

## Abstract Selection

**Effects of draining cochlear fluids on stapes displacement in human middle-ear models.** Lord, R. M., Abel, E. W., Wang, Z., Mills, R. P. Department of Mechanical Engineering, University of Dundee, Scotland. *The Journal of the Acoustical Society of America* (2001) December, Vol. 110 (6), pp. 3132–9.

Displacement-frequency characteristics of the stapes footplate were measured in five human temporal bones before and after draining the vestibule. Measurements were made in the 0.125–8 kHz range at 80 dB input sound pressure level, using a laser Doppler vibrometer. A circuit model was also used to predict stapes displacement. The temporal bone studies show a slight decrease in stapes footplate displacement at low frequency, and little change above 1 kHz. The displacement change is not as great as that found by other investigators or predicted by the model. There is little difference in stapes motion in temporal bones when the inner ear is intact or drained.

**Direct evidence of bacterial biofilms in otitis media.** Post, J. C. Department of Pediatric Otolaryngology, Allegheny General Hospital, Pittsburgh, Pennsylvania 15212-4722, USA. cpost@wpahs.org. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2083–94.

**OBJECTIVES/HYPOTHESIS:** Bacteriologic studies of otitis media with effusion (OME) using highly sensitive techniques of molecular biology such as the polymerase chain reaction have demonstrated that traditional culturing methods are inadequate to detect many viable bacteria present in OME. The presence of pathogens attached to the middle-ear mucosa as a bacterial biofilm, rather than as free-floating organisms in a middle-ear effusion, has previously been suggested to explain these observations. The suggestion has been speculative, however, because no visual evidence of such biofilms on middle-ear mucosa has heretofore been collected. The hypotheses motivating the current study were: 1) biofilms of nontypable *Hemophilus influenzae* will form on the middle-ear mucosa of chinchillas in an experimental model of OME, 2) these biofilms will exhibit changes in density or structure over time, and 3) biofilms are also present on tympanostomy tubes in children with refractory post-tympanostomy otorrhea. The objective of this study was to collect visual evidence of the formation of bacterial biofilms in these situations. **STUDY DESIGN:** Laboratory study of bacteriology in an animal model and on medical devices removed from pediatric patients. **METHODS:** Experimental otitis media was induced in chinchillas by transbullar injection of nontypable *H. influenzae*. Animals were killed in a time series and the surface of the middle-ear mucosa was examined by scanning electron microscopy (SEM) for the presence of bacterial biofilms. Adult and fetal chinchilla uninfected controls were similarly examined for comparison. In addition, tympanostomy tubes that had been placed in children's ears to treat OME and removed after onset of refractory otorrhea or other problems were examined by SEM and by confocal scanning laser microscopy for bacterial biofilms, and compared with unused control tubes. **RESULTS:** Bacterial biofilms were visually detected by SEM on the middle-ear mucosa of multiple chinchillas in which *H. influenzae* otitis media had been induced. Qualitative evaluation indicated that the density and thickness of the biofilm might increase until at least 96 hours after injection. The appearance of the middle-ear mucosa of experimental animals contrasted with that of uninjected control animals. Robust bacterial biofilms were also visually detected on tympanostomy tubes removed from children's ears for clinical reasons, in contrast with unused control tubes. **CONCLUSIONS:** Bacterial biofilms form on the middle-ear mucosa of chinchillas in experimentally induced *H. influenzae* otitis media and can form on tympanostomy tubes placed in children's ears. Such biofilms can be directly observed by microscopy. These results reinforce the hypothesis

that the bacterial aggregates called biofilms, resistant techniques, may play a major etiologic role in OME and in one of its frequent complications, post-tympanostomy otorrhea.

**Intratympanic steroid injections for intractable Meniere's disease.** Barrs, D. M., Keyser, J. S., Stallworth, C., McElveen, J. T., Jr. Carolina Ear and Hearing Clinic, Raleigh, North Carolina 27609, USA. barrs@carolinaear.com. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2100–4.

**OBJECTIVE:** To examine whether intratympanic injection of dexamethasone is effective in controlling vertigo in patients with Meniere's disease who have persistent vertigo despite standard medical treatment, including a low-salt/no-caffeine diet and diuretics. **STUDY DESIGN:** A prospective study. **METHODS:** From August 1999 to November 2000, 21 patients with intractable Meniere's disease underwent intratympanic injections of 4 mg/mL dexamethasone over a period of four weeks as an office procedure. American Academy of Otolaryngology – Head and Neck Surgery guidelines for the definition and reporting of results in Meniere's disease were used. **RESULTS:** Complete relief of vertigo was maintained in 11 of the 21 patients (52 per cent) at three months and in nine of 21 patients (43 per cent) at six months. Repeat injections in five patients who had initial control of vertigo, but later failed, yielded control in three (60 per cent) patients. The complication rate was low: one patient had a 35-decibel pure tone average decrease in hearing during treatment and one patient had a persistent tympanic membrane perforation. **CONCLUSIONS:** Intratympanic injections of dexamethasone are a reasonable initial surgical treatment for persistent vertigo in Meniere's disease. The principal benefits are avoidance of systemic administration of steroids, lower cost than endolymphatic sac surgery, and ease of administration as an office procedure. The disadvantages are the need for repeated office visits for injections and the decreasing effectiveness over time.

**A computer-assisted anatomical study of the nasofrontal region.** Landsberg, R., Friedman, M. Department of Otolaryngology – Head and Neck Surgery, Sourasky Medical Center, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2125–30.

**OBJECTIVES/HYPOTHESIS:** Objectives were as follows: 1) to define the variations of the uncinat process' superior attachment, 2) to study the diameter of the frontal sinus ostium, 3) to study the prevalence of the agger nasi cells, and 4) to evaluate the side-to-side variability of these structures. **STUDY DESIGN:** A retrospective clinical study at a tertiary care center. **METHODS:** One hundred forty-four consecutive computed tomography scans were studied with image-guided surgery software (InstaTrak, Visualization Technology, Inc. Wilmington, MA) that provides continuous coronal, sagittal, and axial sections. We reported the superior attachment sites of the uncinat process, the diameter of the frontal sinus ostium, and prevalence of the agger nasi cells. **RESULTS:** The uncinat process main superior attachment into the surrounding structures was found to have the following distribution: 52 per cent to the lamina papyracea, 18.5 per cent to the posteromedial wall of the agger nasi cell, 17.5 per cent to the lamina papyracea and the junction of the middle turbinate with the cribriform plate, seven per cent to the junction of the middle turbate with the cribriform plate, 3.6 per cent to the ethmoid roof, and 1.4 per cent to the middle turbinate. The frontal ostium anterior-posterior diameter (mean  $\pm$  SD) was  $7.22 \pm 2.78$  mm and its transverse diameter (mean  $\pm$  SD) was  $8.92 \pm 2.95$  mm. Agger nasi cells were found in 78 per cent of the scans. **CONCLUSIONS:** The frontal sinus opens into the middle meatus medial to the uncinat process in 88 per cent of the patients and lateral to the uncinat process in 12 per cent of the patients. The naturally wide dimensions of the frontal ostium help to explain why postoperative patency can be achieved merely by exposing the ostium without

the need to enlarge it. The frontal ostium dimensions in one side may differ considerably from the contralateral side. An agger nasi cell or a terminal recess, or both, are found in most cases. Image-guided surgery software is a helpful new tool for anatomical studies and for preoperative evaluation.

**Tumor deposition of laminin-5 and the relationship with perineural invasion.** Anderson, T. D., Feldman, M., Weber, R. S., Ziober, A. F., Ziober, B. L. Department of Otorhinolaryngology, University of Pennsylvania Medical Center, Philadelphia, Pennsylvania 19104, USA. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2140–3.

**OBJECTIVE/HYPOTHESIS:** Perineural invasion (PNI) is increasingly being recognized as an important indicator of aggressiveness in head and neck squamous cell carcinoma. The mechanisms of PNI are poorly understood. Laminin-5, an important basement membrane constituent, has been shown to be essential in head and neck squamous cell carcinoma invasion and motility. We hypothesized that tumors exhibiting increased expression of laminin-5 are more likely to be neurotropic. **STUDY DESIGN:** Analysis of archived surgical specimens with and without PNI for presence and intensity of laminin-5 tumor staining. **METHODS:** Immunohistochemistry of archived head and neck squamous cell carcinoma specimens with known PNI was performed with anti-laminin-5 antibodies and appropriate positive and negative control specimens. The staining patterns were characterized as follows: A, few to no tumor cells positive; B, some peripheral cells positive; C, all peripheral cells positive; and D, almost all tumor cells positive. Statistical analysis was by  $\chi^2$  analysis. **RESULTS:** Forty-six PNI-positive and 18 PNI-negative specimens were analysed. The staining distribution for the PNI-positive specimens was as follows: two per cent for A, 41 per cent for B, 46 per cent for C, and 11 per cent for D. For tumors without PNI, the distribution was 28 per cent for A, 50 per cent for B, 22 per cent for C, and 0 per cent for D ( $p = 0.005$ ). In PNI-positive tumors, no significant difference in staining was seen between areas with and without PNI. **CONCLUSIONS:** We found a significant correlation between laminin-5 staining and the presence of PNI in head and neck squamous cell carcinoma. Expression of laminin-5 by tumours is, possibly, an important step in the process of PNI. These preliminary findings support the concept that deposition of basement membrane constituents are required in the multistep process of nerve invasion.

**Evaluation of omeprazole in the treatment of reflux laryngitis: a prospective, placebo-controlled, randomized, double-blind study.** Noordzij, J. P., Khidr, A., Evans, B. A., Desper, E., Mittal, R. K., Reibel, J. F., Levine, P. A. Department of Otolaryngology – Head and Neck Surgery, University of Virginia Health System, Charlottesville, Virginia, USA. jacob.noordzij@amedd.army.mil. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2147–51. **OBJECTIVES:** Proton-pump inhibitors are often recommended in the treatment of laryngitis secondary to gastric reflux. Despite prospective treatment studies reporting high efficacy, only one previous report has been placebo-controlled and blinded. The objective of this study was to determine the efficacy of omeprazole in treating proven reflux laryngitis. **STUDY DESIGN:** Prospective, placebo-controlled, randomized, double-blind clinical trial. **METHODS:** Fifty-three patients with one or more reflux laryngitis symptoms were recruited to undergo 24-hour dual-channel pH probe testing. Thirty patients with more than four episodes of laryngopharyngeal reflux were enrolled. By random assignment, 15 patients received 40 mg omeprazole twice a day and the other 15 received placebo for a period of two months. Symptoms (hoarseness, throat pain, lump in throat sensation, throat clearing, cough, excessive phlegm, dysphagia, odynophagia, and heartburn) and endoscopic laryngeal signs (erythema, edema, and mucus accumulation) were recorded initially, at one month, and two months. **RESULTS:** In general, most symptom scores improved over time for both the omeprazole and placebo groups. Hoarseness, when patients begin with low hoarseness symptom scores, and throat clearing improved significantly more in patients on omeprazole than in those on placebo during the two-month study. Throat pain, lump in throat sensation, excessive phlegm, difficulty swallowing, pain with swallowing, and heartburn showed improvement in both treatment arms, signifying the possibility of a placebo effect. Endoscopic laryngeal signs did not change significantly over the course of the study for either treatment group. **CONCLU-**

**SIONS:** A placebo effect appears to exist in the treatment of reflux laryngitis. However, hoarseness, when initially scored low, and throat clearing resulting from reflux laryngitis are effectively treated by omeprazole.

**Lipoinjection augmentation of the soft palate for velopharyngeal stress incompetence.** Klotz, D. A., Howard, J., Hengerer, A. S., Slupchynskj, O. Division of Otolaryngology, University of Rochester Medical Center, Rochester, New York 14642, USA. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2157–61. **OBJECTIVE/HYPOTHESIS:** Velopharyngeal stress incompetence in professional musicians is an uncommon but potentially career-ending problem. Pharyngeal flaps, V-Y palatal pushback procedures, Teflon or collagen injection of the posterior pharyngeal wall, and speech therapy have all been used to address this problem. The ideal procedure for this subset of patients with velopharyngeal incompetence (VPI) with high-pressure, mild VPI would be one that combines low morbidity and an expedient recovery for the busy musician. We describe an approach of endoscopically assisted autologous lipoinjection of the soft palate. **STUDY DESIGN:** A retrospective review of our experience treating high-pressure stress VPI in two professional musicians. **METHODS:** Literature review and retrospective chart review. **RESULTS:** Two musicians underwent autologous lipoinjection of the soft palate for stress VPI. Patients resumed full play within two weeks of the operation with no serious complications. There has been no recurrence of the VPI after 18 and 12 months of follow-up, respectively. **CONCLUSIONS:** Velopharyngeal stress incompetence in musicians is an uncommon disorder. Velopharyngeal incompetence in these patients may not present as in a typical manner with hypernasality but may go undiagnosed for years mistakenly rationalized as a declining performance ability rather than a curable structural problem. The performance demands of professional musicians necessitate a timely solution to their VPI. More precise and limited contouring of palatal bulk can be achieved through the lipoinjection technique than compared with traditional palatal V–Y pushback or a standard pharyngeal flap. Lipoinjection of the palate can be performed as an outpatient procedure with only minor discomfort and an expedient recovery for the career musician.

**Magnetic resonance imaging-guided fine-needle aspiration biopsies of retropharyngeal lesions.** Maghami, E. G., Bonyadlou, S., Larian, B., Borges, A., Abemayor, E., Lufkin, R. B. Division of Head and Neck Surgery, University of California at Los Angeles Center for the Health Sciences, Los Angeles, California 90095, USA. emagham@ucla.edu. *The Laryngoscope* (2001) December, Vol. 111 (12), pp. 2218–24.

**OBJECTIVE:** The retropharyngeal space is deep neck space susceptible to a host of disease processes. Surgical access to this space is technically difficult and associated with potential morbidity. An image-guided fine-needle aspiration (FNA) biopsy, if proven accurate and safe, would be of great benefit as an alternative diagnostic approach to this space. This study reports on the use of magnetic resonance imaging (MRI)-guided FNA for diagnostic evaluation of retropharyngeal lesions. Technical details of needle systems, approach to this space, and reliability of this method are described. **STUDY DESIGN:** This is a prospective study of 14 patients with retropharyngeal lesions who underwent MRI-guided FNA biopsy at the University of California at Los Angeles Center for the Health Sciences between October 1989 and October 1998. **METHODS:** A 0.2-tesla open magnet was used to obtain magnetic resonance images of each retropharyngeal lesion. After standard skin preparation a coaxial needle system was used to reach and sample the lesion. In most instances, the specimen was immediately stained and examined by a cytopathologist for adequacy before removing the patient from the scanner. **RESULTS:** Eleven of 14 (78 per cent) patients had diagnostic aspirations; only two of these 11 patients required additional surgical biopsy for more specific histological characterization of their lesions before definitive treatment recommendation were given. All aspiration procedures were well tolerated and without any complications. **CONCLUSION:** We have demonstrated that MRI-guided approach to the retropharynx is feasible, safe, and sensitive enough to obviate the need for open biopsies in a large percentage of patients.

**Optimal concentration of epinephrine for vasoconstriction in ear surgery.** Gessler, E. M., Hart, A. K., Dunlevy, T. M., Greinwald, J. H. Jr. Department of Otolaryngology, Naval Medical Center, Portsmouth, Virginia 23708, USA. *The Laryngoscope* (2001) October, Vol. 111 (10), pp. 1687–90.

**OBJECTIVE:** To determine the optimal concentration of epinephrine required for vasoconstriction in ear surgery by evaluating changes in laser doppler blood flow. **STUDY DESIGN:** Prospective, randomized, double-blinded. **METHODS:** Forty subjects undergoing surgical procedures under general anesthesia were injected in a standard posterior external auditory canal block with 1 mL of one per cent lidocaine containing varying concentrations of epinephrine (nil, 1:50,000, 1:100,000 or 1:200,000) determined by randomization. Ear canal blood flow measurements were made at one-minute intervals for a 10-minute period using a laser doppler flow meter and compared with baseline blood flow. **RESULTS:** The control solution of one per cent lidocaine had a significantly higher blood flow than the epinephrine-containing solutions with an actual 200 per cent increase in blood flow for the first five minutes before returning to baseline. All epinephrine-containing solutions had an approximately 50 per cent decrease in blood flow from baseline over the 10-minute period as compared with the control which was statistically significant ( $p < 0.0001$ ). There was no significant difference between the blood flow reduction of 1:50,000, 1:100,000, and 1:200,000 epinephrine-containing solutions ( $p = 0.8875$ ). **CONCLUSIONS:** One per cent lidocaine control exhibited the expected initial vasodilatory effect for approximately five minutes. In this experimental model, using a lower concentration of 1:200,000 epinephrine would supply equivalent vasoconstriction in the ear compared with higher concentrations, thus reducing the possible systemic toxicity and related morbidity.

**Laryngeal pseudosulcus as a predictor of laryngopharyngeal reflux.** Hickson, C., Simpson, C. B., Falcon, R. Department of Otolaryngology – Head and Neck Surgery, University of Texas Health Science Center, San Antonio, Texas 78229-3900, USA. *The Laryngoscope* (2001) October, Vol. 111 (10), pp. 1742–5.

**OBJECTIVE/HYPOTHESIS:** Laryngeal pseudosulcus is an accurate prognostic indicator of laryngopharyngeal reflux (LPR) disease. **STUDY DESIGN:** Prospective study of 20 consecutive patients with laryngeal pseudosulcus. Pseudosulcus is infraglottic laryngeal edema that is thought to be secondary to LPR. All patients were evaluated with dual-channel pH probe 24-hour monitoring to evaluate for the presence of laryngopharyngeal reflux. **METHODS:** Twenty patients identified with laryngeal pseudosulcus on routine physical examination were included in the study. Each patient underwent a 24-hour dual-channel pH probe. The data were analysed and compared with previously published normative data. The data included the total number of reflux episodes and the percentage of time the pH dropped below four at the proximal probe. **RESULTS:** Eighteen of the 20 patients with laryngeal pseudosulcus were found to have LPR. The mean number of reflux episodes at the proximal probe was 29.4 (range, 3–82). The mean percentage of time the pH dropped below four was 1.15 per cent. In the upright position the mean value was 1.59 per cent and in the supine position it was 0.19 per cent. This gives pseudosulcus a positive predictive value for LPR of 90 per cent. **CONCLUSION:** This study shows laryngeal pseudosulcus to be an accurate predictor of laryngopharyngeal reflux disease.

**Smoking and tympanoplasty: implications for prognosis and the Middle Ear Risk Index (MERI).** Becvarovski, Z., Kartush, J. M. Michigan Ear Institute, Farmington Hills, Michigan, USA. zb@ent.com.au. *The Laryngoscope* (2001) October, Vol. 111 (10), pp. 1806–11.

**OBJECTIVES/HYPOTHESIS:** The objectives of this study are to review the effects of smoking on preoperative middle ear disease severity, long-term surgical outcome, type and extent of surgery required, the need for ossicular chain reconstruction, and the long-term hearing results. **STUDY DESIGN:** A retrospective chart review. **MATERIALS AND METHODS:** The charts of 74 smokers and non-smokers who underwent over-under tympanoplasty were reviewed. An analysis of the disease severity (using the Middle Ear Risk Index (MERI)) at presentation and type of surgery performed. A review of graft take and delayed failure (late perforation or atelectasis after six months) and audiologic data were performed. **RESULTS:** Fifteen patients smoked a mean

of 20 cigarettes daily for a mean of 15 years. The MERI was well matched for both groups. There was a trend toward smokers having a higher incidence of otorrhea preoperatively and requiring a more extensive surgical procedure. All patients had full take of the tympanic membrane graft at six months; however, delayed surgical failure was seen in 20 per cent of non-smokers compared with 60 per cent of smokers ( $p = 0.050$ ). No statistically significant difference was seen in hearing outcome. **CONCLUSIONS:** Cigarette smoking is associated with more severe middle ear disease preoperatively. More extensive surgery is often needed in smokers to eradicate the disease. Most significantly, smoking is associated with a threefold increase in the chance of long-term graft failure. Based on the results of this study, the MERI has been revised to include smoking as a risk factor.

**Use of laboratory evaluation and radiologic imaging in the diagnostic evaluation of children with sensorineural hearing loss.** Mafong-Derek, D., Shin-Edward, J., Lalwani-Anil, K. Division of Otolaryngology, Department of Otolaryngology – Head and Neck Surgery, University of California, 400 Parnassus Avenue, San Francisco, CA 94143-0342, USA. *The Laryngoscope* (2002) January, Vol. 112 (1), pp. 1–7.

**OBJECTIVE:** Laboratory testing and radiologic imaging are commonly used to delineate syndromic from nonsyndromic sensorineural HL (SNHL). The aim of this study was to examine the yield of laboratory tests and radiologic imaging commonly used in the diagnostic evaluation of SNHL in children. **STUDY DESIGN:** Retrospective analysis of 114 (54 female, 60 male) consecutively investigated children with SNHL between 1998 and 2000 at a tertiary-care university hospital. **METHODS:** Results of routine laboratory testing to assess autoimmunity, blood dyscrasias, endocrine abnormalities, renal function, infection, and cardiac testing were reviewed. Results of radiologic evaluation were also reviewed. In general, computed tomography (CT) was obtained in patients with symmetric SNHL, whereas magnetic resonance imaging (MRI) with or without CT was obtained in asymmetric SNHL. **RESULTS:** Laboratory evaluation of the blood did not yield the etiology of SNHL in any patient. Blood tests for autoimmune disease were often positive but did not correlate with clinical disease. Nonspecific elevation of erythrocyte sedimentation rate (ESR) and antinuclear antibody (ANA) was present in 22 per cent of cases. An abnormal electrocardiogram with a prolonged QT interval resulted in the diagnosis of Jervall and Lange-Nielsen syndrome. In the 97 patients who underwent radiologic studies, abnormalities were present in 38 of 97 studies (39 per cent). Isolated inner ear malformations were twice as common as multiple abnormalities with large vestibular aqueducts as the most common isolated finding. **CONCLUSION:** In the evaluation of children with unexplained SNHL, routine laboratory evaluation should be reconsidered given its low diagnostic yield. However, radiologic abnormalities of the inner ear are common. Identification of inner ear malformations has direct impact on management of these children, suggesting that all children should undergo radiologic imaging as an integral component of evaluation of SNHL.

**The treatment of horizontal canal positional vertigo: our experience in 66 cases.** Casani-Augusto, P., Vannucci-Giovanni, Fattori-Bruno, Berrettini-Stefano. Department of Neurosciences, Otolaryngology Section, University of Pisa, 10 Via Savi, 56126 Pisa, Italy. casani@mail.bin.it. *The Laryngoscope* (2002) January, Vol. 112 (1), pp. 172–8.

**OBJECTIVES/HYPOTHESIS:** The horizontal semicircular canal variant of paroxysmal positional vertigo (HSC-PPV) shows three subtype nystagmic patterns: 1) bilateral geotropic nystagmus, 2) bilateral apogeotropic nystagmus that may switch into bilateral geotropic, and 3) bilateral apogeotropic nystagmus that never switches into bilateral geotropic. In recent years, many methods of physical treatment have been proposed for HSC-PPV, yet no standard protocol has been defined. We studied the effects of different methods according to each different form of HSC-PPV after a precise definition of the nystagmic and clinical features. **STUDY DESIGN:** A prospective trial of 66 patients with horizontal canal paroxysmal positional vertigo treated with a combination of rotational maneuver and forced prolonged position. **METHODS:** We evaluated 66 patients with HSC-PPV in its three subtypes. For patients with bilateral geotropic nystagmus, the ‘barbecue’ method was combined with ‘forced

prolonged position'. Patients with bilateral geotropic nystagmus were submitted to maneuvers aimed at a switch to bilateral geotropic. The cases that did not switch were submitted to a modified fourth step of the Semont maneuver. **RESULTS:** Eighty per cent of the patients with bilateral geotropic nystagmus became symptom free within the second session, and in 90 per cent of the patients, symptoms were resolved by the third session. In the bilateral apogeotropic cases, the modified fourth step of the Semont maneuver resulted in 75 per cent of the patients being symptom free. **CONCLUSIONS:** The correct identification of both nystagmic pattern and site of the lesion is crucial for the choice of physical treatment of HSC-PPV and its success. We have standardized the treatment protocol consisting of a 'barbecue' maneuver followed by 'forced prolonged position' in cases of geotropic nystagmus and a modified fourth step of the Semont maneuver for apogeotropic nystagmus. Our results appear encouraging because 90 per cent of the entire study group was symptom free after three sessions.

**The intracranial complications of rhinosinusitis: can they be prevented?** Jones, N. S., Walker, J. L., Bassi, S., Jones, T., Punt, J. Department of Otorhinolaryngology, Queen's Medical Centre, University Hospital, Nottingham NG8 2RN, UK. nick.jones@nottingham.ac.uk. *The Laryngoscope* (2002) January, Vol. 112 (1), pp. 59–63.

**OBJECTIVES/HYPOTHESIS:** Reference textbooks on the intracranial complications of rhinosinusitis imply that many of the intracranial complications of rhinosinusitis can be prevented. We sought to examine whether or not this is true. **STUDY DESIGN:** A retrospective case series. **METHODS:** The study included 47 consecutive patients presenting with intracranial complications secondary to rhinosinusitis between 1992 to 1999 with a mean follow-up of five years and one month. **RESULTS:** The most common presenting symptoms of intracranial involvement were an altered mental state, headache, fever, seizure, vomiting, a unilateral weakness or hemiparesis, or a cranial nerve sign. These justify an urgent magnetic resonance imaging or computed tomography scan. The importance of imaging before a lumbar puncture cannot be overemphasized. Of particular note was the finding that 21 patients (45 per cent) presented with a periorbital cellulitis or frontal swelling. Therefore, it does not follow that because a collection of pus presents anteriorly it precludes any intracranial involvement. More than half of our patients (55 per cent) had visited their primary care physician with an upper respiratory tract infection and had been treated appropriately. Once any central symptoms or signs developed, there was little evidence of any significant delay in referral to our unit. Only six patients had a history of nasal disease, three having had recent sinus surgery and three having had nasal polyps. Nine patients had significant long-term morbidity, seven patients had epilepsy, one patient had dysphasia, and one patient had right arm weakness. The single death in our series was associated with cavernous sinus thrombosis. **CONCLUSIONS:** The report emphasizes the need for surgeons to be alert to the diagnosis, particularly in patients with a periorbital abscess or frontal swelling. Sinus surgery has a role in obtaining pus for culture, as well as draining the sinus if it is in continuity with an intracranial collection. Intracranial infections secondary to rhinosinusitis occur sporadically and, although it appears that this cannot be prevented, early recognition and treatment are essential to reduce any subsequent morbidity or mortality.

**Effect of nasal surgery on sleep-related breathing disorders.** Verse Thomas, Maurer Joachim, T., Pirsig Wolfgang. Department of Otorhinolaryngology, Head and Neck Surgery, Section for Rhinology and Rhonchopathies, University of Ulm, Ulm, Germany. thomas.verse@hno.ma.uni-heidelberg.de. *The Laryngoscope* (2002) January, Vol. 112 (1), pp. 64–8.

**OBJECTIVE/HYPOTHESIS:** Single cases of patients who have experienced obstructive sleep apnea (OSA) and who recovered completely after nasal surgery have been described in various studies. The purpose of this study was to evaluate the efficacy of only nasal surgery 1) in a group of patients with obstructive sleep apnea and 2) in simple snorers. **STUDY DESIGN:** A prospective, controlled study with 26 adult patients who underwent nasal surgery as single treatment of their sleep-related breathing disorders. The cases were evaluated based on the severity level of their preoperative Apnea Hypopnea Index (AHI). **MATERI-**

**AL AND METHODS:** Between August 1996 and July 2000, 26 patients who snored and had impaired nasal breathing underwent attended polysomnography in the sleep laboratory as single treatment nasal surgery was performed. Postoperative polysomnographic findings and complications were reviewed. **RESULTS:** Nineteen of 26 patients (73.1 per cent) were diagnosed as having OSA. Seven patients were simple snorers with an AHI below 10. The surgical response rates, defined as greater than or equal to 50 per cent reduction in the postoperative AHI and a postoperative AHI of less than 20, was 15.8 per cent in the apneics. For the whole group, the AHI decreased postoperatively from 31.6 to 28.9. However, daytime sleepiness improved significantly and arousals decreased significantly in both apneics and simple snorers after nasal surgery. **CONCLUSIONS:** We conclude that nasal surgery has a limited efficacy in the treatment of adult patients with sleep apnea. Nevertheless, nasal surgery significantly improves sleep quality and daytime sleepiness independent of the severity of obstructive sleep-related breathing disorders.

**Vestibular function in patients with cochlear implantation.** Vibert, D., Haeusler, R., Kompis, M., Vischer, M. Department of Otorhinolaryngology, Head and Neck Surgery, Inselspital, University of Berne, Berne, Switzerland. dominique.vibert@insel.ch. *Acta Oto-Laryngologica Supplementum* (2001), Vol. 545, pp. 29–24.

The aim of this work was to determine the influence of cochlear implantation (CI) on vestibular canal and otolithic function. Between 1995 and 1999, 15 patients (six females, nine males: nine to 77 years old) underwent a vestibular examination before and after CI. Electronystagmography was performed between five and eight days after CI in nine patients, and with a time delay of two to 24 months in 10 patients. Pre- and postoperative evaluation included electronystagmography with caloric (44 degrees C, 30 degrees C, ice-water) and pendular rotatory testing. Otolithic function was measured postoperatively using off-vertical axis rotation (OVAR) in six patients. Preoperative data (n = 14) showed areflexia on caloric and rotatory pendular testing in deafness cases due to meningitis (n = 2) and in two of five patients with sudden idiopathic bilateral deafness. Two patients suffering from an idiopathic deafness had a unilateral hyporeflexia. Vestibular function was normal in the other eight patients. Immediately following CI, among patients with normal preoperative canal function, three developed vertiginous symptoms with spontaneous nystagmus, which disappeared within days to weeks. Later, postoperative canal evaluation was normal in five of eight patients (62 per cent) with initially preserved vestibular function: areflexia was measured ipsilaterally to the implanted ear in one patient and contralaterally in two patients. Hyporeflexia was measured ipsilateral to the implanted ear in two patients. OVAR examination, performed two to 19 months after surgery, showed a preserved otolithic function in all six tested patients. Transient vertigo on electrical CI stimulation was described in only one patient during the first postoperative weeks. The following conclusions can be drawn. Patients with deafness due to meningitis had an eradicated vestibular function. In other etiologies, vestibular function was most often preserved. CI did not usually abolish vestibular function, but the canal function was disturbed temporarily in 20 per cent of cases. Otolithic function was preserved in all six CI patients tested in this series.

**Clinical usefulness of glycerol vestibular-evoked myogenic potentials: preliminary report.** Shojaku, H., Takemori, S., Kobayashi, K., Watanabe, Y. Department of Otolaryngology, Toyama Medical and Pharmaceutical University, Toyama, Japan. hshojaku@ms.toyama-mpu.ac.jp. *Acta Oto-Laryngologica Supplementum* (2001), Vol. 545, pp. 65–8.

The detection of intense sound-induced vestibular-evoked myogenic potentials (VEMPs) on the sternocleidomastoid muscle comprises the basis of the saccular function test. In order to evaluate the endolymphatic hydrops (EH) of the saccule of the inner ear, a glycerol VEMP (GVEMP) test was performed in 15 patients with unilateral typical Meniere's disease (UMD) and seven with delayed endolymphatic hydrops (DEH). Using the GVEMP test, eight of the 15 patients (53 per cent) with UMD were evaluated as being abnormal. In addition, a greater number of patients (67 per cent) were judged to be abnormal when the results of the GVEMP test were combined with those from a glycerol dehydration test, trans-tympanic electrocochleography

(ECochG) or furosemide vestibulo-ocular reflex test (FVOR). Four of the seven patients with DEH (57 per cent) showed abnormal results in the GVEMP test. In particular, in patients with the ipsilateral type of DEH, only the GVEMP test was able to detect the affected side. These findings suggest that the GVEMP test is a new and useful test for EH, and that a test battery comprising the GVEMP test together with one of the other three tests is useful for diagnosing EH of the inner ear.

**The prognostic importance of c-myc oncogene expression in head and neck melanoma.** Chana, J. S., Grover, R., Wilson, G. D., Hudson, D. A., Forders, M., Sanders, R., Grobbelaar, A. O. RAFT Institute of Plastic Surgery, Mt Vernon Hospital, Northwood, Middlesex, UK. *Annals of Plastic Surgery* (2001) August, Vol. 47 (2), pp. 172–7.

Melanomas of the head and neck have a poorer prognosis than melanomas arising at other cutaneous sites. To study the biology of this disease, the expression of the c-myc oncogene was studied in tumours from 97 patients with head and neck melanoma using the technique of flow cytometry. Survival analysis revealed that stratification of patients according to oncogene expression provided a prognostic marker with shorter overall survival in tumours with high nuclear c-myc oncoprotein positivity (log-rank test,  $\chi^2 = 8.77$ ,  $p = 0.005$ ). Multifactorial analysis using Cox's proportional hazards model revealed nuclear c-myc oncoprotein to be an independent prognostic marker (log-rank test,  $\chi^2 = 8.82$ ,  $p = 0.005$ ). These results support the authors' previous studies of the prognostic value of c-myc expression in melanoma and suggest that estimation of c-myc oncoprotein may be of critical importance in identifying high-risk patients.

**Use of the laryngeal mask airway in thyroid and parathyroid surgery as an aid to the identification and preservation of the recurrent laryngeal nerves.** Shah, E. F., Allen, J. G., Greator, R. A. Department of General Surgery, The Queen Elizabeth Hospital, King's Lynn, Norfolk, UK. *Annals of the Royal College of Surgeons of England* (2001) September, Vol. 83 (5), pp. 315–8. A prospective study was carried out in patients undergoing thyroid and parathyroid surgery using a laryngeal mask airway (LMA) and electrical nerve stimulation to identify the recurrent laryngeal nerves. A total of 150 consecutive patients undergoing thyroid and parathyroid surgery by a single surgeon were assessed for suitability of anaesthesia via the LMA. Peroperatively, a fibre-optic laryngoscope was passed through the LMA to enable the anaesthetist to visualise the vocal cords while adduction of the cords was elicited by applying a nerve stimulator in the operative field. In all, 144 patients were selected for anaesthesia via the LMA. Fibre-optic laryngoscopy and nerve stimulation were performed in 64 patients (42.7 per cent). The trachea was deviated in 51 (34 per cent) and narrowed in 33 (22 per cent). The recurrent laryngeal nerves were identified in all patients. There were no cases of vocal cord dysfunction resulting from surgery. The LMA can be safely used for thyroid and parathyroid surgery even in the presence of a deviated or narrowed trachea. It can assist in identification and preservation of the recurrent laryngeal nerve and is, therefore, of benefit to both patient and surgeon.

**Effect of gestational and passive smoke exposure on ear infections in children.** Lieu Judith, E. C., Feinstein, Alvan, R. Robert Wood Johnson Clinical Scholars Program, Yale University School of Medicine, New Haven CT, USA. lieu@msnotes.wustl.edu. *Archives of Pediatrics & Adolescent Medicine* (2002) February, Vol. 156 (2), pp. 147–54.

**OBJECTIVE:** To estimate the relative risk for otitis media (OM) in children from environmental tobacco smoke (passive exposure), maternal smoking during pregnancy (gestational exposure), or both. **DESIGN:** Analysis of data from a national cross-sectional health survey, utilizing questionnaire information and serum cotinine measurements. **PARTICIPANTS:** Children younger than 12 years ( $n = 11\,728$ ) in the Third National Health and Nutrition Examination Survey (NHANES III), conducted from 1988–1994. **MAIN OUTCOME MEASURES:** Occurrence and recurrence of ear infections. **RESULTS:** The cumulative incidence of ear infections was 69 per cent. Of all participants, 38 per cent were exposed to passive smoke, 23 per cent were exposed to gestational smoke, and 19 per cent were exposed to combined passive and gestational smoke. The occurrence of any ear infection was not increased by passive smoke exposure (adjusted risk ratio (RR),

1.01; 95 per cent confidence interval (CI), 0.95–1.06), but was slightly increased by gestational (adjusted RR, 1.08; 95 per cent CI, 1.01–1.14) and combined (adjusted RR, 1.07; 95 per cent CI, 1.00–1.14) smoke exposures. The risk of recurrent ear infections (> or = six lifetime episodes) was significantly increased with combined smoke exposure (adjusted RR, 1.44; 95 per cent CI, 1.11–1.81). Other risk factors for ear infection identified in multivariable analysis were race/ethnicity, poverty-income ratio of 2.00 or more, attendance in day care, history of asthma, and presence of allergic symptoms. **CONCLUSIONS:** Passive smoke exposure was not associated with an increased risk of ever developing an ear infection in this study. The increased risk found with gestational and combined smoke exposures has marginal clinical significance. For recurrent ear infections, however, combined smoke exposure had a clinically and statistically significant effect.

**Balancing speech intelligibility versus sound exposure in selection of personal hearing protection equipment for Chinook aircrews.** Van Wijngaarden, S. J., Rots, G. TNO Human Factors, Department of Perception-Speech Group, Soesterberg, The Netherlands, vanwijngaarden@tm.tno.nl. *Aviation, Space, and Environmental Medicine* (2001) November, Vol. 72 (11), pp. 1037–44.

**BACKGROUND:** Aircrews are often exposed to high ambient noise levels, especially in military aviation. Since long-term exposure to such noise may cause hearing damage, selection of adequate hearing protective devices is crucial. Such devices also affect speech intelligibility. When speech intelligibility and hearing protection lead to conflicting requirements, a compromise must be reached. The selection of personal equipment for RNLA Chinook aircrews is taken as an example of this process. **METHODS:** Sound attenuation offered by aircrew helmets and ear plugs was measured using a standardized method. Sound attenuation results were used to calculate sound exposure. Objective predictions of speech intelligibility were calculated using the Speech Transmission Index (STI) method. Subjective preference was investigated through a survey among 28 experienced aircrew members. **RESULTS:** The use of ear plugs in addition to a (RNLA standard) helmet may lead to a significant reduction of sound exposure. Using ear plugs that offer high sound attenuation, instead of using a less attenuating type, gives a little additional reduction of sound exposure, at the expense of a large reduction in speech intelligibility. Hence, it is better to use 'light' ear plugs. Better performance still is offered by Communications Earplugs, ear plugs featuring integrated miniature earphones. Results from the user preference survey correspond well with objective measurement results. **CONCLUSIONS:** In the case of the RNLA Chinook, the best solution is using Communications EarPlugs in combination with a standard helmet. The Chinook case clearly illustrates that hearing protection and speech intelligibility should be treated as connected issues.

**Randomised controlled trial of butterbur and cetirizine for treating seasonal allergic rhinitis.** Schapowal Andreas. Allergy Clinic, Hochwangstrasse 3, CH-7302 Landquart, Switzerland. andreas.schapowal@freesurf.ch. *British Medical Journal* (2002) January 19, Vol. 324 (7330), pp. 144–6.

**OBJECTIVES:** To compare the efficacy and tolerability of butterbur (*Petasites hybridus*) with cetirizine in patients with seasonal allergic rhinitis (hay fever). **DESIGN:** Randomized, double blind, parallel group comparison. **SETTING:** Four outpatient general medicine and allergy clinics in Switzerland and Germany. **PARTICIPANTS:** 131 patients were screened for seasonal allergic rhinitis and 125 patients were randomized (butterbur 61; cetirizine 64). **INTERVENTIONS:** Butterbur (carbon dioxide extract tablets, ZE 339) one tablet, four times daily, or cetirizine, one tablet in the evening, both given for two consecutive weeks. **MAIN OUTCOME MEASURES:** Scores on SF-36 questionnaire and clinical global impression scale. **RESULTS:** Improvement in SF-36 score was similar in the two treatment groups for all items tested hierarchically. Butterbur and cetirizine were also similarly effective with regard to global improvement scores on the clinical global impression scale (median score three in both groups). Both treatments were well tolerated. In the cetirizine group, two thirds (eight of 12) of reported adverse events were associated with sedative effects (drowsiness and fatigue) despite the drug being considered a non-sedating antihistamine. **CONCLUSIONS:** The effects of butterbur

are similar to those of cetirizine in patients with seasonal allergic rhinitis when evaluated blindly by patients and doctors. Butterbur should be considered for treating seasonal allergic rhinitis when the sedative effects of antihistamines need to be avoided.

**A nasal spray with alpha-haemolytic streptococci as long term prophylaxis against recurrent otitis media.** Tano Krister, Grahn Haakansson Eva, Holm Stig, E., Hellstroem Sten. Department of Clinical Sciences, Otorhinolaryngology, Umeaa University, S-971 80, Luleaa, Sweden. krister.tano@nll.se. *International Journal of Pediatric Otorhinolaryngology* (2002) January 11, Vol. 62 (1), pp. 17–23.

Previous studies have shown that children with recurrent acute otitis media (rAOM) have significantly lower quantities of alpha-haemolytic streptococci (AHS) in the nasopharynx than healthy children. Furthermore children with otitis media have AHS with lower inhibitory activity in vitro on *Streptococcus pneumoniae* and non-typable *Haemophilus influenzae* compared with healthy children. A randomized, placebo controlled and double blind clinical study among children with rAOM was designed to determine whether or not a nasal spray, containing AHS with very good inhibitory activity on the three most common OM pathogens, could be an alternative to tympanostomy tube insertion. Forty-three children under four years of age were included in the study. The children sprayed once daily for four months and were monitored for six months. Sixteen children in the active group and 20 children in the placebo group were evaluated. The result showed no significant differences regarding the number of episodes of AOM, with seven recurrences in the active group and eight in the placebo group. No significant changes of the nasopharyngeal flora could be detected during the study period regarding the OM pathogens. Nasal spray according to the performed schedule is not yet an alternative to tympanostomy tubes in children with rAOM. The possibility of increasing the efficacy of this ecological treatment, by using pre-treatment antibiotics, more adhesive bacteria and alternative treatment schedules is discussed.

**The feasibility of office-based laser-assisted tympanic membrane fenestration with tympanostomy tube insertion: the duPont Hospital experience.** Friedman Oren, Deutsch Ellen, S., Reilly James, S., Cook Steven, P. Department of Otolaryngology, Thomas Jefferson University Hospital, 111 S. 11th Street, Philadelphia, PA 19134, USA. *International Journal of Pediatric Otorhinolaryngology* (2002) January 11, Vol. 62 (1), pp. 31–5.

**OBJECTIVE:** To determine the feasibility of inserting tympanostomy tubes in children using office-based laser-assisted tympanic membrane fenestrations. **METHODS AND MATERIALS:** Study consisted of a retrospective review of the charts of all children who underwent office-based laser-assisted tympanic membrane fenestration with tympanostomy tube insertion from July 1, 1998 to August 31, 2000. Tetracaine eardrops were used for topical anesthesia. Fenestration was achieved with the OtoLAM flashscanner laser (ESC Sharplan, Yokneam, Israel). **RESULTS:** Of the 127 patients (185 ears) who underwent laser-assisted tympanic membrane fenestration, 61 ears underwent tympanostomy tube insertion. Ten ears were treated for otitis media with effusion, 43 for recurrent acute otitis media, and eight for acute otitis media not responding to antibiotics. Fifteen ears had purulent effusion, five had a serous effusion, and 23 had mucoid middle ear fluid. Eighteen ears had no middle ear fluid. At the first follow-up visit, all tested ears had hearing of 20 dB or better. Two children had tubes that were blocked. Blockage occurred in ears that required more than one laser firing to penetrate the tympanic membrane. Otorrhea was present in 13 ears (21 per cent). Otorrhea occurred exclusively in ears with purulent or mucoid middle ear fluid. **CONCLUSIONS:** Office-based laser-assisted tympanic membrane fenestration with tympanostomy tube insertion is a safe and effective alternative to tube placement in the operating room. The outcome compares favourably with previously published data.