Management strategies of glomus jugular tumor

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Learning Objectives: Facial nerve management in the surgery Internal carotid artery management in the surgery Intracranial vascular bypass

As for the most challenging surgery of the lateral skull base, glomus jugular tumor resection is now safely controlled and managed. In this study we focused on the strategies of facial nerve and internal carotid artery management during glomus jugular tumor surgery, especially for the C and D stage tumor in which the internal carotid artery was severely involved and could not be easily separated. Furthermore we tried the extra-intracranial vascular bypass when the internal carotid artery could not be saved in the surgery, by which the mortality and intracranial complications were greatly reduced.

Optotensometry – Development of an optic method for measuring tubal function by tympanic membrane movement in a middle ear model

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Learning Objectives:

Introduction: The amount of pressure in the middle ear depends mainly on the function of the Eustachian tube. Currently there are no continuous recording techniques measuring Eustachian tube function in clinical context and under physiological conditions over extended periods of time.

Purpose: In this paper we investigate the suitability of an active optic triangulation method on the basis of a projected laser-point-pattern in measuring tympanic membrane movement during pressure variations in a middle ear model.

Material and Methods: For projection we used a green semiconductor laser with an output of 1 mW and a diffractive optical element (DOE). As our measured object we used purple latex-foil (Kimberley-Clark®), fixed airtight on the cut-off end of a 2 ml syringe-tube. The movement of the foils was measured by an active optic triangulation method. To simulate pathological variations of the tympanic membrane we prepared the latex-foils in specific ways. One foil was perforated and then covered again (simulating tympanic membrane perforation), another one was partly strengthened by sticking a piece of thick, hard paper to it from the inside (simulating calcification).

Results: The test-setup, as well as the appliance of pressure-changes worked fine and measurement of foil movement in all the modified foil surfaces was possible. This shows that it is possible to record foil-movement with this system even in tympanic membranes with pathological variations. Recording tympanic membrane movements in the temporal bone model need a different set up of the measuring system.

Conclusions: In the course of this study we were able to show that it is possible to assess and record foil movement and tympanic membrane movements using a system of optic triangulation and to simulate different tympanic membrane pathologies. This could be used both in ENT medicine, as well as in aviation and diving medicine.