

„OMEGA SHAPE“ ANOMALY OF THE TYMPANIC SEGMENT OF THE FACIAL NERVE – A CASE REPORT

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Dehiscence of the bony canal of the facial nerve is relatively common in the human adult. The highest incidence occurs in the tympanic segment, near the region of the oval window. However, extreme dehiscence and protrusion of the facial nerve are rare. We present a case of a 34-year-old man suffering intermittent left-sided middle ear discharge for several years. During the operation, we found the trunk of the facial nerve which looked like Greek alphabet letter "omega". It protruded from the fallopian canal within the middle ear space between the first and second genu. The mucosa which covered the whole protruded facial nerve seemed healthy. The medial part of the cavum tympani was not affected. In this report, we described an extreme protrusion of the facial nerve inside the space of the cavum tympani. The dehiscence of the Fallopian canal was not associated with inflammation and bone resorption. *Acta Medica Medianae* 2012;51(3):38-40.

Key words: facial nerve, Fallopian canal, dehiscence, protrusion, "omega shape" anomaly

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Introduction

Previous studies have described many different anomalies of the intratemporal course of the facial nerve. These anomalies most often exist in the tympanic segment as abnormal route over or under the oval window rather than branching of this part of the facial nerve (1-5). Incidences of these anomalies were higher in the cases of congenital middle ear malformations (1-3). With the evolution of microsurgical techniques in the temporal bone surgery, an increased awareness has arisen of abnormalities and variations within the tympanic cavity, of the ossicular chain and of the vessels which course through the middle ear or lie within the walls. Dehiscence of the facial canal, occurring as an anatomical variant, is one such entity (8).

Case report

A 34-year-old man suffering from intermittent left-sided middle ear discharge for several years. He was presented in the ENT department

of the Military Medical Academy, Belgrade for surgical treatment. Sixteen years before, he was treated for inflammatory polyp of the left external auditory canal. The last clinical examination showed a perforation of the posterior part and a small polyp which was located at the posterior and superior margin of the tympanic membrane. CT scan of the temporal bone showed good pneumatisation of the right mastoid bone and poor pneumatisation on the left side. During the operation, we have removed epitympanic mass involving the whole attic space and spreading to the mesotympanum where it destroyed the long process of the incus. On the histo-pathological examination, this lesion was diagnosed as cholesteatoma. After the removal of this lesion, we saw the trunk of the facial nerve which looked like Greek alphabet letter "omega". It protruded from the Fallopian canal within the middle ear space between the first and second genu (Figure 1). The vertical (descendent) segment of the facial nerve seemed normal. The mucosa which covered the whole protruded facial nerve seemed healthy. The medial part of the cavum tympani was not affected. The surgery finished as a first act of tympanoplasty. Two days after the operation, the patient had a transient facial nerve paresis with complete recovery seven days after the start of the corticosteroid and antibiotic therapy.

Discussion

The good knowledge of anatomy of the temporal bone and anomalies of the facial nerve

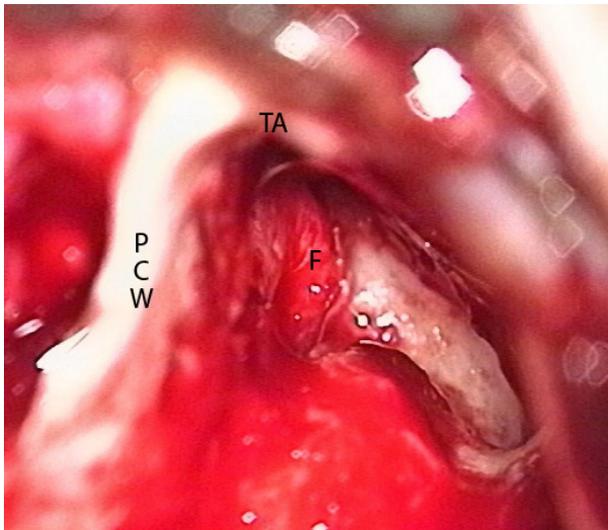


Figure 1. Protrusion of the facial nerve between the first and second genu. The mucosa which covered the facial nerve seemed healthy. Abbreviations: F-facial nerve; TA-tegmen antri; PCW-posterior canal wall

is very important in the middle ear surgery. Abnormal route of the facial nerve can always surprise the surgeon despite his good theoretical and practical knowledge. In the cases of presence of cholesteatoma, polyps and granulations, the surgeon's orientation can be more difficult because the structure of the middle ear and bone canal of the facial nerve can be destroyed. In some cases, the trunk of the facial nerve affects the space of the cavum tympani and some authors describe the proliferation of Schwann's cells and growth of the benign schwannoma. All this facts can make the lesions of the facial nerve more possible during the surgery.

Dehiscence of the bony facial canal is comparatively common in the human adult. The

highest incidence occurs in the tympanic segment of the facial nerve near the region of the oval window (2,3,6). The ossification of the facial canal starts in the fetal life, although the geniculate part and tympanic part are not completed until one year after birth (6). Some portions of the Fallopian canal may fail to ossify during the process of ossification with the resultant dehiscence of the bone covering the facial nerve. The Fallopian canal dehiscences are not congenital anomalies, but variations of normal developmental anatomical processes (7). A disease process in the temporal bone can also secondarily cause resorption of bone covering the facial nerve (6). The dehiscence rate in the bone covering the facial nerve is highest with cholesteatoma, followed by adhesive otitis media, chronic otitis media and tympanosclerosis (6). There are numerous reports in the literature in which the dehiscence rates vary greatly. Baxter (8) found dehiscences of the Fallopian canal in 294 (55 per cent) of 535 temporal bones. According to the results of the study performed by Bayazit et al. (6), the dehiscence of the facial canal was encountered in 18 (8.9 per cent) of 202 patients.

We presented a case of an extreme protrusion of the facial nerve inside the space of the cavum tympani. In our patient, the dehiscence of the Fallopian canal and facial nerve protrusion were not associated with inflammation and bone resorption. This case shows that surgeon must always keep in mind a possible anomaly of the facial nerve route and also know that iatrogenic facial nerve paralysis is the biggest handicap for the patient. Unfortunately, iatrogenic facial nerve lesion still happens and sometimes is impossible to avoid.

References

1. Fowler E. Variations in temporal bone course of the facial nerve. *Laryngoscope* 1961;71:937-946. [[CrossRef](#)] [[PubMed](#)]
2. Djerić D, Savić D. Endotemporal branching of the facial nerve. *Acta Anat* 1987;129:10-11. [[CrossRef](#)]
3. Savić D, Djerić D. Anatomic variations and anomalies in the tympanic and mastoid part of the facial canal of importance in surgery. *Srp Arh Celok Lek* 1984;112:657-672. [[PubMed](#)]
4. Yadav SPS, Ranga A, Sirohiwal BL, Chanda R. Surgical anatomy of tympano-mastoid segment of facial nerve. *Indian J Otolaryngol Head Neck Surg* 2006;58:27-30.
5. Kharat RD, Golhar SV, Patil CY. Study of intratemporal course of facial nerve and its variations-25 temporal bones dissection. *Indian J Otolaryngol Head Neck Surg* 2009;61:39-42. [[CrossRef](#)]
6. Bayazit YA, Ozer E, Kanlikama M. Gross dehiscence of the bone covering the facial nerve in the light of otological surgery. *J Laryngol Otol* 2002;116:800-803. [[CrossRef](#)] [[PubMed](#)]
7. Spector JG, Ge X. Ossification patterns of the tympanic facial canal in the human fetus and neonate. *Laryngoscope* 1993;103:1052-1065. [[CrossRef](#)] [[PubMed](#)]
8. Baxter A. Dehiscence of the fallopian canal. An anatomical study. *J Laryngol Otol* 1971;85:587-594. [[CrossRef](#)] [[PubMed](#)]

PROTRUZIJA TIMPANALNOG SEGMENTA FACIJALNOG ŽIVCA U OBLIKU GRČKOG SLOVA OMEGA - PRIKAZ SLUČAJA

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Dehiscencija koštanog kanala facijalnog živca je relativno česta među odraslim ljudima. Incidencija je najveća u timpanalnom segmentu, neposredno uz ovalno okno. Međutim, ekstremna protruzija stabla ovog nerva je retka pojava. Predstavljamo slučaj tridesetčetvorogodišnjeg muškarca sa povremenom levostranom sekrecijom iz srednjeg uva tokom nekoliko godina. Tokom operacije smo našli da stablo facijalnog nerva protrudira ka šupljini srednjeg uva u obliku grčkog slova omega. Sluzokoža koja ga je prekrivala izgledala je zdravo. Medijalni zid bubne duplje nije bio oštećen. U ovom članku smo prikazali ekstremnu protruziju facijalnog živca ka unutrašnjosti bubne duplje. Dehiscencija Falopijevog kanala nije bila udružena sa zapaljenjem ili koštanom resorpcijom. *Acta Medica Medianae* 2012;51(3):38-40.

Ključne reči: *facijalni živac; Falopijev kanal; dehiscencija; protruzija; anomalija „omega“ oblika*