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# Abstract Selection

**Thyroplasty type I: short- versus long-term results.** Lundy, D. S., Casiano, R. R., Zue, J. W., Lu, F. L. Department of Otolaryngology, University of Miami, Miami, FL, USA. *Otolaryngology – Head and Neck Surgery* (2000) April, Vol. 122 (4), pp. 533–6.
OBJECTIVE: After thyroplasty type I, significant improvement has been reported in objective measures of vocal function. The purpose of this investigation was to compare the short- and long-term results in patients undergoing thyroplasty type I. METHODS: Data on 26 patients who had undergone thyroplasty type I for management of unilateral vocal fold paralysis were compared from before surgery to the short-term (one month) and long-term (>one year) postoperative assessment points. Statistical analysis included paired tests to assess the significance of between-group differences. RESULTS: Significant differences were found between the preoperative and both postoperative evaluations for the measures of mean glottal flow rate, maximum phonation time, jitter, shimmer, and harmonic-to-noise ratio. However, no significant differences were found between the one-month and >one year assessment points. CONCLUSIONS: The results for the parameters studied appeared to reach maximum improvements within one month after surgery. It is possible that the effects of time, including the normal aging process, hormonal changes, or other alterations in general health, may require longer follow-up to better address these issues.

**Vocal fold paresis.** Koufman, J. A., Postma, G. N., Cummins, M. M., Blalock, P. D. Center for Voice Disorders and the Department of Otolaryngology, Wake Forest University School of Medicine, Wiston-Salem, NC 27157-1034, USA. *Otolaryngology – Head and Neck Surgery* (2000) April, Vol. 122 (4), pp. 537–41.
Vocal fold paresis (VFP) is a relatively common and often overlooked condition that can be difficult to diagnose based on the laryngeal examination alone. A retrospective review of the records of 50 consecutive adult patients with VFP was performed. In each case, the diagnosis of VFP was confirmed by laryngeal electromyography. The presenting symptoms were dysphonia (100 per cent), vocal fatigue (76 per cent), diplophonia (40 per cent), and odynophonia (12 per ent), and the findings were unilateral vocal fold hypomobility (50 per cent), unilateral bowing (36 per cent), and bilateral bowing (22 per cent). Laryngoplasty and/or lipoinjection was performed in 54 per cent of the subjects, and significant vocal improvement was achieved in 85 per cent. VFP apears to be underdiagnosed because many VFP patients have compensatory hyperkinetic disorders at presentation. Although the diagnosis of VFP may be suspected based on the patient's symptoms and findings, the diagnostic sine qua non is laryngeal electromyography. In adddition, surgical treatment for VFP appears to be safe and effective.

**Laryngeal synkinesis revisited.** Crumley, R. L. Department of Otolaryngology – Head and Neck Surgery, University of California, Irvine, USA. *The Annals of Otology, Rhinology and Laryngology* (2000) April, Vol. 109 (4), pp 365–71.
First described in 1982, laryngeal synkinesis continues to play an important diagnostic and therapeutic role following recurrent laryngeal nerve (RLN) injury. *Vocal fold motion impairment* (Formerly called "*vocal cord paralysis*"), hyperadducted and hyperabducted vocal folds, and certain laryngeal spasmodic and tremor disorders are often best explained by synkinesis. A closer look at these mechanisms confirms that following RLN injury, immobile vocal folds may be nearly normally functional (favourable), or spastic, hyperadducted, or hyperabducted (unfavourable). This has resulted in a functional classification of laryngeal synkinesis as follows: type I laryngeal synkinesis, with satisfactory voice and airway (vocal fold poorly mobile, or immobile); type II synkinesis, with spasmodic vocal folds and an unsatisfactory voice and/or airway; type III synkinesis, with hyperadducted vocal folds and airway compromise; and type IV synkinesis, with hyperabducted vocal folds, poor voice, and possible aspiration. This classification facilitates the understanding of laryngeal pathophysiology following RLN injuries and promotes a more scientific basis for management.

**Surgical planning of the treatment of cholesteatoma and post-operative follow-up.** Sade, J. Department of Biomedical Engineering, Faculty of Engineering, Sackler School of Medicine, Tel-Aviv University, Israel. *The Annals of Otology, Rhinology and Laryngology* (2000) April, Vol. 109 (4), pp. 372–6.
There is no single surgical treatment of choice for aural cholesteatoma. The extent of the cholesteatoma, the amount of preoperative destruction, and the size of the mastoid pneumatization should guide the surgeon in choosing the type of operation for a particular ear – which may range from a simple extraction of the cholesteatoma (delivery) all the way to a radical mastoidectomy. It is the clinical acumen that will determine the type of surgery for a given cholesteatomatous ear, algorithms being of little use in the complex situation of a pathological condition with infinite variables. However, even when the most suitable surgical modality is chosen by the best of surgeons, the operated ear will still be left with the innate cause of the cholesteatoma, namely, its physiopathologic background and its tendency to develop a negative gas balance in the middle ear pressure, insertion and reinsertion of ventilation tubes are often necessary to prevent recurrent retractions and maintain aeration of the middle ear in posterior tympanotomies and modified radical mastoidectomies. Further, with the mastiod bowl is marsupialized, as in radical and modified radical mastoidectomies, the mastoid bowl is often not self-cleansing, thus periodically requiring the help of the otologist to keep it clean and dry. My study consisted of a long-term follow-up of 368 cholesteatomatous ears, which were operated on according to six different surgical modalities, i.e. 112 radical mastoidectomies, 88 modified radicals, 72 posterior tympanotomies, 52 atticotomies, 36 deliveries, and eight obliterations. Of the 368 ears, 11 per cent did not require any postoperative toilet, whereas 89 per cent required revisiting the surgeon periodically on an average of every five months, for cleansing of the mastoid cavity or securing the aeration of the middle ear by reinserting a ventilation tube.

**Migraine and benign postional vertigo.** Ishiyama, A., Jacobson, K. M., Baloh, R. W. Division of Head and Neck Surgery, UCLA School of Medicine, Los Angeles, California, USA. *The Annals of Otology, Rhinology and Laryngology* (2000) April, Vol 109 (4), pp. 377–80.
Because inner ear symptoms are common in patients with migraine, we questioned whether benign positional vertigo (BPV) is more common in patients with migraine than in the general population. We reviewed the records of 247 patients seen in our neurotology clinic over the past five years with a confirmed diagnosis of BPV. Each patient had the typical history of BPV, and in each case the characteristic torsional vertical positioning nystagmus was identified. All were interviewed regarding migraine symptoms by means of standard International Headache Society criteria. Migraine was three times more common in patients with BPV of unknown cause than in those with BPV secondary to trauma or surgical procedures. Most patients were cured with the aticle repositioning maneuver, regardless of the cause. Presumably, patients with migraine suffer recurrent damage to the inner ear (due to vasospasm or some other mechanism) that predisposes them to recurrent bouts of BPV.

**Validation of outcomes survey for adults with chronic suppurative otitis media.** Wang, P. C., Nadol, J. B. Jr. Merchant -S, Austin, E., Gliklich, R. E. *The Annals of Otology, Rhinology and Laryngology* (2000), March, Vol. 109 (3), pp. 249–54.
Currently, there is no valid, disease-specific outcomes measure to

evaluate health impact and treatment effectiveness for patients with chronic suppurative otitis media (CSOM). The Chronic Ear Survey (CES) is a new, disease-specific outcomes measure for CSOM that was administered in a prospective manner to 91 patients with CSOM. It was then validated according to established criteria for reliability, validity, and sensitivity to clinical change by correlation with objective data and self-assessment questionnaires such as the Hearing Handicap Inventory for Adults (HHIA) and the generic 36-Item Short-Form Health Survey (SF-36). Significant correlations between subscale scores of the CES and audiometric data and between subscale scores of the HHIA and SF-36 were found. The standardized response mean for the CES total score was 0.42, indicating moderate sensitivity to clinical change. Overall, results demonstrated that the CES is a reliable and valid instrument for investigation of health status and health-related quality-of-life outcomes.

**Intractable benign paroxysmal positional vertigo in patients with Meniere's disease.** Gross, E. M., Ress, B. D., Viirre, E. S., Nelson, J. R., Harris, J. P. Division of Head and Neck Surgery, University of California-San Diego, USA. *The Laryngoscope* (2000) April, Vol. 110 (4), pp. 655–9.
OBJECTIVE: To provide a detailed description of the coexistence of benign paroxysmal positional vertigo (BPPV) and Meniere's disease in individuals and to offer a possible mechanism that explains the findings in these patients. STUDY DESIGN: Retrospective. METHODS: Chart review. RESULTS: Of 162 patients diagnosed with Meniere's disease between January 1998 and January 1999, nine were found to have both ''definite'' Meniere's disease and ''certain'' BPPV. Meniere's symptoms preceded the onset of BPPV in all of our patients. Seven of the nine patients were female. Except for one patient who experienced BPPV bilaterally, BPPV was limited to the same ear as the Meniere's disease. All patients presented with intractable BPPV that did not respond completely to otolith repositioning procedures. A detailed description of five patients is presented. CONCLUSION: Our data, in conjunction with that of others, suggest that Meniere's disease may predispose patients to intractable BPPV. Hydropically induced damage to the maculae of the utricle and saccule or partial obstruction of the membranous labyrinth may be possible mechanisms that explain the coexistence of Meniere's disease and BPPV.

**Genomic structure and identification of novel mutations in usherin, the gene responsible for Usher syndrome type IIa.** Weston, M. D., Eudy, J. D., Fujita, S., Yao, S., Usami, S., Cremers, C., Greenburg, J., Ramesar, R., Martini, A., Moller, C., Smith, R. J., Sumegi, J., Kimberling, W. J. Department of Genetics, Boys Town National Research Hospital, Omaha, NE, USA. *American Journal of Human Genetics* (2000) April, Vol. 66 (4), pp. 1199–210.
Usher syndrome type IIa (USHIIa) is an autosomal recessive disorder characterized by moderate to severe sensorineural hearing loss and progressive retinitis pigmentosa. This disorder maps to human chromosome 1q41. Recently, mutations in USHIIa patients were identified in a novel gene isolated from this chromosomal region. The USH2A gene encodes a protein with a predicted molecular weight of 171.5 kD and possesses laminin epidermal growth factor as well as fibronectin type III domains. These domains are observed in other protein components of the basal lamina and extracellular matrixes; they may also be observed in cell-adhesion molecules. The intron/exon organization of the gene whose protein we name "Usherin" was determined by direct sequencing of PCR products and cloned genomic DNA with cDNA-specific primers. The gene is encoded by 21 exons and spans a minimum of 105 kb. A mutation search of 57 independent USHIIa probands was performed with a combination of direct sequencing and heteroduplex analysis of PCR-amplified exons. Fifteen new mutations were found. Of 114 independent USH2A alleles, 58 harboured probable pathologic mutations. Ten cases of USHIIa were true homozygotes and 10 were compound heterozygotes; 18 heterozygotes with only one identifiable mutation were observed. SIxty-five per cent (38/58) of cases had at least one mutation, and 51 per cent (58/114) of the total number of possible mutations were identified. The allele 2299delG (previously reported as 2314delG) was the most frequent mutant allele observed (16 per cent; 31/192). Three new missions mutations (C319Y, N346H, and C419F) were discovered; all were restricted to the previously unreported laminin domain VI region of Usherin. The possible significance of this domain, known to be necessary for laminin network assembly, is discussed in the context of domain VI mutations from other proteins.

**Laryngeal tuberculosis.** Yencha, M. W., Linfesty, R., Blackmon, A. Department of Otolaryngology – Head and Neck Medicine, US Naval Hospital, Pensacola, FL 32512, USA. *American Journal of Otolaryngology* (2000) March–April, Vol. 21 (2), pp. 122–6.
Since the introduction of antituberculous medications, the incidence of laryngeal tuberculosis (TB) has decreased and remains stable. However, with the incidence of TB increasing, mainly caused by the acquired immunodeficiency syndrome epidemic, the incidence of laryngeal involvement may be on the rise. The main presenting symptom of laryngeal TB is dysphonia. The diagnosis is confirmed with the identification of granulomatous inflammation, caseating granulomas, and acid-fast bacilli on histopathologic examination of biopsied laryngeal tissue. However, making the diagnosis difficult can be the presence of pseudoepitheliomatous hyperplasia, which mimics squamous cell carcinoma. Treatment is primarily with antituberculous medications with surgery reserved for those cases of airway compromise. Laryngeal complications can occur; thus, long-term follow-up is recommended. We report a case of laryngeal TB in a human immunodeficiency virus-negative patient and review the literature.

**Hemilaryngeal transplantation in the canine model: technique and implications.** Andrews, R. J., Berke, G. S., Blackwell, K. E., Jakobsen, M., Wang, M. B., Sercarz, J. A. Division of Head and Neck Surgery, UCLA Medical Center, Los Angeles, CA 90095, USA. *American Journal of Otolaryngology* (2000) March–April, Vol. 21 (2), pp. 85–91.
PURPOSE: There is no ideal method for reconstruction of hemilaryngeal defects because there is no autologous flap or graft that can reproduce the unique structural properties of the larynx. In this article, the technique, potential research, and clinical applications of hemilaryngeal transplantation are addressed. MATERIALS AND METHODS: In a canine model, transplantation of a hemilarynx was performed. The thyroarytenoid muscle was reinnervated, and an arytenoid adduction was performed to ensure a component larynx during the early postoperative period. RESULTS: The canine tolerated the procedure well and the transplanted larynx remained healthy and well vascularized during the postoperative period. Electromyography of the transplanted thyroarytenoid muscle verified reinnervation two months after the procedure. During induced phonation, vibration was symmetrical with a normal-appearing laryngeal geometry. CONCLUSIONS: Preliminary experience indicates that this technique has unique advantages compared with other available techniques for laryngeal reconstruction. Only with additional progress in transplantation medicine could this procedure be considered an option for reconstruction of human partial laryngeal defects.

**Vibration does not improve results of the canalith repositioning procedure.** T. C., Helminski, J. O., Reis, I. L., Uddin, M. K. Department of Otolaryngology, Northwestern University Medical School, Chicago, III, USA. t-hain@nwu.edu. *Archives of Otolaryngology – Head and Neck Surgery* (2000) May, Vol. 126 (5), pp. 617–22.
OBJECTIVE: To determine whether, in patients with benign paroxysmal positional vertigo (BPPV), the canalith repositioning procedure performed with vibration applied over the mastoid bone of the affected ear is more effective in resolving the symptoms and preventing recurrence of BPPV than the procedure performed without vibration. DESIGN: Retrospective case review. SETTING: Tertiary refferal centre. PATIENTS: Ninety-four patients diagnosed as having BPPV involving the posterior semicircular canal. INTERVENTIONS: Patients were assigned to one of two treatment groups; the canalith repositioning procedure with vibration (n = 44) and with no vibration (n = 50). MAIN OUTCOME MEASURES: Effectiveness of treatment was determined through clinical reevaluation or reported through a telephone interview one week after treatment. Intensity of symptoms was quantified on a scale of one to three (mild, moderate, or severe); effectiveness of treatment was categorized on a scale of one to four (cure, much better, better or no change). Rate of recurrence was determined through later clinical reevaluation or a telephone interview. RESULTS: At one week, 57 of the 94 patients were cured and 16 were much better,

providing a 78 per cent overall success rate. There was no significant difference in effectiveness of the treatment or the frequency of reocurrence of BPPV between the vibration and no-vibration groups as determined from the Kaplan-Meier product-limit method and log-rank test. Rate of recurrence was 47 per cent at a maximum follow-up of 5.25 years. CONCLUSIONS: Our results suggest that, while the canalith repositioning procedure is effective in the treatment of BPPV, vibration applied during the maneuvre does not significantly affect short-term or long-term outcomes.

**Hypothyroidism after treatment for nonthyroid head and neck cancer.** Sinard, R. J., Tobin, E. J., Mazzaferri, E. L., Hodgson, S. E., Young, D. C., Kunz, A. L., Malhotra, P. S., Fritz, M. A., Schuller, D. E. Department of Otolaryngology, Comprehensive Cancer Center, Arthur G. James Cancer Hospital and Research Institute, The Ohio State University, Columbus 43210, USA. *Archives of Otolaryngology – Head and Neck Surgery* (2000) May, Vol. 126 (5), pp. 652–7.

OBJECTIVES: To determine the incidence of posttreatment hypothyroidism in patients treated with surgery with or without radiotherapy for advanced-stage nonthyroid head and neck cancer and to make recommendations for its detection. DESIGN: A prospective study to assess the incidence and time frame of occurrence of hypothyroidism in patients by primary tumour site and treatment modality. Thyroid function tests were performed preoperatively, at the first postoperative visit, and then approximately every six months. Patients were followed up for up to three years. SETTING: Arthur G. James Cancer Hospital and Research Institute, COlumbus, Ohio. PATIENTS: A total of 251 patients with nonthyroid head and neck cancer were originally enrolled; 198 patients with evaluable data were studied to determine the incidence of posttreatment hypothyroidism. Approximately 80 per cent of the patients had advanced stage (III or IV) or recurrent cancer. RESULTS: The overall incidence of posttreatment hypothyroidism was 15 per cent in 198 patients followed up for a mean of approximately 12 months. Hypothyroidism developed in 12 per cent of patients treated with nonlaryngeal surgery and radiotherapy. The group undergoing total laryngectomy (with thyroid lobectomy) and radiotherapy had a 61 per cent incidence of hypothyroidism. The average time to detection of hypothyroidism was 8.2 months. CONCLUSIONS: Approximately 15 per cent of patients treated for advanced head and neck cancer with surgery and radiotherapy will develop hypothyroidism. Those treated with total laryngectomy and radiotherapy are at greatest risk.

**Intralesional cidofovir for recurrent laryngeal papillomas: preliminary report.** Wilson, W. R., Hashemiyoon, R., Hawrych, A. Division of Otolaryngology – Head and Neck Surgery, George Washington University Medical Center, Washington, DC 20037, USA. surwrw@gwumc.edu. *Ear, Nose and Throat Journal* (2000) April, Vol. 79 (4), pp. 236–8, 240.
This is a preliminary report of an ongoing study to test the efficacy of intralesional injections of the antiviral drug cidofovir in adults with recurrent laryngeal papillomas in whom multiple other treatments have previously failed. This study has been designed to include 10 to 20 patients, a number sufficient to either prove or disprove the safety and efficacy of this agent. This report conveys information on the first three patients enrolled in the trial. Each patient received an overall dose of five to 10 ml of cidofovir, at a concentration of 4.17 mg/ml, intralesionally at two- to four-week intervals. The approximate volume injected into each wart was 0.2 to 0.5 ml. Biopsies of the lesion sites were obtained at the initiation and completion of therapy. No other treatment was given. Resolution of lesions was monitored by videolaryngoscopy and still photography one to two weeks after each treatment. In time, the lesions resolved in all three patients, although all three later experienced a minor recurrence. We conclude that intralesional cidofovir appears to be a promising new treatment for controlling – and perhaps at higher dosages curing – refractory laryngeal papillomas, while causing little or no injury to laryngeal structures.

**Treatment of otitis media with effusion based on politzerization with an automated device.** Arick, D. S., Silman, S. New York Eye and Ear Infirmary, New York City, USA. *Ear, Nose and Throat Journal* (2000) April, Vol. 79 (4), pp. 290–2, 294, 296 passim
This study evaluated the efficiency of politzeration with an automated, hand-held device that controls volume velocity (airflow) in the treatment of 20 children with otitis media with effusion. These patients underwent politzerization twice a week for up to six weeks. Another 20 children with otitis media with effusion who were not treated with politzerization served as controls. Following treatment, resolution of the average air-bone gap to within normal limits was achieved in 70 per cent of the treated group and 20 per cent of the controls, which eliminated the need for grommet insertion in these patients. Improvement in tympanometric peak pressure was also significantly greater in the treated group. Politzerization was efficiently and successfully performed in all patients. The automated device's ease of administration and its ability to control airflow suggests that it has the potential to be an effective home treatment that can be administered by the parents or guardians of children who have otitis media with effusion.

**Management of the unknown primary in patients with metastatic cancer of the head and neck.** Gabalski, E. C., Belles, W. Department of Otolaryngology – Head and Neck Surgery, State University of New York at Buffalo, USA. gabalski_e@hotmail.-com. *Nose and Throat Journal* (2000) April, Vol. 79 (4), pp. 306–8, 310, 312–3.
The evaluation of the patient with metastatic cervical lymph node squamous cell carcinoma and an unknown primary tumour frequently involves the use of guided biopsies as a diagnostic tool. This study was performed to assess the effectiveness of these biopsies. Using a retrospective chart review, we identified 25 patients who had undergone a total of 100 guided biopsies to evaluate an unknown primary malignancy of the head and neck. We found that 99 of the 100 biopsies were negative for malignancy. Although guided biopsies were obviously not helpful in these cases, we believe this might be attributable to the fact that the method of performing them is inconsistent among surgeons. Therefore, we present an algorithm for the management of the unknown primary head and neck malgnancy, including recommendations regarding the use of guided biopsies.

**Cancer spread in the larynx: a pathologic basis for conservation surgery.** Buckley, J. G., MacLennan, K. Department of Otolaryngology – Head and Neck Surgery, Leeds GEneral Infirmary, Leeds LS1 3EX, UK. jgrahambuckley@compuserve.com. *Head and Neck* (2000) May, Vol. 22 (3), pp. 265–74.
BACKGROUND: Previous pathologic studies of the spread of laryngeal carcinoma have drawn inferences about the site of origin of tumours, their mechanisms of growth, or the role of structures as potential barriers to tumour spread. Most of the information is based on the study of advanced or recurrent tumours and is difficult to apply to conservation surgical technique. We carried out a systematic analysis of a wide range of laryngeal tumours with the aim of providing a basis for conservation surgery. METHODS: We analysed tumour invasion of the laryngeal spaces and the laryngeal framework in relation to the mucosal tumour extent by axial sectioning of 80 sequential partial and total laryngectomy specimens. RESULTS: Invasion of a particular laryngeal space could be accurately predicted by mucosal tumour extent and vocal cord mobility. Invasion of the ventricle, subglottis, or pyriform fossa. The thyroid cartilage and the cricothyroid space and ligament were the most frequent sites of invasion. CONCLUSIONS: The mucosal distribution of a tumour and observation of vocal cord mobility can be used to determine accurately the extent of tumour invasion of the laryngeal spaces and framework and therefore the extent of resection necessary.

**Gamma surgery for vestibular schwannoma.** Prasad, D., Steiner, M., Steiner, L. Department of Neurological Surgery, Lars Leksell Center for Gamma Surgery, University of Virginia, Charlottesville, USA. dprasad@virginia.edu. *Journal of Neurosurgery* (2000) May, Vol. 92 (5), pp. 745–59.
OBJECT: The goal of this study was to assess the results of gamma surgery (GS) for vestibular schwannoma (VS) in 200 cases treated over the last 10 years and to review the role of this neurosurgical procedure in the management of VS. METHODS: Follow-up reviews ranging from one to 10 years were available in 153 of these patients. Follow-up images in these cases were analysed using computer software that we developed to obtain volume measurements for the tumours, and the clinical condition of the

patients was assessed using questionnaires. Gamma surgery was the primary treatment modality in 96 cases and followed microsurgery in 57 cases. Tumours ranged in volume from 0.02 to 18.3 cm (3). In the group in which GS was the primary treatment, a decrease in volume was observed in 78 cases (81 per cent), no change in 12 (12 per cent), and an increase in volume in six cases (six per cent). The decrease was more than 75 per cent in seven cases. In the group treated following microsurgery, a decrease in volume was observed in 37 cases (65 per cent), no change in 14 (25 per cent), and an increase in volume in six (11 per cent). The decrease was more than 75 per cent in eight cases. Five patients experienced trigeminal dysfunction; in three cases this was transient and in the other two it was persistent, although there has been improvement. Three patients had facial paresis (in one case this was transient, lasting six weeks; in one case there was 80 per cent recovery at 18 months posttreatment; and in one case surgery was performed after the onset of facial paresis for presumed increase in tumour size). Over a six-year period, hearing deteriorated in 60 per cent of the patients. Three patients showed an improvement in hearing. No hearing deteriorations was observed during the first two years of follow-up review. CONCLUSIONS: Gamma surgery should be used to treat postoperative residual tumours as well as tumours in patients with medical conditions that preclude surgery. Microsurgery should be performed whenever a surgeon is confident of extirpating the tumour with a risk-benefit ratio superior to that presented in this study.

**Temporal bone studies of the human peripheral vestibular system. Aminoglycoside ototoxicity.** Tsuji, K., Velazquez-Villasensor, L., Rauch, S. D., Glynn, R. J., Wall, C. 3rd, Merchant, S. N. Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Boston 02114, USA. *The Annals of Otology, Rhinology, and Laryngology, Supplement* (2000), May, Vol. 181 pp. 20–5.
Quantitative assessments of vestibular hair cells and Scarpa's ganglion cells were performed on 17 temporal bones from 10 individuals who had well-documented clinical evidence of aminoglycoside ototoxicity (streptomycin, kanamycin, and neomycin). Assessment of vestibular hair cells was performed by Nomarski (differential interference contrast) microscopy. Hair cell counts were expressed as densities (number of cells per 0.01 $mm^2$ surface area of the sensory epithelium). The results were compared with age-matched normal data. Streptomycin caused a significant loss of both type I and type II hair cells in all five vestibular sense organs. In comparing the ototoxic effect of type I versus type II hair cells, there was greater type I hair cell loss for all three cristae, but not for the maculae. The vestibular ototoxic effects of kanamycin appeared to be similar to those of streptomycin, but the small sample size precluded definitive conclusions from being made. Neomycin did not cause loss of vestibular hair cells. Within the limits of this study (maximum postototoxicity survival time of 12 months), there was no significant loss of Scarpa's ganglion cells for any of the three drugs. The findings have implications in several clinical areas, including the correlation of vestibular test results to pathologial findings, the rehabilitation of patients with vestibular ototoxicity, the use of a aminoglycosides to treat Meniere's disease, and the development of a vestibular prosthesis.

**Temporal bone studies of the human peripheral vestibular sytsem. Meniere's disease.** Tsuji, K., Velazquez-Villasenor, L., Rauch, S. D., Glynn, R. J., Wall, C. 3rd, Merchant, S. N. Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Boston 02114, USA. *The Annals of Otology, Rhinology and Lary ngology Supplement* (2000) May, Vol. 181, pp. 26–31.
Quantitative assessments of vestibular hair cells and Scarpa's ganglion cells were performed on temporal bones from 24 patients with well-documented Meniere's disease. Of these, 18 had unilateral disease and six had bilateral disease. Vestibular hair cell counts were made in each of the five sense organs by Nomarski (differential interference contrast) microscopy. Hair cell counts were expressed as densities: number of cells per 0.01 $mm^2$ surface area of the sensory epithelium. The results were compared with age- and sex-matched normal data. The type I hair cell densities for all vestibular sense organs were within the range for normative data. On the other hand, there was a significant loss ($p<0.01$) of type II hair cells for all three cristae and both maculae. There was also a significant loss of Scarpa's ganglion cells ($p<0.001$) when compared with normative data. The findings indicate a selective loss of type II hair cells and Scarpa's ganglion cells in Meniere's disease. These new observations have implications regarding the pathophysiological mechanism and clinical manifestations of Meniere's disease.

**Gene therapy for head and neck cancer.** Gleich, L. L. Department of Otolaryngology – Head and Neck Surgery, University of Cincinnati Medical Center, Ohio 45267-0528, USA. *The Larygnoscope* (2000) May, Vol. 110 (5 Pt 1), pp. 708–26.
OBJECTIVES/HYPOTHESIS: New treatment methods are needed for head and neck cancer to improve survival without increasing morbidity. Gene therapy is a potential method of improving patient outcome. Progress in gene therapy for cancer is reviewed with emphasis on the limitations of vector technology and treatment strategies. Given the current technological vector limitation in transmitting the therapeutic genes, treatments that require the fewest number of cells to be altered by the new gene are optimal. Therefore an immune-based gene therapy strategy was selected in which the tumours were transfected with the gene for an alloantigen, human leukocyte antigen (HLA)-B7, a class I major histocompatibility complex (MHC). This would restore an antigen presentation mechanism in the tumour to induce an antitumour response. This gene therapy strategy was tested in patients with advanced, unresectable head and neck cancer. STUDY DESIGN: Prospective trial. METHODS: Twenty patients with advanced head and neck cancer who had failed conventional therapy and did not express HLA-B7 were treated with gene therapy using a lipid vector by direct intratumoral injection. The gene therapy product contained the HLA-B7 gene and the beta2-microglobulin gene, which permits complete expression of the class I MHC at the cell surface. Patients were assessed for any adverse effects, for changes in tumour size, for time to disease progression, and for survival. Biopsy specimens were assessed for pathological response, HLA-B7 expression, apoptosis, cellular proliferation, CD-8 cells, granzyme, and p53 status. RESULTS: There were no adverse effects from the gene therapy At 16 weeks after beginning gene therapy, four patients had a partial response and two patients had stable disease. Two of the tumours completely responded clinically, but tumour was still seen on pathological examination. The time to disease progression in the responding patients was 20 to 80 weeks. The median survival in patients who completed gene therapy was 54 weeks, compared with 21 weeks in patients whose tumours progressed after the first cycle of treatment. One patient survived for 106 weeks without any additional therapy. HLA-B7 was demonstrated in teh treated tumours, and increased apoptosis was seen in the responding tumours. CONCLUSION: Significant advances have been made in the field of gene therapy for cancer. Alloantigen gene therapy has had efficacy in the treatment of cancer and can induce tumour responses in head and neck tumours. Alloantigen gene therapy has significant potential as an adjunctive treatment of head and neck cancer.