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Abstract Selection

Reconstruction of the pharynx and cervical esophagus using ileocolic free autograft. Sartoris, A., Succo, G., Mioli, P., Merlino, G. Department of Clinical Physiopathology, Azienda Ospedaliera S Giovanni Battista di Torino, Italy. *American Journal of Surgery* (1999) October, Vol. 178 (4), pp. 316–22.
BACKGROUND: Advanced stage hypopharyngeal cancer is commonly treated by surgery and radiotherapy. This report presents a technique using ileocolic free autograft as a single-stage procedure for voice and swallowing rehabilitation after pharyngolaryngoesophagectomy. METHODS: Digestive tract restoration is obtained by using the cecum and ascending colon, while the last ileal loop, protected by the ileocecal valve for food and liquid inhalation, is anastomized to the cervical trachea. After abdominal harvesting, the ileocolic complex is transected, transposed, and then revascularized in the cervical field. RESULTS: Six patients underwent this operation successfully with recovery of swallowing function and vocal performance within a short period of time, varying from 18 to 38 days. CONCLUSION: On the basis of achieved results, the ileocolic free autograft can be considered a good option for pharyngoesophageal reconstruction, offering as it does an immediate restoration of swallowing and voice function.

Irradiation-induced extracranial carotid stenosis in patients with head and neck malignancies. Cheng, S. W., Wu, L. L., Ting, A. C., Lau, H., Lam, L. K., Wei, W. I. Department of Surgery, University of Hong Kong Medical Centre, Queen Mary Hospital, Hong Kong, China. *American Journal of Surgery* (1999) October, Vol. 178 (4), pp. 323–8.
BACKGROUND: Carotid stenosis is a recognized complication of external irradiation to the head and neck for malignancy. This study aim to investigate the pattern and prevalence of radiation induced carotid disease, and to identify risk factors associated with significant stenosis. METHODS: In a comparative cross-sectional study, carotid arteries color flow duplex scan was performed on 240 patients who had received external irradiation to the head and neck area, with a mean interval of 72 months from radiotherapy. They consisted of 181 men and 59 women, with a mean age of 59 years. Fifteen patients had a history of cerebrovascular symptoms. RESULTS: Internal carotid artery (ICA) stenosis of 70 per cent or greater was detected in 29 arteries in 24 patients. Common carotid artery (CCA) disease of > or = 70 per cent was present in 13 arteries in 12 patients. Overall 28 patients had significant ICA/CCA disease (11.7 per cent). Patients with nasopharyngeal and laryngeal carcinoma had more cerebrovascular symptoms, and more frequent CCA stenosis. Significant ICA/CCA stenosis was associated with age, smoking, coronary heart disease, stroke, no head and neck surgery, time interval from radiotherapy, and the site of primary tumor. On logistic regression analysis age (>60 years), cerebrovascular symptoms, interval from irradiation (>five years), and nasopharynx and larynx cancer were found to be independent significant ($p<0.05$) predictors of 70 per cent or greater ICA/CCA stenosis. CONCLUSIONS: Patients who had received radiotherapy to the head and neck have a high risk of developing significant carotid stenosis. Routine duplex ultrasound screening in these patients is indicated.

The performance of electroencephalogram bispectral index and auditory evoked potential index to predict loss of consciousness during propofol infusion. Schraag, S., Bothner, U., Gajraj, R., Kenny, G. N., Georgieff, M. Department of Anesthesiology, University of Ulm, Germany. stefanschraag@compuserve.com. *Anesthesia and Analgesia* (1999) November, Vol. 89 (5), pp. 1311–5.
The bispectral index (BIS) of the electroencephalogram and middle latency auditory evoked potentials are likely candidates to measure the level of unconsciousness and, thus, may improve the early recovery profile. We prospectively investigated the predictive performance of both measures to distinguish between the conscious and unconscious state. Twelve patients undergoing lower limb orthopedic surgery during regional anesthesia additionally received propofol by target-controlled infusion for sedation. The electroencephalogram BIS and the auditory evoked potential index (AEPi), a mathematical derivative of the morphology of the auditory evoked potential waveform, were recorded simultaneously in all patients during repeated transitions from consciousness to unconsciousness. Logistic regression procedures, receiver operating characteristic analysis, and sensitivity and specificity were used to compare predictive ability to both indices. In the logistic regression models, both the BIS and AEPi were significant predictors of unconsciousness ($p<0.0001$). The area under the receiver operating characteristic curve for discrete descending index threshold values was apparently, but not significantly ($p>0.05$), larger for the AEPi (0.968) than for the BIS (0.922), indicating a trend of better discriminatory performance. We conclude that both the BIS and AEPi are reliable means for monitoring the level of unconsciousness during propofol infusion. However, AEPi proved to offer more discriminatory power in the individual patient. IMPLICATIONS: Both the bispectral index of the electroencephalogram and the auditory evoked potentials index are good predictors of the level of sedation and unconsciousness during propofol infusion. However, the auditory evoked potentials index offers better discriminatory power in describing the transition from the conscious to the unconscious state in the individual patient.

The fissura antitragohelicina: an anatomic aid to the correction of prominent ears. Ghosh, M. M., Shaaban, H., Knight, S. L. Department of Plastic & Reconstructive Surgery, Withington Hospital, Manchester, UK. *Annals of Plastic Surgery* (1999) October, Vol. 43 (4), pp. 390–2.
One of the important features of correction of prominent ears involves the creation of an antihelical fold in the ear cartilage. The precise and symmetrical location of this fold is crucial for the aesthetic result. This study investigated the use of the fissura antitragohelicina, a constant anatomic landmark, as a guide to the correct line for the new antihelix. In the first part of the study, 16 cadaveric ears were dissected. The fissura antitragohelicina was present in each specimen, and measurements of the distance between the fissura antitragohelicina and the helix and the antihelix were recorded. Based on this study, a clinical series of 20 consecutive prominent ear corrections were performed using the fissura antitragohelicina as a guide for the creation of a new, symmetrical antihelical fold. The aesthetic results were satisfactory by subjective assessment in every one of this group of patients. This study showed that the fissura antitragohelicina was a constant, reliable, and simple guide to the creation of the antihelical fold in patients with prominent ears.

The role of image-guidance systems for head and neck surgery. Metson, R., Cosenza, M., Gliklich, R. E., Montgomery, W. W. Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Boston, USA. *Archives of Otolaryngology – Head & Neck Surgery* (1999) October, Vol. 125 (10), pp. 1100–4.
BACKGROUND: Although image-guidance systems have gained widespread acceptance for neurosurgical procedures, their role for extracranial surgery of the head and neck is yet to be defined. OBJECTIVES: To describe the authors' experience with image-guidance systems and to measure the effects of image-guided technology on the performance of minimally invasive otolaryngological procedures. DESIGN: Prospective cohort study. METHODS: Optical- and electromagnetic-based image-guidance systems were used during the performance of endoscopic surgery on patients with disease of the paranasal sinuses, orbit, skull base, and temporal bone (n = 79). Results were compared with those in control patients who underwent similar surgery without image guidance during the same period (n = 42). RESULTS: Intrao-

perative anatomical localization was accurate to within 2 mm at the start of surgery in all cases. Accuracy degraded by 0.89 ± 0.20 mm (mean ± SE) during the operative procedure. The use of an image-guidance system increased operating room time by a mean of 17.4 minutes per case (image-guidance group, 137.3 ± six minutes (mean ± SE); control group, 11.9 ± 5.7 minutes; $p = 0.006$) and increased hospital charges by approximately $496 per case. Intraoperative blood loss (image-guidance group, 178.4 ± 18 ml (mean ± SE); control group, 149.4 ± 20.1 ml) and complication rates (image-guidance group, 2.7 per cent; control group, 4.7 per cent) did not differ significantly between groups. CONCLUSIONS: Image-guidance systems can provide the head and neck surgeon with accurate information regarding anatomical localization in cases with poor surgical landmarks caused by extensive disease or prior surgery; however, the use of such systems is associated with increased operative time and expense.

Electroglottography in the pediatric population. Cheyne, H. A., Nuss, R. C., Hillman, R. E. Speech and Hearing Sciences Graduate Program, Harvard-Massachusetts Institute of Technology, Division of Health Sciences and Technology, Boston, USA. hal2000@mit.edu. *Archives of Otolaryngology – Head & Neck Surgery* (1999) October, Vol. 125 (10), pp. 1105–8.
OBJECTIVE: To establish normative electroglottography (EGG) data in the pediatric population. DESIGN: Clinical study with EGG data gathered on children with normal voices. SETTING: Major children's hospital and specialty eye and ear hospital. PATIENTS: A total of 164 children, 79 girls and 85 boys, aged three to 16 years. METHODS: Children with normal voices, determined through subjective evaluation and a voice use history questionnaire, underwent EGG recording. The EGG data were analysed with commercially available software for fundamental frequency, jitter, open quotient, closing quotient, and opening quotient. RESULTS: Normative EGG data were established for children aged three to 16 years. Jitter, open quotient, closing quotient, and opening quotient were all found to have no significant dependence on age. CONCLUSIONS: Children as young as three years can easily tolerate EGG, making it possible to establish this initial set of normative pediatric EGG data. These preliminary results suggest that EGG may have potential to assist clinicians with noninvasive documentation of vocal function in the pediatric population. This maybe particularly important for tracking treatment-related changes in the vocal function of children who are difficult to examine endoscopically.

Evolution of the bacteriologic features of persistent acute otitis media compared with acute otitis media: a 15-year study. Loundon, N., Roger, G., Vu-Thien, H., Begue, P., Garabedian, E. N. Department of Pediatric ENT, Hopital d'Enfants Armand Trousseau, Paris, France. orl.trousseau@trs.ap-hop-paris.fr. *Archives of Otolaryngology – Head & Neck Surgery* (1999) October, Vol. 125 (10), pp. 1134–40.
OBJECTIVES:To define the epidemiologic features of persistent acute otitis media (PAOM) and modifications of these features during the past 15 years and to investigate for possible differences in bacterial resistance between acute otitis media (AOM) and PAOM. DESIGN: Retrospective patient series. SETTING: Academic tertiary care centre. PATIENTS AND METHODS: Persistent acute otitis media was defined as AOM lasting longer than three weeks despite one or several courses of antibiotic therapy, with the persistence of clinical and otoscopic signs of AOM. From 1982 to 1997, 475 children with PAOM were seen in our department. Every patient had one or several specimens of aspirations or swabs of spontaneous otorrhea (or both). Microbiologic characteristics of the isolated strains (including antibiotic susceptibility) were analysed. Four successive series of specimens were analysed-group 1: from October 1, 1982, to June 30, 1986 (136 patients); group 2: from January 1, 1987, to December 31, 1989 (165 patients); group 3: from January 1, 1992, to April 30, 1993 (73 patients); group 4: from January 1, 1994, to January 31, 1997 (101 patients). During the same study periods, the bacteriologic results of patients with AOM in the same geographic region were recorded. MAIN OUTCOME MEASURES: A longitudinal comparison between the groups of patients with PAOM and a cross-comparison within each group between patients with PAOM and those with AOM. RESULTS: Obtaining repeated and multiple specimens from patients with POAM led to a progressive decrease in the rate of sterile specimens, from 35.3 per cent (group 1, 48 patients) to 14.9 per cent (group 4, 15 patients) ($p<0.01$). During this period, the prevalence of Streptococcus pneumoniae increased in patients with positive culture results, from 18.2 per cent (group 1, 16 of 88 patients) to 44.2 per cent (group 4, 15 patients) ($p<0.01$). During this period, the prevalence of Streptococcus pneumoniae increased in patients with positive culture results, from 18.2 per cent (group 1, 16 of 88 patients) to 44.2 per cent (group 4, 38 of 86 patients) ($p<0.001$). These strains rapidly and dramatically became resistant to penicillin (amoxicillin) (0 per cent through 1989, 76.2 per cent (16 of 21 patients) in 1993, and 97.4 per cent (37 of 38 patients) in 1996) ($p = 0.01$). The overall prevalence of Haemophilus influenzae remained stable (between 31.4 per cent (27 of 86 patients) and 45.4 per cent (40 of 88 patients)), but the proportion of beta-lactamase-producing strains increased from 30 per cent (group 1, 12 patients) to 55.6 per cent (group 4, 15 patients) ($p = 0.04$). The prevalences of Pseudomonas aeruginosa and Staphylococcus aureus did not vary significantly (from 23.1 per cent (group 2, 30 patients) to 10.7 per cent (group 3, six patients) and from 10.2 per cent (group 1, nine patients) to 4.6 per cent (group 4, four patients), respectively). Comparing data from patients with PAOM with those with AOM revealed that the increased resistance of H influenzae and, in particular, of S pneumoniae was more rapid and more marked in patients with PAOM than in those with AOM (highest rate of resistance in AOM: 36 per cent (271 of 753 specimens) and 50.6 per cent respectively; $p<0.001$ for S pneumoniae). CONCLUSIONS: The increase in bacterial resistance frequently encountered during otitis media is even more marked in patients with PAOM. The identification of the organism is essential when the otitis does not resolve, especially in patients with PAOM. Obtaining repeated specimens helps to decrease the rate of sterilie cultures.

Audiogram fine structure and spontaneous otoacoustic emissions in patients with Meniere's disease. Wiebe-Horst, J., de Kleine, E. Department of Otorhinolaryngology, University Hospital Groningen, The Netherlands. *Audiology, Journal of Auditory Communication* (1999) September–October, Vol. 38 (5), pp. 267–70.
The incidence of and inter-relationship between audiogram fine structure and spontaneous otoacoustic emissions (SOAEs) was investigated in patients with Meniere's disease. This project is a part of a comprehensive longitudinal study in which a range of tests of cochlear and vestibular function in patients who suffer from Meniere's disease, is carried out and repeated over time. In this paper we present preliminary data from both ears (in most cases an affected and an unaffected ear) of 13 patients. The thresholds in these 26 ears ranged from normal to 80 dB HL. SOAEs could be measured in only four ears; these ears had near-normal thresholds. Data from seven ears had to be excluded because of the possibility of crossover effects. In 16 out of the 19 remaining ears, audiogram fine structure was found. Our data confirm that (1) SOAEs correspond to behavioural sensitivity peaks. (2) There is no simple relationship between SOAE level and height of sensitivity peaks.(3) Sensitivity peaks may occur at frequencies without measurable SOAEs. In addition, our data show that; (1) Audiogram fine structure may occur in ears without observable SOAEs. (2) Fine structure can be present in ears without normal thresholds. (3) There is a weak tendency for fine structure to be more pronounced in ears with milder hearing loss.

Methods for early identification of noise-induced hearing loss. Hall, A. J., Lutman, M. E. Institute of Sound and Vibration Research, University of Southampton, UK. *Audiology, Journal of Auditory Communication* (1999) September–October, Vol. 38 (5), pp. 277–80.
An ideal test for identifying shifts in cochlear function would be highly repeatable and sensitive to minor damage. Three types of otoacoustic emission (OAE) test and pure-tone audiometry were evaluated for this purpose. They were compared in terms of test-retest repeatability within subjects and sensitivity to differences between subjects. The OAE measures were transiently evoked either conventionally (TEOAE) or usiing maximum length sequences (TEOAE-MLS), or continuously evoked as distortion products (DPOAEs). Several stimulus conditions were evaluated for each type. Thirty-eight subjects with normal hearing or mild hearing losses were tested on all measures. Test-retest repeat-

ability was rescaled according to the sensitivity of each measure to differences in hearing threshold level, thus allowing a direct comparison across methods. The most repeatable method thus defined was TEOAE-MLS which gave a rescaled standard deviation of 1.8 dB on replication. This was followed by TEOAE and DPOAE which gave rescaled standard deviations of 2.9 and 3.1 dB, respectively. All were more reliable than pure-tone audiometry which had a standard deviation of 4.9 dB. It is concluded that the various OAE measures have the potential to distinguish small changes in cochlear function from measurement uncertainty, and hence show promise for monitoring cochlear function in ears exposed to noise or other hazards.

Physical and psychological symptoms of quality of life in the CHART randomized trial in head and neck cancer: short-term and long-term patient reported symptoms. CHART Steering Committee. Continuous hyperfractionated accelerated radiotherapy. Griffiths, G. O., Parmar, M. K., Bailey, A. J. Cancer Division, Medical Research Council Clinical Trials Unit, London, UK. *British Journal of Cancer* (1999) December, Vol. 81 (7), pp. 1196–205.
The randomized multicentre trial of continuous hyperfractionated accelerated radiotherapy (CHART) versus conventional radiotherapy in patients with advanced head and neck cancer showed no good evidence of a difference in any of the major clinical outcomes of survival, freedom from metastases, loco-regional control and disease-free survival. Therefore an assessment of the effect of treatment on physical and psychological symptoms is vital to balance the costs and benefits of the two treatments. A total of 615 patients were asked to complete a Rotterdam Symptom Checklist and the Hospital Anxiety and Depression Scale, which cover a variety of physical and psychological symptoms, at a total of ten time points. The data consisted of short-term data (the initial three months) and long-term data (one and two years). The short-term data was split into an exploratory data set and a confirmatory data set, and analysed using subject-specific and group-based methods. Differences were only claimed if hypotheses generated in the exploratory data set were confirmed in the confirmatory data set. The long-term data was not split into two data sets and was analysed using a group-based approach. There was evidence of significantly worse symptoms of pain at day 21 in those treated with CHART and significantly worse symptoms of cough and hoarseness at six weeks in those treated conventionally. There was also evidence to suggest a higher degree of decreased sexual interest at one year and sore muscles at two years in those treated with conventional radiotherapy. There is no clear indication that one regimen is superior to the other in terms of 'quality of life', generally the initially more severe reaction in the CHART group being offset by the longer duration of symptoms in the conventionally treated group.

Effect of topical corticosteroids on seasonal increase in epithelial eosinophils and mast cells in allergic rhinitis: a comparison of nasal brush and biopsy methods. Jacobson, M. R., Juliusson, S., Lowhagen, O., Balder, B., Kay, A. B., Durham, S. R. Upper Respiratory Medicine, Imperial College School of Medicine at the National Heart and Lung Institute, London, UK. *Clinical and Experimental Allergy* (1999) October, Vol. 29 (10), pp. 1347–55.
BACKGROUND: Nasal brushing and nasal biopsy are well-tolerated sampling techniques. Seasonal grass pollen-induced rhinitis is characterized by epithelial mast cell infiltration and seasonal increases in both epithelial and sub-mucosal eosinophils. OBJECTIVE: To compare the ability of the nasal brush and nasal biopsy techniques to detect natural seasonal increases in eosinophils and mast cells, and to assess the influence of topical corticosteroid. METHODS: Nasal brush samples and nasal biopsies were collected from 46 grass pollen-sensitive seasonal rhinitis patients before the grass pollen season and at the peak of the pollen season following six weeks' treatment with either fluticasone propionate aqueous nasal spray (200 microg, twice daily) or placebo nasal spray. RESULTS: Placebo patients showed seasonal increases in epithelial eosinophils both with nasal brushing ($p<0.0001$) and biopsy ($p<0.001$). Epithelial mast cell numbers also increased during the pollen season as detectable by brushing ($p<0.0001$) and biopsy ($p<0.03$). Changes in cell numbers measured by nasal brushing correlated with those observed with nasal biopsy, both for eosinophils and mast cells ($p<0.05$). Sub-mucosal eosinophils but not mast cells also increased during the pollen season ($p<0.002$). Nasal brushing and biopsy revealed that fluticasone treatment inhibited seasonal increases in epithelial eosinophils ($p<0.00001$) and epithelial infiltration by mast cells (nasal brushing $p<0.00001$ and nasal biopsy $p<0.01$). Fluticasone also inhibited seasonal increases in sub-mucosal eosinophils ($p<0.001$) and significantly reduced nasal symptoms ($p<0.001$). CONCLUSIONS: Nasal brushing harvests sufficient inflammatory cells from the surface of the nasal mucosa to be used in lieu of nasal biopsies in observation of the effect of drugs on the nasal epithelium.

Long-term effects of corticosteroid nasal spray on nasal inflammatory cells in patients with perennial allergic rhinitis. Holm, A. F., Godthelp, T., Fokkens, W. J., M Severijnen, E. A., Mulder, P. G., Vroom, T. M., Rijntjes, E. Department of Otorhinolaryngology, University Hospital, Rotterdam, The Netherlands. *Clinical and Experimental Allergy* (1999) October, Vol. 29 (10), pp. 1356–66.
BACKGROUND: The effect of long-term topical nasal corticosteroid therapy on nasal inflammatory cells is unclear. OBJECTIVES: To investigate the long-term effect of fluticasone propionate aqueous nasal spray (FPANS) on nasal mucosal inflammatory cells and efficacy in a one-year study in patients with perennial allergic rhinitis. METHODS: In a one year, double-blind, placebo-controlled study of duration we investigated the influence of a topical corticosteroid (FPANS), on Langerhans' cells (CD1a+ cells), T cells, mast cells, eosinophils and macrophages in nasal mucosa in 42 patients with perennial allergic rhinitis. Efficacy was evaluated by nasal symptom score. RESULTS: The FPANS group experienced significantly less sneezing and nasal itching compared with the placebo group. The total symptom score in the FPANS group declined significantly in comparison with baseline ($p = 0.007$) and placebo group ($p = 0.009$). After one year of active treatment, a significant decrease was seen in the epithelium in numbers of Langerhans' cells, CD3+ , CD4+ , CD8+ cells, mast cells and eosinophils. In the lamina propria, there was a significant decrease in eosinophils. CONCLUSION: These findings show that FPANS treatment results in a decrease of nasal inflammatory cells. Furthermore, the efficacy of FPANS improves after prolonged treatment.

Intracranial extension of inverted papilloma: An unusual and potentially fatal complication. Vural, E., Suen, J. Y., Hanna, E. Department of Otolaryngology, University of Arkansas for Medical Sciences, 4301 W. Markham, Slot 543, Little Rock, AR 72205, USA. *Head & Neck* (1999) December, Vol. 21 (8), pp. 703–6.
BACKGROUND: The purpose of this article is to define the outcome of intracranial extension of inverted papilloma and outline a rationale for management of this rare clinical presentation. METHODS: A review of patients with intracranial extension of inverted papilloma reported in the literature (18 patients), or treated in our institution (three patients) was performed. The data of these 21 patients were consolidated with regard to clinical presentation, treatment, and outcome. Nine patients, including one of our cases, had coexisting squamous cell carcinoma and therefore were excluded from the analysis. Twelve patients with 'pure' inverted papilloma formed the basis of this study. RESULTS: The majority of patients (83 per cent) with intracranial inverted papilloma had recurrent disease. Patients with extradural disease had a survival rate of 86 per cent with an average follow-up of 4.4 years. Eighty-six per cent of these survivors were treated with craniofacial resection. In contrast, 75 per cent of patients with intradural inverted papilloma were dead of disease with an average follow-up of 9.3 months regardless of the treatment modality. CONCLUSIONS: Intracranial extension of inverted papilloma is mostly associated with recurrent disease. Intracranial extradural inverted papilloma can be effectively controlled with craniofacial resection. Intracranial intradural involvement of inverted papilloma has a poor prognosis regardless of treatment. Aggressive treatment of intranasal inverted papilloma may be the most important factor in preventing intracranial presentation.

A suggested method for sentinel node biopsy in squamous cell carcinoma of the head and neck. Shoaib, T., Soutar, D. S., Prosser, J. E., Dunaway, D. J., Gray, H. W., McCurrach, G. M., Bessent, R. G., Robertson, A. G., Oliver, R., MacDonald, D. G. Plastic Surgery Unit, Canniesburn Hospital, Switchbank Road, Bearsden, Glas-

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gow G61 1QL, UK. *Head and Neck* (1999) December, Vol. 21 (8), pp. 728–33.
BACKGROUND: Debate continues over the management of the N0 neck in head and neck malignancy. Therefore, the possibility of performing sentinel node biopsy in these patients was investigated to formulate a method for the procedure. METHODS: Patients undergoing prophylactic or therapeutic neck dissections were injected with either Patent Blue V dye alone or with blue dye and 99m Tc labelled Albures. The latter group underwent preoperative lymphoscintigraphy. During surgery, blue stained lymphatics were followed to blue nodes, and a neoprobe was used to identify radioactive nodes. RESULTS: In 5 of 13 patients receiving blue dye, a blue node was identified, but none contained tumour. Metastases were identified in 15 of 16 patients receiving dye, and Albures. Sentinel node biopsy was accurate in seven of seven necks containing impalpable metastases when all nodes had been evaluated after dissection. DISCUSSION: Sentinel node biopsy using blue dye and radiocolloid may prove to be a reliable technique in the N0 neck and warrants further investigation. Copyright 1999 John Wiley & Sons, Inc.

Morphometric measurements of the cartilaginous larynx: An anatomic correlate of laryngeal surgery. Sprinzl, G. M., Eckel, H. E., Sittel, C., Pototschnig, C., Koebke, J. Department of Oto-Rhino-Laryngology, University of Innsbruck, Austria. *Head & Neck* (1999) December, Vol. 21 (8), pp. 743–50.
BACKGROUND: The increasing application of sophisticated methods of laryngeal framework surgery requires a profound knowledge of the size and proportions of the human larynx and its cartilaginous components. Only inadequate data regarding this subject have so far been accessible. The aim of this study was to collect exact and reliable morphometric data of the human laryngeal framework Materials and Methods Larynges from 98 corpses (52 male, 46 female) were removed during autopsy four-64 hours postmortem and processed without delay or fixation. Following a standard routine for preparation, 28 parameters were measured on thyroid cartilage, cricoid cartilage, arytenoid cartilage, epiglottis, and the larynx as a whole organ. None of the patients had histories or visible signs of laryngeal disease. Anatomical preparations were performed with customary surgical tools and morphometric measurements then carried out with a pair of compasses and a caliper rule. RESULTS: A total of 5100 measurements was performed on 98 larynges. These included, aside from evaluation of the whole organ, identification of the internal and external diameters of the cricoid cartilage, height and length of the thyroid alae in different planes, angle of thyroid alae, height of arytenoid cartilage, width and length of epiglottic cartilage, and position of the anterior commissure related to the thyroid cartilage. The results provide a full scale of data determining the size and extent not only of the cartilaginous components, but of the laryngeal framework as a whole. Mean values, standard deviations, and sample sizes are given for every parameter separately for both sexes. CONCLUSION: This study provides a comprehensive and detailed description of the dimensions of the adult human larynx. Copyright 1999 John Wiley & Sons, Inc.

Increased adenoid mast cells in patients with otitis media with effusion. Ulualp, S. O., Sahin, D., Yilmaz, N., Anadol, V., Peker, O., Gursan, O. Haydarpasa Numune Hospital, Department of Otolaryngology, Istanbul, Turkey. sulualp@mcw.edu. *International Journal of Pediatric Otorhinolaryngology* (1999) August 5, Vol. 49 (2), pp. 107–14.
OBJECTIVE: Previous studies have been suggested the possible role of adenoid mast cells in the pathogenesis of otitis media with effusion (OME). The aim of the present study was to evaluate the possible relationship of adenoid mast cells and hearing loss in patients with chronic OME. METHODS: Twenty patients with combined chronic OME and chronic adenoiditis (OME-A) and 20 patients with isolated chronic adenoiditis were studied. Hearing thresholds were determined by pure tone audiometry in both groups. All subjects underwent adenoidectomy and adenoid mast cells were counted in each specimen. Number of adenoid mast cells were determined in both groups. Possible relationship of adenoid mast cells and hearing thresholds in OME-A patients was evaluated by comparing the hearing thresholds of OME-A patients with mast cell count above the mean of OME-A group and hearing thresholds of OME-A patients with mast cell count below the mean of OME-A group. RESULTS: All isolated chronic adenoiditis patients had normal hearing thresholds. OME-A patients had hearing thresholds ranging from 12–52 dB. The number of adenoid mast cells in OME-A group (median: 80) was significantly greater than isolated chronic adenoiditis group (median: 38) ($p<0.05$). OME-A patients with adenoid mast cell count above the mean of OME-A group had significantly higher hearing thresholds compared to OME-A patients with mast cell count below the mean of OME-A group ($p<0.05$). CONCLUSIONS: Patients with OME-A have greater number of adenoid mast cells than patients with isolated chronic adenoiditis. OME-A patients with adenoid mast cell count above the mean of the OME-A group had higher hearing thresholds than OME-A patients with adenoid mast cell count below the mean of the OME-A group. Increased number of adenoid mast cells may contribute to the pathogenesis of higher hearing thresholds in some OME-A patients.

Efficacy of tympanostomy tube insertion for otitis media with effusion in children with Down syndrome. Iino, Y., Imamura, Y., Harigai, S., Tanaka, Y. Department of Otolaryngology, Teikyo University School of Medicine, Tokyo, Japan. yiorl@med.teikyo-u.ac.jp. *International Journal of Pediatric Otorhinolaryngology* (1999) August 5, Vol. 49 (2), pp. 143–9.OBJECTIVE: Although the insertion of tympanostomy tubes is regarded as an effective treatment for otitis media with effusion in the general population, it remains to be determined whether tympanostomy tube insertion is also effective for otitis media with effusion in children with Down syndrome. The present study was carried out to determine the efficacy of tympanostomy tube insertion in children with Down syndrome. PATIENTS AND METHODS: We studied 28 children (18 males and ten females) with Down syndrome and 28 age-matched control children who underwent tympanostomy tube insertion and were followed up for more than two years, up to seven years of age or older. The children were followed up every month for six months after the operation and every two months thereafter. The tympanostomy tubes were not removed unless granulation tissue appeared around the ventilation tubes. RESULTS: The cure rate for otitis media with effusion was lower in the children with Down syndrome than in the age-matched control children. Sequelae of otitis media with effusion (atelectatic eardrum, permanent perforation of the eardrum and middle ear cholesteatoma) were significantly often encountered in the former group. The children with Down syndrome had more frequent episodes of otorrhea from the tympanostomy tubes than the control children and antibiotic-resistant-bacteria were frequently isolated. Moreover, improvement in hearing acuity after the placement of tympanostomy tubes was not always achieved in children with Down syndrome. CONCLUSION: The efficacy of the tympanostomy tube insertion for children with Down syndrome was much lower than in control children. We propose that in children with Down syndrome conservative management should be the treatment of first choice and that the insertion of tympanostomy tubes should be indicated only when hearing loss due to middle ear effusion is in a severe degree and when pathological changes of the eardrum, such as adhesion and deep retraction pocket formation, are going to occur.

Magnetic resonance of imaging procedures to study the concurrent anatomic development of vocal tract structures: preliminary results. Vorperian, H. K., Kent, R. D., Gentry, L. R., Yandell, B. S. Department of Communicative Disorders, Waisman Center, University of Wisconsin-Madison, USA. vorperian@waisman.wisc.edu. *International Journal of Pediatrics, Otorhinolaryngology* (1999) August 20, Vol. 49 (3), pp. 197–206.
The vocal tract structures undergo drastic anatomic restructuring during the course of development from infancy to adulthood. This study demonstrates the feasibility of using MRI to examine the growth processes of the vocal tract. This method affords precise and detailed visualization of the soft tissues in the oro-pharyngeal region, while also providing images of related bony and cartilaginous structures. Information on anatomic restructuring contributes to the understanding of how speech emerges and develops, and it also establishes normative information that can be used in the assessment of developmental anomalies. This paper describes the method used to measure and examine the concurrent anatomic development of the various vocal tract structures during early childhood. Preliminary results from two pediatric subjects

indicate that there is synchrony of growth in the different structures – both soft and hard tissues – and that such synchronous growth appears to persist during periods of growth spurts.

Pediatric ear, nose and throat services' demands and resources: a global perspective. Alberti, P. W. Toronto Hospital, University of Toronto, Canada. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S1–9.
Global population trends, health care economics and disease patterns are reviewed. The world's population has doubled twice in the 20th century, and will grow by at least a further two billion before stabilizing in the middle of the next century. There is gross maldistribution of wealth and health care expenditures: 20 per cent of the population control 80 per cent of the gross domestic product, the same 20 per cent of the population spend 87 per cent of the total global health care funds. Extreme poverty facilitates all manner of diseases. Globally, infections remain the most important causes of disease. Of these, upper respiratory infections are an important cause of hearing loss and learning handicap in children world-wide. Epidemic meningitis in Africa and parts of Asia is a preventable major cause of death and deafness. There are about 80,000 otolaryngologists in the world and they too are maldistributed, with most in Europe and the Americas. This is exacerbated when looked at from the standpoint of children, most children live where there are fewest otolaryngologists: the differences are greater than two orders of magnitude. This greatly affects the role and scope of paediatric otolaryngology. The discipline is small and rapidly evolving. Suggestions are made for sharing training.

Paroxysmal vertigo in children – an epidemiological study. Russell, G., Abu-Arafeth, I. Department of Child Health, University of Aberdeen, UK. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S105–7.
BACKGROUND: Little is currently known about the prevalence of vertigo in children. METHODS: In a questionnaire designed to examine the prevalence of migraine and migraine equivalents in children of school age, we include an item on 'attacks of dizziness in the past year'. The questionnaire was applied to 2165 children (10 per cent of the school population in the city of Aberdeen, Scotland). RESULTS: 314 children had experienced at least one episode of dizziness in the previous year, unexplained in 44 per cent of cases. A total of 57 children with three attacks, either unexplained or attributed to migraine, were interviewed and examined. Forty-five fulfilled our criteria for benign paroxysmal vertigo. Other symptoms suggestive of migraine were found in a small majority, but in 47 per cent paroxysmal vertigo was an isolated symptom. The age of onset peaked at 12 years, but it was seen in all age groups. Paroxysmal vertigo was commonly accompanied by features that are common in migraine, i.e. pallor, nausea, phonophobia and photophobia, and migraine was twice as common in first degree relatives compared to controls. CONCLUSIONS: Paroxysmal vertigo is common in children and although it is seldom diagnosed, it appears to cause few major problems to the affected children. In common with previous studies, we found that it appears to be related to migraine.

Intratemporal and intracranial complications of acute suppurative otitis media in children: renewed interest. Dhooge, I. J., Albers, F. W., Van Cauwenberge, P. B. Department of ENT, University Hospital, Ghent, Belgium. ingeborg.dhooge@rug.ac.be. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S109–14.
In recent years, a rise in the incidence of intratemporal and intracranial complications of acute otitis media (AOM) has been mentioned in the literature. Lack of a well-developed immune system and difficulties in diagnosing AOM, can account for part of the rise in the incidence of complications of purulent middle ear infections in young children. Antibiotic treatment of AOM is certainly not an absolute safeguard against the development of complications. Antibiotic therapy may have a masking effect on significant signs and symptoms of complications, causing delay in diagnosis. Myringotomy, especially in young children, should not be forgotten for drainage and to provide material for culture. Increased virulence of the causative pathogens cannot be ruled out, but to date there is no evidence suggesting it. We have to maintain a high level of clinical awareness. If there is insufficient improvement of the patient with the appropriate conservative treatment, radioimaging followed by the necessary surgical procedures should be performed.

What is wrong in chronic adenoiditis/tonsillitis anatomical considerations. Casselbrant, M. L. Department of Otolaryngology, School of Medicine, University of Pittsburgh, PA, USA. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S133–5.
Waldeyer's ring is most prominent during childhood, when the size of the oro-nasopharyngeal space is not yet fully developed, but decreases spontaneously with age. In the child, enlarged tonsils and/or adenoids may cause Eustachian tube dysfunction/otitis media, rhinosinusitis, obstructive sleep apnea, voice changes, change in facial growth, swallowing problems and can affect overall quality of life. Consequently, tonsillectomy and/or adenoidectomy are among the most common surgical procedures in children. The size of the oro- and nasopharynx has been investigated in normal children with and without tonsil/adenoid hyperplasia, to assess whether or not it is the adenoid and tonsillar tissue that are enlarged and not the dimensions of the anatomic space that are reduced. Studies have supported that the nasopharyngeal space is not smaller in children with hyperplastic adenoids when compared to normal children. However, children with large obstructing tonsils have a smaller oropharyngeal diameter compared to children with small tonsils. Tonsil/adenoid hyperplasia appears to be due to an increase in the lymphoid elements. The size of the tonsil has been shown to be directly proportional to aerobic bacterial load and absolute number of B and T cells. Bacteria have been suggested in the etiology of the development of hyperplasia. Of interest is that of the different pathogens, Haemophilus influenzae in particular, has been associated with tonsil/adenoid hyperplasia. The distribution of dendritic cells, antigen presenting cells, is altered during disease, with fewer dendritic cells in the surface epithelium and more in the crypts and extrafollicular areas.

Management of acute otitis media in an era of increasing antibiotic resistance. Klein, J. O. Maxwell Finland Laboratory for Infectious Diseases, Boston Medical Center, MA 02118, USA. jerome.klein@bmc.org. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S15–7.
Development of resistance to available antimicrobial agents has been identified in every decade since the introduction of the sulfonamides in the 1930s. Current concerns for management of acute otitis media (AOM) are multi-drug resistant Streptococcus pneumoniae and beta-lactamase producing Haemophilus influenzae and Moraxella catarrhalis. In the USA, amoxicillin remains the drug for choice for AOM. Increasing the current dose to 80 mg/kg/day in two doses provides increased concentrations of drug in serum and middle ear fluid and captures additional resistant strains of S. pneumoniae. For children who fail initial therapy with amoxicillin an expert panel convened by the Centers for Disease Control and Prevention suggested amoxicillin-clavulanate, cerfuroxime axetil or intramuscular ceftriaxone. To protect the therapeutic advantage of antimicrobial agents used for AOM, it is important to promote judicious use of antimicrobial agents and avoid uses if it is likely that viral infections are the likely cause of the disease, to implement programs for parent education and to increase the accuracy of diagnosis of AOM. Conjugate polysaccharide pneumococcal vaccines are currently in clinical trial; early results indicate protective levels of antibody can be achieved with a three dosage schedule beginning at two months of age. Finally, alternative medicine remedies may be of value for some infectious diseases including AOM; garlic extract is bactericidal for the major bacterial pathogens of AOM but is heat- and acid-labile and loose activity when cooked or taken by mouth.

The development of auditory perception in children following cochlear implantation. Nikolopoulos, T. P., Archbold, S. M., O'Donoghue, G. M. Department of Otolaryngology, University Hospital, Queen's Medical Centre NHS Trust, Nottingham, UK. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S189–91.
The time course for the development of auditory perception in prelingually deaf children following cochlear implantation may extend over many years, thus making long-term studies necessary to evaluate any such outcome. However, few such studies exist in

the literature. We prospectively followed-up a consecutive group of 133 prelingually deaf children up to six years following implantation. All children were prelingually deaf with age at onset of deafness <three years and age at implantation <eight years. The aetiology of deafness was meningitis for 45 children (34 per cent), congenital deafness for 77 children (58 per cent) and other causes for 11 children (eight per cent). All were implanted with a Nucleus-22 multi-channel cochlear implant and followed the same rehabilitation programme. No child was lost to follow-up and there were no exclusions from the study. Prelingually deaf children showed significant improvement in the auditory perception with implant experience. Eighty-two per cent of children who reached the six-year interval could understand conversation without lip-reading. The respective percentage in the four-year interval was 70 per cent. The long-term results of cochlear implantation reveal that the majority of prelingually deaf children, when implanted before the age of eight years, will develop significant auditory perception.

Growth factor therapy to the damaged inner ear: clinical prospects. Malgrange, B., Rigo, J. M., van de Water, T. R., Staecker, H., Moonen, G., Lefebvre, P. P. Department of Human Physiology and Pathophysiology, University of Liege, Belgium. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S19–25.

Most hearing loss results from lesions of the sensory cells and/or of the neurons of the auditory part of the inner ear. There is currently no treatment able to stop the progression of a hearing loss or to restore a lost auditory function. In this paper, we review the progress which has been made with respect to the regeneration and the protection of the hair cells and of the auditory neurons in the cochlea. In particular, we emphasize the control by growth factors of the protection/repair mechanisms of the neurosensory structures within the inner ear, in the prospect of the possible clinical use of these molecules. Finally, we discuss the different approaches which can be used to deliver these therapeutic agents to the inner ear.

Surgical treatment of chronic otitis media with effusion. Maw, R., Stewart, I., Schilder, A., Browning, G. Department of Otolaryngology, St Michael's Hospital, Bristol, UK. *International Journal of Pediatric Otorhinolaryngology* (1999) October 5, Vol. 49 Suppl 1, pp. S239–41.

Otitis media with effusion is the most frequent reason for admission to hospital for surgery in children. There are worldwide differences in the management of the condition. Recent studies have evaluated indications for surgery, surgical treatment methods, outcome measures following surgery and sequelae. The present report defines the increased risk of behavioural problems in pre-school children with persistent disease. Factors affecting the outcome of surgery with ventilation tubes are discussed. Assessment is made of the complications due to the disease and those resulting from treatment with ventilation tubes. Finally, a review is made of the various international guidelines for the management of persistent disease as a basis for good clinical practice.