Effectiveness of Migraine-Associated Dizziness Treatment Strategies Revealed

Migraine-Associated Dizziness: Patient Characteristics and Management Options.
Reploue MD, Goebel JA:
Otol Neurotol 2002; 23 (3): 364-371

A combination of lifestyle change and medication is effective for control of migraine-associated dizziness symptoms in the majority of patients.

Background: Migraine-associated dizziness (MAD) is an extremely common disorder that affects one-third of migraine sufferers. It is at least 10 times more common than Meniere’s disease. Despite its commonality, there have been few studies on the treatment of this condition. The pathophysiology is also very poorly understood.

Objective: To evaluate the effectiveness of MAD treatment.

Design: Retrospective review.

Participants: 81 patients (61 women, 20 men) with a diagnosis of MAD and at least 4 weeks of therapy were included in the analysis. The average age of participants was 36 years, and the median follow-up was 55 weeks.

Methods: If a headache history was present (which was found in 90% of patients), either migraine with aura or without aura was diagnosed using the International Headache Society criteria. Patients were treated using sequential therapies.

Interventions: Initial treatment included dietary changes. Dietary restrictions included avoidance of aged cheese, processed meat, and red wine. If dietary changes were not successful, patients were prescribed a low-dose tricyclic antidepressant. If this medication did not work, a beta-blocker was either added to the tricyclic antidepressant or replaced the antidepressant. Medications were given for 4 to 8 weeks before a dose increase or treatment failure was considered. Finally, if these therapies were not successful, patients were referred to a neurologist.

Results: 72% of patients experienced a resolution of at least 75% of their symptoms. Only 5% of patients had no improvement in symptoms. Dietary changes alone relieved symptoms in only 16% of patients. An additional 24% were improved after starting a tricyclic antidepressant. The treatment regimen was well tolerated; only 4% did not tolerate low-dose tricyclic antidepressants, and 5% did not tolerate the beta-blocker.

Conclusions: There is effective therapy for MAD, although a combination of therapies is often required.

Reviewer’s Comments: This is one of the few studies that examined MAD treatment systematically. I applaud the authors for this work, but this is unlikely to be the last word on the issue. These symptoms often fluctuate with time, so ideally, a study would have a no-treatment arm. Also, I believe effective dietary restrictions should be more extensive than those used in this study and should include avoidance of caffeine, monosodium glutamate, and products containing fresh yeast, such as yogurt. The diet may have been more effective if these were included. In the patients who failed the diet in this study, it is not clear why; however, I suspect that a significant number of these patients chose not to eliminate these factors from their diet. Another common treatment is to titrate the dose of tricyclic antidepressants up, as many patients require a higher dose to control symptoms. However, in this study, only a low dose was considered.

Additional Keywords: None

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A careful examination followed by a series of studies can diagnose the underlying cause of pulsatile tinnitus in most cases.

**Objective:** “To evaluate the incidence of identifiable anomalies in patients with pulsatile tinnitus.”

**Design:** Retrospective review of the records of 54 patients evaluated for pulsatile tinnitus.

**Results:** Arterial findings were found in 26% of patients, most of whom (11 of 14) had cervical carotid atherosclerosis. Two patients had carotid dissections. One patient was found to have an erosion of the cochlea by an aberrant carotid artery. Nonvascular causes included benign intracranial hypertension and superior canal dehiscence (1 case each). In 28% of cases, no definitive diagnosis was found. In only 1 case (a patient with carotid artery dissection) was vertebral arteriography helpful in making the diagnosis.

**Conclusions:** Autophony suggests patulous eustachian tube or superior canal dehiscence. Other symptoms were classified as arterial or venous. If symptoms were arterial, a carotid ultrasound was performed, and if symptoms were venous, CT angiography was done. The authors warn against the routine use of MR angiography due to resolution limitations. A potential shortcoming of CT angiography is missing small dural arteriovenous malformations; however, none of these malformations were found in this series. The study did find a diagnosis in 72% of patients with pulsatile tinnitus.

**Reviewer’s Comments:** In pulsatile tinnitus, identifying the underlying pathophysiology can be difficult. This paper provides reasonable guidelines to clinicians, and although it will not help you find a cause for every case of pulsatile tinnitus, it will hopefully help you find the most serious ones. Although the authors suggest 4-vessel arteriography as a final step in finding a potential diagnosis, this procedure did not yield a diagnosis in any cases in this series, so its value is not clear from this study. This study focuses on pulsatile tinnitus of vascular origin, so it is not clear that all cases of benign intracranial hypertension, superior canal dehiscence syndrome, or patulous eustachian tube would be found.

**Additional Keywords:** None

**Print Tag:** Refer to original journal article
A new facial nerve function is proposed that attempts to improve on some of the weaknesses with the popular House-Brackmann scale.

**Background:** The House-Brackmann scale is now one of the most commonly used facial nerve grading systems. Since the system was proposed, several weakness and criticisms have been raised. These criticisms include not considering synkinesis and significant interobserver variability.

**Objective:** To present an updated version of the original Facial Nerve Grading Scale system, usually referred to as the House-Brackmann scale.

**Design:** Controlled trial of grading systems.

**Participants:** 21 patients with facial nerve dysfunction.

**Methods:** During standardized movements, a score of 1 to 6 is assigned to the brow, eye, nasolabial fold, and oral commissure: normal movement is 1; >75% movement is 2; 50% to 75% movement is 3; obvious movement

**Results:** There was a strong tendency for an examiner to reach the same grade assignment for a given patient using either scale, with the grade being the same in 69% of cases. Changes by 2 grades occurred in only 1% of scores. Interobserver agreement was also similar using the 2 scales. The proposed grading system had fewer outliers than did the House-Brackmann system, although the difference was small.

**Conclusions:** The proposed grading system offers some incremental benefits over the established House-Brackmann system, although in many cases the results will be comparable.

**Reviewer's Comments:** I agree with the criticism that the House-Brackmann scale is less than ideal in many situations, and I applaud these authors for attempting to remedy some of these weaknesses. However, the House-Brackmann scale is in common use and its popularity is bolstered by its simplicity. Only time will tell if this proposed facial nerve grading system 2.0 will catch on. However, if I were a betting man, I would not put my money behind it. The scale of this new system is very similar to the House-Brackmann scale; in the majority of patients, the grade will be the same using either scale. The House-Brackmann scale has a big advantage in that it is easy to apply at the bedside. This new scale will take longer to assess. Scores in 5 categories will have to be totaled, and then most clinicians would have to consult a table to convert this total score to a grade. This extra effort will probably outweigh the benefit for many.

**Additional Keywords:** None

**Print Tag:** Refer to original journal article
**Rinne Test Does Not Predict Results of Stapes Surgery**

*A Reevaluation of the 512-Hz Rinne Tuning Fork Test as a Patient Selection Criterion for Laser Stapedotomy.*


Patients with an equivocal Rinne test with a 512-Hz fork receive significant benefit from stapedotomy.

**Background:** The Rinne test compares air and bone conduction. A normal (positive) test is when the patient perceives the sound to be louder with air conduction. In a negative Rinne test, the patient perceives a louder tone when the tuning fork is touching the mastoid. The test is an indicator of conductive hearing loss; thus, the idea is that if the Rinne is reversed, the conductive hearing loss is severe enough that the potential for improvement warrants the risks of stapes surgery. Previous studies have shown that the Rinne test may be reliably positive only for gaps of up to 15 dB and reliably negative for gaps of ≥50 dB.

**Objective:** To evaluate the Rinne test as a predictor of stapes outcomes.

**Design:** Retrospective review with questionnaire.

**Participants:** 18 patients (19 ears) with primary stapedotomies and an equivocal Rinne test.

**Methods:** Stapedotomy was performed using a KTP laser. Preoperative air-bone gaps were measured and averaged across 500, 1000, and 2000 Hz. Postoperative air-bone gaps were also measured so that the degree of improvement could be calculated. Patients were also asked to qualitatively gauge their hearing improvement on a 5-point scale, as well as determine if they thought the surgery was worthwhile.

**Results:** The preoperative air-bone gap had a mean of 32 dB. Audiometric follow-up was a mean of 20 months. The air-bone gap was initially closed to

**Conclusions:** The Rinne test is not a predictor of stapes success, either objectively by air-bone gap closure or subjectively. Furthermore, this study confirms that there is a large range of air-bone gaps where the Rinne is equivocal. The authors suggest that some of the variability in Rinne testing can be attributed to the distance and orientation of the tuning fork during testing, as well as the force at which the tuning fork is pushed against the patient.

**Reviewer's Comments:** This study debunks the popular wisdom that an equivocal preoperative Rinne test may indicate a worse result of stapes surgery. However, I found it interesting that the study did not include any patients with a normal-positive Rinne test, even though stapes surgery is performed on some of these patients.

Additional Keywords: None

Print Tag: Refer to original journal article
How Much Gentamicin Is Safe for Hearing?


Salt AN, Gill RM::
Laryngoscope 2008; 118 (October): 1793-1800

A single administration of low-dose gentamicin has a low risk to hearing loss and deafness.

**Background:** Intratympanic gentamicin has now become a standard and effective therapy for Meniere's disease. One issue that limits its use is the potential for hearing loss. The exact risk of hearing loss seems to depend on the protocol used, and gentamicin protocols have not been standardized. Finding the best technique for gentamicin treatment has been difficult because a large number of protocols have been presented that vary in the number of injections, concentration of gentamicin, amount injected, and number of injections used. In addition to injections, continuous infusion protocols have also been presented.

**Objective:** To use an analytic model of cochlear diffusion to understand the relationship between intratympanic gentamicin protocol and hearing loss.

**Design:** Meta-analysis involving 19 previously published studies of gentamicin delivered to the middle ear for the treatment of Meniere's disease. These studies were published between 1993 and 2007.

**Methods:** For each published protocol, the maximum concentration of gentamicin ($C_{\text{max}}$) was determined using the author's model. In addition, the concentration over time or area under the curve (AUC) was determined for a single treatment cycle. These values were compared with the published hearing results.

**Interventions:** Intratympanic gentamicin for the treatment of Meniere's disease.

**Results:** The concentration of gentamicin used varied between 10 and 80 mg/mL, with most studies using between 20 and 30 mg/mL. The volume delivered was between 0.25 and 2 mL. Application duration for single injections was between 20 and 60 minutes. Two protocols used continuous infusions that lasted several days. Most studies used 1 injection per treatment, although the number of injections could be as high as 12. The number of treatment cycles was typically titrated to patient symptoms but varied between 1 and 10. The maximum concentration varied over several orders of magnitude between studies with a minimum of 10 µg/mL and a maximum of 2000. There was a similar amount of variation in the AUC, which varied from 34 mg min/mL to >8000. The authors found that for very low $C_{\text{max}}$ (maxmax or AUC provided a more appropriate measure of toxicity.

**Conclusions:** One-shot applications of gentamicin have a minimal risk of hearing loss.

**Reviewer's Comments:** The complex model of the cochlea used in this paper yielded essentially the same results found by previous meta-analyses: There is a lot of individual variation, but low-dose one-shot intratympanic gentamicin has a low risk of hearing loss. The rate of vertigo control or loss of vestibular function was not addressed by this study.

Additional Keywords: None

Print Tag: Refer to original journal article
Vestibular neuritis (VN) patients treated with prednisone have greater improvement in VN symptoms at 3 and 6 months than do patients taking placebo.

**Background:** Vestibular neuritis (VN) typically presents with a rapid onset of vertigo and nausea, which is often slightly improved by keeping the head stationary. Although the symptoms are often initially severe, this is a benign condition in which patients usually have a gradual recovery even with no treatment. Although the underlying pathophysiology is not known for certain, a viral etiology (specifically, herpes simplex virus type I) has been suspected. Steroid treatment has been recommended, although it has not previously been shown to improve patient symptoms.

**Objective:** To describe the effect of prednisone on patient symptoms and electroneurography (ENG) results after VN.

**Design:** Randomized, controlled trial.

**Participants:** 30 patients with acute VN; 15 patients were given a placebo, and 15 were given prednisone and famotidine.

**Methods:** Patients had a standard otolaryngology exam, ENG testing, and Jacobson Dizziness Handicap Inventory (DHI) completed within 3 days of presentation. Patients also had an identical follow-up examination after 1, 2, 6, and 12 months. Complete resolution of symptoms was defined as no symptoms, normal exam, DHI 22 receptor antagonist was also given. Both control and prednisone patients had vestibular sedatives provided.

**Results:** The significant finding of this study is that, at 3 months and at 6 months, a greater fraction of treated patients experienced a complete recovery. Almost 70% of the treated patients returned to normal versus only about 20% of the placebo group experiencing a complete recovery during this period. When only the ENG lateralization was considered, there was a significantly better improvement with patients who were given steroids at both 1 and 3 months, although the results were similar at 6 months and later. At the 1-year follow-up, the treatment and placebo group were similar in all respects. At 1 year, less than one third of patients continued to have any symptoms, the mean DHI score was approximately 10, and 73% of patients had a complete recovery.

**Conclusions:** This study provides a significant advancement in the understanding of steroid treatment of VN by demonstrating that steroids lead to a shorter symptom duration; however, even without treatment, recovery is similar at 1 year. Canal paresis on ENG testing improved earlier than clinical symptoms as measured by the DHI.

**Reviewer's Comments:** One potential criticism of this study is that famotidine, an H2 receptor antagonist, was given with steroids. Although this drug was given for its gastric protective effects, it is possible that it also had an effect on vestibular compensation, since histamine is a component of this pathway.
Subset of Thyroid Cancer Patients May Have Diminished QOL After Treatment

Clinical Predictors of Quality of Life in Patients With Initial Differentiated Thyroid Cancers.

Almeida JP, Vartanian JG, Kowalski LP.


Radioactive iodine therapy doses >150 mCi are the greatest risk factor for diminished quality of life in patients with thyroid cancer.

Objective: To assess quality of life (QOL) and clinical predictors of QOL in patients with differentiated thyroid cancer.

Design: Cross-sectional analysis.

Participants: 154 patients undergoing thyroidectomy for differentiated thyroid cancer.

Methods: All patients completed the University of Washington Quality of Life questionnaire (UW-QOL). Bivariate and multivariate analyses were performed to compare the dependent variables of the UW-QOL to independent variables (age, sex, time since treatment, radioactive iodine treatment [RIT] dose, neck dissection, and comorbidities).

Results: 83.9% of patients reported good health-related QOL. Age >45 years was correlated with poorer recreational scores. RIT doses >150 mCi were associated with worse scores in pain, swallowing, chewing, speech, shoulder function, taste, anxiety, and composite score. Neck dissections from level II to level VI were associated with poorer chewing and shoulder functions. Higher comorbidity ratings were associated with poorer activity, recreation, speech, saliva, and composite scores. Time since treatment was not associated with poorer scores in any domain.

Conclusions: Although the majority of patients report good overall QOL after treatment for differentiated thyroid cancer, some subgroups are at risk for diminished QOL.

Reviewer's Comments: This important study is the first to consider QOL as an important outcome measure for differentiated thyroid cancer. Traditionally, oncologic control has been considered the paramount factor when comparing treatment approaches. A greater awareness of functional abilities and patient-perceived function after oncologic treatment has given rise to consideration of QOL as an important consideration in evaluating specific treatment approaches. The World Health Organization defines QOL as the perceptions of an individual regarding his/her position in life in the context of the culture and value systems in which he/she lives in relation to his/her goals, expectations, standards, and concerns. This definition highlights the importance of consideration of each patient's experience. In this study, the authors found that the greatest risk factor for diminished QOL is RIT doses >150 mCi. This cut-off corresponds to previous data indicating adverse effects on the salivary glands at that dose. Previous studies of patients undergoing external beam radiation for oropharyngeal and laryngeal cancers have demonstrated greater patient-perceived difficulties with voice and swallowing in those experiencing xerostomia. These data may reflect a similar mechanism of greater impact on patient-perceived QOL related to salivary gland dysfunction. Although not directly measured in this series, this is an interesting consideration. Given the demonstrated risk factors for reduced QOL, clinical consideration may be given to greater patient education and early referral to ancillary services such as physical and speech therapists. Future study of actual functions may contribute to the determination of most appropriate clinical pathways.

Additional Keywords: None

Print Tag: Refer to original journal article
Deaf Adults Becoming More Accepting of Cochlear Implants

Children With Cochlear Implants: Changing Parent and Deaf Community Perspectives.

Christiansen JB, Leigh IW::
Arch Otolaryngol Head Neck Surg 2004; 130 (May): 673-677

**Cochlear implants are now becoming more accepted by the deaf community**

**Background:** In the United States, newborn hearing screening is almost universal, and babies with profound hearing loss who are potential cochlear implant candidates are usually identified in the first few months of life. The deaf community has historically been opposed to cochlear implantation. Approximately 90% of deaf children will be born to hearing parents. Most of these hearing parents will have little, if any, exposure to deaf culture, and the decision to proceed with a cochlear implant will be an easy one for them.

**Objective:** To explore the decision to undergo cochlear implantation by the parents of deaf children and the changing perceptions of the deaf community.

**Design:** Survey and interviews of the parents of children implanted with cochlear devices.

**Methods:** In the spring of 1999, the authors distributed a 12-page survey to 1841 parents of cochlear-implanted children. Interviews were conducted in 56 parents of children with implants, all but 1 of whom was hearing.

**Results:** The survey had a 24% response rate. Parents generally found advice about pre-implant communication options confusing. Hearing aids were used all day everyday prior to implantation in 76% of patients, and half of the children used some sign language before implantation. Only 15% of children were in a school for the deaf after implantation, but 70% had at least 1 deaf classmate. However, 59% of children with implants were seen to be trailing behind their hearing peers in reading, and 37% were thought to be behind in mathematics. Several patients reported using support services in schools, including sign language interpretation for 40% of children. More than 50% of the parents still identified their children as deaf after implantation; however, parents were generally pleased with the implant. When asked about their relationship with the deaf community, 50% of subjects had previously met a deaf adult, and 29% had met deaf adults who opposed cochlear implantation. Those who had contact with the deaf community had variable experiences ranging from positive experiences to being called child abusers and butchers.

**Conclusions:** Opposition to cochlear implants in the deaf community is improving.

**Reviewer’s Comments:** Although the paper was published 5 years ago, most of the data are 10 years old. The survey was flawed by a low response rate and the fact that it did not seek out parents of deaf children who decided not to get cochlear implants during this period. The average age at implantation in this study was 4 years. This age would be much younger if the survey were repeated today. Also, the fraction of recipients who use sign language would be much less than the 50% in this study today, and the rate of placing these students in mainstream classrooms would be higher. My own perception from interaction with deaf adults is that the community is becoming much more accepting of cochlear implants.

Additional Keywords: None

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Intraoperative EMG monitoring of the facial nerve during primary parotidectomies does not reduce the rate of postoperative facial nerve weakness.

**Background/Objective:** In this spirit of evidence-based medicine, 2 centers in Germany set up a prospective, controlled study to test the efficacy of EMG monitoring in primary parotidectomies for benign disease.

**Design:** The authors chose a 2-centered prospective trial.

**Participants:** Included were patients with benign parotid lesions as well as chronic parotiditis.

**Methods:** 100 parotidectomies, both superficial and total, were performed in the 2 institutions by senior residents. Of these procedures, one half made up the EMG group, and the other half was the control group. The patients were not paralyzed, and the facial function was assessed independently by an assistant surgeon intraoperatively. Postoperative facial nerve function was assessed using both the House-Brackmann and Stennart facial nerve grading scales for approximately 3 months. Facial nerve dysfunction in the 2 groups was compared.

**Results/Conclusions:** In the 100 parotidectomies performed, there were 41 cases of postoperative nerve weakness; of these, 6 had permanent paralysis. The distribution of the facial paresis between the 2 groups was comparable, 19 for the EMG group and 22 for the control group. Statistically, there were no differences between groups in postoperative facial paresis. It should be noted that, despite the high frequency of facial palsy, most of the weakness was consistent with a House-Brackmann score of 2/6. No differences were seen in the degree of facial weakness between groups. Interestingly, 1 difference noted was that the surgical time was reduced in the EMG group.

**Reviewer’s Comments:** Despite the prospective nature of the study, this was not a randomized, controlled study. Although the patient profiles in the 2 groups were comparable, each group had their surgeries in 2 separate institutions. The EMG group patients had their surgeries at the University of Jena, and the control group patients had their surgery at the University of Cologne. As such, this study may have selection bias built into it. On the plus side, all surgeries were performed by unidentified senior residents, so that individual surgeon bias may not be prominent. In both study groups, roughly 2 of 5 patients had temporary postoperative facial nerve dysfunction. Unfortunately, the number of permanent facial paralysis was small in both groups, and it is unclear whether the study design accounted for the potential small number of cases of permanent facial weaknesses. There are no mentions of power analysis in the statistic section to account for this. The use of the EMG monitor currently is not the standard of care in the United States, and this study, despite its limitations, corroborates this statement. It should be noted that this study does not address EMG use in revision parotid surgeries. Another take-home finding was that EMG reduced the time of surgery.

**Additional Keywords:** None

**Print Tag:** Refer to original journal article
A transaxillary totally endoscopic approach for thyroidectomy is feasible and potentially safe.

**Objective:** Dr. Simon Wright at the University of Iowa has adopted the transaxillary totally endoscopic (TATE) approach in his practice and reports his initial experience in this article.

**Design/Participants:** Historic cohort study of 24 patients undergoing primary hemithyroidectomy and isthmusectomy. Included were patients with benign thyroid nodules. Hashimoto thyroiditis patients were also included. Excluded were those nodules >6 cm, a history of irradiation, or previous neck surgeries.

**Methods:** Operative times, complications, and patient satisfaction questionnaires were evaluated for all patients.

**Results:** In this series, no conversion to the open approach was noted, and there were no complications. The TATE approach was initially longer than the open approach by almost 70 minutes. However, after these initial 5 surgeries, the operative time decreased and compared well with the open thyroidectomies. In terms of patient satisfaction, the questionnaire revealed no significant differences in satisfaction to incision type. The TATE group did complain of greater pain 24 hours after surgery, but this became equivalent after 1 week.

**Reviewer's Comments:** This appears to be an adequate series to validate the TATE approach as an alternative method of thyroidectomy. One interesting finding is that the patient satisfaction survey between the 2 groups (open cervical vs endoscopic transaxillary) was not very different. The authors believe this was due to differing patient expectations. However, this would partly invalidate their questionnaire since they may be looking at 2 different patient populations. In addition, the transaxillary approach group complained of more pain initially. This is actually consistent with Dr. Ikeda's recent finding that the transaxillary approach is associated with greater pain. These postoperative pain issues may be real given the greater amount of muscle transections required for the transaxillary approach. The true complication rates will become more evident as more of these TATE procedures are performed, but, overall, this report suggests continued progress in the surgical management of thyroid disorders.

**Additional Keywords:** None

**Print Tag:** Refer to original journal article
Patients in their 70s and 80s can still receive significant benefit from cochlear implantation.

**Background:** The oldest segment of the United States population is one of the fastest growing. Presbycusis is the third most common condition in the elderly population, and a subset of these patients will be cochlear implant (CI) candidates. However, very few studies have examined the benefit of CI beyond the age of 75 years.

**Objective:** To report auditory performance for CI patients aged >75 years.

**Design:** The medical records of all CI recipients from 1995 at the authors' institution were reviewed, and patients who were >75 years of age were selected. Patients had to have at least 12 months of follow-up data postimplantation. A total of 28 patients were included, 27 of whom used the cochlear Nucleus device. Patients in group 1 were >80 years of age at implantation or >75 years of age with 5 years of implant use. Group 2 patients were aged >75 years at implantation, aged >70 years with 5 years of experience, or aged >65 years with ≥10 years of implant experience.

**Methods:** Data were compiled for hearing in noise tests (HINT), Consonant-Nucleus-Consonant (CNC), open-set tests, and sound field pure-tone thresholds. Open-set speech perception was analyzed using a Kaplan-Meier technique. Patients were considered to have no benefit if they did not use the CI or if scores were lower than preoperative values on the CNC or HINT. Questionnaires were also used.

**Results:** Both groups of patients had significant improvement in HINT scores, although the improvement was better in the younger patients of group 2. Kaplan-Meier analysis represented a similar level of benefit in both groups. When questionnaires were analyzed, the response rate was 46%, but nearly 70% of individuals felt that the CI was beneficial, with 15% believing it was no better than amplification.

**Conclusions:** The student demonstrates a clear benefit of CI in patients aged >75 years.

**Reviewer's Comments:** This study is limited by its retrospective approach and the fact that most patients did not return their questionnaire. It would have also been interesting to know if the patients who did not receive benefit from their CI had any preoperative factors that could have predicted a worse result. The data are now becoming clear that CI is of benefit even in advanced age, but with growing health-care costs and the expense of this procedure in an expanding population, otolaryngologists will likely be pressured to carefully select patients to ensure maximum benefit of those implanted.

Additional Keywords: None

Print Tag: Refer to original journal article
Viruses are not at the root of all head and neck cancers and are very site specific.

**Objective:** To determine the incidence of human papillomavirus (HPV) and adenovirus (AdV) infection in patients with laryngeal dysplasia and squamous cell carcinoma.

**Design:** Prospective series.

**Participants:** 68 patients with laryngeal lesions (40 cases of squamous cell carcinoma, 1 case of verrucous carcinoma, 4 cases of dysplasia, 5 cases of papillomatosis, and 18 samples of nonneoplastic tissue).

**Methods:** Polymerase chain reaction (PCR) was employed with HPV-specific primers, and these amplicons were then sequenced for specific genotyping. Similarly, AdV-specific PCR was used, although subsequent sequencing was not performed.

**Results:** HPV was not detected in any of the cases of squamous cell carcinoma, verrucous carcinoma, dysplasia, or control tissues. Four of the 5 samples of laryngeal papillomatosis (80%) were positive for HPV (2 for HPV-6 and 2 for HPV-11). None of the 68 samples demonstrated the presence of AdV.

**Conclusions:** Adenovirus does not play a role in the development of benign or malignant laryngeal carcinoma. HPV is found primarily in the case of laryngeal papillomatosis, but not premalignant or malignant disease.

**Reviewer’s Comments:** This study falls in line with the majority of the literature on the role of HPV involvement in laryngeal neoplasms. While the cohort is relatively diverse and small, it illustrates that high-risk HPV does not seem to be involved at any level in laryngeal lesions, benign or malignant. Therefore, the high-risk HPV subtypes seem to be very concentrated in oropharyngeal carcinoma, but not other head and neck subsites. In laryngeal papillomatosis, it is known that the HPV subtypes are those not associated with malignancy (HPV 16 and 18), which fits the clinical scenario.

Additional Keywords: None

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Factors, including newer vehicle model and seatbelt use, are protective against facial fractures in motor vehicle collisions.

**Objectives:** This study analyzes the patterns and trends of facial fractures sustained in motor vehicle collisions as well as the risk factors associated with the various types of facial fractures.

**Design/Methods:** The authors did a retrospective analysis of the Crashworthiness Data System database of the National Automotive Sampling System from 1993 to 2005. The database collects a sample of nearly 5,000 cases from 24 to 27 geographic areas. The study population consisted of drivers and front seat passengers involved in frontal and side collisions. Occupants were excluded from the study if they were

**Results:** The likelihood of facial fractures significantly decreased with newer vehicle models ($P = 0.11$). Side impact, mismatch in crash vehicle sizes, increased occupant height, and increased traveling velocity at the time of the crash were associated with increased risk of facial fractures.

**Conclusions:** The likelihood of sustaining facial fractures in motor vehicle collisions appears to decrease with newer vehicle models. This is likely secondary to newer vehicles being equipped with improved safety features. The use of seat belts continues to be a significant protective factor.

**Reviewer's Comments:** This retrospective analysis shows that the incidence of facial fractures decreases with newer vehicle models. The protective effect of seat belts as shown in this study is consistent with other similar studies. This study also confirms that the presence of airbags does not replace the need for seat belt use. It is important to keep in mind that the database used in the study may not offer a true representation of facial trauma trends given the selection and reporting bias of the database, particularly for minor vehicular injury with isolated facial fractures.

Additional Keywords: None

Print Tag: Refer to original journal article
A PDL can be used for the treatment of postoperative facial ecchymoses to facilitate the recovery course.

**Design/Objective:** This pilot study assessed the clinical safety and efficacy of using a 595-nm pulsed-dye laser (PDL) for the treatment of post-surgical facial ecchymoses.

**Participants/Methods:** PDL was used in the treatment of postoperative ecchymoses in 20 patients who underwent facial cosmetic procedures including rhytidectomy and facial liposuction. The areas of ecchymoses were outlined and divided into lateral and medial halves. The lateral half was treated with PDL on day 5 or 6 after surgery, and the medial half was treated from day 7 to day 10. Hence, the ecchymotic area served as its own internal control. The severity of ecchymoses was graded by 3 blinded observers on a visual scale developed by the authors.

**Results:** PDL treatment resulted in improvement or resolution of postoperative ecchymoses within 48 to 72 hours after treatment (mean improvement, 63%). Often, improvement began within 24 hours after treatment. Minimal adverse effects were observed, which included treatment discomfort and local soft tissue edema. No skin dyspigmentation was observed in any of the 20 patients. Maximal efficacy of PDL treatment was observed when it was performed on or after postoperative day 5. Subjectively high patient satisfaction was reported.

**Conclusions:** Postoperative facial ecchymoses can be safely and effectively treated with PDL to facilitate the recovery course.

**Reviewer's Comments:** Ecchymoses can take up to 2 weeks or longer to resolve, and it is a concern, particularly in patients undergoing facial cosmetic procedures. PDL has been utilized in the treatment of cutaneous vascular lesions and works by selective photothermolysis of red blood cells. Its efficacy in the treatment of postoperative ecchymoses, therefore, makes sense intuitively. The ideal time period for treatment (postoperative day 5) is thought to be secondary to a combination of soft tissue edema resolution and completion of the red blood cell extravasation process from the site of surgical trauma.

Additional Keywords: None

Print Tag: Refer to original journal article
Delayed facial paralysis is a rare complication of stapedectomy surgery that may be prevented by acyclovir in at-risk patients.

**Background:** Occasionally, patients develop facial weakness several days after stapedectomy surgery. The first large series of this was reported on in 1973 when 5 out of 2307 stapedectomy cases (0.22%) experienced facial weakness 5 to 14 days after surgery, with complete recovery occurring within 8 weeks. Several other large series of stapedectomy patients have reported this unusual complication, with an incidence well under 1%. However, the pathophysiology of this complication remains unclear.

**Objective:** To report the incidence of delayed facial palsy in a large series of stapedectomy patients and to study predisposing factors and potential preventative measures.

**Participants:** 2152 stapedectomy procedures were reviewed in 2106 patients who were operated on over a 12-year period.

**Methods:** The date of onset of facial palsy was recorded, and the House-Brackmann (HB) grading system was used to assess facial nerve function after surgery and throughout the recovery period. Serologic evaluation was performed for herpes simplex virus (HSV) types I and II as well as varicella virus.

**Interventions:** Patients underwent a stapedectomy procedure. Acyclovir was given in 1 patient, who had a history of delayed facial palsy, before a revision stapedectomy.

**Results:** Delayed facial weakness occurred in 11 of the 2152 stapedectomy procedures (0.5%). The 11 patients included 5 men and 6 women (mean age, 53 years). Five of the patients had a primary stapedectomy, and the remaining 6 patients had a revision stapedectomy. The stapedectomy was performed with an Argon laser (3 cases) or drill (8 cases). The average air-bone gap was 21 dB preoperatively and was closed to 5.4 dB postoperatively. The onset of facial palsy was in 5 to 16 days (mean, 8 days). Palsy was HB grade III in 6 cases, HB grade IV in 3 cases, and HB grade V in 2 cases. Ten patients recovered completely, and 1 patient recovered to HB grade II. The mean time to recovery was 36 days. Serum antibodies were measured in 6 patients, all of whom had elevated anti-varicella zoster titers, and HSV types I and II were elevated in 5 patients. Prophylactic acyclovir was given to 1 patient who had a history of delayed facial palsy prior to a revision stapedectomy, and this patient did not have facial palsy after the second case.

**Conclusions:** Delayed facial palsy occurs in approximately 1 in 200 stapedectomy cases. The authors believe it may be due to viral re-activation.

**Reviewer's Comments:** This study confirms the rare incidence of delayed facial palsy. It may be due to viral reactivation as the authors suggest; however, we do not know the viral titers in patients who had uneventful stapedectomy surgery. It would be premature to recommend acyclovir to prevent this complication based on the single case reported here. Many of these cases were revision surgeries, who presumably did not have complications during their initial procedure.
Background: Esophageal stenosis is a relatively common problem in head and neck oncology patients. Traditionally, this problem has been managed in the office with progressively larger transoral bougienage dilation. This type of dilation can often be done by the patient with minimal complication, but not all patients are able to do this and there is a small risk of esophageal perforation.

Objective: To describe the technique and complication rate of transnasal esophageal balloon dilation.

Design: Retrospective case series.

Participants: 54 transnasal esophageal balloon dilations were performed in 38 patients at 2 institutions. Approximately 76% of patients were male, 30% had a history of radiation, and 18% were post-laryngectomy.

Methods: All patients who underwent transnasal esophageal dilation over a 2-year period were reviewed. The nasal cavity was topically anesthetized, an endoscope was passed into the esophagus, and the area of stenosis was visualized. A guide wire was pushed beyond the area of stenosis. A balloon dilator was then placed over the wire and used to dilate the stenosis.

Interventions: Transnasal balloon dilation of the esophagus.

Results: The majority of procedures (63%) were performed with the patient under conscious sedation in an outpatient surgery center. The remaining procedures were performed in an office setting. No major complications were reported; minor complications requiring the procedure to be aborted included laryngospasm and gagging, which occurred in 3.7% of cases. The authors believe the incidence of gagging is less than with traditional bougienage. This technique also offers the ability to visualize the area being dilated during the procedure, and biopsies can be performed if necessary.

Conclusions: The authors report a series of transnasal esophageal dilation with no major complications.

Reviewer's Comments: This is an interesting procedure that some clinicians may find an important addition to the tools currently available in treating esophageal stricture. However, the indications for balloon dilation are not clearly outlined by the authors, nor does this study directly compare balloon dilation to more standard techniques. There is no evidence that the technique presented will offer a lower rate of complications. Balloon dilation does have a major disadvantage, which is cost, especially when we consider that many of these patients may require frequent dilation. In an age where health care expenditures are being scrutinized by insurance companies and legislators alike, the cost needs to be considered before this procedure is likely to gain widespread acceptance.

Additional Keywords: None

Print Tag: Refer to original journal article
Second-generation stapes pistons have not improved on the success of earlier models.

**Background:** We now have 50 years of experience with stapedectomy surgery. During this time, techniques have evolved, as have the pistons that are available. Long-term results of stapedectomy surgery often deteriorate with time, which in many cases is due to damage to the incus secondary to the crimp of the prosthesis. If we believe the marketing information, newer stapedectomy prostheses should cause less damage to the incus, but does this translate into better long-term hearing outcomes?

**Objective:** To evaluate the long-term outcome of stapedectomy surgery by comparing the first generation Schuknecht teflon-wire piston with several second-generation devices. A Kaplan-Meier product-survival procedure is used to adjust for patients lost to follow up.

**Design:** Retrospective chart review.

**Participants:** 277 patients (311 ears) who had primary stapes surgery. Patients were accumulated over a number of years from 1989 to 2005 so that different prostheses could be compared.

**Methods:** Patients were reviewed with 5 types of stapes pistons: the Schuknecht Teflon-wire piston; a De La Cruz Teflon-platinum ribbon; a Mangham Teflon-platinum ribbon piston; the Kurz CliP titanium piston, and a Teflon version of the Robinson prosthesis. All pistons were 0.6 mm in size by the manufacturer specifications. All patients had a preoperative air-bone gap of >10 dB and were operated on by the first author of the study using similar techniques in all patients. Successful surgery was defined as an air-bone gap of ≤10 dB and no need for revision surgery.

**Interventions:** Laser stapedotomy.

**Results:** The air-bone gap at 1 year for a 4-frequency pure tone average was determined. When compared with the Schuknecht piston, no device had statistically better hearing results, but the CliP prosthesis had a slightly, but significantly, worse result. Kaplan-Meier analysis demonstrated that no device had a significant hearing advantage of the Schuknecht piston and the CliP piston and Robinson device had significantly worse hearing outcomes. A total of 18 patients had revision surgery for air-bone gaps >15 dB, and 83% of these were found to have incus necrosis. The revision rates for each of the prostheses were not significantly different.

**Conclusions:** The Schuknecht prosthesis had a medial success of maintaining an air-bone gap ≤10 dB of 24 years. The De La Cruz and Mangham pistons had a similar rate of success, while the CliP and Robinson prostheses had a poorer result.

**Reviewer’s Comments:** Incus necrosis is a problem most otolaryngologists with a significant stapes experience have encountered. Over the decades, there have been several “advances” in stapes prosthesis technology that were thought to have a theoretical hearing improvement or decreased revision rate. This paper demonstrates that there is no significant advantage with newer prostheses. Any potential advantage of newer prostheses, is likely slight and below the statistical power of this study.

**Additional Keywords:** None

**Print Tag:** Refer to original journal article
**Background:** Decades ago, removal of a vestibular schwannoma (VS) could be a life-saving surgery that was also associated with considerable morbidity and even perioperative mortality. In the modern era of magnetic resonance imaging (MRI), VS are discovered earlier and at a smaller size than in the past. Often, these smaller tumors will not have significant growth, so they can be simply observed with periodic MRIs. Even when large, these tumors are now almost never fatal.

**Objective:** To determine quality of life (QOL) following long-term conservative management of VS.

**Design:** Prospective study.

**Participants:** 70 VS patients, who were found to have VS and were a candidate for conservative management, were included. Patients were excluded for neurofibromatosis type 2, prior surgical or radiation therapy, or if they had only a single MRI as were those who were low to follow-up. Patients were diagnosed in 2002 and 2003 and followed until 2008. The average tumor was 10 mm. Patients were considered for active treatment if they had significant tumor growth, hearing deterioration, or if it was the patient's preference. Patients who had treatment received either stereotactic radiation or surgery.

**Methods:** The patients underwent gadolinium-enhanced MRI that was generally conducted yearly for the first 4 years after diagnosis. Audiometry was also periodically performed. QOL was measured using the Short Form 36 Health Survey (SF-36) at the time of diagnosis and at the end of the study period.

**Interventions:** SF-36, MRI, and surgery or radiation if warranted.

**Results:** Unilateral hearing loss was almost a universal presenting symptom. In 63% of patients, no tumor growth was observed during the follow-up period. Tumors that grew did so at an average rate of 1.5 mm/year. A total of 39% of patients failed conservative management. Two patients died during follow-up of causes unrelated to their VS. Of the patients who remained in the conservative treatment group, 49% had worsening of hearing. SF-36 scores did not significantly differ from those at diagnosis at the end of the follow-up period.

**Conclusions:** Conservative management of VS does not affect SF-36 scores.

**Reviewer's Comments:** The authors concluded that QOL does not deteriorate during conservative management of VS, even though 50% of these patients had deterioration in hearing during the follow-up period. The study is limited because QOL was not reported in those who had surgery. Also, SF-36 is a very general instrument that has no questions that are directly related to communication. Other studies that have used the SF-36 to gauge the effect of hearing loss (such as in hearing aid patients) have also failed to show an effect. Thus, it is likely that the SF-36 is not the best QOL measure in this population.

Additional Keywords: None

Print Tag: Refer to original journal article
Enlarged Vestibular Aqueduct Syndrome May Cause Hearing Loss

Enlarged Vestibular Aqueduct In Pediatric Sensorineural Hearing Loss.

Dewan K, Wippold FJ II, Lieu JEC:

The Cincinnati criteria identify more cases of enlarged vestibular aqueduct syndrome than the Valvassori criteria.

**Background:** Congenital sensorineural hearing loss (SNHL) is a problem frequently encountered by the otolaryngologist. The most common genetic cause of SNHL that has been identified so far is connexin 26, which accounts for almost 50% of profound nonsyndromic hearing losses. However, in many patients, the cause of hearing loss is not identified. The most common radiographic finding associated with hearing loss is enlarged vestibular aqueduct (EVA). In this syndrome, patients often experience progressive hearing loss that is often associated with minor head trauma. The classic Valvassori criteria for defining EVA is a midpoint >1.5 mm. However, recently, the Cincinnati criteria proposed a midpoint width of 1.0 mm or opercular width of 2 mm as enlarged.

**Objective:** To compare criteria for the definition of EVA.

**Design:** Retrospective review.

**Participants:** 163 patients who received cochlear implants at the author's institution from January 2003 through August 2007 were included. Patients were excluded if scans were not available or not of sufficient resolution, thus leaving 130 patients in the study. The average patient age was 5.2 ± 4.4 years.

**Methods:** CT scans were performed using a standard temporal bone protocol and 0.6-mm slices. The vestibular aqueduct (VA) was measured at its midpoint and operculum. All scans were measured by a single reader, with a subset of scans checked by a second reader.

**Interventions:** CT scan, cochlear implantation.

**Results:** The Valvassori criteria found 16% of ears to have EVA, while the Cincinnati criteria found 45% of ears (70 ears) to be consistent with EVA. All ears that met the Valvassori criteria also met the Cincinnati criteria. Of these 70 ears that met the Cincinnati criteria, 16% had another reason for hearing loss, such as Waardenberg's syndrome. The Cincinnati criteria also identified EVA in 8 of 12 patients with a known connexin mutation.

**Conclusions:** The authors found a much greater incidence of EVA using the Cincinnati criteria than the Valvassori criteria.

**Reviewer's Comments:** The authors propose using the Cincinnati criteria for diagnosis of EVA because it will allow more cases to be identified. But how many of these cases will be false positives? We do not know from these data, but it is likely to be a significant number. An interesting follow-up to this study would be to apply these criteria to CT scans of patients who had normal hearing to see how many were positive. Since the slice thickness is a significant fraction of the size of the VA, it is also possible that the Cincinnati criteria may yield different results in the same patient depending on where the slices of the CT scan fall.

Additional Keywords: None

Print Tag: Refer to original journal article
The first repair of choanal atresia has the best chance of success. The endoscopic approach is now favored.

**Background:** Choanal atresia (CA) is the congenital obstruction of the nasal aperture. It is a relatively rare problem that occurs in 1 in 5000 births, with some cases not presenting until adulthood. The disorder more commonly occurs on the right side, in females, and is usually bony. In some cases, CA is associated with coloboma, heart defects, choanal atresia, growth and mental retardation genital and ear anomalies (ie, CHARGE syndrome).

**Objective:** To review the current state of CA understanding, to report the authors’ technique of surgical correction, and to review expected outcomes.

**Design:** Retrospective review.

**Participants:** 73 pediatric patients treated for CA between 1973 and 2005 were included in this study. Patients who had an initial surgery at another institution or were lost to follow-up were not included. Patients with CHARGE syndrome comprised 22% of cases, while 16% of the patients had other less common syndromes. Bilateral CA was present in 38% of cases. Long-term follow-up results were available in 58 patients.

**Methods:** Three standard approaches were used: transpalatal (44%), transnasal (25%), and endoscopic (32%). During the most recent decade, the endoscopic approach was most common.

**Interventions:** Repair of CA.

**Results:** In patients with adequate follow-up, the rate of restenosis was 23%. The rate of restenosis varied by technique and occurred in 13% of transpalatal, 50% of transnasal, and 12% of endoscopic repairs. The transpalatal approach was associated with a cross bite deformity that required subsequent orthodontic treatment in 21%. Cross bite deformity was more common in patients with CHARGE.

**Conclusions:** The transnasal puncture often only provides temporary patency of the nasal cavity and is now not commonly performed. The exposure is best using the transpalatal approach, but the removal of this bone is associated with a delayed cross bite deformity. The authors recommend the endoscopic technique due to is low rate of restenosis and developmental complications. The authors recommend delaying repair until 1 year of age in bilateral cases, while repair can safely be delayed to 4 or 5 years of age in unilateral cases.

**Reviewer’s Comments:** This is a nice review of 1 institution’s experience with a problem that is only rarely encountered by most otolaryngologists. As a retrospective review, there is little standardization of management, so the conclusions are not as strong as a prospective study could offer. However, given the rare incidence of this condition, prospective studies will likely never be available.