Subtotal petrosectomy is the basic procedure in skull base surgery. It involves complete exenteration of all air cells of the temporal bone (middle ear and mastoid). It includes the following air tracts: retrosigmoid, retrofacial, antral, retrolabyrinthine, supralabyrinthine, infralabyrinthine, subpratubal and peritubal carotid cells. Only a few cells in the petrous apex left behind. The otic capsule is either removed or left behind.

In advanced cholesteatoma cases, where numerous previous middle ear procedures could not reassure dry ear and when there is no possibility of hearing reconstruction and one whishes to attain a dry safe ear this procedure has proved to be the solution. Depending on the bone conduction result the procedure can be combined with the simultaneous application of vibrant soundbridge in the round window or BAHA/Bonbridge implants. During the past years we carried out subtotal petrosectomies in 4 cases due to advanced cholesteatomas. The steps of the procedure will be demonstrated and conclusions will be drowned based on our experiences. Further rare indications of this useful procedure will be briefly discussed too.

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New trends in cholesteatoma management (N733)

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Bony obliteration technique (BOT) surgery in paediatric cholesteatoma cases

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Learning Objectives: bony obliteration technique in pediatric aquired cholesteatoma - results and discussionon advantageges

Paediatric cholesteatoma is aggressive, destructive disease to all surrounding tissues. It has high recurrent tendency even after careful removal. High complication rate, severe, sometimes life-threatening complications can occur. Hearing deterioration is characteristic. Main goals of therapy are the following:

- complete eradication of the disease (no residual disease)
- prevention of recurrent disease, prevention complications
- improvement of the hygienic status of the ear
- preservation or improvement of hearing

Formerly in childhood mostly operations has been done in 2 sessions: one year after the first op – enough time to grow a „spider-egg" to be removed and reconstruction. Today the method of choice is in cases of invagination cholesteatoma the CWU /CWD with BOT, complete removal the matrix and keratin, primary reconstruction of the ear. For control of recurrent/ residual cholesteatoma is done by non-epi DW MRI.

Own results: In the last 5 years we had 53 cholest cases, 4 congenital, 49 epitympanic, and invagination type. In non-obliteration cases (n = 32) the recurrent/residual rate was 37, 5% (12), in obliteration cases (n = 17) this figure was 5, 9% (1). Hearing results in obliteration group was better than in non-obliteration group (average ABG improvement was 5, 3 vs 12, 5 dB).

Conclusion: After a learning curve BOT surgery is the method of choice in paediatric invagination cholesteatoma cases.

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New trends in cholesteatoma management (N733)

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Middle ear gas exchange problems in OME and cholesteatoma

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Learning Objectives:

Background: Gas pressure balance is substantial for normal middle ear (ME) function, however, mechanisms involved in the ME pressure control are still not fully understood. In vivo examination of the ME gas pressure (MEP) regulation is difficult, therefore mathematical models are developed to describe and test hypotheses concerning ME gas exchange function.

Objective: To examine the role of ET function and mastoid pneumatization in MEP balance, and to interpret the possible clinical relevance of the mathematical model predictions.

Method of approach: A mathematical description and MatLab® modeling of the MEP development is presented in the function of different ME volumes (V_{ME}), considering normal and malfunctioning ET. Published data as input values and our 3D CT reconstruction data of healthy and pathological MEs of children are applied.

Results: The model predicted larger MEP fluctuations in $V_{ME} < 3\ ml$ than in $V_{ME} \geq 3\ ml$ considering normal ET function due to the different pressure change rate and pressure buffer effect of the MEs. Substantially larger MEP fluctuations can be expected in a $V_{ME} < 3\ ml$ with malfunctioning ET. Modeling mastoid obliteration predicts similar MEP fluctuations to a $V_{ME} \geq 3\ ml$ resulting from elimination of gas exchange surface. The 5-year follow-up study in children with persistent OME indicates lower ME growth rate as compared to healthy