

Abstract Selection

Proliferation potential in recurrent acoustic schwannoma following gamma knife radiosurgery versus microsurgery. Lee, F., Linthicum, F. Jr., Hung, G. Department of Otolaryngology–Head and Neck Surgery, University of California, Irvine Medical Center, Orange, USA. *The Laryngoscope* (2002) June, Vol. 112 (6), pp. 948–50.

OBJECTIVE: To evaluate the proliferation potential of recurrent acoustic schwannoma following gamma knife radiosurgery (GKR) versus microsurgery. **STUDY DESIGN:** Retrospective study. **METHODS:** A review of surgical records of the House Ear Clinic revealed eight patients who had undergone GKR and 15 patients who had undergone microsurgery who had unilateral acoustic schwannoma recurrences. Immunohistochemical studies were performed to evaluate the expression of proliferating cell nuclear antigen (PCNA) on archival paraffin-embedded blocks. **RESULTS:** All eight GKR and 15 microsurgical tumours had positive staining for PCNA. The recurrent GKR tumours had significantly lower proliferation levels than in the microsurgical group ($p = 0.03$). Two GKR tumours had high proliferation levels. **CONCLUSIONS:** Our study indicates that recurrent vestibular schwannomas treated with GKR have lower proliferation potential as assessed by PCNA compared with recurrences following microsurgery. Radiation-induced apoptosis is thought to contribute to the lower tumor cell proliferation in GKR tumour. The two GKR tumours with high proliferation potential could be a result of radiation-induced sporadic mutation, resulting in high tumour cell proliferation.

A preliminary report on micronized AlloDerm injection laryngoplasty. Pear, A. W., Woo, P., Ostrowski, R., Mojica, J., Mandell, D. L., Costantino, P. Department of Otolaryngology–Head and Neck Surgery, Mount Sinai Medical Center, New York, New York 10029, USA. pearla01@yahoo.com. *The Laryngoscope* (2002) June, Vol. 112 (6), pp. 990–6.

OBJECTIVES: To report the preliminary data of voice and quality-of-life improvement after micronized AlloDerm injection laryngoplasty in patients with unilateral vocal cord paralysis. **STUDY DESIGN:** A prospective study was conducted in patients with unilateral vocal cord paralysis who underwent injection laryngoplasty with micronized AlloDerm. **METHODS:** Preoperative and post-operative patients evaluation consisted of videostrobolaryngoscopy, computer voice analysis, airflow, and voice handicap index (VHI) assessment. All injections were conducted with the patient under general anesthesia using the Storz injector system and a 22-gauge spinal needle. **RESULTS:** Fourteen patients received injection with an average amount of 0.641 mL. Twelve patients were available for evaluation. Initial results at four weeks ($n = 12$) showed significant increase in habitual phonation time from 3.84 to 6.72 seconds ($p .01$) and a decrease in airflow from 0.616 to 0.295 l's ($p .01$). The VHI rating improved from 62.8 to 37.5 ($p .01$). Jitter and shimmer also improved significantly ($p .05$). Stroboscopic findings showed complete closure of glottic gap in 10 patients with excellent return of mucosal wave on the injected side. The mucosal wave return after injection was rapid with little evidence of tissue reaction. Post-operative follow-up at three months ($n = 8$) demonstrated slight resorption of the material, but sustained excellent voice was noted in 87.5 per cent. Minimal morbidity and tissue reaction were noted. **CONCLUSIONS:** Micronized AlloDerm appears to be a safe new material that is suitable for injection laryngoplasty. Long-term results are pending.

The evolution of surgery on the maxillary sinus for chronic rhinosinusitis. Lund, V. Institute of Laryngology and Otology, University College, London, UK. *The Laryngoscope* (2002) March, Vol. 112 (3), pp. 415–9.

OBJECTIVE: To examine the management of the maxillary sinus in chronic rhinosinusitis over the last 500 years. **METHOD:** A

literature review was conducted. **RESULT:** The maxillary sinus was first recognized in the 16th century and its role as a source of infection became the focus of attention, beginning with Nathaniel Highmore in 1651 and continuing up until the 21st century. The surgical drainage of the sinus was achieved by a variety of routes, including the alveolar margin, anterior wall and middle and inferior meati. The rationale for these procedures, developed in a pre-antibiotic era, may be re-examined in the context of our present understanding of the pathophysiology of chronic rhinosinusitis. **CONCLUSION:** The maxillary sinus has been the focus of surgical attention from the 17th century onward largely as a result of its size and accessibility, initially reinforced by plain X-ray. However, in the 20th century, the advent of computed tomography and nasal endoscopy was reaffirmed the relationship of the maxillary sinus to the ostiomeatal complex in chronic rhinosinusitis, as originally demonstrated by pioneers such as Zuckerkandl, and redirected the focus of our therapeutic approaches.

The axillary flap approach to the frontal recess. Wormald, P. J. Department of Surgery, Otolaryngology – Head and Neck Surgery, Adelaide University, South Australia, Australia. peterj-wormald@adelaide.edu.au. *The Laryngoscope* (2002) March, Vol. 112 (3), pp. 494–9.

OBJECTIVES: To evaluate the access to the frontal recess using the axillary flap approach by identifying the frontal ostium during endoscopic sinus surgery. **STUDY DESIGN:** Prospective review of 64 consecutive patients (118 sides) undergoing axillary flap exposure of the frontal recess between November 1998 and July 1999. **METHODS:** Demographic data, identification of the frontal ostium, findings at surgery, use of nasal packing, the presence of postoperative symptoms, revision surgery, and the endoscopic appearance of the frontal recess were collected. The operative technique is presented. **RESULTS:** The frontal sinus ostium was identified in 96 per cent of patients (104 of the 118 sides). Eight sides had Kuhn type three cells that required removal for clearance of the frontal ostium. Eighty-two per cent of sides (97 sides) had endoscopically healed sinuses without symptoms after an average follow-up of 15.4 months. Six sides had middle meatal adhesions requiring division under local anesthetic. One patient has required revision surgery. **CONCLUSION:** The axillary flap approach to the frontal recess provides excellent access to the frontal recess and allows clearance of cells in the recess with identification of the frontal ostium in the vast majority of cases.

Vestibular rehabilitation using visual displays: preliminary study. Viirre, E., Sitarz, R. Division of Otolaryngology – Head and Neck Surgery, University of California, San Diego, School of Medicine, 92037, USA. eviirre@ucsd.edu. *Laryngoscope* (2002) March, Vol. 112 (3), pp. 500–3.

OBJECTIVES/HYPOTHESIS: Interactive computer displays can alter vestibular function. We hypothesized that by placing a vestibulopathic subject with chronic vertigo in a computer scene, slowing the visual scene motion to a rate slightly higher than their vestibulo-ocular reflex (VOR) gain, and gradually speeding up the scene, we could cause VOR improvement and symptom reduction. **STUDY DESIGN:** Randomized, nonblinded treatment/control study. **METHODS:** Subjects were selected for VOR gain less than 0.5 at 0.16, 0.32 or 0.64 Hz. They wore a computer display that interacted with the movement of their head. The scene magnification controlling image motion was initially set approximately five per cent higher than the VOR gain. Subjects had interaction tasks for ten sessions of 30 minutes twice daily for five days. The scene magnification was gradually increased over the sessions. Control subjects had a similar procedure but were shown a normal, $\times 1.0$ magnification for each interaction session. **RESULTS:** Nine subjects and six control subjects were tested. Test subjects showed an average increase in VOR gain of 0.05 at 0.16 Hz, 0.048 at 0.32 Hz, and 0.098 at 0.64 Hz. In contrast, control subjects showed

a decrease of 0.008 at 0.16 Hz, an increase of 0.016 at 0.32 Hz, and a decrease of 0.058 at 0.64 Hz. Improvement remained after one week but at a lower level than immediately after testing. Subject Dizziness Handicap Inventory scores decreased by 2.8 from 38.5 in the first week. Control subjects reported no symptom improvement. **CONCLUSION:** Immersive computer environments can improve VOR function and reduce vertigo.

Increased vulnerability of auditory system to noise exposure in mdx mice. Chen, T. J., Chen, S. S., Wang, D. C., Hsieh, Y. L. Department of Physiology, Graduate Institute of Medicine, Kaohsiung Medical University, Taiwan. tsanju@cc.kmu.edu.tw. *The Laryngoscope* (2002) March, Vol. 112 (3), pp. 520–5.

OBJECTIVES: Dystrophin is a cytoskeletal protein mainly found just beneath the sarcolemma. Lack of dystrophin is known to be the cause of Duchenne muscular dystrophy (DMD). Other tissues, including the brain, retina, and cochlear hair cells, also express dystrophin. Recently, a gene (Xp21.2) associated with sensorineural hearing impairment has been mapped within the localization site for dystrophin in two families. Thus, it is reasonable to assume that dystrophin may play a role in auditory function. However, animal studies have produced conflicting results. **STUDY DESIGN:** An attempt was made to clarify the differences between the auditory systems of dystrophin-deficient mdx mice and control B-10 mice by exposure to noise. **METHODS:** In the present study, mdx mice and B-10 mice were used. Animals were exposed daily to noise for one month, and their auditory functions were evaluated by recording the brainstem auditory evoked potentials (BAEPs). **RESULTS:** Before noise exposure, the mdx mouse demonstrated normal BAEP threshold when compared with the B-10 mouse. After one month of noise exposure, the B-10 mouse showed no apparent change in hearing threshold and BAEP latencies. In contrast, significantly increased hearing threshold and prolonged BAEP peak and interpeak latencies were observed in the mdx mouse after noise exposure. **CONCLUSIONS:** These results indicate that the mdx mice are more vulnerable to noise damage. This involves not only the peripheral auditory system, but also the brainstem central auditory pathway. Therefore, a significant role for dystrophin in the auditory system, especially under noise stress, is suggested.

Lateralization during the Weber test: animal experiments. Sichel, J. Y., Freeman, S., Sohmer, H. Department of Otolaryngology/Head and Neck Surgery, Hadassah University Hospital, Jerusalem, Israel. sicheljy@yahoo.com. *The Laryngoscope* (2002) March, Vol. 112 (3), pp. 542–6.

OBJECTIVES/HYPOTHESIS: The objective of this study were to present an assessment of a new theory to explain lateralization during the Weber test using an animal model. This theory is based on the discovery that a major pathway in bone conduction stimulation to the inner ear is through the skull contents (probably the cerebrospinal fluid (CSF)). The placement of a bone vibrator or tuning fork on the skull excites the inner ear by the classic osseous pathway and by the suggested CSF pathway. We assume that there is a phase difference between the stimulation mediated by the ossicular chain (inertial and occlusion mechanisms) and the one mediated by the CSF. The presence of a conductive pathology will decrease the magnitude of the sound energy mediated by the ossicular chain. Thus, the out-of-phase signal arriving through the bony pathways will be decreased, hence increasing the resultant sound intensity stimulating the cochlea. **STUDY DESIGN:** Prospective animal study. **METHODS:** The experiment was performed on 10 fat sand rats, which had undergone unilateral cochleostomy and a small craniotomy. The auditory nerve brainstem response (ABR) thresholds were measured to air-conducted stimulation, to stimulation with the bone vibrator applied to the skull, and to stimulation with the bone vibrator applied directly to the brain through the craniotomy. The ossicular chain of the second ear was then fixed to the middle ear walls with cyanoacrylate glue to induce a conductive hearing loss. The ABR thresholds to the same three stimuli were then measured again. **RESULTS:** After ossicular chain fixation, the ABR threshold to air-conducted stimulation increased, to bone vibrator stimulation on the bone decreased (hearing improvement), and to bone vibrator stimulation directly on the brain remained unchanged. **CONCLUSIONS:** This experiment confirms the proposed theory. During clinical bone conduction stimulation, there is a phase

difference between sound energy reaching the inner ear through the middle ear ossicles and from the CSF. A middle ear conductive pathology removes one of these components, thus increasing the effective sound intensity in the affected ear. On the other hand, when the bone vibrator is applied on the brain, the inner ear is stimulated only through the CSF, so ossicular chain fixation does not change the ABR threshold. Moreover, this study proves that lateralization during the Weber phenomenon is the result, at least in part, of an intensity difference between sound energy reaching the two cochleae.

Digital image processing of laryngeal lesions by electronic videoendoscopy. Kawaida, M., Fukuda, H., Kohno, N. Department of Otolaryngology, Tokyo Metropolitan Ohtsuka Hospital, Japan. *The Laryngoscope* (2002) March, Vol. 112 (3), pp. 559–64.

OBJECTIVES: To present electronic videoendoscopy of the larynx with digital image processing and to discuss this endoscopic technique from the standpoint of diagnostic usefulness of laryngeal lesions. **STUDY DESIGN:** Electronic videoendoscopic evaluation of laryngeal lesions with digital image processing. **METHODS:** Seventy patients underwent electronic videoendoscopy without digital image processing and, subsequently, with the digital image processing function. Of these, 15 patients with white lesion of the vocal fold and laryngeal neoplasms were assessed in the study. Clinical assessments made before enhancement of digital image processing function were compared with those after enhancement in 15 patients. **RESULTS:** Of the 15 patients observed, the clinical diagnoses of two patients were changed after enhancement. Both patients underwent endolaryngeal microsurgery with histopathological examination of the removed lesions, which confirmed the definitive diagnosis. The clinical diagnoses of both patients after enhancement were compatible with histopathological diagnoses. **CONCLUSIONS:** The enhanced colour images provided by this system are superior in both quality and resolution to those obtained by conventional flexible fiberoptic endoscopy with a video camera. This system should be a valuable tool for the diagnosis of laryngeal lesions.

Alar batten grafting for management of the collapsed nasal valve. Millman, B. Department of Otolaryngology – Head and Neck Surgery, Geisinger Medical Center, Danville, Pennsylvania 17822, USA. Bmillman@geisinger.edu. *The Laryngoscope* (2002) March, Vol. 112 (3), pp. 574–9.

OBJECTIVE: The purpose of the study is to describe a commonly overlooked etiology of nasal airway obstruction. Collapse of the nasal valve can be corrected with precise placement of cartilage grafts. This study demonstrates the surgical technique, rarely described in the literature, of placing a contoured cartilage graft in the nasal valve region for the improvement of the nasal airway. **STUDY DESIGN:** Retrospective review of surgical results of the 21 patients who underwent alar batten grafting performed over a three-year period at the Geisinger Medical Center (Danville, PA). **METHODS:** A retrospective review was conducted of 21 patients surgically treated with alar batten grafts for nasal valvular collapse between the 1997 and 1999. The surgical technique is described, and our results are analysed including for both functional and aesthetic outcome. **RESULTS:** All patients treated with alar batten grafting at the nasal valve improved with regard to their airway obstruction. There were no complications, and there was only minor aesthetic fullness in six cases. **CONCLUSIONS:** Alar batten cartilage grafting is an easy, highly effective therapeutic measure in the treatment of nasal valve collapse. The surgical technique is demonstrated.

Treatment of benign positional vertigo using the semont manoeuvre: efficacy in patients presenting without nystagmus. Haynes, D. S., Resser, J. R., Labadie, R. F., Girasole, C. R., Kovach, B. T., Scheker, L. E., Walker, D. C. Vanderbilt Bill Wilkerson Center for Otolaryngology and Communicative Sciences, Nashville, Tennessee, USA. *The Laryngoscope* (2002) May, Vol. 112 (5), pp. 796–801.

OBJECTIVE: To evaluate and compare the efficacy of the Semont liberatory manoeuvre on 'objective' benign paroxysmal positional vertigo (BPPV) defined as vertigo with geotropic nystagmus in Dix-Hallpike positioning versus 'subjective' BPPV defined as vertigo without nystagmus in Dix-Hallpike positioning. **STUDY DESIGN:** Retrospective chart review. **METHODS:** One hundred sixty-two patients with positional vertigo during Dix-

Hallpike positioning were identified. Patients were evaluated for the presence or absence of nystagmus. All patients underwent the Semont liberatory manoeuvre. The patient's condition at follow-up was documented at three weeks as complete, partial, or failure. Repeated procedures were performed if necessary. RESULTS: There were 127 cases of objective BPPV and 35 cases of subjective BPPV. Overall, 90 per cent of all patients tested had significant improvement of their vertigo after 1.49 manoeuvres on average. Improvement was seen in 91 per cent of patients with objective BPPV after 1.59 manoeuvres on average, compared with 86 per cent in subjective BPPV after 1.13 manoeuvres on average (χ^2 test, not significant ($p = .5$)). Patients with a history of traumatic origin or cause had an overall success rate of 81 per cent compared with 92 per cent for nontraumatic causes or origins (χ^2 test, not significant ($p = .1$)). Recurrences were seen in 29 per cent of patients after a successful initial manoeuvre; however, 96 per cent of these patients responded to further manoeuvres. Four patients with persistent symptoms after conservative management underwent posterior semicircular canal occlusion with resolution of symptoms. CONCLUSION: The Semont liberatory manoeuvre provides relief of vertigo in patients with positional vertigo, even in patients without objective nystagmus.

Association of laryngopharyngeal symptoms with gastroesophageal reflux disease. Tauber, S., Gross, M., Issing, W. J. Department of Otolaryngology–Head and Neck Surgery, Medizinische Poliklinik, Ludwig-Maximilians–University Munich, Germany. *The Laryngoscope* (2002) May, Vol. 112 (5), pp. 879–86.

OBJECTIVES: The prevalence of gastroesophageal reflux disease (GERD) in patients with laryngopharyngeal disorders is probably greater than realized. STUDY DESIGN: Prospective study. METHODS: To investigate the incidence of gastroenterological diseases including GERD in patients complaining of nonspecific laryngopharyngeal symptoms, laryngological examinations and gastroenterological evaluation with esophagogastroduodenoscopy were performed in 30 patients who refused to undergo 24-hour pH monitoring. Therapeutic intervention by behavioural and dietary modifications, antireflux medication, and eradication of *Helicobacter pylori* were assessed for changes in laryngeal findings and relief of symptoms. RESULTS: Posterior laryngitis was present in 26 patients and in 19 of them was accompanied by erythema and edema of the interarytenoid region. Gastroenterological diseases such as GERD (43 per cent), hiatal hernia (43 per cent), and *Helicobacter pylori*-positive antrum gastritis (23 per cent) were confirmed in 22 (73 per cent) cases by esophagogastroduodenoscopy and histological examination of biopsy specimens. Medical antireflux treatment and eradication of *Helicobacter pylori* resulted in a remarkably therapeutic success rate of 90 per cent because there was resolution of laryngopharyngeal symptoms and laryngeal findings in 20 of 22 patients with gastroenterological diseases for the mean follow-up period of eight months. CONCLUSIONS: Laryngopharyngeal symptoms can be predictors of gastroesophageal diseases and GERD because the most frequent underlying cause is supposed to be associated with posterior laryngitis. Medical antireflux treatment is effective for relief of symptoms and mucosal healing of posterior laryngitis.

In vitro study of IL-8 and goblet cells: possible role of IL-8 in the aetiology of otitis media with effusion. Smirnova, M. G., Birchall, J. P., Pearson, J. P. Department of Physiological Sciences, Medical School, University of Newcastle, Newcastle upon Tyne, UK. Marina.Smirnova@ncl.ac.uk. *Acta oto-laryngologica* (2002) March, Vol. 122 (2), pp. 146–52.

One of the main characteristics of otitis media with effusion (OME) is the differentiation of basal cells into goblet cells with subsequent proliferation in a modified respiratory epithelium leading to the formation of mucin-rich effusion in the middle ear cleft. In order to determine the effect of pro-inflammatory cytokines identified in OME, e.g. IL-1 β , tumour necrosis factor (TNF)- α , IL-6 and IL-8, on goblet cells, and to clarify the role of IL-8 in particular, we used the human goblet cell line HT29-MTX, which secretes two OME-related mucins: MUC5AC and MUC5B. IL-1 β and TNF- α stimulated the secretion of IL-8 in HT29-MTX goblet cells. Dose- (2–200 ng/ml) and time- (0–5 days) response studies of IL-8-induced mucin secretion were carried out. IL-8 upregulated the secretion of MUC5AC and MUC5B mucins in a concentration-dependent manner, with a maximum response at an IL-8 concentration of 20 ng/ml. IL-8 (20 ng/ml)-mediated mucin

secretion persisted for up to five days, with a peak response 72 h after the addition of cytokine. These results suggest that: (i) goblet cells are target cells for the pro-inflammatory cytokines IL-1 β , TNF- α and IL-8 and can contribute to the pathogenesis of OME by increasing both the concentration of IL-8 and the secretion of mucin; and (ii) IL-8 stimulates prolonged mucin secretion from goblet cells and may be involved in the maintenance of the disease in the chronic stage.

Predictors of the risk of mortality in neurofibromatosis 2. Baser, M. E., Friedman, J. M., Aeschliman, D., Joe, H., Wallace, A. J., Ramsden, R. T., Evans, D. G. R. Department of Medical Genetics, University of British Columbia, Vancouver, United Kingdom. baser@earthlink.net. *American Journal of Human Genetics* (2002) October, Vol. 71 (4), pp. 715–23.

To evaluate clinical and molecular predictors of the risk of mortality in people with neurofibromatosis 2 (NF2), we analysed the mortality experience of 368 patients from 261 families in the United Kingdom NF2 registry, using the Cox proportional-hazards model and the jackknife method. Age at diagnosis, intracranial meningiomas, and type of treatment center were informative predictors of the risk of mortality. In Cox models, the relative risk of mortality increased 1.13-fold per year decrease in age at diagnosis (95 per cent confidence interval (CI) 1.08–1.18) and was 2.51-fold greater in people with meningiomas compared with those without meningiomas (95 per cent CI 1.38–4.57). The relative risk of mortality in patients treated at specialty centers was 0.34 compared with those treated at nonspecialty centers (95 per cent CI 0.12–0.98). In a separate model, the relative risk of mortality in people with constitutional NF2 missense mutations was very low compared with those with other types of mutations (nonsense or frameshift mutations, splice-site mutations, and large deletions), but the CI could not be well quantified because there was only one death among people with missense mutations. We conclude that age at diagnosis, the strongest single predictor of the risk of mortality, is a useful index for patient counseling and clinical management (as are intracranial meningiomas). To ensure optimal care, we recommend that people with NF2 be referred to specialty treatment centers.

The evaluation of dysphagia following radical surgery for oral and pharyngeal carcinomas by cine-magnetic resonance imaging (Cine-MRI). Kitano, H., Asada, Y., Hayashi, K., Inoue, H., Kitajima, K. Department of Otolaryngology, Head and Neck Surgery, Shiga University of Medical Science, Otsu, Japan. hkitano@belle.shiga-med.ac.jp. *Dysphagia* (2002) Summer, Vol. 17 (3), pp. 187–91.

Cine-magnetic resonance imaging (cine-MRI) creates moving pictures by a video system and turbo-flash method that allow for high-speed MRI. This report describes our experience using this new technique for dynamic imaging using the fast spoiled GRASS (SPGR) sequence to study swallowing in patients with dysphagia following radical surgery for oral cancer. We defined two new parameters, laryngeal elevation and the angle of the epiglottis, to quantify swallowing ability by cine-MRI. These variables were markedly different in patients with dysphagia than they were in healthy controls. Cine-MRI not only provides dynamic images of swallowing but can generate objective measures of swallowing ability as well.

Intensity-related performances are modified by long-term hearing aid use: a functional plasticity? Philibert, B., Collet, L., Vesson, J. F., Veuillet, E. Unite CNRS UMR 5020, Laboratoire Neurosciences et Systemes Sensoriels, CNRS GDR 2213 Protheses Auditives, Hospices Civils de Lyon, Universite Claude Bernard Lyon 1, 50 Av. Tony Garnier, 69366 Lyon Cedex 07, France. *Hearing Research* (2002) March, Vol. 165 (1–2), pp. 142–51.

It is now well established that the adult central nervous system can reorganize following various environmental changes. In particular, it has been hypothesized that auditory rehabilitation of sensorineural hearing-impaired adults may involve functional plasticity. The present study sought to compare intensity-related performance between two groups of subjects paired for age, gender and absolute thresholds in both ears. One group comprised long-term binaural hearing aid (HA) users and the other non-HA users. The effect of HA use was measured in two intensity tasks, a discrimination-limen-for-intensity task (DLI) and a loudness-scaling task. Results indicated that significant differences exist in

loudness perception between long-term HA users and non-HA users, the latter rating intensity as louder than the former. Concerning intensity discrimination performance, a statistical tendency to lower, i.e. better, DLIs in long-term than in non-HA users was revealed. Moreover, significant differences between ears were observed in the loudness-scaling task, with the right ear showing greater inter-group difference than the left ear. This additional result points to a lateralization of the acclimatization effect. Finally, this study suggests significant perceptual modification and thus a possible functional plasticity entailed by HA use.

Esthesioneuroblastoma: irradiation alone and surgery alone are not enough. Gruber, G., Laedrach, K., Baumert, B., Caversaccio, M., Raveh, J., Greiner, R. Department of Radiation-Oncology, University of Berne, Inselspital, Bern, Switzerland. guenter.gruber@insel.ch. *International Journal of Radiation Oncology, Biology, Physics* (2002) October 1, Vol. 54 (2), pp. 486–91.

PURPOSE: To evaluate the long-term outcome of patients with esthesioneuroblastoma treated with neoadjuvant or definitive radiotherapy (RT). **METHODS AND MATERIALS:** Between 1980 and 2001, 28 patients with histologically confirmed esthesioneuroblastoma underwent RT, with a median dose of 60 Gy (range 38–73). The median age was 58 years (range 16–85). According to the Kadish classification, four patients had Stage A, eight Stage B, and 16 Stage C tumours. Radical resection was performed in 13 cases, in nine before RT and in four after RT because of stable or progressive disease. The outcome analyses included the median age (58 years), Kadish stage, total dose (or = 60 vs. >60 Gy). **RESULTS:** After a mean follow-up of 68 months, 54 per cent of patients were free of tumour progression. The five- and 10-year local progression-free survival rate was 81 per cent and 51 per cent, respectively, and the disease-free survival rate was 70 per cent and 25 per cent, respectively. Four of ten deaths (four of 10) were intercurrent, resulting in a cause-specific survival of 77 per cent and 69 per cent at five and 10 years, respectively. Radical resection offered significantly better local progression-free survival and disease-free survival (p 0.02). Skull base penetration (p 0.04), intraorbital extension (p 0.04), and Kadish C stage (p 0.06) were important for impaired disease-free survival. **CONCLUSION:** Despite doses up to 73 Gy, radical RT cannot replace radical resection, which classifies esthesioneuroblastoma as rather radioresistant. Because of its biology and the high rates of late recurrence, we recommend a radical strategy with resection, high-dose RT, and simultaneous chemotherapy. We are aware that some tumors qualify for palliative treatment only.

Fractionated stereotactic radiotherapy for acoustic neuromas. Williams, J. A. Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA. jw@jhu.edu. *International Journal of Radiation Oncology, Biology, Physics* (2002) October, Vol. 54 (2), pp. 500–4.

PURPOSE: When compared with radiosurgery, fractionated stereotactic radiotherapy for acoustic neuroma (AN) offers escalation of the tumour dose and potential sparing of auditory and facial nerve functions. **METHODS AND MATERIALS:** Between 1996 and 2001, 249 consecutive patients have received fractionated stereotactic radiotherapy for AN. One hundred twenty-five patients had follow-up >one year and were the subject of this report. A noninvasive, repeat-fixation mask allowed simulation by way of spiral CT. Two distinct schedules for total dose and fractionation were used. For an AN 3.0 cm in diameter (volume $1.4 \pm 0.2(3)$), patients received 25 Gy given in five consecutive daily fractions of 5 Gy (111 patients), and for ANs >or = 3.0 cm (volume $8.1 \pm 1.2(3)$), patients received 30 Gy given in 10 fractions of 3 Gy (14 patients). **RESULTS:** The percentage of decrease in tumor size was 12 per cent \pm two per cent (range 0–100 per cent) vs. 13 per cent \pm three per cent (range 0–38 per cent) for the 25 Gy vs. 30 Gy regimens, respectively. No patients had growth of the AN or developed facial weakness. Two patients developed transient decreases in facial sensation. The rates of hearing preservation were similar for the larger and smaller tumours. **CONCLUSION:** Fractionated stereotactic radiotherapy may preserve normal function and control both small and large ANs.

Autoantibodies to inner ear and endothelial antigens in Cogan's syndrome. Lunardi, C., Bason, C., Leandri, M., Navone, R., Lestani, M., Millo, E., Benatti, U., Cilli, M., Beri, R., Corrocher,

R., Puccetti, A. Department of Clinical and Experimental Medicine, University of Verona, Verona, Italy. claudio.lunardi@univr.it. *Lancet* (2002) September 21, Vol. 360 (9337), pp. 915–21. **BACKGROUND:** Cogan's syndrome is a chronic inflammatory disease of unknown origin, characterized by sensorineural hearing loss, episcleritis, and vasculitis. An autoimmune origin has been suggested but not proven. Our aim was to establish whether or not an autoimmune process is the cause of the disease. **METHODS:** We used pooled IgG immunoglobulins derived from eight patients with Cogan's syndrome to screen a random peptide library to identify disease relevant autoantigen peptides. Among the identified peptides, one was recognized by all the patients' sera. Antibodies against peptides were affinity purified from patients' sera and used to characterize the autoantigen, to stain human cochlea, and to transfer the features of Cogan's disease into animals. **FINDINGS:** We identified an immunodominant peptide that shows similarity with autoantigens such as SSA/Ro and with the reovirus III major core protein lambda 1. The peptide sequence shows similarity also with the cell-density enhanced protein tyrosine phosphatase-1 (DEP-1/CD148), which is expressed on the sensory epithelia of the inner ear and on endothelial cells. IgG antibodies against the peptide, purified from the patients' sera, recognized autoantigens and DEP-1/CD148 protein, bound human cochlea, and inhibited proliferation of cells expressing DEP-1/CD148. The same antibodies bound connexin 26, gene mutations of which lead to congenital inner-ear deafness. Furthermore, these antibodies were able to induce the features of Cogan's disease in mice. **INTERPRETATION:** Our results indicate that Cogan's syndrome is an autoimmune disease, characterized by the presence of autoantibodies able to induce tissue damage on binding of cell-surface molecules present on the sensory epithelia of the inner ear and on endothelial cells.

Occupational exposure to noise and the attributable burden of hearing difficulties in Great Britain. Palmer, K. T., Griffin, M. J., Syddall, H. E., Davis, A., Pannett, B., Cogon, D. MRC Environmental Epidemiology Unit, Community Clinical Sciences, Southampton General Hospital, University of Southampton SO16 6YD, UK. *Occupational and Environmental Medicine* (2002) September, Vol. 59 (9), pp. 634–9.

AIMS: To determine the prevalence of self reported hearing difficulties and tinnitus in working aged people from the general population, and to estimate the risks from occupational exposure to noise and the number of attributable cases nationally. **METHODS:** A questionnaire was mailed to 22 194 adults of working age selected at random from the age-sex registers of 34 British general practices (21 201 subjects) and from the central pay records of the British armed services (993 subjects). Information was collected on years of employment in a noisy job; and whether the respondent wore a hearing aid, had difficulty in hearing conversation, or had experienced persistent tinnitus over the past year. Associations of hearing difficulty and tinnitus with noise exposure were examined by logistic regression, with adjustment for age, sex, smoking habits, and frequent complaints of headaches, tiredness, or stress. The findings were expressed as prevalence ratios (PRs) with associated 95 per cent confidence intervals (CIs). Attributable numbers were calculated from the relevant PRs and an estimate of the prevalence of occupational exposure to noise nationally. **RESULTS:** Some two per cent of subjects reported severe hearing difficulties (wearing a hearing aid or having great difficulty in both ears in hearing conversation in a quiet room). In men, the prevalence of this outcome rose steeply with age, from below one per cent in those aged 16–24 years to eight per cent in those aged 55–64. The pattern was similar in women, but severe hearing loss was only about half as prevalent in the oldest age band. Tinnitus was far more common in subjects with hearing difficulties. In both sexes, after adjustment for age, the risk of severe hearing difficulty and persistent tinnitus rose with years spent in a noisy job. In men older than 35 years with 10 or more years of exposure, the PR for severe hearing difficulty was 3.8 (95 per cent CI 2.4 to 6.2) and that for persistent tinnitus 2.6 (95 per cent CI 2.0 to 3.4) in comparison with those who had never had a noisy job. Nationally, some 153 000 men and 26 000 women aged 35–64 years were estimated to have severe hearing difficulties attributable to noise at work. For persistent tinnitus the corresponding numbers were 266 000 and 84 000. **CONCLUSIONS:** Significant hearing difficulties and tinnitus are quite common in men from the older working age range. Both are

strongly associated with years spent in a noisy occupation – a predominantly male exposure. The national burden of hearing difficulties attributable to noise at work is substantial.

Evaluation of the internal auditory canal with virtual endoscopy. Vrabec, J. T., Briggs, R. D., Rodriguez, S. C., Johnson, R. F. Jr, Bobby R. Alford Department of Otolaryngology and Communicative Sciences, Baylor College of Medicine, Houston, Texas, USA. jvrabec@bcm.tmc.edu. *Otolaryngology – Head and Neck Surgery* (2002) September, Vol. 127 (3), pp. 145–52.

OBJECTIVE: Three-dimensional imaging can improve the understanding and comprehension of complex anatomy. Recent advances in software development allow the construction of a virtual endoscopic view of anatomic structures. This report applies virtual endoscopic capabilities to imaging of the internal auditory canal. **STUDY DESIGN, SETTING, AND PATIENTS:** We conducted a retrospective case review at a tertiary referral center of patients with abnormal internal auditory canal anatomy on computed tomography. **INTERVENTIONS:** Computed tomography images were obtained using conventional clinical algorithms involving multiple, 1 mm thick slices through the temporal bone. Three-dimensional reconstructions were made using General Electric Advantage Windows Navigator software. The virtual endoscopic image-processing algorithm used selected image intensity threshold levels to visualize internal auditory canal anatomy from an endoscopic perspective. **RESULTS:** Eleven cases of abnormalities of the internal auditory canal were retrospectively identified. Clinical applications using the virtual endoscopic images are presented. The virtual endoscopic images supported prior clinical decision making in six of the 11 cases evaluated. **CONCLUSION:** This technique shows promise for the diagnosis, surgical planning, and teaching of temporal bone anatomy. Usefulness is dependent on acquisition parameters and clinical indications for examination.

Prognostic value of the blink reflex in acoustic neuroma surgery. Darrouzet, V., Hilton, M., Pinder, D., Wang, J. L., Guerin, J., Bebear, J. P. Department of Skull Base Surgery, University Hospital of Bordeaux, France. vincent.darrouzet@chu-bordeaux.fr. *Otolaryngology – Head and Neck Surgery* (2002) September, Vol. 127 (3), pp. 153–7.

OBJECTIVE: The study goal was to demonstrate that blink reflex analysis can predict post-operative facial nerve outcome in cerebellopontine angle tumour surgery. **STUDY DESIGN, SETTING, AND PATIENTS:** In an open and prospective study conducted at a single tertiary care center over three years, 91 subjects with a vestibular schwannoma filling the internal auditory meatus were enrolled and operated on via a translabyrinthine approach. The difference in latency of the early response (DeltaR1) of the blink reflex between the pathologic side and the healthy side was calculated in every patient during a complete electrophysiologic examination of the facial nerve performed on the day before surgery. **MIN OUTCOME MEASURES:** DeltaR1 was compared with the other pre-operative data (tumour volume, facial function), with the perioperative observations (difficulties with the dissection of the facial nerve), and especially with the post-operative status after one year. The statistical study was conducted using polynomial regression. **RESULTS:** Patients with a negative or zero DeltaR1 have normal facial function at one year. For those with a positive DeltaR1 the outcome is not favorable unless the tumour is small. For patients presenting with an immediate complete facial paralysis, the value of DeltaR1 is also indicative of facial function outcome. **CONCLUSION:** Statistical analysis shows that the blink reflex, through DeltaR1, has an excellent prognostic value in anticipating the difficulties with facial nerve dissection and post-operative facial function after one year.

Sinus tympani endoscopic anatomy. Abdel, B. F., El-Dine, M. B., El-Saiid, I., Bakry, M. Department of Otolaryngology, Alexandria Faculty of Medicine, Egypt. fatthibaki@cns-egypt.com. *Otolaryngology – Head and Neck Surgery* (2002) September, Vol. 127 (3), pp. 158–62.

OBJECTIVE: The sinus tympani has been the focus of clinical interest because of its tendency to be invaded by cholesteatoma, its visual obscurity, and the lack of a straightforward surgical

approach by which it can be addressed. This study was undertaken to describe the microscopic as well as the endoscopic anatomy of the sinus tympani. **STUDY DESIGN AND SETTING:** Thirty temporal bones harvested from cadavers were dissected using an operating microscope and telescopes with different angles and 2.7- and 4 mm diameters, fitted with a videocamera. Images were transmitted to a computer screen. Precise measurements were made after scaling the distances with the digital image processing. **RESULTS:** Marked variation in size and shape was the rule. It was found that the sinus tympani is bounded laterally by a constant ledge of bone anterior to the facial nerve. It was deep, extending posterior to the facial nerve in six specimens. The telescopes (30 degrees to 70 degrees) enabled the surgeon to see this region clearly because the orifice plane was more or less perpendicular to the axis of the external auditory canal. **CONCLUSION:** The study emphasizes the importance of removal of this lateral lip of bone to expose the orifice of the sinus tympani. This should be complemented with the use of a 30 degrees endoscope (1.7 mm in canal-up and 4.0 mm in canal-down technique) for better visualization and cleaning of this hidden area.

Laser therapy for refractory myringitis in children. Fechner, F. P., Cunningham, M. J., Eavey, R. D. Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston 02114, USA. *Otolaryngology – Head and Neck Surgery* (2002) September, Vol. 127 (3), pp. 163–8.

OBJECTIVE: We present the application and initial results of a CO₂ laser technique for the treatment of medically refractory chronic granular myringitis (CGM). **STUDY DESIGN AND SETTING:** Retrospective case series and 15 treated ears in 13 consecutive patients between the ages of six and 14 years (median age, nine years) cared for in a tertiary care specialty hospital. **RESULTS:** Eleven of 15 treated ears had total resolution of CGM and associated symptoms; median follow-up time was 10 months. Three ears were improved, and one ear remained unchanged. Three of five preoperative tympanic membrane perforations healed after laser treatment; one patient developed a post-operative, dry perforation. Hearing was not impaired in any patient tested. **CONCLUSION:** Preliminary results suggest that CGM, when refractory to medical treatment, can often be treated effectively by a single laser treatment.

Unilateral endolymphatic hydrops: what about the contralateral ear? Salvinelli, F., Trivelli, M., Greco, F., Casale, M., Miele, A., Lamanna, F., Pallini, R. Campus Biomedico University, Department of Otolaryngology, V. Emilio Longoni, 69, 00155 Roma, Italy. *Revue de laryngologie – otologie – rhinologie* (2002), Vol. 123 (2), pp. 71–5.

INTRODUCTION: The early recognition of incipient Ménière's disease (MD) in the asymptomatic ear of a patient with known unilateral disease has profound implications for patient management and follow-up, but the criteria for a right and precocious diagnosis is still controversial. **MATERIALS AND METHODS:** We evaluated 49 patients with MD, selected according to Committee on Hearing and Equilibrium guidelines. All patients underwent laminar tonal audiometry, stapedial reflex study, Glycerol dehydration test, Auditory Brainstem Response (ABR) vestibular examination. MRI was performed in 14 patients. **RESULTS:** A raised hearing threshold in the contralateral ear was found in 27 patients, but only seven (14.3 per cent) fulfilled the requirements to be considered affected by bilateral MD. The average delay of occurrence in the contralateral ear was seven years (from five to 12 years). The glycerol test was positive only in four patients with unilateral MD and moderate hearing loss. It was not positive in any case of bilateral MD. The membranous endolymphatic duct and sac is not well visualized with MRI on the affected side in the majority of patients. **CONCLUSION:** A MRI study must be included in the diagnostic protocol for MD and with improvements in this imaging modality will possibly allow detection of variations in the size of inner ear structures. Glycerol dehydration test was useful only in selected cases. A full assessment of incipient disease in the asymptomatic ear in unilateral Ménière's disease should be undertaken. A conservative approach in surgical treatment of unilateral MD is recommended because of the possibility of evolution of a bilateral form, which can occur even 10 years after the onset of the disease.