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Learning Objectives: In order to better understand the inner ear damage in chronic inflammatory ears, the diagnosis and treatment of cholesteatoma induced fistulae is very important. Here in this talk, new staging method of fistulae using a biomarker is introduced and discussed with the previous methods.

Introduction: Previously proposed staging methods of labyrinthine fistulae include; A) the depth or severity of labyrinthine structure involvement (Dornhoffer et al. Palva et al.) B) Diameter of the fistula (Gacek). In this presentation I will introduce a novel method of staging using a biochemical marker.

Methods: CTP (Cochlin tomo-protein, an isoform of Cochlin), perilymph specific protein, is a novel and unique biomarker. We reported a biochemical test for perilymph leakage detecting CTP in middle ear lavage (MEL, lavaging the middle ear cavity using 0.3 ml saline). Recently we could establish a highly reliable ELISA-kit to detect CTP. The Japanese PLF diagnosis criterion is now based on the visual identification of the fistula (not a leakage) and/or detecting CTP. With a help of private clinical test enterprise (SRL inc.) in Japan, CTP test is widely available nationwide, in 170 hospitals.

If there is 2ul of leaked perilymph in the MEL, the test is positive. The diagnostic performance of the test has a high reliability, and the AUC in ROC analysis was greater than 0.90.

Results: We have tested fistulae and suspected fistulae induced by cholesteatoma. If the diameter of the fistula is more than 2 mm, there is more chance to detect CTP.

Conclusions: CTP test is a objective biochemical test to detect PL leakage. The visual judgment of "the depth or severity" of the fistula propped previously is a subjective judgment. The detection of CTP correlated better with the diameter of the fistulae.

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Labyrinthine problem in chronic ear diseases (R864)

ID: 864.4

Panel Discussion: Labyrinthine Problems in Chronic Ear Disease

Presenting Author: **Joel Goebel**

Joel Goebel

Washington University School of Medicine

Learning Objectives: 1. Understand the causes of vestibular dysfunction in chronic ear disease. 2. Appreciate the available vestibular function tests to assess function in the setting of middle ear/mastoid disease. 3. Recognize the causes, symptoms and treatment for labyrinthine fistulae and third window phenomena.

Patients with chronic ear disease and cholesteatoma frequently present with symptoms of dizziness and vertigo that may represent labyrinthine dysfunction in the involved ear or dizziness from unrelated causes. The challenge for the otologist is to recognize specific signs of vestibular involvement on the physical exam and order appropriate vestibular function testing. This panel will explore various examination and laboratory signs of labyrinthine involvement in patients presenting with dizziness. Of particular interest on examination are the presence of the Halmagyi head impulse sign, presence of nystagmus with pressure or air caloric stimulation, and the postural responses on foam posturography. In the laboratory, responses to rotation, centrifugation, evoked responses to sound stimulation and computerized dynamic posturography are of particular utility to diagnose and treat labyrinthine dysfunction in patients with active chronic ear disease.

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Various aspects of cholesteatoma surgery (N865)

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Long-term Results of Troublesome CWD Cavity Reconstruction by Mastoid and Epitympanic Bony Obliteration (CWR-BOT) in Adults

Presenting Author: **Jean-Philippe Vercruysse**

Jean-Philippe Vercruysse[1], Joost van Dinther[2], Bert De Foer[3], Jan Casselman[3], Thomas Somers[2], Andrzej Zarowski[2], Cor Cremers[4], Erwin Offeciers[2]

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Learning Objectives: To present the long-term surgical outcome of the bony mastoid and epitympanic obliteration technique with canal wall reconstruction (CWR-BOT) in adults with an unstable cavity after prior canal wall-down surgery (CWD) for extensive cholesteatoma Study Design: Retrospective study Interventions: Therapeutic Setting: Tertiary referral center Patients: Fifty consecutive adult patients undergoing a CWR-BOT between 1998 and 2009. Main Outcome Measure(s): (A) Recurrence and residual rates of cholesteatoma, (B) postoperative hygienic status of the ear, including postoperative aspect of the tympanic membrane (TM) and external ear canal integrity (EAC), (C) functional outcome and (D) long-term safety issues. Results: (A) The percentage of ears remaining safe without recurrent or residual disease after CWR-BOT was 96% after a mean follow-up time of 101,8 months. Recurrent cholesteatoma occurred in 2% (n = 1) and a residual cholesteatoma was detected in 2% (n = 1) of the cases. (B) A safe dry, and trouble-free graft and self- cleaning EAC was achieved in 94%. (C)

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The postoperative hearing results showed a gain of 1,7 dB on pure-tone average air-conduction (PTA-AC). (D) Non-echo planar diffusion weighted imaging (non-EP DW MRI) documented the residual (n = 1) and recurrent cholesteatoma (n = 1). The 1 and 5 year Imaging follow-up revealed no other recurrent or residual disease. Conclusions: The CWR-BOT is a safe and very effective option for treatment of problematic unstable canal wall-down mastoid cavities, resulting in dry trouble-free ears.

Objective: To present the long-term surgical outcome of the bony mastoid and epitympanic obliteration technique with canal wall reconstruction (CWR-BOT) in adults with an unstable cavity after previous canal wall-down surgery for extensive cholesteatoma.

Study Design: Retrospective study.

Interventions: Therapeutic.

Setting: Tertiary referral center.

Patients: Fifty consecutive adult patients undergoing a CWR-BOT between 1998 and 2009.

Main Outcome Measure(s): (A) Recurrence and residual rates of cholesteatoma, (B) postoperative hygienic status of the ear, including postoperative aspect of the tympanic membrane and external ear canal integrity (EAC), (C) functional outcome, and (D) long-term safety issues.

Results: (A) The percentage of ears remaining safe without recurrent or residual disease after CWR-BOT was 96% after a mean follow-up time of 101.8 months. Recurrent cholesteatoma occurred in 2% (n = 1) and a residual cholesteatoma was detected in 2% (n = 1) of the patients. (B) A safe dry, and trouble-free graft and selfcleaning EAC was achieved in 94%. (C) The postoperative hearing results showed a gain of 1.7 dB on pure-tone average air-conduction. (D) Nonecho planar diffusion-weighted imaging (non-EP DW magnetic resonance imaging) documented the residual (n 1⁄4 1) and recurrent cholesteatoma (n = 1). The 1 and 5-year imaging follow-up revealed no other recurrent or residual disease. Conclusion: The CWR-BOT is a safe and very effective option for treatment of problematic unstable canal wall- down mastoid cavities, resulting in dry trouble-free ears.

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Various aspects of cholesteatoma surgery (N865)

ID: 865.2

For the Dutch-Flemish Otology Society: Patient Satisfaction in Cholesteatoma Surgery: study set-up and preliminary results

Presenting Author: **Joost van Dinther**

Joost van Dinther[1], Stefan Delrue[2], Valerie Droessaert[2], Sophie Camp[2], Robby Vanspauwen[2], Youri Maryn[2], Andrzej Zarowski[2], Thomas Somers[2], Erwin Offeciers[2]

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Learning Objectives: 1. To test the validity and test-retest reliability of the Dutch translation of the Chronic Otitis Media Questionnaire 12 (COMQ-12). 2. To evaluate the quality of life in cholesteatoma patients after treatment with the bony obliteration technique.

Objective: To test the validity and test-retest reliability of the Dutch translation of the Chronic Otitis Media Questionnaire 12. To evaluate the QOL in cholesteatoma patients after treatment with the bony obliteration technique (BOT).

Materials and Methods: 35 individuals with no history of COM received the questionnaire as well as a group of 35 patients with complaints of COM. The healthy participants had to complete the questionnaire twice (control group 1 and control group 2) to estimate the test-retest reliability, and their scores were compared with those of the patients (group 3) to test the validity. The Dutch GBI and COMQ-12 questionnaires were used in a group of cholesteatoma patients after treatment with the BOT.

Results: The overall COMQ-12 score in control group 1 ranged from 0 to 11, in control group 2 from 0 to 6, and in group 3 from 7 to 46. The mean score in group 1 was 1.43, 1.34 in group 2 and 27.80 in group 3. A comparison of the COMQ-12 scores of the two control groups and the patient group showed a significantly higher COMQ-12 score in patients with COM. The diagnostic accuracy was investigated, and a COMQ-12 cut-off score of 8 was found to have a near-perfect sensitivity and specificity in distinguishing between the presence and absence of COM. The single-measures ICCAA was 0.859 (with a 95% confidence interval from 0.738 to 0.926). This clearly exceeded the ICC threshold for acceptable reliability (ICC ≥ 0.75) and therefore confirmed that there was reasonable test-retest reliability when applying the questionnaire to control subjects. The preliminary results of the GBI and COMQ-12 questionnaires in a group of cholesteatoma patients after treatment with the bony obliteration technique will be discussed.

Conclusion: The Dutch version of the COMQ-12 has good validity, diagnostic accuracy, and test-retest reliability. The preliminary QOL results after the BOT in cholesteatoma patients will be discussed.

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Various aspects of cholesteatoma surgery (N865)

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Pediatric cholesteatoma behaviour and the role of bony obliteration in its treatment

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