**Ventilation and Gas exchange in middle ear (R716)**

**ID: 716.2**

**The role of the mastoid in middle ear pressure regulation**

Presenting Author: Michael Gaithede

Michael Gaithede

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*Learning Objectives*: Recent studies on the mastoid structure and function has pointed to an important role in middle ear physiology.

The normal function of the middle ear depends on regulation of its pressure relative to ambient pressure, and traditionally gas exchange between the middle ear mucosa and gas pocket has been focused on together with the function of the Eustachian tube. However, recent studies have also pointed to a role of the mastoid mucosa, where volumetric changes affected by changes in the blood vessels congestion may influence the pressure.

Physiological experiments have revealed two distinct patterns for pressure changes in the middle ear, where stepwise fast pressure equilibrations towards ambient pressure represent Eustachian tube openings, and where gradual slow pressure changes in both negative and positive directions represent other mechanisms. The congestion of the mucosa is likely to reflect these gradual changes, and loose connective tissue with abundant blood vessels favors such function together with the high surface area-to-volume ratio of the mastoid.

Recently micro-CT-scanning of temporal bones have revealed a high number of retroauricular microchannels, which represents a rich blood supply to the mastoid, as well as they have shown higher surface areas than previous CT studies. These observations point to a specific function of the mastoid structure. In addition, retroauricular injection of adrenaline has demonstrated a decrease the middle ear pressure, which can be explained by a direct drug transfer to the mastoid via the microchannels, and subsequently a vasoconstriction and shrinkage of the mucosa.

The mastoid mucosa has no cilia and goblet cells resulting in a relative susceptibility to infection in comparison with the tympanum. Repeated or chronic infections often lead to fibrosis, which may hamper the mucosa function. If the overall pressure regulation is represented by the complimentary actions of both the Eustachian tube and the mastoid mucosa, then an impaired function of both factors should be considered in the formation of middle ear underpressure.

**Hearing Reconstruction: How I do it (2) (V717)**

**ID: 717.1**

**Ossiculoplasty techniques**

Presenting Author: Christopher Aldren

Christopher Aldren

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*Learning Objectives*: The video will show the use of the Dresden Partial Clip prosthesis, the KURZ Variac TORP with omega connector and the malleus replacement prosthesis. Results will be presented with surgical tips and time for questions.

The video session will demonstrate the use of various prostheses that the author uses regularly. This includes the use of the Dresden partial clip prosthesis for use in the...