

Studies Fickle Regarding Radiation Outcomes for VS

Radiation Therapy for the Treatment of Vestibular Schwannoma: A Critical Evaluation of the State of the Literature.

Bassim MK, Berliner KI, et al:

Otol Neurotol 2010; 31 (June): 567-573

The radiation literature shows a large amount of variation in the outcomes type of data for radiation therapy for vestibular schwannomas. Studies with longer follow-up report significantly worse outcomes.

Background: Vestibular schwannomas (VS) are now commonly treated with radiation. The fraction of tumors being treated by radiation increased from 5% in 1998 to 20% in 2008. Despite the rising popularity of this treatment option, the literature contains only limited data to compare the efficacy of VS treatments.

Objective: To critically review the literature on radiation therapy of VS.

Design: Literature review.

Participants: 58 studies (56 articles) on the outcomes of radiation therapy for the treatment of VS.

Methods: Studies published between 2002 and 2007 were identified using PubMed. Included papers had to present tumor size and patient characteristics from multiple cases. Data were extracted from the articles using standardized forms.

Results: The average patient age was 55 years (range, 8-92 years). At least some patients with neurofibromatosis type 2 were included in 43% of studies. Two-thirds of studies included patients with previous treatment. The average tumor diameter was 2.1 cm (range, 0.7 to 3.7 cm). Almost 80% of studies had an average follow-up <5 years. Only 10% of the studies were prospective. Large differences existed between studies regarding the types of radiation and protocols used. Gamma knife radiation therapy was most common, but radiation with a linear accelerator (LINAC) and proton beam therapy were also popular. Single-dose therapy was the most common and was used in 57% of studies. The total radiation ranged from 11 to 54 Gy. Growth criteria were variable and included a change in size of ≥ 2 mm, "significant change" seen on MRI, or "requiring surgery." Facial nerve function was graded using the House-Brackmann grading system in two-thirds of studies. Hearing results were most commonly presented using the Gardner-Robertson scale, but many other scales were also presented. There were significant correlations between longer follow-ups and a higher percentage of patients requiring additional therapy ($P < 0.01$), worse hearing outcome ($P < 0.004$), and facial numbness ($P < 0.02$).

Conclusions: Studies of radiation therapy for VS that had longer follow-ups tended to demonstrate worse outcomes than did studies with shorter follow-ups. However, the large variations in the types of outcomes and the quality of data presented make meta-analysis difficult.

Reviewer's Comments: I agree with the conclusions the authors report in this paper because I, too, have often been frustrated with shortcomings in articles that seem to report very good outcomes of VS radiation therapy. Unfortunately, I think many of these shortcomings in the radiation literature also apply to the literature on surgical treatment of acoustic neuromas. Advocates of both treatment options need to publish more detailed data using standard criteria so that we may meaningfully compare of the available treatment options. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Vestibular Schwannoma, Radiation Therapy, Outcomes

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A New Way to Treat a Bloody Problem?

Treatment of Auricular Hematoma by OK-432.

Kubota T, Ohta N, et al:

Otolaryngol Head Neck Surg 2010; 142 (June): 863-866

OK-432 is an effective nonsurgical approach in the management of auricular hematomas.

Background: Auricular hematomas occur commonly after trauma to the external ear. In the United States, this is a common problem in wrestlers. Standard treatment is to drain the hematoma and place a bolster to prevent reaccumulation. However, recurrences remain common.

Objective: To describe OK-432 as a treatment for auricular hematoma.

Design: Prospective study.

Participants: 21 patients (all male) whose ages ranged from 15 to 78 years (mean age, 43 years).

Methods: The dose of OK-432 was 0.5 KE, which was diluted in 0.2 mL of saline delivered through a 27-gauge needle. Two days after injection, the hematoma was drained with a 20-gauge or larger needle. To prevent fever, patients received prophylactic analgesics for 3 to 5 days after treatment. Patients returned again on post-injection days 7, 14, and 28. If the response to therapy was judged to be insufficient after ≥ 4 weeks, the therapy was repeated with double the dose of OK-432.

Results: Hematoma diameters varied from 2.7 to 6.7 cm (mean diameter just under 4 cm). Twenty of the 21 cases were cured with the therapy as of the last follow-up, which was at least 4 months. Although 18 cases only required a single injection, some required as many as 3 injections. A single patient did not have complete elimination of the hematoma even after 5 injections, although the hematoma's size decreased. Most patients had a mild fever for a few days after the injection. However, no infections or abscesses were identified. There were no scars, and no patients developed post-rheumatic fever sequelae or glomerulonephritis.

Conclusions: OK-432 is a safe and effective method for the nonsurgical treatment of auricular hematomas.

Reviewer's Comments: One reason that treatment of auricular hematomas has historically been difficult is that these hematomas tend to recur. This may be partly for anatomical reasons, but patients also often recur due to re-injury of the area. This study reports a very low recurrence rate, which is promising. The authors also point out that the technique can easily be used in children, although the youngest patient in this series was 15 years old. In addition, the treatment is faster than drainage with bolster placement, and it is painless. Potential disadvantages of this technique include cost, the large number of office visits required, and potential side effects of OK-432, which commonly include fever but can rarely lead to more serious side effects. Because of these disadvantages, I do not plan to recommend this therapy as initial treatment for patients with auricular hematoma. However, I would definitely consider this therapy for recurrent hematomas and for patients who are unwilling to accept bolster placement. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Auricular Hematoma, OK-432

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Autoimmune Screening Not Necessary for SNHL

Systematic Screening for Nonspecific Autoantibodies in Idiopathic Sensorineural Hearing Loss: No Association With Steroid Response.

Hervier B, Bordure P, et al:

Otol Neurotol 2010; 31 (June): 687-690

Positive autoimmune tests in patients with idiopathic sensorineural hearing loss do not predict improvement with steroids.

Background: In many cases of sensorineural hearing loss (SNHL), the underlying cause is unclear. In the past, blood tests and antibody screens have been developed which have suggested correlations with autoimmune hearing loss. However, these tests are not in common use because they lack specificity, they are not commonly available, and they rarely influence management decisions.

Objective: To evaluate the value of several autoimmune markers in predicting the response of idiopathic SNHL to steroid therapy.

Design: Prospective single-center trial.

Participants: 49 patients with idiopathic SNHL. The inclusion criteria were age <60 years, pure-tone hearing loss >30 dB, and normal imaging study. Patients with strong family histories of hearing loss, diabetes, and a history of radiation to the brain were excluded. The mean age at onset was 36 years.

Methods: Patients completed a battery of serologic tests, which included antinuclear antibodies, complement protein levels, rheumatoid factor, HLA-B27, antiphospholipid antibodies, Hepatitis B and C viruses, and HIV. Follow-up was as short as 1 month, but it averaged 34 months. Steroids were given for worsening hearing after a month of observation.

Results: 29 patients received steroid therapy, although many of these patients also received diuretics or vasoactive therapies. Treatment was deemed effective in 13 of these 29 patients (45%), although this was demonstrated via audiogram in only 7 cases. The authors point out that steroid efficacy was similar in patients with Ménière's disease and other hearing loss patients. No significant difference was found between responders and non-responders in terms of duration of symptoms or severity of hearing loss.

Conclusions: Positive autoimmune tests in patients with idiopathic SNHL do not predict improvement with steroids.

Reviewer's Comments: This study is an unusual one in that the inclusion criteria are very different than most studies of autoimmune hearing loss. Most studies of this type are focused on patients with recent sudden-onset hearing loss. This study includes patients with long-standing hearing loss, and it even includes patients with Ménière's disease. Given these inclusion criteria, the rate of positive autoimmune markers is much less than in other studies, and the rate of hearing recovery is also poor. Although I do not think there is a lot of evidence for ordering autoimmune markers in these patients, I am not sure that the findings of this paper really addresses the hypothesis. What I found most interesting in this study was that some of these patients with well-established hearing loss actually improved with steroids. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Sensorineural Hearing Loss, Idiopathic, Steroid Therapy, Predicting Response

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Still Questioning if Surgery Benefits Traumatic Facial Paralysis

Management and Outcomes of Facial Paralysis from Intratemporal Blunt Trauma: A Systematic Review.

Nash JJ, Friedland DR, et al:

Laryngoscope 2010; 120 (July): 1397-1404

Evidence for surgical treatment of traumatic facial nerve paralysis is based largely on uncontrolled case series and is not convincing.

Background: Facial nerve dysfunction occurs in about 10% of temporal bone fractures. Classic teaching is that the timing of facial paralysis relative to the injury should be determined. However, because these patients often have loss of consciousness and other severe injuries, it is often difficult to determine the time of facial paralysis.

Objective: To review the literature regarding outcomes of traumatic facial nerve paralysis.

Design: Systematic literature review.

Methods: >2000 articles have been published on traumatic facial paralysis, but only 35 studies met the inclusion criteria. A total of 612 cases of facial weakness in 606 patients were reviewed. Only human studies published in English were included. Reports of single cases were excluded, and included articles had to have outcome data. Most cases reported were secondary to temporal bone fracture, but in some cases, it could not be determined if a fracture was present. Facial nerve function was categorized into 1 of 3 groups: House-Brackmann I (HB-I), HB II-V, and HB VI.

Results: 612 cases of traumatic facial weakness were reviewed. The length of follow-up was extremely variable and ranged from 1 month to 12 years. The use of diagnostic testing, such as CT, MRI, and electrical studies, varied significantly. Observation alone was used 189 cases, and 66% of these cases regained function to HB-I. Steroids were the primary treatment in 83 patients, and 67% gained HB-I function. Most patients (n=340) underwent surgery. Most surgical patients had an outcome in the HB II-V group. Normal facial nerve function was achieved in only 23% of these patients. However, of the surgical patients who were observed to have an immediate paralysis, only 16% returned to HB-I function. Even among those with a complete facial paralysis, the patients who underwent surgery tended to have a much lower rate of full recovery (21%) than did those who were observed (57%).

Conclusions: Almost all the evidence regarding facial decompression in the setting of trauma is based on uncontrolled case series or class C evidence.

Reviewer's Comments: The current state of the traumatic facial paralysis literature makes it difficult to make strong conclusions regarding the value of surgical treatment. In the published literature, those who did not have surgery clearly did better than those who did, but it is also likely that these groups are not similar with respect to the extent of their injury. Problems included variable and usually limited follow-up and few details about the nature of the trauma and facial paralysis. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Temporal Bone Fracture, Facial Nerve Paralysis, Outcomes

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Is BET a Better Way to Treat Eustachian Tube Dysfunction?

Balloon Dilatation Eustachian Tuboplasty: A Clinical Study.

Ockermann T, Reineke U, et al:

Laryngoscope 2010; 120 (July): 1411-1416

According to the results of this study, balloon eustachian tuboplasty is a viable technique for improving eustachian tube dysfunction.

Background: Eustachian tube dysfunction (ETD) is one of the most common problems we see as otolaryngologists. In many patients, it is a temporary problem that is associated with upper respiratory infection or allergies, but in some patients it becomes a persistent issue.

Objective: To present and evaluate balloon eustachian tuboplasty (BET) as a treatment for ETD.

Design: Prospective interventional study.

Participants: 8 adults with a history of chronic ETD that was causing persistent otitis media. The average patient age was 44 years. Five patients had bilateral ETD, which allowed a total of 13 BET procedures to be performed.

Methods: Tubomanometry was used to measure eustachian tube dysfunction. Success was measured using a combination of patient symptoms, such as if they experienced clicking when swallowing, and tubomanometry data, which the authors called "eustachian tube score" (ETS). This scale ranges from 0 to 10 points, with a higher score representing better function. Patients were evaluated at 1, 2, and 8 weeks after BET. The intervention consisted of transnasally placing a balloon catheter. Prior to inflation, the balloon was 0.6 mm in diameter. This was inflated to 10 bars of pressure, allowing a maximal diameter of 3 mm over a maximum length of 2 cm. The pressure was applied for 2 minutes prior to deflation.

Results: The ETS was 1.0 ± 0.6 prior to treatment. The score was re-evaluated at 1, 2, and 8 weeks after treatment. After 1 week, the score improved to 4 ± 3 , at 2 weeks it was 6 ± 3 , and after 8 weeks it was 7.5 ± 1.3 . The authors point out that there was a statistically significant difference between preoperative and postoperative data ($P < 0.05$).

Conclusions: The authors proposed a novel technique for treating ETD, which was easily administered and not associated with complications.

Reviewer's Comments: Treatment of ETD by widening the eustachian tube is not a new idea. In fact, there have been several attempts to widen the eustachian tube by placing objects inside it, but for various reasons, none of these techniques have gained significant traction. I am cautious in accepting the high success rate presented by the authors in this paper. This study included no control group, procedures had a significant placebo effect, and ETD is often transient and improves with time. With most dilation procedures, re-stenosis is a significant problem, and it is not clear to me how this dilation continued to yield additional benefit as more time passed. Although these results are interesting, a better controlled study is needed before we should accept these findings. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Eustachian Tube Dysfunction, Eustachian Tuboplasty

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Tinnitus Signals Increased Risk for VS Growth

Predictors of Vestibular Schwannoma Growth and Clinical Implications.

Agrawal Y, Clark JH, et al:

Otol Neurotol 2010; 31 (July): 807-812

A third of patients who initially choose observation for managing vestibular schwannomas later change to radiation or surgery. Larger tumors and tinnitus predict an increased risk of failing conservative management.

Background: Vestibular schwannomas (VS) are now often found at a small size with minimal symptoms. Management of these tumors is shifting toward serial observation with MRI. However, tumor growth remains a risk and has historically been difficult to predict.

Objective: To describe the initially observed natural history of VS and to identify the factors associated with changes in management strategy.

Design: Retrospective review.

Participants: 180 patients with unilateral sporadic VS who presented during a 10-year study interval.

Methods: To be included in the study, patients needed to have had at least 2 clinic visits during the initial year of presentation. Schwannomas of nerves other than cranial nerve VIII were excluded, as were cases of neurofibromatosis type 2. Patients were also excluded from this study if there was a history of prior radiation or surgery.

Results: 37% of patients experienced tumor growth, which was manifested after a mean duration of 32 months. Overall, 35% of patients pursued a change in their treatment strategy to either surgery or radiation. Patients who changed treatment strategies were significantly more likely to have had larger tumors at presentation, to have tumors located in the cerebellopontine angle, and to have tinnitus. The tinnitus association was especially interesting, and the presence of tinnitus at presentation increased the odds of tumor growth 3-fold. In >80% of patients who opted to change treatment strategy, the reason for the change was tumor growth. Twelve patients who had tumor growth opted to continue observation, a decision which was usually due to poor health or advanced age. No significant differences were found between those who changed treatment strategy and those who remained with observation with respect to age, gender, laterality, presence of hearing loss, vertigo at initial presentation, or length of follow-up.

Conclusions: The results of this study demonstrate that about a third of patients with acoustic neuromas who initially opt for observation will eventually change to treatment with radiation or surgery. The most interesting correlation that this study reports is the strong correlation between tumor growth and tinnitus. The authors suggest that tinnitus may be a marker of more biologically active tumors.

Reviewer's Comments: One major bias of this study is that those who were chosen for observation tended to be older and have smaller tumors than those who initially chose surgery or radiation. However, this paper will cause me to more carefully consider tinnitus complaints in a patient presenting with a small VS. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Vestibular Schwannoma, Predicting Growth, Treatment vs Tumor Growth

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Survival Not Changed By Intracranial Extension

Outcomes Following Temporal Bone Resection.

Dean NR, White HN, et al:

Laryngoscope 2010; 120 (August): 1516-1522

In patients with malignant tumors of the temporal bone, the survival rates were similar for those with or without intracranial extension. However, the prognosis was worse in patients with recurrent tumors.

Background: Patients with lateral skull base malignancy can be treated with a temporal bone resection, but they still tend to have a poor prognosis. Variables such as recurrent disease and intracranial extension are thought by some to be contraindications to surgery.

Objective: To report the outcome of temporal bone resection for lateral skull base malignancy in a series of patients.

Design: Retrospective review.

Participants: 65 patients who underwent temporal bone resection for epithelial and salivary gland tumors were included in this review. More than 75% of these patients were men, and the mean age was 65 years.

Methods: Patients underwent treatment between 2002 and 2009. Tumors were staged using American Joint Committee on Cancer guidelines. Most of these patients also underwent neck dissections and postoperative radiation. Rehabilitative procedures were performed when cranial nerves were taken. Facial reanimation procedures were also included in all patients. Free flaps were used in 72% of patients.

Results: The median follow-up was 10 months (range, 1 month to 5 years). At the last follow-up, about 50% of patients were disease-free. The 2-year disease-free survival rate was 68%. Recurrence was twice as likely in patients who had recurrent disease at the initial surgery. Nodal metastasis was also associated with a poor prognosis and dropped the 2-year survival rate to 34%. Intracranial extension did not have a significant effect on survival.

Conclusions: This study found that those with recurrent disease could still benefit from temporal bone resection, although they had a worse prognosis. Patients with intracranial extension had a rate of survival similar to those who did not have intracranial extension.

Reviewer's Comments: I found this paper to be interesting because the results challenged two common assumptions about malignant tumors of the temporal bone: (1) patients with recurrent disease are not curable, and (2) patients with intracranial extension have an extremely poor prognosis. In this series, some patients with recurrent disease were cured, although the prognosis was worse in these cases. Surprisingly, intracranial extension did not affect survival. Perhaps because of the greater use of free tissue transfer flaps, these authors were able to report results better than historical averages. However, this retrospective study had variation in both the extent of disease and tumor histology. No doubt, some patients who had intracranial extension or recurrent disease were not offered temporal bone resection. Therefore, the cohort reported in this study represents a select group of patients. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Lateral Skull Base Malignancy, Temporal Bone Resection

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Good Measure of Residents' Surgical Skills Nearing Reality

Objective Assessment of Mastoidectomy Skills in the Operating Room.

Francis HW, Masood H, et al:

Otol Neurotol 2010; 31 (July): 759-765

The authors present a task-based checklist (TBC) that is a reliable but not completely objective measure of a resident's surgical performance during mastoidectomy.

Background: There are currently few established metrics of operative skills, but the Accreditation Council for Graduate Medical Education is putting pressure on programs to objectively evaluate residents.

Objective: To propose a new instrument for evaluating residence performance during mastoidectomy.

Design: Prospective study.

Participants: 15 residents in their second to sixth year of residency were observed while performing mastoidectomy in the operating room and were evaluated by 1 of 6 faculty members.

Methods: The assessment evaluated performance with a task-based checklist (TBC) that used a series of steps required to perform a mastoidectomy. These steps were defined as "initial bone cuts, defining anatomic limits, opening the antrum, thinning the digastric, thinning the posterior external auditory canal, opening the facial recess, and the posterior atticotomy." A global rating scale (GRS) was also administered as previously developed by others. The GRS is a 10-item scale with each item being scored from 1 to 5 points. The GRS includes some nonoperative items, such as "interpretation of preoperative tests" and "knowledge of instruments." The residents were aware they were being evaluated and were aware of the items on the evaluation.

Results: 70 evaluations were completed for 15 residents during a 3-year study interval. There was a significant correlation between the GRS and the TBC ($r=0.93$ and $P<0.0001$). Both tests also had a significant correlation with cumulative otology experience ($r=0.6$) and increased from 3.1 to 4.4 during the 3 months the residents spent on the otology service.

Conclusions: The authors present a feasible and reliable method of evaluating mastoidectomy skills in the operating room.

Reviewer's Comments: Surgical performance has been notoriously difficult to quantify, but this study, in addition to previous work, is demonstrating that quantification is possible. There is still incomplete objectivity because the evaluators are familiar with the residents being evaluated. Furthermore, in real patients, cases vary in difficulty. It would be interesting to know how these surgical performance measures correlated with other measures of performance, such as in-service exam scores or resident's self assessments of their surgical abilities. It would also be interesting to know how skills correlate with year of training in residency or number of cases performed. Data like this will probably become available as these operative evaluations become more common. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Resident Education, Otolaryngology Training, Surgical Proficiency Evaluation

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Auditory Sensory Processing Abnormal in Vestibular Migraine

Sensory Dysmodulation in Vestibular Migraine: An Otoacoustic Emission Suppression Study.

Murdin L, Premachandra P, Davies R:

Laryngoscope 2010; 120 (August): 1632-1636

Suppression of otoacoustic emissions is reduced with background noise in a greater fraction of patients with migraine-associated vertigo than in controls.

Background: Migraine is a diagnosis known to the public as a headache disorder, although it is also a common cause of dizziness. Migraine is primarily a disorder of impaired sensory integration with symptoms exacerbated by sound, movement, and light.

Objective: To use otoacoustic emissions (OAEs) to seek evidence for sensory integration abnormalities in migraine.

Design: Prospective case-control study.

Participants: 39 subjects with migraine-associated vertigo and 31 controls.

Methods: The patients included in this study were seen during a 1-year study interval starting in June 2007. The inclusion criteria were a diagnosis of definite migrainous vertigo using the criteria of Neuhauser, which included having a diagnosis of migraine using International Headache Society criteria. The exclusion criteria were diagnoses that could interfere with measurement of OAEs, including history of middle ear disease, conductive hearing loss, significant noise exposure, or abnormal otoscopy. Transient-evoked OAEs (TEOAEs) were recorded using default settings. These were then repeated with white noise at 40 dB. Participants were classified as having "normal" or "abnormal" suppression based on previously collected normative data. If possible, OAEs were recorded during an attack of vestibular migraine and also recorded later in a recovered state.

Results: TEOAEs were present in all controls and all but 1 of the migraine patients. Approximately 20% of patients had TEOAEs that were too small to permit measurement of any suppression. Therefore, only 33 migraine patients were included in the final analysis. These patients had an average age of 36 years, as did the 31 patients in the control group. Of the migraine patients, 88% experienced phonophobia. All subjects were classified as having either "normal suppression," which was defined as ≥ 2 dB, or "decreased suppression," which was defined as < 2 dB. Decreased suppression was found in 3 of 31 controls and in 11 of 33 patients. This represented a significantly higher rate of decreased suppression among patients ($P=0.02$). However, phonophobia occurred at a similar rate in patients with decreased OAE suppression and normal OAE suppression. Age and gender were not significant predictors of decreased OAE suppression.

Conclusions: OAE suppression is reduced in a greater fraction of patients with migraine-associated vertigo than in controls.

Reviewer's Comments: Reduced OAE suppression might suggest a possible etiology for the sensitivity to sound or phonophobia that many migraine patients experience. However, the rate of phonophobia was similar in migraine patients with normal OAE suppression and those with reduced OAE suppression. Thus, the phenomena is more complicated than the OAE alone can explain. It is doubtful that OAE will provide a useful test to diagnose migrainous vertigo. Based on the data presented here, the sensitivity and specificity of such a test would be too poor to make it of value. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Migraine, dizziness, Otoacoustic emissions.

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Gentamicin, Endolymphatic Shunts Still Duking It Out

Outcomes of Endolymphatic Shunt Surgery for Ménière's Disease: Comparison With Intratympanic Gentamicin on Vertigo Control and Hearing Loss.

Derebery MJ, Fisher LM, et al:

Otol Neurotol 2010; 31 (June): 649-655

The authors conclude that the best chance of hearing preservation and vertigo control is with an endolymphatic shunt, but it is unclear if hearing preservation was a goal in the patients treated with gentamicin.

Background: Endolymphatic shunts have long been a staple of therapy for Ménière's disease (MD), although their popularity has decreased somewhat in the past decade with the increasing use of intratympanic injections. According to the results of 2 surveys conducted within the past decade, the use of intratympanic gentamicin was found to surpass the use of endolymphatic shunts. However, the rates of hearing preservation and vertigo control have not been directly compared between these 2 interventions.

Objective: To compare hearing and vertigo control outcomes between intratympanic gentamicin and endolymphatic shunts used to treat MD.

Design: Retrospective review and meta-analysis.

Participants: 183 patients who had an endolymphatic shunt at the authors' institution, and 203 patients from 6 published gentamicin studies.

Methods: Shunt patients had a diagnosis of unilateral definite MD and were excluded if they had prior surgical treatment. A total 203 patients from 6 studies of intratympanic gentamicin were chosen for review based on their inclusion of individual data, as well as pre- and post-treatment hearing preservation and post-treatment vertigo control.

Results: The shunt and gentamicin groups were not similar with respect to preoperative hearing level: good pretreatment hearing (pure tone average >50 dB) was found in 60% of the shunt group and in 36% of the gentamicin group. The percentage of complete vertigo control and hearing preservation was 62% in the shunt group and 56% in the gentamicin group. These groups also differed with respect to vertigo outcome. The gentamicin group had 71% complete vertigo control compared with 86% for shunts. However, the gentamicin outcomes were not consistent between studies: rates of hearing preservation and vertigo control ranged from 40% to 87%.

Conclusions: The authors believe that endolymphatic shunt surgery was more likely to achieve vertigo control with hearing preservation than was intratympanic gentamicin for the treatment of MD.

Reviewer's Comments: This study has some flaws. First, gentamicin patients had significantly worse hearing than shunt patients prior to treatment. Only a third of gentamicin patients had a pure tone average <50 dB. Most of these patients got very high gentamicin doses, further indicating that hearing preservation was probably not a concern. The most common dose of gentamicin averaged >200 mg, and in the next two largest series, it was at least 100 mg. Second, inclusion criteria required gentamicin studies to report individual results, excluding many larger studies. For example, a study of 78 patients published last year from Johns Hopkins reported a 96% rate of vertigo control with gentamicin, which was significantly better than any endolymphatic shunt series. Finally, most published series on gentamicin included 1-year to 2-year follow-ups, but no follow-up was required or described for the shunt patients. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Ménière's Disease, Endolymphatic Shunt, Outcomes

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New QOL Instrument Validated for VS Patients

Validation of a Disease-Specific Quality-of-Life Instrument for Acoustic Neuroma: The Penn Acoustic Neuroma Quality-of-Life Scale.

Shaffer BT, Cohen MS, et al:

Laryngoscope 2010; 120 (August): 1646-1654

A disease-specific quality-of-life instrument for vestibular schwannomas is presented which correlates with tumor size and facial nerve function.

Background: Quality of life (QOL) measures are becoming increasingly important in evaluating the outcomes of surgical procedures and medical interventions. However, there are currently no validated instruments available for assessing QOL in patients with vestibular schwannomas (VS).

Objective: To present and validate a QOL measure for VS patients.

Design: Prospective instrument validation.

Participants: Of 301 VS patients initially sent questionnaires, about 50% returned them, and 143 were included in this study. There were also 48 control subjects.

Methods: The questions consisted of the Short Form-36 Health Survey (SF-36) and 80 additional questions. These 80 questions were derived from the Hospital Anxiety and Depression Scale, as well as several items the patients were asked to rate from 1 to 5 which covered areas including hearing, balance, pain, and ability to perform daily activities. The responses to these questions were analyzed, and those with poor correlations, or floor or ceiling effects were eliminated using statistical criteria. The final Penn Acoustic Neuroma Quality-of-Life (PANQOL) scale had 26 questions.

Results: The PANQOL score was significantly correlated with House-Brackmann facial nerve function, although two-thirds of the patients in this series had normal nerve function and only 4 patients had worse than grade III function. The PANQOL score was also significantly but weakly correlated with tumor size: those with larger tumors tended to have worse scores. The PANQOL score was also significantly lower in males. The PANQOL also found significant differences between patients with acoustic neuroma and controls, although the control group was on average almost a decade younger. Neither PANQOL nor the SF-36 was strongly correlated with pure-tone averages or speech discrimination. PANQOL and SF-36 domains were significantly correlated.

Conclusions: The authors present a QOL instrument that they validate for use in VS patients.

Reviewer's Comments: The purpose of this study is to present and validate this new instrument, so it does not answer some of the obvious follow-up questions like how QOL is affected by treatment. I found it surprising that PANQOL was not correlated with degree of hearing loss. This was surprising to me because, in my experience, many of these patients are very concerned about hearing preservation. Although SF-36 is also not correlated with degree of hearing loss, this is not surprising since SF-36 is a very general instrument which does not ask any questions directly related to communication. One wonders if the PANQOL instrument would be more valuable if more hearing- and communication-related questions were included. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Vestibular Schwannomas, Quality of Life, Assessment

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MRI Needed to Rule Out Tumors That Mimic MD

Endolymphatic Sac Tumor Presenting With Ménière's Disease.

Lee KJ, Kirsch CF, et al:

Otolaryngol Head Neck Surg 2010; 142 (June): 915-916

An endolymphatic sac tumor is a rare lesion that can mimic Ménière disease (MD). Although an MRI is normal in cases of MD, it is important to get an MRI to rule out tumors that can mimic MD.

Background: Endolymphatic sac tumors (ELST) are rare low-grade adenocarcinomas that originate from the endolymphatic sac. These tumors can be sporadic but are also commonly associated with von Hippel-Lindau disease where bilateral tumors have been described.

Objective: To describe a case of ELST that initially mimicked Ménière disease (MD).

Design: Retrospective case report.

Participants: A 30-year-old male with an ELST.

Methods: Workup included an MRI. The tumor was histologically examined with hematoxylin-eosin stain after surgical removal.

Results: The patient had a history of left-sided tinnitus, hearing loss, aural fullness, and recurrent episodic vertigo attacks lasting several hours beginning at age 20 years. An MRI was performed and was initially thought to be unremarkable, and a diagnosis of MD was given. The patient continued to have vertigo attacks that progressed to nearly constant symptoms which were made worse by sound. A second MRI was ordered 10 years after the first study at age 30 years. This study demonstrated a 2-cm tumor arising from the left endolymphatic sac. A review of the earlier MRI revealed some faint enhancement in this area. The patient chose to have this tumor removed after the treatment options were presented. Histological examination revealed papillary, cystic, and follicular patterns with clear cells.

Conclusions: ELST is a rare cause of symptoms that may mimic MD.

Reviewer's Comments: Although this is only a single case report, this case makes a point that is relevant to all of us who see patients with MD-like symptoms. Although the MRI is normal in cases of MD, it is important to get an MRI to rule out tumors, such as this one that can mimic MD. By not ordering an MRI, we risk failing to diagnose a treatable condition. In this case, the patient had an MRI, but the tumor was missed on the initial study due to its small size. This report makes the point that the MRI should be repeated after several years if symptoms persist despite treatment. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Endolymphatic Sac Tumor, Ménière Disease Mimic, Case Report

Print Tag: Refer to original journal article

Predicting Surgical Aptitude Prior to Residency Difficult

Under the Microscope: Assessing Surgical Aptitude of Otolaryngology Residency Applicants.

Carlson ML, Archibald DJ, et al:

Laryngoscope 2010; 120 (June): 1109-1113

A new tool is described which might prove useful in determining the surgical aptitude of surgical residents. However, surgical aptitude based on this test is not well correlated with performance on standardized board examinations.

Background: The process of applying to otolaryngology residency programs has become highly competitive. Candidates have traditionally been evaluated using academic performance, scores on standardized tests, research experience, letters of reference, and interviews. However, none of these metrics directly assess an applicant's aptitude for acquiring surgical skills.

Objective: To describe a novel method of surgical aptitude assessment.

Design: Retrospective review.

Participants: 127 residency applicants who interviewed at the Mayo Clinic during a 4-year study interval.

Methods: Applicants were given access to a microscope, a disposable suture card, 10-0 nylon suture, and some appropriate instruments. Applicants were tested in groups of 4, and each group was given a standardized 10-minute orientation on microscope and instrument use. Subjects were given a suture card with a vertical incision in it, which they are asked to close during a 20-minute period. Performance was scored based on microscope use, respect for tissue, instrument handling, knot tying, skills, and attitude, with each being scored on a 5-point scale.

Results: The mean score was 23, with 13% of applicants falling at least 1 standard deviation (SD) below the mean, and 21% having an SD above the mean. The average United States Medical Licensing Examination (USMLE) Step 1 score was 244. There was a poor correlation between surgical performance and USMLE score (Pearson product-moment correlation coefficient $r=0.07$).

Conclusions: Surgical aptitude based on this test is not well correlated with performance on standardized testing. It remains to be shown if the proposed test predicts surgical skills during residency.

Reviewer's Comments: Evaluating residency applicants can be a difficult process because most otolaryngology residencies have only a small number of positions relative to the number of qualified applicants. Metrics such as board scores, letters of recommendation, and class rank, often do not make it easy to determine how applicants should be ranked nor do they predict the applicants' later performance in residency. This paper presents a novel method for assessing residency applicants. However, the authors do not tell us how or if they use this metric to rank their applicants. We also do not know how well this new test correlates with future performance during residency or beyond. Only a relatively small group of medical students apply for otolaryngology residency positions, and these students usually communicate with each other about the interview processes at different programs. Part of the problem I can see with this test is that students will find out about it beforehand (perhaps even by reading this paper) and practice the task prior to the interview. The authors do not present data to demonstrate that the mean scores remain stable over time. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Resident Education, Otolaryngology Training, Surgical Aptitude Evaluation

Print Tag: Refer to original journal article

Tympanoplasty Debate Continues -- CPT Superior to FT

Efficacy of Cartilage Palisade Tympanoplasty: Randomized Controlled Trial.

Cabra J, Moñux A:

Otol Neurotol 2010; 31 (June): 589-595

In patients undergoing tympanoplasty, cartilage graft had a higher rate of morphologic success when compared with fascia graft. Although this technique shows promise, this high success rate needs to be verified.

Background: Tympanoplasty is an extremely common procedure, and many good techniques are in active use. However, the best technique remains a topic of active debate and controversy.

Objective: To compare the rate of anatomic closure and function associated with cartilage palisade tympanoplasty (CPT) and temporalis muscle fascia tympanoplasty (FT).

Design: Prospective randomized controlled study.

Participants: 123 tympanoplasty patients (CPT, n=64; FT, n=59) recruited between 1997 and 2002.

Methods: The inclusion criteria were perforations >25% of the tympanic membrane, no more than 1 episode of otorrhea in the 6 months prior to surgery, no prior tympanoplasty in the ear, and no psychological problems. Patients were randomly allocated to 1 of 2 treatment groups, and the surgeon was informed of the technique to be used the day before surgery. Morphologic success was defined as the absence of perforation, atrophy, atelectasis, graft lateralization, blunting, or otorrhea. For hearing results, air and bone conduction thresholds were measured.

Results: Preoperatively, the 2 groups were similar with respect to age and hearing. Morphologic success was significantly higher in CPT patients than in FT patients at 6, 12, and 24 months. For CPT, morphologic success was 92% at 6 months and 82% at 24 months, and for the FT group, it was 75% at 6 months and 64% at 24 months. In both groups, the most frequent morphologic failure was recurrent perforation. Hearing results were similar in the 2 groups, with both procedures yielding 32% in those who had air-bone gap closure to <10 dB. Most patients in both groups closed to within 20 dB.

Conclusions: Tympanoplasty using the CPT technique has a lower chance of recurrent perforation when compared with the FT technique.

Reviewer's Comments: Comparisons of surgical procedures have historically been very difficult, in part because there have been very few prospective randomized controlled trials. This is one of those few studies, and it seems to offer strong evidence in favor of using cartilage for tympanoplasty. However, this is still only the first study which has shown a significant difference between cartilage and fascia graft tympanoplasty. Part of the reason prior studies failed to show a difference is that the rate of recurrent perforation using fascia graft is very low (often near 10%). In this study, fascia grafts had a much higher morphologic failure rate (35%). The authors attribute this high failure rate to the long follow-up and more broad definition of failure. Although this technique shows promise, ultimately this high success rate will need to be verified in the hands of other surgeons. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Cartilage Palisade Tympanoplasty vs Temporalis Muscle Fascia Graft, Outcomes

Print Tag: Refer to original journal article

Romberg Test Performance Decreases With Age

Clinical Romberg Testing Does Not Detect Vestibular Disease.

Longridge NS, Mallinson AI:

Otol Neurotol 2010; 31 (July): 803-806

Perhaps the aging process should be considered a “vestibular lesion” that may serve as a confounder when using tandem Romberg and tandem walking testing for assessing vestibular function.

Background: The Romberg test (having the patient stand with their feet together and their eyes closed) was initially proposed in 1846 as a test for syphilis. In the 1960s, the test was expanded to include ambulation and became re-popularized as a test of vestibular function.

Objective: To evaluate the Romberg test as a vestibular disease screening test.

Design: Prospective study.

Participants: 52 patients with vestibular disease and 44 control patients.

Methods: Patients in the vestibular group had at least 1 significant vestibular event and had to be able to stand with their eyes closed. The control group included patients who had no history of dizziness and who were referred for evaluation of otologic conditions not related to the vestibular system. Subjects underwent tandem Romberg and tandem walking testing. Testing was done with the eyes open and closed, with a single trial of each condition. A scoring system was developed.

Results: The tandem Romberg test with eyes closed was passed by 46% of patients but only 39% of controls. The tandem walking test with eyes closed was passed by 27% of patients and only 18% of controls. There was no statistical difference in the number of patients able to complete all tasks relative to the number of controls. When the effects of age were analyzed, young patients tended to do significantly better on all tasks.

Conclusions: As a clinical test, the tandem Romberg and tandem walking tests do not differentiate those with vestibular pathology from controls.

Reviewer's Comments: This study makes the surprising conclusion that some popular bedside tests have no value in making the diagnosis of vestibular disease. Instead, these tests demonstrate a much stronger correlation with decreasing performance and advancing age. One criticism of this study is that the group of vestibular patients does not have well-defined pathology. It is not clear that these patients had active vestibular symptoms at the time of testing, and it is possible that many of these patients only had episodic vertigo, such as is commonly observed in benign paroxysmal positional vertigo or Ménière disease. I would expect tests such as Romberg testing, would be much more valuable in conditions such as active vestibular neuronitis or bilateral vestibular hypofunction. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Vestibular Function, Screening, Efficacy of Romberg Test

Print Tag: Refer to original journal article

OCT Has Great Potential for Imaging Cholesteatomas

Optical Coherence Tomography of Cholesteatoma.

Djalilian HR, Rubinstein M, et al:

Otol Neurotol 2010; 31 (August): 932-935

Optical coherence tomography is presented as a novel technique of intraoperative cholesteatoma identification, and it has the potential to differentiate cholesteatoma from normal tissue and inflamed mucosa.

Background: One problem we face in chronic ear surgery is preventing recurrent cholesteatoma, which requires identifying and removing all the cholesteatoma at the time of surgery. This has historically been difficult for many reasons, which may include difficulty differentiating cholesteatoma from benign tissue.

Objective: To describe the technique of optical coherence tomography (OCT) for differentiating cholesteatoma from normal middle ear tissue.

Design: Prospective clinical study.

Participants: 10 patients (average age, 43 years) who underwent otologic surgery.

Methods: Patients were imaged intraoperatively using OCT. An infrared light source was used to create 200 x 200 pixel images at a frame rate of 1 Hz. Imaging required ≤5 minutes.

Results: Cholesteatomas had characteristic OCT imaging findings, such as a superficial keratin layer, which was absent in normal mucosa and granulation tissue. The authors were also able to differentiate cholesteatoma from dura and normal tympanic membrane using this technique.

Conclusions: The authors present a new technique by which cholesteatoma may be intraoperatively differentiated from normal tissue.

Reviewer's Comments: This is a first report of using OCT to differentiate normal tissue from cholesteatoma. Although, the authors claim OCT can differentiate cholesteatoma from normal tissue, the images presented in the manuscript are low-resolution and are not convincing. There is no follow-up data presented to tell us if recurrent cholesteatoma developed. I think it is possible that many surgeons would have an easier time differentiating normal tissue from cholesteatoma using just the gross appearance of the tissue under the operating microscope. The technique also has several limitations, including cost and potential interference from blood. Ultimately, there will need to be data establishing the sensitivity and specificity of this technique before the value of OCT can be determined. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Cholesteatoma, Complete Resection, Differentiating From Normal Tissue, Imaging

Print Tag: Refer to original journal article

CI Devices Safely Secured Using Periosteal Anchor Sutures

Device Fixation in Cochlear Implantation: Is Bone Anchoring Necessary?

Molony TB, Giles JE, et al:

Laryngoscope 2010; July 2 (): epub ahead of print

The complication rate was not significantly different between bone-anchored and periosteum-anchored cochlear implants. However, all the major complications occurred exclusively in bone-anchored devices.

Background: Cochlear implantation (CI) can now be safely and efficiently performed at most academic institutions, although there are variations in the basic technique at each institution. One source of variation in technique is the method by which the device is anchored.

Objective: To compare a boney tie-down technique and a periosteal tie-down technique for anchoring CI devices.

Design: Retrospective review.

Participants: 302 consecutive patients who underwent 327 CIs by the senior author between 1991 and 2008. Patient ages ranged from 1 to 86 years (mean age, 31 years).

Methods: All devices were placed in a well drilled into the skull. All but 15 patients had the CI device placed via a post-auricular incision. The first 157 patients had their CI device secured using monocortical tie-down sutures. The next 65 patients had the CI device anchored to bone using a prefabricated suture anchor system. The remaining 63 patients had the device anchored only by suturing periosteum over the device, and all of these patients were implanted within the final 15 months of the study. Patients with <90 days of follow-up were excluded, leaving 285 implants for analysis.

Results: The rate of complications was not significantly different between the 2 groups: the overall rate of complications was approximately 10% in both groups. However, all the major complications occurred exclusively in bone-anchored devices, including infected implant, device failure, and extrusion. The rate of minor complications was slightly but not significantly higher with bone-anchored devices. No device migration occurred in the periosteum-anchored devices. No significant differences were found when adult and pediatric patients were analyzed separately.

Conclusions: Bone anchoring of CI devices is not required.

Reviewer's Comments: It is difficult to interpret the results of this series because these devices were placed during a 17-year study interval. All the bone-anchored devices were placed early in the series, and the periosteum-anchored devices were placed in the final 15 months. In addition to the technique used to anchor the device, there were other changes to the surgical technique and the implants used during this time, making cause-and-effect unclear. However, it is noteworthy that none of the devices migrated that were anchored using only periosteum, and there were no major complications in this group. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Cochlear Implantation, Anchoring Technique, Boney vs Periosteal Tie-Down

Print Tag: Refer to original journal article

TMJ Associated With Increased Middle Ear Stiffness

Aural Symptoms in Patients With Temporomandibular Joint Disorders: Multiple Frequency Tympanometry Provides Objective Evidence of Changes in Middle Ear Impedance.

Riga M, Xenellis J, et al:

Otol Neurotol 2010; July 31 (): epub ahead of print

An increase in tympanic membrane stiffness was found ipsilateral to TMJ disease when compared with the contralateral side. Further study is needed because this finding could be due to causes other than middle ear pathology.

Background: Temporomandibular joint (TMJ) disorders are a common cause of ear pain. These patients frequently also have tinnitus and hearing loss in the affected ear at a rate higher than would be expected from chance alone. The cause of the association remains unclear, but it has been hypothesized to originate in the central nervous system.

Objective: To determine if multiple frequency tympanometry (MFT) can uncover a middle ear abnormality in TMJ disorder.

Design: Prospective clinical study.

Participants: 40 patients with unilateral TMJ disorder of >1 month's duration.

Methods: The diagnosis of TMJ was confirmed using clinical criteria. Additionally, all patients had x-rays to exclude dental pathology. The ear workup included 226 Hz tympanometry, MFT, audiometry, and brainstem evoked potentials. Results were compared between the ear ipsilateral to the TMJ and the contralateral side.

Results: Pain around the ear was reported in 72% of the participants, tinnitus by 70%, fullness by 30%, and subjective hearing loss by 30%. Subjective hearing loss was significantly more common in patients older than age 45 years when compared with the younger group. Auditory brainstem responses (ABR) were normal. Standard tympanometry revealed type A tympanometry in all patients. Pure-tone audiometry revealed symmetric responses in all patients. Resonant frequency, as measured with MFT, was higher on the TMJ side in 85% of patients (statistically significant difference). This difference tended to be greater in patients younger than age 45 years.

Conclusions: TMJ disorders increase the stiffness of the middle ear as measured using MFT.

Reviewer's Comments: The observation that those with TMJ disorder tend to have a higher incidence of ear pathology, such as tinnitus and subjective hearing loss, is an interesting one. However, standard tympanometry, audiometry, and ABR are normal in these patients and, until now, these patients have had only subjective ear symptoms. This paper is the first to report an objective ear finding in these patients, which was a subtle but significant increase in tympanic stiffness as detected by MFT. This finding could be due to the pain causing increased tensor tympani or stapedius tension rather than middle ear pathology. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Temporomandibular Joint Disorders, Ear Pain, Hearing Loss, Tinnitus

Print Tag: Refer to original journal article

Central Auditory Processing Disorder May Have Anatomic Basis

Central Auditory Processing Deficiency With Anatomic Deficit in Left Superior Temporal Lobe.

Grindle CR, O'Reilly RC, et al:

Laryngoscope 2010; 120 (August): 1671-1674

Central nervous system lesions can be the cause of hearing problems that are missed on standard audiograms.

Background: A population of patients has significant communication impairment despite having relatively preserved pure-tone hearing. This problem is becoming increasingly recognized as auditory processing disorder, but it can be difficult to diagnose because the source of the abnormality is often unclear.

Objective: To describe a case of auditory processing disorder for which the underlying abnormality was clear

Design: Case report.

Participants: An 8-year-old boy with normal otological and neurology exams who had normal speech development until age 18 months but who stopped speaking short sentences after this time.

Methods: CT and MRI scans were performed. Additionally, the patient completed a battery of central auditory testing. These tests included some components of the Willeford Central Auditory Test Battery, Competing Sentences Test, Katz Staggered Spondaic Word Test, Alternating Speech Test, Binaural Fusion Test, and filtered speech test. Not all tests in the battery could be completed due to the patient's attention span and motivation. Three testing sessions were completed during a 2-year span when the patient was between ages 7 and 9 years. The child was placed on an individualized listening program and was given preferential classroom seating.

Results: The patient had normal audiometry, tympanograms, and otoacoustic emissions. However, the patient was having difficulty listening in school, and the central auditory processing tests were abnormal. CT demonstrated a large deficit in the superior temporal lobe, which MRI confirmed as a cystic lesion 4.5 cm in maximum dimension. The patient improved with an individualized education program, and by age 13 years, he was appropriate for his grade level.

Conclusions: Central auditory processing disorder is largely a diagnosis of exclusion. However, this case demonstrates that there may be an anatomic basis in some cases.

Reviewer's Comments: Central auditory processing disorder is often a difficult diagnosis and often even more difficult to treat effectively. This is an interesting case because it establishes that there can be an anatomic basis for this disorder, which we need to consider when evaluating these patients. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Auditory Processing Disorder,

Print Tag: Refer to original journal article

Perilymph Gushers Complicate CI in Patients With EVA

Cochlear Implantation in Children With Enlarged Vestibular Aqueduct.

Lee KH, Lee J, et al:

Laryngoscope 2010; 120 (August): 1675-1681

The most common complication of cochlear implantation in patients with an enlarged vestibular aqueduct was a perilymph gusher, but this was usually easily managed by intraoperative plugging.

Background: The most common abnormality on imaging studies for patients undergoing cochlear implantation (CI) is enlarged vestibular aqueduct (EVA). Many patients with this abnormality eventually require CI.

Objective: To report the outcomes and complications of CI in patients with EVA.

Design: Retrospective chart review.

Participants: 23 pediatric patients with EVA who underwent CI.

Methods: Patients with EVA who underwent CI between 1999 and 2006 were identified. The diagnosis of EVA was made using either CT or MRI. The criteria for diagnosis included EVA >1.5 mm at the midpoint. Postoperative audiometric data were collected at least 2 years after implantation.

Results: 19 of the 23 participants had bilateral EVA. Twelve of the patients had other temporal bone abnormalities in addition to EVA, most commonly cochlear dysplasia, which was usually mild. The average age at implantation was 5 years. The mean postoperative pure-tone average (PTA) was 30 dB, although those implanted >10 months after diagnosis had a significantly better PTA than those implanted within 1 month. Those with EVA as their only abnormality also scored significantly better on PTA. Four patients (17%) had surgical complications related to their CI. Three patients had perilymph gushers, which were controlled at the time of implantation by placing tissue around the electrode. One patient who required a canal wall down mastoidectomy for CI subsequently developed a postoperative infection and cholesteatoma. This patient eventually required device explantation. Six subjects completed Phonetically Balanced Kindergarten test (PBK50) sentence testing with a mean score of 58% ±30%, demonstrating a large variation in this population.

Conclusions: Although patients with EVA do well with CI, they are at higher risk for perilymph gushers, especially if cochlear dysplasia is also present.

Reviewer's Comments: This paper confirms that pediatric patients with EVA can do very well with CI, even if their surgery is complicated by a perilymph gusher. However, this complication is usually easily managed during surgery, and when it occurred, it did not compromise the audiometric outcome. Report of most of the patients' audiometric testing was limited to PTA, which gives only a small piece of the story. In the 6 patients with sentence comprehension testing, the results demonstrated a large amount of variation, but we are given few clues to determine which patients will perform best on this type of testing. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Enlarged Vestibular Aqueduct, Cochlear Implantation, Outcomes

Print Tag: Refer to original journal article

Mechanism of ELH Formation May Be Multifactorial

Endolymphatic Hydrops in Otolgic Syphilis: A Temporal Bone Study.

Miller ME, Makary C, et al:

Otol Neurotol 2010; 31 (June): 681-686

Endolymphatic hydrops may occur in the absence of endolymphatic duct or sac involvement in cases of otologic syphilis.

Background: Ootosyphilis is now a rare disease, although cases are still occasionally encountered. The disorder is known as the great mimicker because it can produce symptoms similar to other otologic disorders, such as Ménière's disease, as well as the histologic finding of endolymphatic hydrops (ELH).

Objective: To test the hypothesis that ELH in otosyphilis is caused by osteitis or new bone formation.

Design: Histopathology study of 11 temporal bones from 8 otosyphilis patients.

Participants: Temporal bones from Massachusetts Eye and Ear Infirmary and the University of California—Los Angeles

Methods: Temporal bones were identified by searching for "syphilis" in the electronic database. Specimens with other coexisting pathology were excluded. Temporal bones were examined histologically for the presence or absence of ELH, microgummata, inflammation, osteitis, and osteolysis along the course of the endolymphatic sac and duct.

Results: All bones demonstrated changes consistent with advanced syphilis, including microgummata, bone replaced by marrow, fatty tissue, and new bone formation. Changes involving the endolymphatic duct and sac were variable and ranged from normal anatomy to surrounding osteolytic lesions, to new bone formation in the endolymphatic duct and sac. In 3 specimens, ELH was present but the endolymphatic sac and duct were intact. No significant differences between congenital and acquired syphilis were found.

Conclusions: This study demonstrates that the mechanism of ELH may not be the disruption of the endolymphatic duct or sac.

Reviewer's Comments: Fortunately, otosyphilis is now a very rare disease, but the histologic finding of ELH remains clinically important because of its association with Ménière's disease. The underlying cause of hydrops remains controversial, but there is some evidence that this is caused by an abnormality of the endolymphatic duct or sac. Relief of this obstruction forms the basis of endolymphatic shunt placement as a therapy for Ménière's disease. Although it is possible that obstruction of the endolymphatic sac or duct may cause ELH, this study demonstrates that there are likely other causes. (Reviewer-Benjamin T. Crane, MD).

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Keywords: Ootosyphilis, Endolymphatic Hydrops, Ménière's Disease

Print Tag: Refer to original journal article