

Abstract Selection

CT scanning of middle ear cholesteatoma: what does the surgeon want to know? Yates, P. D., Flood, L. M., Banerjee A., Clifford, K. Department of Otolaryngology, North Riding Infirmary, Newport Road, Middlesbrough TS1 5JE, UK. *The British Journal of Radiology* (2002) October, Vol. 75 (898), pp. 847–52.

The history of surgery for middle ear cholesteatoma is of an evolution of techniques to meet the challenges of inaccessible disease and of post-operative cavity management. The concept has traditionally been of exploration guided by awareness and anticipation of all, possibly asymptomatic, complications. Modern imaging reliably demonstrates surgical anatomy, dictating the ideal approach, forewarns of complications and may reveal the extent of disease. An apparent resistance amongst otologists to universal CT scanning prior to mastoidectomy contrasts with the enthusiasm of skull base surgeons or rhinologists for appropriate imaging.

Is hyperventilation-induced nystagmus more common in retro-cochlear vestibular disease than in end-organ vestibular disease? Robichaud, J., DesRoches, H., Bance, M. Department of Otolaryngology, The Toronto General Hospital-University Health Network, Ontario. *The Journal of Otolaryngology* (2002) June, Vol. 31 (3), pp. 140–3.

Hyperventilation-induced nystagmus (HVIN) has previously been shown by the senior author to be common in patients with both acoustic neuromas and following resection. The recurrent study's aim was to examine if HVIN was specific for retrocochlear pathology. To test this, the incidence of HVIN in 24 patients with confirmed acoustic neuroma was compared with its incidence in 38 patients with end-organ vestibular disease (defined as a greater than 25 per cent reduction in caloric testing). Hyperventilation was carried out for 90 seconds. The results showed that 58 per cent of the acoustic neuroma group were positive for HVIN versus 18 per cent of the end-organ group. This difference was very significant on chi-square testing (p 0.002). Hyperventilation pathology than in end-organ pathology.

Is gastric reflux a cause of otitis media with effusion in children? Tasker, A., Dettmar, P. W., Panetti, M., Koufman, J. A., Birchall, J. P., Pearson, J. P. Department of Physiological Sciences, University of Newcastle upon Tyne, UK. *Andrea.Tasker@ncl.ac.uk*. *The Laryngoscope* (2002) November, Vol. 112 (11), pp. 1930–4.

OBJECTIVES/HYPOTHESIS: Otitis media with effusion is the most common cause of childhood deafness. Gastroesophageal reflux has been implicated in the disease pathogenesis; therefore, it is necessary to identify the presence or absence of gastric juice in the middle ear. **STUDY DESIGN:** Middle ear effusions were collected from children undergoing myringotomy. If gastric reflux has occurred, effusions should contain pepsin protein. **METHODS:** Total pepsin/pepsinogen protein, fibrinogen, and albumin content of effusions were measured in enzyme-linked immunosorbent assays using antibodies to porcine pepsin, human albumin, and human fibrinogen. Proteolytic activity of each effusion was measured at pH 2. The pH of effusions was measured. **RESULTS:** Fifty-nine of 65 effusion samples gave a positive result with the antipepsin antibody, which also recognized pepsinogen. Pepsin/pepsinogen levels ranged from 0.8 to 213.9 microg/ml (serum reference levels, 49.8–86.6 ng/mL). All effusions contained albumin and fibrinogen with respective ranges of 1.77 to 95.75 and 0.30 to 2.30 mg/mL (serum reference levels, 35–45 and 2.2 to 4.6 mg/mL, respectively). Acidic protease activity occurred in 19 of 65 effusion samples. The pH of effusion samples was seven to nine. **CONCLUSIONS:** The majority of effusion samples contained pepsin/pepsinogen protein; only 29 per cent were active. The pepsin level in effusion samples based on activity is substantially lower than levels based on antibody detection; however, the pH present would irreversibly inhibit pepsin, which

would explain the low levels of active enzyme. Pepsin/pepsinogen levels in the effusion samples were up to 1000 times higher than serum levels, whereas albumin and fibrinogen levels were of the same magnitude. The pepsin in middle ear effusions is almost certainly due to reflux of gastric contents, and there may be a role for antireflex therapy in the treatment of otitis media with effusion.

Stapedectomy versus stapedotomy: comparison of results with long-term follow-up. House, H. P., Hansen, M. R., Al Dakhail, A. A. A., House, J. W. House Ear Clinic, Los Angeles, California 90057, USA. *The Laryngoscope* (2002) November, Vol. 112 (11), pp. 2046–50.

OBJECTIVE/HYPOTHESIS: To compare the effectiveness and long-term stability of hearing results between stapedectomy and small fenestra stapedotomy in patients with conductive hearing loss due to otosclerosis. **STUDY DESIGN:** Retrospective review of prospectively collected audiometric data. **METHODS:** The hearing results and complication rates of 209 ears with long-term follow-up that underwent either stapedectomy or stapedotomy by the senior author (h.p.h.) between 1961 and 1989 were compared. Forty-two patients underwent stapedectomy in one ear and stapedotomy in the opposite ear, permitting a paired case review of the results in these patients. The techniques were compared with respect to initial and late hearing results and change of the results over time. **RESULTS:** Patients undergoing stapedectomy and stapedotomy were followed for an average of 11.5 and 6.0 years, respectively. There were no statistically significant differences in initial or late postoperative pure-tone average (PTA), PTA air-bone gap, speech discrimination scores, or incidence of sensorineural hearing loss between the two groups. Ears treated by stapedotomy showed statistically better initial and late postoperative 4 kHz air-conduction threshold and initial 4 kHz air-bone gap, but the gap difference was not significant with late follow-up. There was no significant difference in the percentage of patients with air-bone gap closure within 10 dB for any frequency other than 4 kHz at the initial postoperative test. Importantly, the successful outcomes in both groups were stable over long-term follow-up. Results were the same when comparing the two procedures in patients having undergone both. **CONCLUSION:** These results show that, in the hands of an experienced surgeon, either technique provides satisfactory and stable long-term results.

A new ventilation tube for long-term middle ear ventilation. Bonvin, P., Hansen, B. B., Hentzer, E. Department of Otolaryngology, Fyn Hospital, Svendborg, Denmark. *Bonvin@lycos.com*. *The Laryngoscope* (2002) November, Vol. 112 (11), pp. 2054–6.

OBJECTIVES: The treatment of secretory otitis media often requires repeated tubulation of the tympanic membrane as the standard ventilation tubes are extruded before the disease of the middle ear has remitted. The T-tube and its modification have been developed to remain longer in situ, often requiring surgical removal. The rates of subsequent persisting tympanic membrane perforations and granulations around the tube have been unacceptably high. In the search for a long-term ventilation tube with fewer complications, the Duravent tube (Smith and Nephew) has been developed. The aim of the study was to estimate duration in situ and observe complications in using the Duravent tube compared with standard tubes and T-tubes. **STUDY DESIGN:** Retrospective study. **METHODS:** In all, 51 patients have been treated with the Duravent tube over a two-year period. In all, 72 Duravent tubes have been inserted. All patients were subsequently invited for a follow-up examination at a median time of 28 months (range, 11–43 mo) after the tube insertion and were followed up for five years. **RESULTS:** The duration in situ was optimal with a median duration of 17 months. The Duravent tube

was extruded spontaneously in all but four cases in which surgical removal was necessary. The rate of persisting perforations of the tympanic membrane was low (4.2 per cent) compared with 24 per cent after the use of the T-tube. Likewise, the usual complications connected with long-term ventilation tubes were less frequent (14 per cent compared with 35 per cent when using the T-tube). **CONCLUSIONS:** In the present study, the Duravent tube has proved superior to other known long-term ventilation tubes. The problem of granulations, otorrhoea, and tube occlusion was significantly less than reported in other studies using the T-tube.

Does the serological testing really play a role in the diagnosis immune-mediated inner ear disease? Garcia, B. J. R., Ramirez, C. R., Vargas, J. A., Millan I., *et al.* Otorhinolaryngology Department, Clinica Puerta de Hierro, Universidad Autonoma de Madrid, Spain. jrgarciab@yahoo.com. *Acta Oto-Laryngologica* (2002) April, Vol. 122 (3), pp. 243–8.

In order to analyse the clinical presentation and laboratory tests used for the diagnosis of immune-mediated sensorineural hearing loss (IMSNHL) a prospective study was conducted involving 125 patients affected by diverse clinical forms of the disease. The following methods were used: analysis of clinical evolution, pure-tone audiometry, determination of the immunophenotype of peripheral blood lymphocytes, immunoglobulins, complement factors C3 and C4, erythrocyte sedimentation rate, antinuclear autoantibodies (ANA) and heat shock protein 70 and the response to therapy. Levels CD4 ($p = 0.03$) and CD3CD45RA ($p = 0.002$) T cells were significantly reduced in patients with sudden sensorineural hearing loss. ANA were found in 34.4 per cent of patients and the incidence of antibodies to HSP-70 was similar in both patients and control subjects. Diagnosis of IMSNHL is still based on clinical impressions as laboratory testing is not sufficiently diagnostic. However, the long-term evolution of IMSNHL presented by the patients included in this study may explain the negative results obtained in the tests. The existence of a typical profile patient including the clinical course, immunological changes (presence of ANA and detection of abnormalities in T-cell subpopulations) and the response to steroid therapy can facilitate diagnosis. Further investigation to help identify a specific marker characteristic of IMSNHL is required.

Ciliary and secretory differentiation of normal human middle ear epithelial cells. Choi, J. Y., Kim, C. H., Lee, W. S., Kim, H. N., Song, K. S., Yoon, J. H., *et al.* Department of Otorhinolaryngology, Yonsei University College of Medicine, Seoul, South Korea. *Acta Oto-Laryngologica* (2002) April, Vol. 122 (3), pp. 270–5.

Recent technical advances now permit the serial culture of normal human middle ear epithelial (NHMEE) cells. However, the ciliary differentiation of these cells has not been achieved. The purpose of this study was to establish a culture system in order to differentiate serially cultured NHMEE cells into ciliated cells. If ciliated cells developed, the percentages of ciliated cells and secretory cells were measured throughout the duration of culture. We also examined the levels of mucin and lysozyme secretion and their mRNAs in a time-dependent manner. Human middle ear mucosa was a normal appearance was harvested and serially cultured after enzymatic disaggregation. These cells were cultured in an air-liquid interface (ALI) culture system for two, seven, 14, 21 and 28 days after confluence. Ciliogenesis usually began 16–18 days after confluence. The percentage of ciliated cells detected by means of immunohistochemical staining increased over time up to a maximum of 10.6 per cent but the percentage of secretory cells remained stable at approximately 40 per cent throughout the duration of culture. By day 14 after confluence, the amounts of mucin and lysozyme secretion, as measured by dot-blotting analysis, had increased significantly and then remained stable. The expression levels of mucin gene 5B (MUC5B), MUC8 and lysozyme increased with the duration of culture. MUC8 in particular showed a dramatic increase on day 28 after confluence. In contrast, the level of MUC5AC mRNA peaked on day 14 after confluence, and then decreased. In conclusion, ciliary differentiation of NHMEE cells can be induced using an ALI culture system. Our study also suggests that secretory function develops earlier than ciliogenesis, and that the expressions of MUC5B and MUC8 mRNAs increase as a function of differentiation.

Laryngeal manifestations of gastroesophageal reflux disease in children. Zaleska, K. M., Krecicki, T., Iwanczak, B., Blitek, A., Horobiovska, M., *et al.* Department of Otolaryngology, Medical University of Wroclaw, Poland. krecicki@orl.am.wroc.pl. *Acta Oto-laryngologica* (2002) April, Vol. 122 (3), pp. 306–10.

Although the association between gastroesophageal reflux disease (GERD) and laryngeal disorders in adults is well established there is still a lack of information concerning the true extent of the laryngeal complications of GERD in children. The aim of this study was to determine the laryngeal status of children with diagnosed GERD. We sought to identify the initial appearance of their larynges and then to determine the laryngeal status of children with diagnosed GERD. We sought to identify the initial appearance of their larynges and then to determine the clinical response to antireflux therapy. GERD was recognized in 90/100 children examined. Using 24 h pH monitoring we found that most of the patients experienced episodes of gastroesophageal reflux during the daytime when they were in an upright position. The hallmark of GERD affecting the larynx in our group was posterior laryngitis, which is characterized by erythema of the mucous membrane overlying the arytenoid cartilages and the posterior mucosal wall of the glottis. The findings regarding the effectiveness of therapy were that, in children with severe laryngeal alterations, voice quality improved significantly after 12 weeks of antireflux treatment ($p < 0.001$) and laryngeal status was significantly better after six weeks of treatment ($p < 0.001$). This study provides evidence that gastroesophageal reflux in children is the underlying cause of inflammatory and morphological lesions, and that antireflux treatment is effective in reducing or eliminating these lesions.

Free radial forearm flap with adipofascial tissue extension for reconstruction of oral cancer defect. Jeng, S. F., Kuo, Y. R., Wei, F. C., An, P. C., Su, C. Y., Chien, C. Y., *et al.* Departments of Plastic and Reconstructive Surgery, Chang Gung Memorial Hospital at Kaohsiung, Taiwan, Chang Gung University, Taiwan. *Annals of Plastic Surgery* (2002) August, Vol. 49 (2), pp. 151–5.

The radial forearm flap has been one of the most popular flaps used to reconstruct defects after oral cancer ablation. However, it sometimes may not provide sufficient soft tissue to obliterate the dead space after tumour excision and lymph node dissection, which can result in deep wound infection of the neck or even orocervical fistula. The authors modified the radial forearm flap with a sheet of adipofascial tissue extension to prevent such postoperative complications. From January 1997 to December 2000, 52 patients who underwent ablative oral cancer surgery were studied. A total of 29 patients (group I) underwent reconstruction with the traditional radial forearm flap retrospectively, and 23 patients (group II) underwent reconstruction with the radial forearm flap along with a sheet of adipofascial tissue extension. The radial forearm flap was designed on the axis of the radial artery, was 8×4 to 12×10 cm in size, and was sufficient to resurface the intraoral defect. In group II, the radial forearm skin flap along with a sheet of adipofascial tissue 8×8 to 12×10 cm was used to obliterate the dead space of the oral floor and neck. The donor site of both groups was resurfaced with a split-thickness skin graft. In group II, the skin flap of the adipofascial tissue was resurfaced to its original site. Two flaps in group I failed because of arterial occlusion and required other skin flaps for reconstruction. Postoperative hematoma, which required surgical treatment for drainage, developed in five patients in group I. None of the patients in group II had hematoma formation. Nine patients in group I had a neck wound infection compared with only two patients in group II (a significant difference). The average volume of drainage and days of hospitalization were similar in both groups. The morbidity of the donor site of both groups was not significant. The advantages of this modification include 1) suitable soft tissue available for dead space obliteration to decrease the chance of postoperative hematoma; 2) the important vessels in the neck can be protected; 3) there is a decrease in neck wound infections; and 4) donor site morbidity is similar to the traditional group.

Patient-based outcomes in patients with primary tinnitus undergoing tinnitus retraining therapy. Berry, J. A., Gold, S. L., Frederick, E. A., Gray, W. C., Staeker, H., *et al.* Tinnitus and Hyperacusis Center, Division of Otolaryngology–Head and Neck Surgery, University of Maryland Medical System, Baltimore

21201-1619, USA. *Archives of Otolaryngology – Head and Neck Surgery* (2002) October, Vol. 128 (10), pp. 1153–7.

OBJECTIVE: To determine whether the Tinnitus Handicap Inventory (THI), a validated patient-based outcomes measure, may improve our ability to quantify impact and assess therapy for patients with tinnitus. **DESIGN:** Nonrandomized, prospective analysis of 32 patients undergoing tinnitus retraining therapy (TRT). Assessment tools included comprehensive audiology, a subjective self-assessment survey of tinnitus characteristics, and the THI. Tinnitus Handicap Inventory scores were assessed at baseline and six months following TRT. **RESULTS:** Baseline analysis revealed significant correlation between the subjective presence of hyperacusis and higher total, emotional, and catastrophic THI scores. Tinnitus Handicap Inventory scores correlated with subjective perception of overall tinnitus effect ($p < 0.001$). Mean pure-tone threshold average was 17.4 dB, and mean speech discrimination was 97.0 per cent. There were no consistent correlations between baseline audiologic parameters and THI scores. Following six months of TRT, the total, emotional, functional, and catastrophic THI scores significantly improved ($p < 0.001$). Loudness discomfort levels also significantly improved ($p < 0.02$). **CONCLUSIONS:** There is significant improvement in self-perceived disability following TRT as measured by the THI. The results confirm the utility of the THI as a patient-based outcomes measure for quantifying treatment status in patients with primary tinnitus.

Randomized prospective study of the validity of the great auricular nerve preservation in parotidectomy. Vieira, M. B. M., Maia, A. F., Ribeiro, J. C., *et al.* Department of Otolaryngology—Head and Neck Surgery, Hospital Felício Rocho, Belo Horizonte, Minas Gerais, Brazil. maurobecker@uol.com.br. *Archives of Otolaryngology—Head and Neck Surgery* (2002) October, Vol. 128 (10), pp. 1191–5.

OBJECTIVE: To evaluate the feasibility and validity of great auricular nerve preservation during parotidectomy. **METHODS:** Thirty patients with parotid tumors were randomized to two groups. Sixteen patients (group A) underwent classic parotidectomy with sacrifice of the great auricular nerve. The surgeon tried to spare the nerve in the 14 patients (group B). Tactile sensitivity, pain sensitivity, and tactile discrimination were evaluated preoperatively and at seven days, 30 days, six months, and 12 months after surgery. The regions examined were the superior helix, lobule, and infra-auricular and posterior auricular regions. **RESULTS:** After surgery, both groups showed lower levels of sensitivity, mainly in the lobule and in the infra-auricular region. These alterations were less pronounced in group B. Both groups showed improvement over time. In group B the tactile sensitivity reached preoperative levels by six months after surgery. The recuperation in group A was partial and stabilized at six months after surgery. **CONCLUSION:** Great auricular nerve preservation is technically feasible during parotidectomy, with a decrease of the sensitivity alterations in the early postoperative period and avoidance of the permanent sequelae that occur when the nerve is sacrificed.

Management of chondrodermatitis helix by protective padding: a series of 12 cases and a review of the literature. Timoney, N., Davison, P. M., *et al.* Department of Plastic Surgery, City General Hospital, Stoke on Trent, UK. *British Journal of Plastic Surgery* (2002) July, Vol. 55 (5), pp. 387–9.

There are numerous theories concerning the aetiology of chondrodermatitis, and many authors have suggested that pressure is a significant factor. We prospectively gathered information from 14 patients with a clinical diagnosis of this condition. Many of the patients had a physical condition that forced them to lie on the side of the affected ear. Patients were advised to use protective padding of the ear at night. Most patients were rapidly relieved of their symptoms, although healing was frequently prolonged. This positive response rate and the high recurrence rate after surgery suggest that this condition should be primarily treated conservatively; they also support the theory that pressure on the ear is the main aetiological factor. Biopsies in two patients who did not respond to conservative treatment led to an altered diagnosis.

Hereditary deafness and phenotyping in humans. Bitner, G. M., *et al.* Unit of Clinical and Molecular Genetics, Institute of Child Health, London, UK. *British Medical Bulletin* (2002), Vol. 63, pp. 73–94.

Hereditary deafness has proved to be extremely heterogeneous genetically with more than 40 genes mapped or cloned for non-syndromic dominant deafness and 30 for autosomal recessive non-syndromic deafness. In spite of significant advances in the understanding of the molecular basis of hearing loss, identifying the precise genetic cause in an individual remains difficult. Consequently, it is important to exclude syndromic causes of deafness by clinical and special investigation and to use all available phenotypic clues for diagnosis. A clinical approach to the aetiological investigation of individuals with hearing loss is suggested, which includes ophthalmology review, renal ultrasound scan and neuro-imaging of petrous temporal bone. Molecular screening of the GJB2 (Connexin 26) gene should be undertaken in all cases of non-syndromic deafness where the cause cannot be identified, since it is a common cause of recessive hearing impairment, the screening is straightforward, and the phenotype unremarkable. By the same token, mitochondrial inheritance of hearing loss should be considered in all multigeneration families, particularly if there is a history of exposure to aminoglycoside antibiotics, since genetic testing of specific mitochondrial genes is technically feasible. Most forms of non-syndromic autosomal recessive hearing impairment cause a prelingual hearing loss, which is generally severe to profound and not associated with abnormal radiology. Exceptions to this include DFNB2 (MYO7A), DFNB8/10 (TMPRSS3) and DFNB16 (STRC) where age of onset may sometimes be later on in childhood, DFNB4 (SLC26A4) where there may be dilated vestibular aqueducts and endolymphatic sacs, and DFNB9 (OTOF) where there may also be an associated auditory neuropathy. Unusual phenotypes in autosomal dominant forms of deafness, include low frequency hearing loss in DFNA1 (HDIA1) and DFNA6/14/38 (WFS1), mid-frequency hearing loss in DFNA8/12 (TECTA), DFNA13 (COL11A2) and vestibular symptoms and signs in DFNA9 (COCH) and sometimes in DFNA11 (MYO7A). Continued clinical evaluation of types and course of hearing loss and correlation with genotype is important for the intelligent application of molecular testing in the next few years.

Clinical manifestations of laryngopharyngeal reflux. Cohen, J. T., Bach, K. K., Postma, G. N., Koufman, J. A., *et al.* Center for Voice Disorders, Wake Forest University School of Medicine, Winston-Salem, N.C., USA. *Ear, Nose and Throat Journal* (2002) September, Vol. 81 (9 Suppl 2), pp. 19–23.

Laryngopharyngeal reflux (LPR) is ubiquitous and associated with many head and neck symptoms and diagnoses. In some cases, the symptom is the diagnosis for example, LPR can cause sore throat, chronic cough, globus pharyngeus, and laryngospasm. Alternately, LPR can be associated with specific histopathologic lesions for example, vocal process granulomas. LPR can be the sole cause or an etiologic cofactor in the development of many disorders of the aerodigestive tract.

Stereotactic radiosurgery for locally recurrent nasopharyngeal carcinoma. Pai, P. C., Chuang, C. C., Wei, K. C., Tsang, N. M., Tseng, C. K., Chang, C. N., *et al.* Department of Radiation Oncology, Chang Gung Memorial Hospital, 5 Fu-Shin Street, Kwei-Shan Hsiang, Taoyuan, Taiwan, R.O.C. *Head and Neck* (2002) August, Vol. 24 (8), pp. 748–53.

BACKGROUND: Stereotactic radiosurgery has been used to treat intracranial tumors. Recently, it has also been used for the treatment of head and neck tumours involving the base of skull, including recurrent NPC. **METHODS:** From October 1994 to April 1999, 36 patients with recurrent NPC, were retreated by stereotactic radiosurgery. These patients received radiosurgery as a boost treatment after reirradiation for recurrence. The external RT dose ranged from 20 to 60 Gy. The tumour volume ranged from 3.58 to 24.6 cc. The target surface dose ranged from eight to 20 Gy. The median follow-up was 22.1 months. **RESULTS:** The three-year local control rate was 56 per cent. The five-year overall survival was 49 per cent. Persistence after radiosurgery had a worse survival than those who had secondary recurrence. Age and gender were marginally significant. No patient had new severe complications after retreatment. Four patients (11 per cent) had nasopharyngeal necrosis after radiosurgery, none had nasal bleeding or headache, but a foul odour was present in one patient. **CONCLUSIONS:** Conformal radiotherapy and stereotactic radiotherapy provide good local control and survival without severe complications for patients with recurrent NPC.

Angiofibroma of the larynx: report of a case with clinical and pathologic literature review. Steele, M. H., Nuss, D. W., Faust, B. F., *et al.* Department of Otolaryngology, Louisiana State University Health Science Center, 533 Bolivar Street, Fifth Floor, New Orleans, LA 70112. msteel@lsuhsc.edu. *Head and Neck* (2002) August, Vol. 24 (8), pp. 805–9.

BACKGROUND: Angiofibromas are uncommon vascular tumours with a strong predilection for the nasopharynx of adolescent males. Although they are slow growing and histologically benign, they have the potential to cause significant morbidity with laryngeal involvement. **METHODS:** We describe the clinical characteristics, histopathologic findings, differential diagnosis, preoperative evaluation, and management of a case of laryngeal angiofibroma. **RESULTS:** The patient was initially seen with a 2½ year history of progressive dyspnea and dysphagia. Preoperative evaluation suggested a vascular mass involving the left supraglottic larynx. A partial laryngopharyngectomy was performed without complication. The patient is alive and disease free three years postoperatively. Final histopathologic diagnosis is consistent with angiofibroma. **CONCLUSIONS:** Laryngeal angiofibroma is an extremely rare entity. Adequate preoperative imaging is necessary to confirm the vascularity of this lesion, because ill-planned biopsy may lead to significant blood loss. The role of preoperative embolization of other laryngeal vascular lesions has been well documented and may be useful in the management of laryngeal angiofibroma.

Prospective study on the incidence of chronic ear complaints related to gastroesophageal reflux and on the outcome of antireflux therapy. Poelmans, J., Tack, J., Feenstra, L., *et al.* Department of Otorhinolaryngology–Head and Neck Surgery, University Hospitals, Leuven, Belgium. *The Annals of Otolaryngology and Laryngology* (2002) October, Vol. 111 (10), pp. 933–8.

Over a two-year period (1997 to 1999), five consecutive adult patients with chronic refractory secretory otitis media (CSOM) and 16 with a chronic refractory feeling of pressure in the ear(s) (CRFP) thought to be related to concomitant eustachian tube dysfunction were prospectively studied for coexisting gastroesophageal reflux (GER). All patients underwent an extensive standardized otorhinolaryngological examination, ambulatory 24-hour dual-probe esophageal pH monitoring with a distal pH probe

5 cm and a proximal probe 20 cm above the lower esophageal sphincter, and upper gastrointestinal endoscopy. Most of them also underwent esophageal manometry. All patients with CSOM and 12 of the 16 patients with CRFP had evidence of GER. Only five patients experienced heartburn or regurgitation. All patients responded very well to antireflux therapy with omeprazole 20 mg twice per day (40 mg twice per day in two patients) accompanied by conservative antireflux measures, ie, complete cessation of their middle ear complaints. This study demonstrates the role of GER in the pathogenesis of refractory CSOM and CRFP and the effectiveness of sustained antireflux therapy.

Evolving resistant pseudomonas to ciprofloxacin in malignant otitis externa. Berenholz, L., Katzenell, U., Harell, M., *et al.* Department of Otolaryngology, E. Wolfson Medical Center, Holon and Sackler Faculty of Medicine, Tel Aviv University, Israel. Leonard@netvision.net.il. *The Laryngoscope* (2002) September, Vol. 112 (9), pp. 1619–22.

OBJECTIVE: To determine whether there has been an increase in ciprofloxacin-resistant pseudomonas malignant otitis externa, and if this has increased the morbidity of the disease. **STUDY DESIGN:** Retrospective. **SETTING:** Tertiary referral center. **PATIENTS:** Twenty-eight patients over 13 years. **RESULTS:** The records of a total of 28 patients who were admitted between 1988 and 2001 with the diagnosis of malignant otitis externa were reviewed. Seven patients had ciprofloxacin-resistant pseudomonas on their hospital culture and sensitivity test. Five of the seven resistant cases appeared in the last three years, as opposed to two of the seven who appeared in the 10 years before that period. In our series, there is a significant trend developing over time of pseudomonas resistant to treatment with ciprofloxacin. No increased morbidity or mortality was found in the ciprofloxacin-resistant pseudomonas group compared with the remaining patients who were sensitive to ciprofloxacin. **CONCLUSIONS:** In our series, resistance to ciprofloxacin in patients with malignant otitis externa is increasing over time. This may have an impact on the relatively successful outpatient treatment of these patients in the past decade. A return to inpatient or outpatient intravenous treatment with third-generation cephalosporins/antipseudomonal penicillins and frequent debridement will be required in these patients.