.
7. Kulczyński B, Woźniak W. Variation of the origin and course of the chorda tympani. Folia Morphol (Warsz) 1978;37:237-41.
8. Nager GT, Proctor B. Anatomic variations and anomalies involving the facial canal. Otolaryngol Clin North Am 1991;24:531-53.