

SELECTED ABSTRACTS

***POSTER
PRESENTATIONS***



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AMERICAN NEUROTOLOGY SOCIETY

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A Retrospective Matched Comparison of Endolymphatic Shunt Surgery and Intratympanic Gentamicin for Meniere's Disease

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Objective: To report audiovestibular outcomes of endolymphatic shunt surgery (ELS) and intratympanic gentamicin injections (ITG) in patients with Meniere's disease (MD).

Study Design: Retrospective matched cohort study

Setting: Tertiary referral center

Patients: Patients with MD refractory to medical management between 2004 and 2017 were reviewed: 47 patients underwent ELS and 44 had outcomes available, while 33 patients underwent ITG and 27 had outcomes available. Mean follow-up durations for the ELS and ITG groups were 39.1 and 43.3 months, respectively. Twenty-six patients from the ELS group and 24 patients from the ITG group were then included in a pre-treatment hearing- and age-matched analysis.

Intervention: ELS or ITG

Main Outcome Measures: Successful control of vertigo, pure-tone average (PTA; 0.5, 1, 2 and 4 kHz), word recognition score (WRS), and treatment complications.

Results: A matched analysis showed vertigo control rates of 88.5% in the ELS group and 66.8% in the ITG group, which were not significantly different ($p = 0.091$). The change in PTA following treatment was statistically similar between the ELS group (6.2 dB) and ITG group (4.6 dB) ($p = 0.521$), while the change in WRS for the ELS group (+3.9 %) was significantly more favorable than the ITG group (-13.6 %) ($p = 0.046$). Chronic post-treatment unsteadiness was reported in 25.0% of the ITG group and was not encountered in the ELS group ($p = 0.009$).

Conclusion: ELS provided successful vertigo control at least as well as ITG with a lower incidence of audiovestibular complications.

Define Professional Practice Gap & Educational Need: 1. Controversies regarding the efficacy of endolymphatic shunt surgery (ELS) for the treatment of Meniere's disease continue to exist and demonstrate a need for additional data. 2. Despite its efficacy and less-invasive nature, intratympanic gentamicin (ITG) injections for the treatment of Meniere's disease can be hazardous to hearing and can have significant long-term vestibular sequelae. Additional information is needed to examine outcomes of this procedure compared to other treatments options. 3. Whether a patient receives ELS or ITG often depends on their clinician. Studies comparing the outcomes of these procedures are needed to enable clinicians to be better informed about the efficacy and audiovestibular complications of these treatment options.

Learning Objective: 1. Understand the evidence supporting ELS as an effective treatment for medically refractory Meniere's disease with a low incidence of audiovestibular complications. 2. Appreciate that while ITG is also provides successful vertigo control in patients with Meniere's disease, it can have a higher incidence of audiovestibular complications. 3. Gain additional information to aid in the decision to recommend either ELS or ITG to patients with medically refractory Meniere's disease.

Desired Result: Attendees will use the knowledge they gain from this presentation to make a more informed decision regarding the use of ELS versus ITG to treat patients with Meniere's disease. They will also be able to include information related to the audiovestibular complications in the informed consent for these procedures.

Level of Evidence - Level IV - Historical cohort or case-control studies

Indicate IRB or IACUC Approval: Approved

National 30-Day Readmission and Prolonged Length of Stay after Vestibular Schwannoma Surgery: Analysis of the Nationwide Readmissions Database

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Objectives: To determine the risk factors for unanticipated readmission and prolonged index admission after vestibular schwannoma surgery.

Study design: Retrospective cohort study.

Setting: Large, national database.

Patients: Those undergoing surgery for vestibular schwannoma were identified in the Nationwide Readmissions Database (2013-2014).

Main outcome measures: readmission rate, length of stay

Results: There were 4,586 cases identified. The overall unanticipated readmission rate was 7.5%, and 7.9% had a prolonged length of stay (LOS) of >8 days. Mean and median LOS were 4.48 and 4.00 days, respectively, and >90% of patients were discharged after 7 days. Disposition to a facility occurred in 6.4% of cases. Modified Charlson score of 1 (odds ratio [OR] 1.60, $p=.001$), large hospital size (OR 0.37, $p<.001$), and prolonged LOS (OR 2.42, $p<.001$) were independently associated with unintended readmission. Variables independently associated with prolonged index admission include high-volume facility (OR 0.33, $p<.001$), disposition to a facility (OR 10.06, $p<.001$), and insurance consisting of Medicaid (OR 3.96, $p<.001$) or none (OR 6.90, $p<.001$). The most common readmission diagnoses included “other nervous system complications” (2.8%), “other postoperative infection” (1.3%), meningitis (1.2%), and cerebrospinal fluid leak (1.2%).

Conclusions: Unanticipated readmission and prolonged LOS following vestibular schwannoma surgery are common, with varied sociodemographic, hospital, and patient factors independently associated with each. Further studies are needed to investigate targeted interventions aimed at minimizing readmission and prolonged LOS using the factors outlined above.

Define Professional Practice Gap & Educational Need: 1. Lack of awareness in independent risk factors for readmission following hospitalization for vestibular schwannoma resection. 2. Lack of awareness of independent risk factors for prolonged hospitalization after vestibular schwannoma resection.

Learning Objective: To identify independent risk factors for unintended readmission and prolonged length of stay in patients undergoing vestibular schwannoma resection.

Desired Result: We hope that neurotologic surgeons who perform vestibular schwannoma resection will use the risk factors for readmission and prolonged length of stay to predict outcomes for their own patients and target interventionable variables.

Level of Evidence - Level IV - Historical cohort or case-control studies

Indicate IRB or IACUC Approval: Exempt

**Completion of an Individualized Learning Plan (ILP) for
Otology-Related Milestone Sub-competencies Leads to Improved
Otology Section OTE Scores**

*Michael M. Pennock, MD; Maja Svrakic, MD
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Objective: To examine the relationships among self-assessment of knowledge in otology via an individualized learning plan (ILP), otology milestone achievement rate, and OTE otology scores.

Study Design: Prospective study.

Setting: One otolaryngology residency covering a tertiary care facility, trauma and hospital center, outpatient ambulatory surgery center, and outpatient clinics.

Participants: Twenty otolaryngology residents, four from each class.

Methods: Residents identified four milestones from otology-related sub-competencies to achieve in a 3-month rotation via an ILP. During the same rotation, the residents sat for the OTE, and their overall and otology scores were analyzed.

Main Outcome Measures: Completion of an ILP prior to and at the end of the rotation, self-reported achievement of otology milestones, and OTE score components including total percent correct, scaled score, group stanine, national stanine and residency group weighted scores.

Results: Group stanine OTE otology scores were higher for those residents who completed pre- and post-rotation ILPs compared with those who did not, $4.0(\pm 0.348)$ vs. $2.75(\pm 0.453)$, respectively ($p=0.04$). Residents who self-reported achieving all four otology milestones had significantly higher otology group stanine scores than the residents who achieved less, $4.1(\pm 0.348)$ vs. 2.9 ± 0.433 , respectively ($p=0.045$). Residents who performed well in their PGY program cohort on the otology OTE one year were less inclined to complete an ILP for otology in the subsequent year (Pearson correlation -0.528 , $p=0.035$).

Conclusion: In the otology subspecialty, residents who completed ILPs scored better on OTE exams independent of resident class. Consequently, programs may find ILPs useful in other otolaryngology subspecialties and across residencies.

Define Professional Practice Gap & Educational Need: 1. Lack of active learning implementation in resident education. 2. Lack of contemporary knowledge of short-term and long-term benefits of active learning in resident education. 3. Lack of awareness of how to implement active learning into residency education. 4. Lack of awareness of alternative learning strategies to resident education outside of traditional didactics and passive learning.

Learning Objective: 1. Educate the learner about implementing active learning into resident education and why it is important. 2. Provide the learner with evidence that active learning strategies have short-term benefits (increased exam scores and ACGME-milestone achievement rates) and long-term benefits (increased chance of passing board exams, promotion of lifelong active-learning strategies in all fields) for resident physicians. 3. Offer the learner an example of active learning in resident education: the individualized learning plan (ILP), and discussing its use and benefits. 4. Describe the components of an individualized learning plan (ILP), and describing how it was implemented in a particular otolaryngology residency program.

Desired Result: Attendees and learners can take the knowledge from this abstract and study, and learn about the individualized learning plan (ILP) as an effective form of active learning for resident education, realize and discuss the benefits of the ILP in terms of improved career readiness for residents, and explore ILPs, ILP components, or inspiration for other forms of active learning to incorporate into their own practice or residency program. Ultimately, this information can be used to improve education for otolaryngology residencies across the U.S.A.

Level of Evidence - Level III - Cohort and case-control studies

Indicate IRB or IACUC Approval: Exempt

Involvement of the Cochlear Aqueduct by Jugular Paraganglioma Is Associated with Sensorineural Hearing Loss

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Objective: The etiology of sensorineural hearing loss (SNHL) in patients with jugular paraganglioma (JP) whose tumors lack inner ear fistulae or vestibulocochlear nerve involvement is unknown. Recent literature has proposed that occlusion of the inferior cochlear vein may be causative. Herein, we assess the association between radiologic involvement of the cochlear aqueduct (CA) and the development of SNHL.

Study design: Blinded, retrospective review of imaging and audiometry.

Setting: Tertiary center

Patients: Adults with JP

Intervention(s): None

Main outcome measure(s): Asymmetric SNHL was assessed continuously as the difference in bone conduction pure-tone average (BCPTA) between ears and as a categorical variable (≥ 15 dB difference at two consecutive frequencies, or a difference in speech discrimination score of $\geq 15\%$). Involvement of the CA was considered present if there was evidence of medial T2 fluid signal loss, contrast enhancement, or bony erosion/expansion.

Results: Of 29 patients meeting inclusion criteria, 15 (52%) had asymmetric SNHL. Cochlear aqueduct involvement was observed in 87% of patients with asymmetric SNHL compared to 17% in those with symmetric hearing ($p < 0.001$). The median difference in BCPTA between ears in patients with CA involvement was 21.3 dB HL compared to 1.9 dB HL in those without CA involvement ($p < 0.0001$). Adjusting for age and tumor volume, CA involvement was a significant predictor of SNHL ($p = 0.006$). Age, sex, and tumor volume were not associated with SNHL.

Conclusions: Cochlear aqueduct involvement by JP is associated with SNHL. Correlation with operative findings or histopathologic evidence of tumor involvement may validate this intriguing imaging finding.

Define Professional Practice Gap & Educational Need: 1. Lack of contemporary knowledge of the mechanism of sensorineural hearing loss in patients with jugular paraganglioma 2. Insufficient data regarding baseline hearing function in patients with jugular paraganglioma

Learning Objective: To report the association between cochlear aqueduct involvement by jugular paraganglioma and sensorineural hearing loss

Desired Result: Utilize this intriguing imaging finding to better understand the etiology of hearing loss in jugular paraganglioma and counsel patients regarding the risk of hearing loss from tumor progression.

Level of Evidence - Level V - Case series, studies with no controls

Indicate IRB or IACUC Approval: Approved

