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Abstract Selection

Sensitivity of a new grading system for studying nasal polyps with the potential to detect early changes in polyp size after treatment with a topical corticosteroid (budesonide). Johansson, L., Holmberg, K., Melen, I., Stierna, P., Bende, M. Department of Otorhinolaryngology, Central Hospital, Skoevde, Sweden. *Acta Oto-Laryngologica* (2002) January, Vol. 122 (1), pp. 49–53.
We have previously compared different scoring systems for endoscopic staging of nasal polyps. Of the five methods evaluated, we found that two were better than the others with regard to reproducibility and agreement between physicians. One method was lateral imaging, developed by the authors, and the other was a scoring system developed by Lildholdt *et al*. The main objective of the present study was to compare the sensitivity of these two methods. Another aim was to study the effect on nasal polyposis of topical nasal corticosteroids over a two week period. Patients with bilateral nasal polyposis (n = 100) were randomized to a two week treatment with a topical corticosteroid (budesonide aqueous nasal spray: 128 microg b.i.d.) or placebo in a double-blind manner. Nasal symptoms were scored before treatment and after three, seven and 14 days of treatment, and the patients underwent nasal endoscopy at clinical visits. Patients treated with active substance had an improvement in their symptoms, an effect already detectable after three days of treatment, compared with those who received placebo. In addition, a statistically significant decrease in polyp size could be registered after 14 days using lateral imaging but not with the other scoring system. In conclusion, lateral imaging was more sensitive and could detect effects earlier than the other scoring system and can be recommended for the endoscopic staging of nasal polyps in clinical studies.

Relationship between three inner ear antigens with different molecular weights and autoimmune inner ear disease. Gong, S. S., Yu, D. Z., Wang, J. B. Department of Otolaryngology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, People's Republic of China. keyc@tjmu.edu.cn. *Acta Oto Laryngologica* (2002) January, Vol. 122 (1), pp. 5–9.
Crude inner ear antigen (CIEAg) can induce autoimmune inner ear disease (AIED) although it is not known which subcomponent of CIEAg is involved. In this study, we investigated the relationship between three purified inner ear antigens (31, 42–45 and 60 kD proteins) and AIED, and determined their distribution in normal guinea pig cochlea. Three groups of guinea pigs were immunized with the three inner ear antigens and one group served as a control. The hearing thresholds, serum IgG level and morphological changes in the inner ear were observed. The expression of the three antigens in the cochlea was detected using immunohistochemical techniques. No obvious changes in hearing thresholds or inner ear morphology were observed between the control and 42–45 kD groups. Animals immunized with the 31 or 60 kD proteins showed a significant increase in hearing thresholds (p 0.05 vs control), accompanied by morphological changes in the inner ear. The serum IgG level was increased significantly (p 0.05) in all immunized animals. The 31 kD protein was distributed in the cochlear nerve and spiral ganglion, while the 42–45 and 60 kD proteins were distributed widely, being found in the spiral ganglion, organ of Corti, stria vascularis and spiral ligament. These results suggest that two subcomponents of CIEAg (the 31 and 60 kD proteins), may induce AIED independently, that several inner ear antigens may contribute to the pathogenesis of AIED and that the 31 kD protein is of high tissue specificity and may be used as a marker protein for the clinical diagnosis of AIED.

Intralaryngeal application of a miniaturized ultrasonic probe. Tamura, E., Kitahara, S., Kohno, N. Department of Otorhinolaryngology, National Defense Medical College, Saitama, Tokorozawa City, Japan. *Acta Oto Laryngologica* (2002) January, Vol. 122 (1), pp. 92–5.
We developed a method for performing intralaryngeal ultrasonography. Normal larynges were obtained from 10 cadavers and examined using an intraluminal ultrasonic tomography apparatus connected to a radial scanning 20 MHz miniaturized probe. The larynx was placed in a bath filled with physiologic saline and the probe was inserted through the forceps channel of the fiberscope (6 mm diameter). A horizontal ultrasonic image of the vocal fold was obtained. Histologic sections of the larynx were compared with the ultrasonic images. The mucosa in the membranous region of the vocal fold was comprised of three layers ultrasonographically. The epithelium and superficial layer of the lamina propria were visualized as a high echo (hyperechoic) region, the intermediate layer of the lamina propria was visualized as a low echo (hypoechoic) region and the deep layer of the lamina propria was seen as a hyperechoic region. The vocal fold structure can be visualized by intralaryngeal ultrasonography using the filling method. This method may be clinically useful for the detection of tumors involving the vocal folds.

Change in olfaction after radiotherapy for nasopharyngeal cancer – a prospective study. Ho, W. K., Kwong, D. L. W., Wei, W. I., Sham, J. S. T. Division of Otorhinolaryngology–Head and Neck Surgery, Department of Surgery, University of Hong Kong Medical Center, Queen Mary Hospital Pokulam, Hong Kong, PR China. *American Journal of Otolaryngology* (2002) July–August, Vol. 23 (4), pp. 209–14.
PURPOSE: To evaluate the changes in olfactory function in patients with nasopharyngeal carcinoma who have received radiation to the head and neck. MATERIALS AND METHODS: Olfactory function of consecutive patients with nasopharyngeal carcinoma was assessed prospectively before irradiation and serially up to one year after radiotherapy by the Sniffin' Sticks (Erlangen, Germany) olfactory function test and by a patient symptom visual analogue scale. RESULTS: Fifty-eight patients were recruited before radiotherapy was commenced. Three patients could not give a reliable response to the Sniffin' Sticks test even in this first assessment, and seven patients did not return for evaluation after irradiation. Forty-eight patients were available for follow-up assessment. Mean olfactory threshold scores by the Sniffin' Sticks test were found to deteriorate significantly at 12 months when compared with the scores before irradiation (8.3 at 12 months vs. 11.5 before irradiation; $p = 0.001$). Scores for olfactory discrimination and for identification did not exhibit any significant changes when assessed at 12 months ($p>0.05$ for both). Subjective patient assessment of olfactory function with the visual analogue scale at 12 months did not demonstrate any significant differences when compared with patients' assessment before irradiation ($p = .90$). An increase in discharge was the only nasal symptom that demonstrated a significant change at 12 months when compared with the assessment before irradiation ($p = 0.001$). CONCLUSIONS: Deterioration in olfactory threshold scores was found at 12 months after irradiation and was not noticed by the patients.

Atypical isolated epiglottic tuberculosis: a case report and a review of the literature. Galli, J., Nardi, C., Contucci, A. M., Cadoni, G., Lauriola, L., Fantoni, M. Institute of Otolaryngology, Catholic University of the Sacred Heart, Rome, Italy. iclot@rm.unicatt. *American Journal of Otolaryngology* (2002) July–August, Vol. 23 (4), pp. 237–40.
Tuberculosis is a systemic disease and its occurrence in the larynx

and in the oral cavity is well-documented in the literature. Tuberculosis of the larynx involves mainly the vocal folds and the ventricular band and is associated with pulmonary tuberculosis in 80 per cent of cases. Isolated epiglottic tuberculosis has rarely been described, and it is always associated with pulmonary lesions. The authors report a case of isolated epiglottic tuberculosis in a 72-year-old woman that presented as a laryngeal carcinoma and discuss the diagnostic problems related to its atypical clinical, endoscopic, and radiologic presentation.

Mandibular advancement devices: rate of contraindications in 100 consecutive obstructive sleep apnea patients. Petit, F. X., Pepin, J. L., Bettega, G., Sadek, H., Raphael, B., Levy, P. Department of Acute Specialized Medicine and Sleep Laboratory, PRETA Laboratory TIMC UMR CNRS 5525, University Hospital Grenoble, BP 217 X, 38043 Grenoble, France. *American Journal of Respiratory and Critical Care Medicine* (2002) August 1, Vol. 166 (3), pp. 274–8.
Mandibular advancement devices (MAD) should be contraindicated (Clark GT, Sleep Med Rev 1998;2:163–174) if there are: (1) insufficient teeth to support the device, (2) periodontal problems inducing tooth mobility, (3) active temporomandibular joint (TMJ) disorder, and (4) limited maximum protrusive distance (6 mm). The aim of the present study was to evaluate the proportion of the obstructive sleep apnea population that exhibits any contraindication (CI) to MAD. For this study there were 100 unselected adult patients consecutively diagnosed by polysomnography in a tertiary sleep laboratory. Clinical and radiologic evaluation of the dental, periodontal, and TMJ status of these 100 patients were performed by two expert maxillofacial surgeons, blind to each other, permitting the identification of MAD CIs. The two maxillofacial surgeons agreed on MAD absolute CIs in 96 of the 100 patients. CIs were identified in 34 per cent of the patients. The nature of the CIs systematically referred to an insufficient number of remaining teeth (mean number teeth lost: 7.8 ± 6.1 with 31 patients having had more than 10 teeth removed). The tooth avulsions were significantly higher in contraindicated compared with noncontraindicated patients (16 ± 8 versus ± 3, p 0.00001). Periodontal abnormalities coexisted with dental CI in approximately half of the patients. A TMJ disorder was considered as significant enough to lead to CI in two patients. Dental and periodontal care was needed in 16 patients before the use of MAD could be considered. Conclusions were that primary CIs were present in 34 per cent of 100 consecutive patients, mainly owing to dental problems. Moreover, another subgroup of patients (16 per cent) required close supervision and follow-up to avoid impairment of preexisting TMJ and dental problems. Such a high rate of CI should be considered when the overall efficacy of oral appliances is compared with other treatments, such as surgery or nasal continuous positive airway pressure.

Use of nasal cannula for detecting sleep apneas and hypopneas in infants and children. Trang, H., Leske, V., Gaultier, C. Service de Physiologie, Hopital Robert Debre, Universite Paris VII, INSERM E9935, 48 boulevard Serurier, 75019 Paris, France. ha.trang@rdb.ap-hop-paris.fr. *American Journal of Respiratory and Critical Care Medicine* (2002) August 15, Vol. 166 (4), pp. 464–8.
We evaluated tolerance of nasal cannula (NC) by 14 infants (median age, 2.6 months) and 16 children (median age, 5.5 years) with suspected obstructive sleep apnea syndrome and compared the efficacy of the NC with that of a nasobuccal thermistor in detecting obstructive apneas (OA) and obstructive hypopneas (OH) on polysomnography traces. The relationship between cannula flow and esophageal pressure was assessed in six patients. Time spent with an uninterpretable flow signal was longer when using a cannula than when using a thermistor in infants (p 0.05) and children (p 0.01), and it was longer in the younger patients (p 0.05). Among the 650 OA-OH detected by either method, only 38 per cent were detected by both, and 58 per cent were detected by the cannula and missed by the thermistor, so that the apnea-hypopnea index was higher with cannula than with thermistor in each age group (p 0.01). More hypopneas than apneas were detected by the cannula and missed by the thermistor (p 0.001). Out-of-phase thoracic and abdominal motions and/or changes in the end-tidal CO(2) signal shape were associated with 86 per cent of OH identified by cannula. In the six patients whose esophageal pressure was measured, all respiratory events identified using a cannula were associated with increased 'airway resistance.' Thus, the NC is more likely than the thermistor to detect OA and OH in infants and children, and this superiority is particularly marked for hypopneas.

Upper airway epithelial structural changes in obstructive sleep-disordered breathing. Paulsen, F. P., Steven, P., Tsokos, M., Jungmann, K., Mueller, A., Verse, T., Pirsig, W. Institute of Anatomy, Christian Albrecht University of Kiel, Olshausenstrasse 40, D-24098 Kiel, Germany. fpaulsen@anat.unikiel.de. *American Journal of Respiratory and Critical Care Medicine* (2002) August 15, Vol. 166 (4), pp. 501–9.
The etiology of upper airway collapsibility in patients with snoring and obstructive sleep apnea (OSA) remains unclear. Structural mucosal changes could be contributory factors. The objective of this study was to determine whether pathologic changes in the epithelium or the epithelial-connective tissue interface are present in patients with snoring and/or OSA by means of scanning electron microscopy and immunohistochemistry. Uvulae were obtained by uvulopalatopharyngoplasty from three patients with habitual snoring and nine patients with mild to severe OSA, as well as by dissection from 43 nonsnoring body donors. Scanning electron microscopy revealed structural changes in the epithelial-connective tissue boundary that significantly differed from age-related changes in the control subjects. The immunohistochemical staining with antibodies against epithelial cytokeratins showed differences in the expression pattern of cytokeratin 13 between patients and control subjects. No differences were found in the distribution pattern of laminin. Analysis of defense cells revealed a significant diffuse infiltration of leukocytes, mainly T cells, inside the lamina propria of the patient group, which was not observed in the control group. In conclusion, these results support the hypothesis that progressive structural changes in the mucosa caused by the trauma of snoring are a possible contributory factor to upper airway collapsibility.

Design and impact of intraoperative pathways for head and neck resection and reconstruction. Chalian, A. A., Kagan, S. H., Goldberg, A. N., Gottschalk, A., Dakunchak, A., Weinstein, G. S., Weber, R. S. Department of Otorhinolaryngology/Head and Neck Surgery, Hospital of the University of Pennsylvania, Philadelphia 19104-4283, USA. chaliana@uphs.upenn.edu. *Archives of Otolaryngology–Head and Neck Surgery* (2002) August, Vol. 128 (8), pp. 892–6.
OBJECTIVES: To describe the design and impact of three intraoperative pathways for the treatment of head and neck cancers; to detail the pathways schematically to illustrate projected intraoperative flow and teamwork; and to analyse impact on procedure and case lengths in each pathway and in comparison with historical prepathway average times. SETTING: Tertiary-level academic health system main operating room. PATIENTS: Twenty-one patients undergoing transcervical (TC) resection (n = 11), transmandibular (TM) resection (n = 8), or laryngopharyngectomy (LP) (n = 2) with radial forearm free-flap reconstruction for ablative or reconstructive reasons were pathway eligible. A convenience sample of 16 patients undergoing TC resection, seven undergoing TM resection, and seven undergoing LP prepathway is used for comparison. INTERVENTION: Our academic medical center uses three intraoperative clinical pathways to manage resource use and streamline care for patients. These three pathways were designed schematically by an interdisciplinary team. The pathways plan progression of the case by timed actions for surgical, anesthesia, and nursing teams. MAIN OUTCOME MEASURES: Procedure and case lengths. RESULTS: The TC pathway procedure and case length averaged 10.48 and 12.33 hours, respectively; TM pathway procedure and case lengths, 11.19 and 13.32 hours, respectively; and LP pathway procedure and case lengths, 12.42 and 13.83 hours, respectively. Aggregate averages were 10.93 hours and 12.85 hours for procedure and case length, respectively. The average pathway case lengths of 12.33, 13.32 and 13.83 hours compare favourably with our target times of 13, 14 and 15 hours, respectively. Environmental management, work flow, and team satisfaction anecdotally increased postpathway. CONCLUSIONS: Intraoperative pathways afford enhanced time and action efficiency to streamline care of patients undergoing head and neck procedures. Pathway implementation produced time savings. Our results suggest that implementation of such pathways will benefit similar

academic medical centers seeking to improve intraoperative resource use to improve performance in the care of patients undergoing head and neck procedures.

Long-term effects of Le Fort I osteotomy for resection of juvenile nasopharyngeal angiofibroma on maxillary growth and dental sensation. Lowlicht, R. A., Jassin, B., Kim, M., Sasaki, C. T. Department of Surgery, Section of Otolaryngology, Yale School of Medicine, New Haven, Conn, USA. *Archives of Otolaryngology–Head and Neck Surgery* (2002) August, Vol. 128 (8), pp. 923–7.
OBJECTIVE: To analyse the long-term effects of the Le Fort I osteotomy approach for the resection of juvenile nasopharyngeal angiofibroma (JNA) on maxillary growth and dental sensation. DESIGN: Prospective collection of structured data. SETTING: Tertiary care academic teaching hospital. PATIENTS: Between 1993 and 1998, five adolescents (aged 10–14 years) constituted the evaluable cohort among 14 patients who underwent Le Fort I osteotomy for JNA resection. Mean follow-up was 47.2 months. INTERVENTIONS: The Le Fort I osteotomy approach was used to resect JNA. Cephalometric X-ray films were taken at various postoperative intervals to assess maxillary growth. The results were matched against age-correlated predictions from Dentofacial Planner software. MAIN OUTCOME MEASURES: Horizontal and vertical maxillary growth were each measured anteriorly and posteriorly by comparing interval postoperative cephalometric x-ray films. Dental sensation was longitudinally evaluated by performing interval pulp testing postoperatively. RESULTS: (1) Average vertical growth of the maxilla achieved 30 per cent of predicted growth anteriorly ($p = 0.02$). (2) Average horizontal growth matched predicted growth in all patients. (3) All patients demonstrated long-term maxillary dental denervation. CONCLUSIONS: Le Fort I osteotomy provides excellent surgical exposure for resection of JNA in the growing facial skeleton. Although it significantly affects vertical but not horizontal growth, its cosmetic effect is negligible. It also causes long-term dental denervation, which in most cases is undetected by patients.

Exclusively endoscopic removal of juvenile nasopharyngeal angiofibroma: trends and limits. Roger, G., Tran, B. H. P., Froelich, P., Van den Abbeele, T., Klossek, J. M., Serrano, E., Garabedian, E. N., Herman, P. Ear, Nose and Throat Surgery, Armand Trousseau Children's Hospital, Assistance Publique Hopitaux de Paris, France. gilles.roger@trs.aphop-paris.fr. *Archives of Otolaryngology–Head and Neck Surgery* (2002) August, Vol. 128 (8), pp. 928–35.
OBJECTIVE: To determine the feasible conditions for exclusive endoscopic resection of juvenile nasopharyngeal angiofibroma. DESIGN: Retrospective study of 20 patients, with a mean follow-up of 22 months. SETTING: Six academic referral hospitals. INTERVENTIONS: All patients had a preoperative computed tomographic or magnetic resonance imaging scan and at least one follow-up computed tomographic and/or magnetic resonance imaging scan six or 12 months after surgery. Exclusive endoscopic removal was performed using conventional functional endoscopic sinus surgery instrumentation after preoperative embolization. RESULTS: Using Radkowski staging, four, seven, and nine patients had stage I, II and IIIA tumours, respectively. Seven patients were operated on for a recurrence after open surgery. Extension toward the sphenoid sinus, pterygomaxillary fossa, or infratemporal fossa could be removed. There was no attempt at endoscopic removal of deep skull base or temporal fossa invasion. The mean surgery duration was 135 minutes; mean dimensions of the tumor were $4.5 \times 4 \times 3$ cm; and mean blood loss was 350 ml (median, 300 mL). No recurrences occurred in this series; there were small asymptomatic remnants in two cases. CONCLUSIONS: An exclusively endoscopic management of juvenile nasopharyngeal angiofibroma appears to be effective for small to medium tumors. It should be considered as a first-choice option for these cases (in view of the minimal bleeding, shorter duration, and efficacy).

Transnasal endoscopic treatment of choanal atresia without prolonged stenting. Van Den Abbeele, T., Francois, M., Narcy, P. Department of Pediatric Otorhinolaryngology, Robert Debre Hospital, Paris, France. thierry.van-den-abbeele@rdb.ap-hop-paris.fr. *Archives of Otolaryngology–Head and Neck Surgery* (2002) August, Vol. 128 (8), pp. 936–40.
OBJECTIVE: To analyse the outcome of transnasal endoscopic repair of choanal atresia (CA) in children without prolonged nasal stenting after surgery. DESIGN: Restrospective study. SETTING: Academic tertiary care children's hospital. PATIENTS: Forty children aged three days to 15 years (mean age, 41 months) who presented with unilateral (n = 26) or bilateral (n = 14) CA and underwent surgery between August 1996 and December 1999. INTERVENTION: All children underwent transnasal endoscopy with telescopes, endoscopic instruments, and a microdebrider. Nasal tubes in neonates or infants and nasal packing in older children were always removed after two days. Systematic revision endoscopy was performed with the patients under local or general anaesthesia on days six to 10. All patients were then clinically and endoscopically monitored for nasal obstruction and healing during a mean follow-up period of 18 months. RESULTS: There were 16 patients with associated malformations, including six cases of CHARGE association (a malformative syndrome that includes coloboma, heart disease, CA, retarded development, genital hypoplasia, and ear anomalies, including hypoplasia of the external ear and hearing loss) and 14 patients (nine with bilateral CA) with a history of previous choanal surgery (four transnasal, four laser, and six transpalatine). Postoperatively, 32 patients (80 per cent) had normal nasal patency and a satisfactory choanal diameter, and eight (20 per cent) had restenosis or complete choanal closure. Six underwent a second procedure, with success. The results in all children who had been previously treated with laser or transpalatine surgery were successful. The last patient, who presented with severe Treacher Collins syndrome, is still tracheotomized. There were no significant postoperative complications. One patient died of congenital cardiopathy six months after surgery. CONCLUSIONS: Transnasal endoscopic repair of CA is a safe and successful technique. The use of powered instrumentation and routine postoperative revision endoscopy seems to avoid prolonged nasal stenting.

Vocal cord paralysis after surgery for thoracic aortic aneurysm. Ishimoto, S. I., Ito, K., Toyama, M., Kawase, I., Kondo, K., Oshima, K., Niimi, S. Department of Otolaryngology, Faculty of Medicine, University of Tokyo, Tokyo. *Chest* (2002) June, Vol. 121 (6), pp. 1911–5.
OBJECTIVE: To determine the incidence, etiology, prognosis, and treatment of vocal cord paralysis (VCP) after surgery for thoracic aortic aneurysm (TAA). STUDY DESIGN: Retrospective study performed between 1989 and 1995. SETTING: Academic, tertiary care, referral medical center. PATIENTS: Seventy-one TAA patients underwent surgery at the Kameda Medical Center between 1989 and 1995. RESULTS: Sixty-two of 71 patients were examined postoperatively for voice quality. Twenty patients (32 per cent) had hoarseness develop caused by VCP, as confirmed by laryngoscopy. The left recurrent laryngeal nerve had been sacrificed in one patient during surgery, but it was preserved in the remaining 19 patients. Unilateral left VCP was noted in 19 patients, and bilateral VCP occurred in one patient. The incidence of VCP was higher in those patients who underwent surgery for type I aneurysms (nine of 14 patients, 64 per cent). In 16 of the 19 patients (84 per cent) who received follow-up for <six months, vocal cord movement did not return to normal. Surgery to improve voice quality, arytenoid adduction in five patients and intracordal injection in two patients, was performed with success. CONCLUSIONS: Our results indicate that surgery for TAA is associated with a relatively high incidence of VCP. VCP occurred despite preservation of the recurrent laryngeal nerve, and the paralysis did not show a spontaneous recovery even six months after surgery.

Multi-MUP analysis of laryngeal muscles. Koivu, M. K., Jaeaeskelaeinen, S. K., Falck, B. B. Department of Clinical Neurophysiology, University Hospital, PL 52, FI-20521, Turku, Finland. marja.koivu@tyks.fi. *Clinical Neurophysiology* (2002) July, Vol. 113 (7), pp. 1077–81.
We performed quantitative motor unit potential (MUP) analysis of the thyroarytenoid (TA) and cricothyroid (CT) muscles, using multi-MUP-analysis in 40 healthy volunteers. The method is well tolerated, easy to perform, and examination of one muscle takes five to 10 min. The mean MUP amplitude of both muscles was significantly larger in men than in women. The method can safely be used in clinical routine.

The quality of life impact of dysphonia. Wilson, J. A., Deary, I. J., Millar, A., Mackenzie, K. Department of Otolaryngology Head and Neck Surgery, University of Newcastle, UK. Janet.Wilsonnuth@northy.nhs.uk. *Clinical Otolaryngology and Allied Sciences* (2002) June, Vol. 27 (3), pp. 179–82.
Dysphonia can affect social life and employment, but formal studies of its general health impact are lacking. The aims of this study were (i) to compare self-rated general health status as measured by the SF-36 in a large cohort of dysphonic patients with those from normative groups; and (ii) to examine in differential impact of dysphonia on the various health status domains. The 163 dysphonic voice clinic attendees (38 men, 125 women) were drawn from recruits to a prospective trial of speech therapy efficacy. The Short-Form 36 (SF-36) scores were compared with published data on 744 age-matched healthy controls. Patients with dysphonia had significantly poorer self-reported health than the controls on all eight SF-36 subscales (limitation of physical activity p 0.05; other seven, all p 0.001, Student's t-test). We thus conclude that dysphonia in patients without obvious laryngeal disease has an adverse impact on all health status subscales as measured by the SF-36. The study provides further evidence for the inclusion quality of life measures in otolaryngology baseline and outcome assessments.

Results from a European clinical investigation of the Nucleus multichannel auditory brainstem implant. Nevison, B., Laszig, R., Sollmann, W. P., Lenarz, T., Sterkers, O., Ramsden, R., Fraysse, B., Manrique, M., Rask, A. H., Garcia, I. E., Colletti, V., von Wallenberg, E. Cochlear Europe Ltd., 22–24 Worple Road, Wimbledon, London SW19 4DF, UK. *Ear and Hearing* (2002) June, Vol. 23 (3), pp. 170–83.
OBJECTIVE: This study was designed to investigate the perceptual benefits and potential risks of implanting the Nucleus (R) multichannel auditory brainstem implant. DESIGN: Between September 1992 and October 1997 a total of 27 subjects received a Nucleus 20- or 21-channel Auditory Brainstem Implant (ABI). All subjects involved in the trial had bilateral acoustic tumour as a result of neurofibromatosis type 2 (NF2) resulting in complete dysfunction of the VIIIth nerve. The study used each subject as their own control without a preoperative baseline because residual hearing, if existing, was destroyed at surgery by tumour removal. A battery of speech tests was conducted to evaluate each patient's performance and communication abilities. Tests were conducted, where possible, in the auditory-only, visual-only, and auditory-visual conditions at three days postoperatively (baseline), at three-mo intervals for the first year and every 12 mo thereafter. A subjective performance questionnaire was administered together with an extensive neurological examination at each test interval. RESULTS: 27 subjects involved in this trial were successfully implanted with a Nucleus ABI. One subject died two days postoperatively due to a lung embolism unrelated to the device. Twenty-six subjects underwent device activation and all but one patient received auditory sensation at initial stimulation (96.2 per cent). On average 8.6 (±4.2) of the available 21 electrodes were used in the patients' MAPs. Performance evaluation measures showed that the majority of users had access to auditory information such as environmental sound awareness together with stress and rhythm cues in speech that assist with lipreading. Although most subjects did not achieve any functional auditory-alone, open-set speech understanding, two subjects from this series (7.4 per cent) did receive sufficient benefit to be able to us the ABI in conversation without lipreading. CONCLUSIONS: Although the medical risks and surgical complexity associated with ABI device implantation are far greater than those for a cochlear implant, the clinical results from this trial show that the Nucleus multichannel ABI is capable of providing a significant patient benefit over risk ratio for subjects suffering loss of hearing due to bilateral retrocochlear lesions.

Vestibular evoked myogenic potentials are intact after sudden deafness. Wu, C. C., Young, Y. H. Department of Otolaryngology, National Taiwan University Hospital, 1 Chang te Street, Taipei, Taiwan. *Ear and Hearing* (2002) June, Vol. 23 (3), pp. 235–8.
OBJECTIVE: To evaluate vestibular evoked myogenic potentials (VEMPs) in cases of sudden deafness, and to confirm the noncochlear origin of the VEMPs. STUDY DESIGN: Prospective study. VEMPs, which were evoked by short tone burst (95 dB nHL) stimulation, were recorded in 20 the deaf ears were compared with those of the contralateral healthy ears and the normal control ears. The relations between VEMPs and the hearing level or caloric response were then investigated. RESULTS: All 20 of the deaf ears displayed normal biphasic VEMPs. The mean latencies of p13 and n23, as well as mean amplitude p13-n23, were 15.1 ± 2.8 msec, 20.7 ± 3.3 msec and 25.2 ± 12.6 microV, respectively, not significantly different to either the contralateral healthy ears (p>0.05) or the normal control ears (p>0.050. Five deaf ears displayed canal paresis or absent caloric response, whereas the remaining 15 ears revealed normal caloric response. CONCLUSION: All the lesioned ears of patients with idiopathic sudden deafness exhibit normal biphasic VEMPs. Neither the hearing level nor the caloric response correlated to the VEMPs.

The inhibitory effect of topical N-acetylcystein application on myringosclerosis in perforated rat tympanic membrane. Ozcan, C., Goeruer, K., Cinel, L., Talas, D. U., Unal, M., Cinel, I. Department of Otorhinolaryngology, School of Medicine, Mersin University, Mersin, Turkey. cengizozcan@hotmail.com. *International Journal of Pediatric Otorhinolaryngology* (2002) May 15, Vol. 63 (3), pp. 179–84.
OBJECTIVE: Myringosclerosis often occurs in patients in whom ventilation tube insertion and tympanoplasty procedures are performed. Recent studies have revealed a relationship between the development of myringosclerosis and oxygen-derived free radicals, and some investigations have demonstrated that free radical scavengers prevent the development of myringosclerosis. N-acetylcysteine is a well-known anti-oxidant and anti-inflammatory agent. In this study, we aimed to investigate the preventive effect of N-acetylcysteine on myringosclerosis in myringotomized rat tympanic membranes. METHODS: Twenty Sprague-Dawley rats were bilaterally myringotomized and divided into four groups. Group 1 received no treatment, group 2 was treated with topical saline solution in Spongostan, group 3 received topical 0.6 mg n-acetylcysteine in Spongostan and group 4 received 1.2 mg N-acetylcystein in Spongostan daily for 12 days. Tympanic membranes were examined by otomicroscopy on day 12. Then, the membranes were harvested and evaluated histologically by light microscopy. RESULTS: The tympanic membranes of groups 1 and 2 (saline and non-treated) showed extensive occurrence of myringosclerosis, whereas groups 3 and 4 (treated with N-acetylcystein) showed lesser occurrence of myringosclerosis in otomicroscopic evaluation (p 0.01). Under light microscopic examination, lamina propria of pars tensa was found thicker in groups 3 and 4 when compared with groups 1 and 2. There was no significant difference between groups 3 and 4 (p 0.03). CONCLUSIONS: Topically applied N-acetylcystein was found to be effective in the prevention of sclerotic lesions in myringotomized rat tympanic membranes.

Mastoid subperiosteal abscess management in children. Bauer, P. W., Brown, K. R., Jones, D. T. Department of Otolaryngology and Communication Disorders, Children's Hospital, Boston University School of Medicine, 300 Longwood Avenue, Boston, MA 02115, USA. bauerp@msnotes.wustl.edu. *International Journal of Pediatric Otorhinolaryngology* (2002) May 15, Vol. 63 (3).
The management of a mastoid subperiosteal abscess has traditionally required mastoidectomy. With the improvement of antibiotic therapy current literature supports the treatment of uncomplicated acute mastoiditis with myringotomy and intravenous antibiotics. Treatment of a mastoid subperiosteal abscess with tympanostomy tube insertion, intravenous antibiotics, and postauricular incision and drainage of the abscess avoids the morbidity and potential complications of mastoid surgery in young children. Three patients diagnosed with a mastoid subperiosteal abscess were managed in this way. The outcome of their treatment has been documented with lengthy otologic follow-up. Complete resolution of the acute infectious process was achieved in all cases with no evidence of recurrent disease.

Carhart's notch: a finding in otitis media with effusion. Ahmad, I., Pahor, A. L. Department of Otolaryngology, Birmingham City Hospital, Dudley Road, Birmingham, UK. ijazamad@hotmail.com. *International Journal of Pediatric Otorhinolaryngology* (2002) June 17, Vol. 64 (2), pp. 165–70.
INTRODUCTION: Carhart's notch (CN) is a false depression of bone conduction (BC) thresholds at 2–4 kHz initially described in

cases of stapes fixation. This study was designed to estimate the incidence and assess the clinical significance of CN in cases of otitis media with effusion (OME) in children. PATIENTS AND METHODS: Clinical records of 50 patients of OME that showed CN were analysed, retrospectively. First 24 were identified as seen in outpatients and 26 were found out of 100 consecutive cases of OME. The criteria of CN were a minimum of 10 dB depression in BC at any frequency 500–4000 Hz. RESULTS: Fifty patients showed CN, with mean age of 8.8 years. All had myringotomies with or without insertion of grommets. The CN ranged from 10 to 20 dB in the majority and up to 30 dB in few cases. In 85 ears studied, the affected frequencies comprised of 2000 Hz in 80 (94 per cent), 4000 Hz in four and 1000 Hz in one ear. Pre-operative tympanograms were of type B in 68 (80 per cent), type C in16 (18.8 per cent) and type A in one ear. Middle ear fluid was thick glue in 57 (67 per cent), serous in five (5.8 per cent), and no fluid found in 23 (27 per cent) cases. Oedematous, granular or polypoidal appearances of middle ear mucosa was noted in 57 (67 per cent) of the ears. A normal mucosa was seen in 17 (20 per cent), and no details were available in 11 (13 per cent) ears. Post-operative audiograms showed improvements of BC thresholds in 72 (84.7 per cent) of the ears. CONCLUSION: Our results show 26 per cent incidence of CN in paediatric cases of OME, with evidence of thick fluid and abnormal middle ear mucosa in about two-thirds of cases. This suggests that CN may be of prognostic value for myringotomy outcomes. Statistically there is a significant correlation between presence of fluid on myringotomy and CN, and type of tympanogram and post-operative BC threshold improvement. There is no predictive value of CN in terms of character of the middle ear fluid. Studies with larger numbers may be required to determine this with more certainty. It can help clinically, however, in pre-operative assessment of these cases. It is our opinion that BC should be an essential part of routine audiometry in all cases of OME.

Linkage of otosclerosis to a third locus (OTSC3) on human chromosome 6p21.3–22.3. Chen, W., Campbell, C. A., Green, G. E., Van Den Bogaert, K., Komodikis, C., Manolidis, L. S., Aconomou, E., Kyamides, Y., Christodoulou, K., Faghel, C., Giguere, C. M., Alford, R. L.. Manolidis, S., Van Camp, G., Smith, R. J. H. Molecular Otolaryngology Research Laboratories, Department of Otolaryngology–Head and Neck Surgery, University of Iowa Hospitals and Clinics, Iowa City, IA, USA. *Journal of Medical Genetics* (2002) July, Vol. 39 (7), pp. 473–7.
Clinical otosclerosis (OMIM 166800/605727) has a prevalence of 0.2–1 per cent among white adults, making it the single most common cause of hearing impairment in this group. It is caused by abnormal bone homeostasis of the otic capsule with the consequent development of sclerotic foci that invade the stapedio-vestibular joint (oval window) interfering with free motion of the stapes. Impaired ossicular chain mobility results in a conductive hearing loss. We identified the first locus for otosclerosis (OTSC1) on chromosome 15 in 1998 and reported a second locus (OTSC2) on chromosome seven last year. Here we present results of a genome wide linkage study on a large Cypriot family segregating otosclerosis. Results of this study exclude linkage to OTSC1 and OTSC2 and identify a third locus, OTSC3, on chromosome 6p. The defined OTSC3 interval covers in the HLA region, consistent with reported associations between HLA-A/HLA-B antigens and otosclerosis.

Preoperative histologic assessment of head and neck lesions using cutting needle biopsy. Yamashita, Y., Kurokawa, H., Takeda, S., Fukuyama, H., Takahashi, T. Kyushi Dental College, Kikakyushu, Japan. y-yama@kyu-dent.ac.jp. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics* (2002) May, Vol. 93 (5), pp. 528–33.
OBJECTIVE: This study assessed the clinical utility of cutting needle biopsy in which a newly developed Monopty biopsy instrument (MBI) (Monopty, Bard Urologic Division; Covington, Ga) was used in the preoperative assessment of head and neck lesions. STUDY DESIGN: Needle biopsies were performed with the MBI in 16 cases of head and neck lesions that included lesions in lymph nodes, salivary glands, palate, and soft tissue. RESULTS: High-quality histopathologic specimens were obtained without complications in all biopsies performed, and the diagnostic target tissue was obtained in 15 of 16 cases. Diagnoses made from MBI needle biopsy specimens were consistent with the final diagnoses made from subsequent surgical materials in 14 cases, and the accuracy rate was 88 per cent. None of the samples demonstrated significant rush artifacts or obscuring blood, both of which are problems commonly associated with manual biopsy techniques. CONCLUSIONS: This technique offers a safe and effective means of obtaining adequate tissue for the histological assessment of head and neck lesions.

Laser office ventilation of ears with insertion of tubes. Siegel, G. J., Chandra, R. K. Department of Otolaryngology–Head and Neck Surgery, Northwestern University Medical School, Il 60611, USA. *Otolaryngology–Head and Neck Surgery* (2002) July, Vol. 127 (1), pp. 60–6.
OBJECTIVE: Myringotomy with insertion of pressure equalization tubes has proven to be extremely effective in treating persistent serous otitis media (SOM). This study compares the advantages and disadvantages of this procedure when performed in the operating room or with a laser in an office setting. PATIENTS AND METHODS: Patients selected either traditional myringotomy and tube (MT; n = 29) done in an operating room under general anesthesia or Laser Office Ventilation of Ears with Insertion of Tubes (LOVE IT; n = 35) done in an office setting with only topical anesthesia. The reasons for selecting either MT or LOVE IT and satisfaction with the procedure chosen were evaluated by survey, the results of which were compared statistically. Chart review was performed to determine the time and cost of the procedures, time interval from diagnosis to treatment, tube longevity and complications. RESULTS: Overall satisfaction was similar with both procedures. Patients and families were more likely to choose LOVE IT based on the anesthetic technique involved (p 0.001, chi^2)). MT required less time to perform, whereas the cost of LOVE IT was less. Tube longevity and complication rates were similar between the two procedures, and all complications were minor. CONCLUSIONS: LOVE IT is a potential alternative to traditional MT in the treatment of SOM. LOVE IT is most likely to be selected by patients/parents who wish to avoid a general anesthetic and provides a level of satisfaction similar to that of traditional MT.

A new absorbable pressure-equalizing tube. Deredita, R., Marsh, R. R., Lora, S., Kazahaya, K. Division of Pediatric Otolaryngology, The Children's Hospital of Philadelphia and the Institute of Photochemistry and High Energy Radiation, National Institute of Nuclear Energy, Legnaro, Padua, Italy. rderedita@hotmail.com. *Otolaryngology–Head and Neck Surgery* (2202), July, Vol. 127 (1), pp. 67–72.
OBJECTIVE: We investigated pressure-equalizing (PE) tubes made of biogradable, absorbable material in an animal model. METHODS: PE tubes, made of poly-bis(ethylanate)phosphazene (PBE) were inserted in 55 ears of 28 Harley guinea pigs, with survival times of 10, 30 and 60 d after tube insertion. In vivo reactions between the PBE-PE tube and the tympanic membrane (TM) were studied. Tubes, TMs, and middle ears were examined by scanning electron microscopy and light microscopy. RESULTS: There was neither infection nor an inflammatory reaction to the tube within the middle ear in any animal. At 30 d, 53 per cent of the tubes had disintegrated. At 60 d, tubes were still functioning in the 25 per cent of ears. CONCLUSION: More research must be performed before these new PBE PE tubes can be considered for clinical use. Nonetheless, these tubes are promising. The disintegration rate can be controlled by varying the formulation of the polymer, so treatment can be adjusted to the needs of each patient.