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Abstract selection

Periodic fever, aphthous stomatitis, pharyngitis, and adenopathy syndrome: clinical characteristics and outcome (see comments). Padeh, S., Brezniak, N., Zemer, D., Pras, E., Livneh, A., Langevitz, P., Migdal, A., Pras, M., Passwell, J. H. Department of Pediatrics, Heller Institute of Medical Research, Sheba Medical Center, affiliated with the Tel-Aviv University, Sackler School of Medicine, Tel Hashomer, Israel. *Journal of Pediatric* (1999) July, Vol. 135 (1), pp. 98-101. Comment in: *Journal of Pediatric* (1999) July, 135 (1), 1–5.

We report 28 patients (20 male) with a syndrome characterized by abrupt onset of fever, malaise, aphthous stomatitis, tonsillitis, pharyngitis, and cervical adenopathy (PFAPA syndrome). Episodes of fever occurred at intervals of 5.1 ± 1.3 weeks beginning at the age of 4.2 ± 2.7 years. Fever, malaise, tonsillitis with negative throat cultures, and cervical adenopathy were reported in all 28 patients, aphthase in 19, headache in five, abdominal pain in five, and arthralgia in three. Mild hepatosplenomegaly was observed in six patients. Mild leukocytosis, elevation of the erythrocyte sedimentation rate, and fibrinogen were found during attacks. These episodes of illness resolved spontaneously in 4.3 ± 1.7 days. Serum IgD was found elevated (> 100 U/mL) in 12 of the 18 patients tested (140.2 ± 62.4 U/mL). Affected children grow normally, have no associated diseases, and have no long-term sequelae. Attacks were aborted by a single dose of oral prednisone (2 mg/kg) at the beginning of the attack in all 15 patients in whom this medication was prescribed. In nine patients the syndrome has completely resolved (beginning at the age of 2.9 ± 1.3 and lasting 8 ± 2.5 years). In three other patients complete resolution of the attacks occurred after tonsillectomy was performed. PFAPA is sporadic, and no ethnic predilection was found. Increased awareness of the clinical syndrome has resulted in more frequent diagnosis and adequate treatment.

Sound localization in noise in hearing-impaired listeners. Lorenzi, C., Gatehouse, S., Lever, C. MRC Institute of Hearing Research (Scottish Section), Royal Glasgow Infirmary, Scotland, United Kingdom. *Journal of the Acoustical Society of America* (1999) June, Vol. 105 (6), pp. 3454–63.

The present study assesses the ability of four listeners with high-frequency, bilateral symmetrical sensorineural hearing loss to localize and detect a broadband click train in the frontal-horizontal plane, in quiet and in the presence of a white noise. The speaker array and stimuli are identical to those described by Lorenzi *et al.* (in press). The results show that: (1) localization performance is only slightly poorer in hearing-impaired listeners than in normal-hearing listeners when noise is at 0 deg azimuth, (2) localization performance begins to decrease at higher signal-to-noise ratios for hearing-impaired listeners than for normal-hearing listeners when noise is at ± 90 deg azimuth, and (3) the performance of hearing-impaired listeners is less consistent when noise is at ± 90 deg azimuth than at 0 deg azimuth. The effects of a high-frequency hearing loss were also studied by measuring the ability of normal-hearing listeners to localize the low-pass filtered version of the clicks. The data reproduce the effects of noise on three out of the four hearing-impaired listeners when noise is at 0 deg azimuth. The additional effects of a low-frequency hearing loss were investigated by attentuating the low-pass filtered clicks and the noise by 20 dB. The results show that attenuation does not strongly affect localization accuracy for normal-hearing listeners. Measurements of the clicks' detectability indicate that the hearing-impaired listeners who show the poorest localization accuracy also show the poorest ability to detect the clicks. The inaudibility of high frequencies, 'distortions', and reduced detectability of the signal are assumed to have caused the poorer-than-normal localization accuracy for hearing-impaired listeners.

System identification of feedback in hearing aids. Hellgren, J., Lunner, T., Arlinger, S. Department of Neuroscience and Locomotion, Linkoping University, Sweden. johan.hellgren@oto-liu.se. *Journal of the Acoustical Society of America* (1999) June, Vol. 105 (6), pp. 3481–96.

The feedback problems of behind the ear (BTE), in the ear (ITE), and inthe ear canal (ITEC) hearing aid categories have been investigated. All possible feedback paths (acoustical via vent, via tubing wall, mechanical, etc.) were converted to a single transfer function from the ear canal to the hearing aid microphone, here called the acoustic feedback equivalent (AFE). The attenuationof the AFE represents the maximum gain that can be used without the hearing aid starting to howl. Magnitude and phase responses of the AFE were identified on ten human subjects and on a Knowles ear manikin (KEMAR). The acoustic feedback via vent and leak between earmould and ear canal dominated the AFE. The transfer function from a reference point under the ear to the position of microphone of the different hearing aid categories was identified and used together with the AFE to calculate the maximum real ear aided gain (REAG) for the hearing aid categories. A model of the AFE, consisting of a fourth-order filter together with a delay, showed good agreement with the measured data.

What your colleagues think of tympanostomy tubes – 28 years later. Todd, N. W. Department of Otolaryngology, Emory University School of Medicine, Atlanta, Georgia 30322, USA. ntodd@emory.edu. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1028–32.

OBJECTIVE: Assess the changing opinions of otolaryngologists about tympanostomy tubes, including indications, tube material and shape and size, placement sites, and complications. STUDY DESIGN: Cross-sectional survey, compared to the same survey done 28 years earlier. METHODS: Questionnaires mailed to the 441 active fellows and 86 candidates of the Triological Society. Response rate 69.3 per cent. RESULTS: The preference for polyethylene has decreased from 75 per cent to 13 per cent of respondents. Preferred insertion sites are more anterior. The proportion of respondents who have seen a permanent perforation as a consequence has increased from 26 per cent to 93 per cent. The proportion of respondents who have seen a tube-attributable cholesteatoma has increased from eight per cent to 38 per cent. The average tube duration has increased from four months to 18 months. Teflon and Silastic are now the materials most often used. As 28 years earlier, about 19 per cent of patients get a subsequent tympanostomy tube. Anesthetics most commonly used now are general or topical phenol. CONCLUSION: The consensus on several aspects of tympanostomy tubes has changed during 28 years. Controversy continues about the indications for using tubes. Although not a not cure-all for otitis media, tympanostomy tubes have proved useful.

Test-retest reliability of computed tomography in the assessment of chronic rhinosinusitis. Bhattacharyya, N. Joint Center for Otolaryngology and Harvard Medical School, Boston, Massachusetts 02115, USA. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1055–8.

OBJECTIVE: Computed tomography (CT) of the paranasal sinuses has emerged as the standard test for the assessment of chronic rhinosinusitis, as evidenced by the emergence of several CT-based staging systems. Despite its central role in the diagnosis and treatment planning for chronic rhinosinusitis, the sinus CT represents a 'snapshot in time'. This study was conducted to determine the reliability of the CT scan for chronic sinus disease: are the CT findings in chronic rhinosinusitis stable over time? METHODS: A prospective series of patients scheduled for

endoscopic sinus surgery was evaluated. A total of 45 patients received two CT scans: an initial scan obtained during routine diagnostic evaluation, and a second scan performed for use as part of an image-guided sinus surgery protocol. No surgical intervention occurred between scans. The patients' scans were staged according to the Lund system by a blinded observer. The correlation between scans for each patient was determined using the matched pairs t test and the Pearson correlation coefficient. RESULTS: The mean time interval between scans was 122.6 days (range, 5364 d). The average Lund scores for the initial and second scans were 13.56 and 13.27, respectively. The Lund score for five patients remained the same, increased in 22 patients, and decreased in 18 patients. Overall, 75.6 per cent of patients' second scans were within ± two points of the first scan Lund score. The mean change in score between scans of −0.29 was not significant ($P = 0.606$, paired samples t test). The Pearson correlation coefficient between scans was 0.796 ($P<0.001$). CONCLUSIONS: CT scan assessment of chronic rhinosinusitis is a reliable test. The CT findings in patients with chronic rhinosinusitis remain consistent over time.

The rhinology laboratory. Bent, J. P., Porubsky, E.S. Lenox Hill Hospital and Albert Einstein School of Medicine, New York, New York, USA. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1059–63.
OBJECTIVES: This study seeks to develop a rhinology lab model and to assess its effectiveness for physicians-in-training STUDY DESIGN: We established a rhinology lab at our institution with simple and affordable modifications to our temporal bone lab. Residents attended a seven-part lecture series and received a list of endoscopic and open procedures to perform on computed tomography (CT)-scanned, vessel-injected cadaver heads. METHODS: After two years we asked participating residents to rate their lab experience on a one to 10 (disagree-agree) scale. RESULTS: Cumulative scores indicated that residents enthusiastically perceived this additional training as worthwhile (micro = 10), while increasing their efficiency (micro = 9.5), safety (micro = 9.875), and anatomic knowledge (micro = 9.875). The lab has opened oppportunities for rhinology research, as evidence by one resident publication and another project in progress. Survey feedback has helped develop guidelines for instructor participation in the lab as well as for assigned reading and independent study. CONCLUSIONS: Based on our preliminary experience, we recommend the rhinology lab to all residency programs as an important yet cost-effective means of maintaining education in step with rapidly changing technologies.

Breaking the bad news of cancer: the patient's perspective. Kim, M. K., Alvi, A. Department of Otorhinolaryngology and Bronchoesophagology, Temple University School of Medicine, Philadelphia, Pennsylvania 19140, USA. Michael@flower.aud.temple.edu. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1064–7.
OBJECTIVE: Head and neck cancers present a special challenge to the patient and the physician because they affect the quintessential aspects of living such as breathing, eating, and speaking. Numerous articles have described how the physician should perform the difficult task of conveying bad news, but only a small number of articles specifically assess the patients' perceptions when being told of a serious diagnosis. The purpose of this survey was to evaluate the thoughts and concerns of patients receiving diagnoses of head and neck cancer. STUDY DESIGN: Questionnaire survey. METHODS: A 41-item questionnaire was sent to head and neck cancer patients who have been treated for and remain free of disease for at least two years. RESULTS: All of the respondents felt that their diagnosis was adequately explained to them and that no further explanations were necessary. Eighty-one per cent of the respondents did not wish to have anyone else present at the time of diagnosis. Additionally, 75 per cent of the respondents did not want the physician to touch their hands or hug them when given the bad news. Only 63 per cent of the respondents had further discussions with family, friends, or other physicians after being told of their diagnosis. CONCLUSION: When patients are told of the diagnosis of head and neck cancer, they want their physician to be truthful, caring, and compassionate. The patients want their diagnosis in simple and direct term without the incorporation of complex medical terminology. The results of this survey can provide insightful information to physicians when they are undertaking the difficult task of conveying bad news to their patients.

Anti-endothelial autoantibodies in patients with sudden hearing loss. Ottaviani, F., Cadoni, G., Marinelli, L., Fetoni, A. R., De Santis, A., Romito, A., Vulpiani, P., Manna, R. Department of Otorhinolaryngology, Catholic University of the Sacred Heart, Rome, Italy. iclot@rm.unicatt.it. *Laryngoscope* (1999) July, Vol. 198 (7 Pt 1), pp. 1084–7.
OBJECTIVES/HYPOTHESIS: Sudden hearing loss (HL) can be caused by autoimmune disorders localized to the inner ear or secondary to systemic immune diseases. Studies in autoimmune animal strains showing HL have reported changes in the cochlear stria vascularis. The authors investigated the presence of antiendothelial cell antibodies (AECA) to see if immune-mediated vasculitis may play a role in human sudden HL. STUDY DESIGN: A prospective study in patients with sudden HL. METHODS: Fifteen consecutive patients (mean age, 32 y) affected by sudden HL and 14 normal subjects were included. Patients with familial deafness and metabolic diseases were excluded. Extensive audiovestibular, imaging, microbiological, immunological, and routine examinations were performed. AECA were detected on rat kidney tissue sections on the sera collected at −20 degrees C. RESULTS: AECA were positive in eight of 15 patients (53 per cent) (two of five men and six of 10 women), thus differing significantly from the normal control population, in which only two of 14 tested AECA positive ($P = 0.023$). CONCLUSIONS: In patients with sudden HL, immune-mediated vascular damage can have a pathogenetic role and AECA might represent a serological marker of vasculitis.

Nasal stuffiness during pregnancy. Bende, M., Gredmark, T. Department of Otorhinolaryngology, Central Hospital, Skovde, Sweden. *Laryngoscope* (1999) July, Vol. 199 (7 Pt 1), pp. 1108–10.
OBJECTIVE: To investigate the occurrence of nasal stuffiness during pregnancy. STUDY DESIGN: Prospective longitudinal study, with collection of data during one year in a cohort of 2,264 pregnant women. METHODS: Self-reported nasal stuffiness in gestational weeks 12, 20, 30 and 36 was correlated to age, parity, body mass index, and smoking habits. RESULTS: The prevalence of nasal stuffiness increased during pregnancy and occurred in 27 per cent of the women at 12 weeks of gestation, in 37 per cent at 20 weeks, in 40 per cent at 30 weeks and in 42 per cent at 36 weeks. Sixty-five per cent of the women reported stuffiness at some time when asked. It was commoner in multiparous than in nulliparous women. Age, body mass index, and smoking habits were not associated with nasal stuffiness. CONCLUSION: Self-reported nasal stuffiness for three or more weeks was common during pregnancy and could occur at any time in two thirds of the women. Treatment regimens to alleviate this symptom should be developed.

Is epistaxis evidence of end-organ damage in patients with hypertension? Lubianca, J. F., Fuchs, F. D., Facco, S. R., Gus, M., Fasolo, L., Mafessoni, R., Gleissner, A. L. Department of Ophthalmo-Otorhinolaryngology, Fundaccao Faculdade Federal de Ciencias Medicas de Porto Alegre, Brazil. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1111–5.
OBJECTIVE/HYPOTHESIS: To study the association between history of mild to severe epistaxis with different stages of hypertension and with other evidence of target organ damage in a sample of patients attending an outpatient hypertension clinic, controlling for potential confounding factors. STUDY DESIGN: A survey of adult patients with hypertension. METHODS: A consecutive sample of 323 adults with hypertension was studied. The main outcome measures were history of adult epistaxis, high blood pressure, duration of hypertension, nasal abnormalities, and fundoscopic and electrocardiogram abnormalities. RESULTS: Ninety-four patients (29.1 per cent of the whole sample) reported at least one episode of nosebleed after 18 years of age. Of these, 59 (62.8 per cent) needed medical assistance to control at least one of the episodes. The history of epistaxis was not associated with blood pressure classified according to the World Health Organization/International Society of Hypertension paradigm or classified as severe or not severe. There was a trend of an association between history of epistaxis and duration of hypertension. The history of severe epistaxis (epistaxis that needed medical

assistance) was not associated with blood pressure classified as severe or not severe and with duration of hypertension. More patients with left ventricular hypertrophy had a positive history of adult epistaxis. There was no association between history of epistaxis or history of severe epistaxis and fundoscopic abnormalities. Among the abnormalities detected at rhinoscopy, only the presence of enlarged septal vessels was associated with history of epistaxis. The presence of enlarged septal vessels was strongly and independently associated with history of epistaxis in the logistic regression model. Duration of hypertension and left ventricular hypertrophy showed a trend for an association with the history of epistaxis in the adult life. CONCLUSIONS: A definite association between blood pressure and history of adult epistaxis in hypertensive patients was not found. The evidence for an association of duration of hypertension and left ventricular hypertrophy with epistaxis suggests that epistaxis might be a consequence of long-lasting hypertension. The association between the presence of enlarged vessels at rhinoscopy with history of epistaxis in hypertensive patients is a novel observation that needs to be addressed in future observations.

A new transnasal approach to endoscopic marsupialization of the nasolabial cyst. Su, C. Y., Chien, C. Y., Hwang, C. F. Department of Otolaryngology, Chang Gung University, Chang Gung Memorial Hospital, Kaohsiung Medical Center, Taiwan. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1116–8.
OBJECTIVE: Nasolabial cyst is a mucus-secreting, nonodontogenic cyst in the nasofacial area. It is usually situated behind the ala nasi, extending backward beneath the nasal floor into the inferior meatus and forward into the labio-gingival sulcus behind the upper lip. Patients with nasolabial cysts generally undergo surgical removal of the cyst via a transoral sublabial approach. This article reports a simple, less invasive surgical procedure for the treatment of nasolabial cysts. STUDY DESIGN: A transnasal endoscopic marsupialization method was designed to treat patients with nasolabial cysts. From 1996 through 1998, 16 consecutive patients underwent this new surgical procedure. METHODS: With patients under local anaesthesia, the roof of the cyst, which was firmly attached to the mucous membrane of the anterior nasal floor, was removed transnasally with a sickle knife and scissors. Under the guidance of a nasoendoscope, the opening of the cyst was widened with bite forceps. Meanwhile, the cut edges of the nasal mucosa and the epithelium lining of the cyst were adequately matched. The nose was then loosely packed. RESULTS: All but one of the 15 patients were successfully treated with this technique, and the whole surgical procedure was usually completed within 15 and 20 minutes. Postoperative endoscopic and radiological findings revealed that the cyst was replaced by an air-containing sinus with a persistent opening at the anterior or anterolateral nasal floor. There has been no evidence of mucus accumulation in the newly created sinus or recurrence of the cyst during a mean follow-up of 16 months. CONCLUSIONS: These results suggest that TGF-alpha may play a role in the inflammatory derangement of rhinitis.

Preservation of function and histologic appearance in the injured glottis with topical mitomycin-c. Spector, J. E., Werkhaven, J. A., Spector, N. C., Huang, S., Page, R. N., Baranowski, B., Luther, M., McGehee, B., Reinisch, L. Department of Otolaryngology, Vanderbilt Bill Wilkerton Center for Otolaryngology and Communication Sciences, Vanderbilt University Medical Center, Nashville, Tennessee 37232-2559, USA. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1125–9.
OBJECTIVE: To evaluate the functional and histological effects of a single application of topical mitomycin-C after laser injury in the posterior canine glottis. STUDY DESIGN: A prospective, randomized study of 16 canines. METHODS: A supersaturated (one per cent) solution of topical mitomycin-C was applied to a unilateral, laser-induced injury near the cricoarytenoid joint in eight dogs. The mitomycin-soaked pledget was placed immediately after induction of the injury and was left in contact with exposed cartilage for three minutes. The opposite side was not injured to provide an internal control. In eight additional dogs, the same laser injury was allowed to heal untreated. After six weeks, the animals were sacrificed and their larynges harvested. Arytenoid adduction sutures were placed bilaterally, and the force required to bring the vocal folds to midline was measured for each side using tensiometry. Gross and microscopic histological analysis was performed. Statistical analysis was accomplished using a two-tailed Student t test of unpaired samples, and the Wilcoxon Signed Rank Test where appropriate. RESULTS: The mitomycin-C treated larynges demonstrated improved cricoarytenoid joint mobility ($P = 0.007$), decreased granulation tissue development ($P = 0.03$), and complete prevention of secondary 'vocal granuloma' formation ($P = 0.0004$) when compared with eight dogs with identical laser injuries allowed to heal untreated. No complications were noted. CONCLUSIONS: This study demonstrates functional preservation and improved histological appearance of the injured glottis after a single treatment with topical mitomycin-C. Potential applications of these findings include prophylactic use of topical mitomycin-C on glottic insults that commonly progress from granulation tissue formation to scarring and decreased vocal fold function.

An external landmark for the anterior commissure. Adams, J., Gross, N., Riddle, S., Andersen, P., Cohen, J. I. Department of Otolaryngology-Headand Neck Surgery, Oregon Health Sciences University, Portland 97201, USA. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1134–6.
OBJECTIVE: The ability to predict the level of the true vocal cords based on external landmarks is crucial to the success of many laryngeal surgical procedures. This study examines the reliability of one such landmark on the thyroid cartilage. METHODS: Twenty-four cadaver larynges were examined. A pin was placed through the landmark, best described as a small diamond shaped area of color change and surface depression along the anterior midline of each thyroid cartilage through which travels a very small unnamed artery. The endolaryngeal position of the pin was checked with a flexible nasopharyngoscope. RESULTS: In all 24 cadavers, the pin entered the larynx at the anterior commissure, just above or at the level of the true vocal cords. CONCLUSIONS: This external landmark reliably predicts the position of the true vocal cords. It serves as a useful adjunct to existing external landmarks used to direct thyroid cartilage cuts in laryngeal procedures.

Characterization of cyclooxygenase in laryngeal papilloma by molecular techniques. Robinson, A. B., Das, S. K., Bruegger, D. E., Hoover, L. A., Sanford, T. R. Department of Otolaryngology-Head and Neck Surgery, University of Kansas Medical Center, Kansas City, USA. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1137–41.
OBJECTIVES: Demonstrate the induction of cyclooxygenase-2 (COX-2) in laryngeal papilloma Discuss the possible causal role of COX-2 in papilloma formation. Consider the potential for treatment of papilloma using selective COX-2 inhibitors. STUDY DESIGN: Molecular biological analysis of COX-1 and COX-2 in laryngeal papilloma. METHODS: Tissue samples from five patients with recurrent respiratory papillomatosis (RRP) were analyzed by in situ hybridization, immunohistochemical staining, and reverse transcription polymerase chain reaction (RT-PCR) techniques. RESULTS: In situ hybridization to COX-2 mRNA showed strong autoradiographic signal surrounding fibrovascular cores. COX-1 autoradiographic signal was low intensity or nondetectable. Normal buccal mucosa biopsies showed low-density or nondetectable autoradiographic signal for both COX-1 and COX-2 mRNAs. In situ hybridization results were corroborated by RT-PCR studies. Levels of COX-2 mRNA were 13-fold more than those in normal mucosa. Immunohistochemical staining for COX-1 and COX-2 showed a similar pattern to that seen with in situ hybridization in both normal and papilloma tissues. CONCLUSIONS: There is an elevation of COX-2 expression in papilloma tissues. This may represent a causal role of COX-2 in the formation and proliferation of laryngeal papilloma. There may also be a role for selective COX-2 inhibition for the treatment of.

Hyaluronic acid (with fibronectin) as a bioimplant for the vocal fold mucosa. Chan, R. W., Titze, I. R. National Center for Voice and Speech, Department of Speech Pathology and Audiology, The University of Iowa, Iowa City 52242, USA. roger-chan@uiowa.edu. *Laryngoscope* (1999) July, Vol. 109 (7 Pt 1), pp. 1142–9.
OBJECTIVES: To measure the viscoelastic shear properties of hyaluronic acid, with and without fibronectin, and to compare them with those of the human vocal fold mucosa and other phonosurgical biomaterials. METHODS: Viscoelastic shear prop-

erties of various implantable biomaterials (Teflon, gelatin, collagen, fat, hyaluronic acid, and hyaluronic acid with fibronectin) were measured with a parallel-plate rotational rheometer. Elastic and viscous shear properties were quantified as a function of oscillation frequency (0.01–15 Hz) at 37 degrees C. RESULTS: The shear properties of hyaluronic acid were relatively close to those of human vocal fold mucosal tissues reported previously. Hyaluronic acid at specific concentrations (0.5 per cent-one per cent), with or without fibronectin, was found to exhibit viscous shear properties (viscous shear modulus and dynamic viscosity) similar to those of the average male and female vocal fold mucosa. CONCLUSIONS: According to a theory that establishes the effects of tissue sheer properties on vocal fold oscillation, phonation threshold pressure (a measure of the ease of phonation) is directly related to the viscous shear modulus of the vibrating vocal fold mucosa. Therefore, our findings suggest that hyaluronic acid, either by itself or mixed with fibronectin, may be a potentially optimal bioimplant for the surgical management of vocal fold mucosal defects and lamina propria deficiencies (e.g. scarring) from a biomechanical standpoint.

Needle cricothyroidectomy revisited. Peak, D. A., Roy, S. Department of Emergency Medicine, Boston Medical Center, Massachusetts 02118, USA. *Pediatric Emergency Care* (1999) June, Vol. 15 (3), pp. 224–6.
Needle cricothyroidotomy may provide a life-saving airway when tracheal intubation is not possible. Indications for needle cricothyroidectomy are discussed. Methods of needle/angiocatheter insertion and proposed means to connect to an oxygen source for intermittent insufflation are reviewed. A new technique for administering effective oxygenation and ventilation through a trans-tracheal catheter using materials commonly available in an emergency department is presented. Potential complications are discussed. Complete upper airway obstruction is a contraindication to needle cricothyroidectomy because of the risks of barotrauma. In a crisis situation, the emergency practitioner needs a simple, reliable, effective, and preplanned technique to deal with the 'nightmare airway'.

A four year investigation into phonetic inventory development in young cochlear implant users. Serry, T. A., Blamey, P. J. Bionic Ear Institute, Melbourne, Australia. *Journal of Speech, Language, and Hearing Research* (1999) February, Vol. 42 (1). pp. 141–54.
Phonetic inventories of nine children with profoundly impaired hearing who used the 22-electrode cochlear implant (Cochlear Limited) were monitored before implantation and during the first four years of implant use. All children were five years old or younger at the time of implant. Spontaneous speech samples were collected at regular intervals for each child and analyzed to investigate phone acquisition over the post-implant period. Acquisition was measured using two different criteria. The 'targetless' criterion required the child to produce a phonetically recognizable sound spontaneously, and the 'target' criterion required the child to produce the phone correctly at least 50 per cent of the time in meaningful words. At four years post-implant, 40 out of 44 phones (91 per cent) had reached the targetless criterion, and 29 phones (66 per cent) had reached the target criterion for five or more of the children. Over the time of the study 100 per cent of monophthongs, 63 per cent of diphthongs, and 54 per cent of consonants reached the target criterion. The average time taken for a phone to progress from the targetless to target criterion was 15 months. Overall, the data suggest trends in the order of phone acquisition similar to those of normally hearing children, although the process of acquisition occurred at a lower rate.

Vocal fold proteoglycans and their influence on biomechanics. Gray, S. D., Titze, I. R., Chan, R., Hammond, T. H. National Center for Voice and Speech, Department of Surgery, University of Utah School of Medicine, Salt Lake City 84113, USA. pcsgray@ihc.com. *Laryngoscope* (1999) June, Vol. 109 (6), pp. 845–54.
OBJECTIVE/HYPOTHESIS: To examine the interstitial proteins of the vocal fold and their influence on the biomechanical properties of that tissue. STUDY DESIGN: Anatomic study of the lamina propria of human cadaveric vocal folds combined with some viscosity testing. METHODS: Identification of proteoglycans is performed with histochemical staining. Quantitative analysis is performed using an image analysis system. A rheometer is used for viscosity testing. Three-dimensional rendering program is used for the computer images. RESULTS: Proteoglycans play an important role in tissue biomechanics. Hyaluronic acid is a key molecule that affects viscosity. DISCUSSION: The proteoglycans of the lamina propria have important biological and biomechanical effects. The role of hyaluronic acid in determining tissue viscosity is emphasized. Viscosity, its effect on phonatory threshold pressure and energy expended due to phonation is discussed. CONCLUSION: Proteoglycans, particularly hyaluronic acid, play important roles in determining biomechanical properties of tissue oscillation. Future research will likely make these proteins of important therapeutic interest.

Botulinum toxin: adjunctive treatment for posterior glottic synechiae. Nathan, C. O., Yin, S., Stucker, F. J. Department of Otolaryngology/Head and Neck Surgery, Louisiana State University Medical Center, Shreveport 71130, USA. cnatha@l-sumc.edu. *Laryngoscope* (1999) June, Vol. 109 (6), pp. 855–7.
INTRODUCTION: Synechiae formation of the posterior glottis can result in tracheostomy dependence secondary to airway obstruction. Stenosis is caused by total or partial fixation of the vocal folds in adduction resulting from scar contracture. The treatment poses a management dilemma because of recurrent scar formation, made worse by mobility of the vocal folds. Although various treatment options from conservative endoscopic repair to open procedures have been proposed, the results are not satisfactory and patients often require multiple procedures. METHODS: We present the trial of a conservative approach that includes microscopic CO_2 laser resection of the scar with concomitant botulinum toxin injection of the interarytenoid and thyroarytenoid muscles of the more mobile cord. This results in a temporary paresis of the adductor muscles and hence prevents overadduction in the posterior commissure during the post-operative healing period. STUDY DESIGN: We present the surgical technique and results in three patients who underwent the procedure. RESULTS: Treatment in all three patients was successful. CONCLUSIONS: The appropriate use of botulinum toxin may help improve the treatment outcome of posterior synechiae of the larynx without sacrificing any laryngeal components.

Magnetic resonance navigation for head and neck lesions. Davis, S. P., Anand, V. K., Dhillon, G. Department of Surgery, University of Mississippi Medical Center, Jackson 39216-4505, USA. *Laryngoscope* (1999) June, Vol. 109 (6), pp. 862–7.
OBJECTIVE: Review applications of interventional magntic resonance imaging and describe methods, procedures, and additional instrumentation for the magnetic resonance 'operating theater'. Describe advantages of magnetic resonance navigation for biopsies of head and neck tumors. STUDY DESIGN: Patients with palpable and nonpalpable head and neck and cranial base tumors were recruited into the study. Patients underwent magnetic resonance-guided biopsy. Retrospective analysis of 21 patients was conducted. METHODS: 0.5 Tesla superconducting open magnetic resonance imaging was used for navigation of the biopsy needle. Patient records and magnetic resonance images were reviewed. The type, size and location of the lesions were tabulated. Type of anesthesia and monitoring method were analysed. The histopathologic correlation was conducted in patients who required further surgeries or open surgical biopsies. RESULTS: Twenty-two biopsies were carried out in the magnetic resonance suite. One patient required general anesthesia and the other biopsies were conducted under intravenous sedation. There was only one case of nonconcurrence in a patient with Wegener's granulomatosis of the posterior orbit. Overall, a 92 per cent concurrence rate between image-directed fine-needle aspiration, open biopsy, and surgical therapy was encountered. No complications occurred. CONCLUSIONS: The use of interventional magnetic resonance imaging to assist with fine-needle aspiration core biopsy has made the biopsy procedure safer and more accurate. Potentially morbid and disfiguring surgeries have been avoided in some patients. Deeper lesions have been more easily approached, as the needle for biopsy is under constant magnetic resonance guidance. Improved visualization for critical structures allows safer performance of biopsies. The primary difficulties of open magnetic resonance imaging relate to the need for nonferromagnetic instrumentation

and equipment and their high costs. An inverse relationship exists between the imaging quality and the 'dead time' required to acquire images.

Uses and limitations of FDG positron emission tomography in patients with head andneck cancer. Hanasono, M. M., Kunda, L. D., Segall, G. M., Ku, G. H., Terris, D. J. Division of Otolaryngology/Head and Neck Surgery, Stanford University Medical Center, California 94305-5328, USA. *Laryngoscope* (1999) June, Vol. 109 (6), pp. 880–5.
OBJECTIVE: Numerous authors have reported the potential usefulness of positron emission tomography (PET). These studies have had conflicting results, at least partly owing to limited sample sizes. The objective of this study is to define not only the uses, but also the limitations of PET in patients with head and neck and cancer. STUDY DESIGN: Nonrandomized, retrospective analysis of PET at an academic institution. METHODS: The authors performed 146 PET scans on 133 patients with head and neck cancer. Eighteen patients (19 PET scans) with thyroid disorders were excluded. A minimum one year of follow-up was available in 84 patients, who were separated into groups based on whether the PET was used to detect unknown primary cancers (n = 20), stage neck nodal and distant metastases (n = 8), monitor response to nonsurgical therapy (n = 22), or detect recurrent or residual cancers (n = 34). The results of PET were compared with results from computed tomography (CT) and magnetic resonance imaging (MRI) performed in the same patients RESULTS: Of the unknown primary cancers, PET correctly identified seven of 20 primary sites, giving a sensitivity of 35 per cent. When combined with CT or MRI, the sensitivity increased to 40 per cent. When used for detection of metastatic disease, PET demonstrated five of five nodal metastases (100 per cent) and two of four distant metastases (50 per cent). In evaluating the response to nonsurgical therapy, PET had a sensitivity of 50 per cent and a specificity of 83 per cent for detecting tumour at the primary site and a sensitivity of 86 per cent and a specificity of 73 per cent for detecting nodal disease. When used for evaluation of recurrent/residual disease, PET identified seven of seven cases of nodal disease and had a specificity of 89 per cent. CONCLUSIONS: For staging purposes, PET is limited by its lack of anatomic detail. However, PET compares favourably with CT and MRI in detecting recurrent/residual cancers. PET imaging complements the more traditional imaging modalities (CT or MRI), especially for an unknown primary cancer.

Success of the modified Epley maneuvre in treating benign paroxysmal positional vertigo. Wolf, J. S., Boyev, K. P., Manokey, B. J., Mattox, D. E. Division of Otolaryngology-Head and Neck Surgery, University of Maryland Medical System, Baltimore, USA. *Laryngoscope* (1999) June, Vol. 109 (6), pp. 900–3.
OBJECTIVE: Benign paroxysmal positional vertigo (BPPV) is a common condition seen by otolaryngologists The purpose of this study is to determine the ability of the modified Epley maneuver to treat BPPV. STUDY DESIGN: Retrospective review. METHODS: A retrospective chart review of 107 patients diagnosed with BPPV at our institution between March of 1993 and June of 1995. Each patient was diagnosed with isolated BPPV by history and Hallpike-Dix maneuver. There were no other vestibular symptoms or electronystagmogram abnormalities. Patients diagnosed with BPPV received modified Epley maneuvres, were instructed to remain upright for 48 hours, and wore a soft collar for a week. Patients were followed up with repeat Hallpike-Dix maneuvers at one to two weeks. If symptoms persisted, the maneuver was repeated for up to a maximum of three times, at which point patients were considered to have failed treatment. RESULTS: The average age of patients was 57.8 years old. Thirty per cent were male and the right ear was affected in 54 per cent. The posterior semicircular canal was affected in 105 ears. The average patient received 1.23 Epley maneuvers, with a success rate of 93.4 per cent. No successfully treated patients received mastoid vibration. Seven out of 107 patients failed after three Epley maneuvers. Two failure patients had a history of temporal bone fracture. Two failure patients were treated with posterior semicircular canal block surgery. CONCLUSION: The modified Epley maneuver is an excellent treatment for BPPV.

Acoustic neuroma surgery: absent auditory brainstem response does not contraindicate attempted hearing preservation. Roberson, J. B. Jr., Jackson, L. E., McAuley, J. R. California Ear Institute at Stanford, Stanford University Medical Center, Palo Alto, California 94304-1608, USA. *Laryngoscope* (1999) June, Vol. 109 (6), pp. 904–10.
OBJECTIVE: Absence of auditory brainstem response (ABR) waveforms has been associated with a poor likelihood of hearing preservation following resection of acoustic neuromas. Our experience is reviewed for patients with absent preoperative ABR regarding hearing preservation, hearing improvement, and return to ABR. STUDY DESIGN: Retrospective review of 22 cases of acoustic neuroma resection. Nine patients with absent preoperative ABR were identified. All underwent tumor resection utilizing intraoperative cochlear nerve action potential (CNAP) monitoring. Postoperative hearing results and ABR waveforms were examined. METHODS: Charts were reviewed and tabulated for age, sex, tumor side, tumor size, preoperative and postoperative audiometric and ABR results, intraoperative monitoring results by ABR and CNAP, and surgical complications. RESULTS: Hearing preservation was achieved in seven of nine patients (78 per cent) with absent preoperative ABR, as well as six of seven patients (86 per cent) with tumors less than or equal to 20 mm in greater dimension. Although intraoperative ABR monitoring was not possible in any of these patients, CNAP monitoring was successful in all. Return of ABR waveforms was observed in four of the six patients (67 per cent) tested from three to 22 months postoperatively. Four of the seven patients (57 per cent) enjoyed improvement in hearing class as defined by the guidelines of the American Academy of Otolaryngology-Head and Neck Surgery. CONCLUSIONS: Absent ABR waveforms have not been a negative prognostic sign regarding hearing preservation. CNAP monitoring is possible in these patients and likely helps to minimize iatrogenic cochlear nerve trauma. Patients with no ABR waveforms have hope of hearing preservation and even improvement following acoustic neuroma resection performed utilizing CNAP monitoring and hearing preservation surgical techniques.