



PROGRAM and ABSTRACTS

of the

*One Hundred Forty-First
Annual Meeting*

**AMERICAN OTOLOGICAL
SOCIETY, INC.**

**May 2-3, 2008
Mediterranean Ballroom
Salon 4**

**JW Marriott Grande Lakes Resort
Orlando, Florida**

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The American Otological Society designates this educational activity for a maximum of 8 *AMA PRA Category 1 Credit(s)*TM. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Certificate of Attendance will be issued at the close of the meeting upon completion of the questionnaire required by us for the certifying organizations.

AMERICAN OTOLOGICAL SOCIETY, INC. MISSION STATEMENT

The mission of the American Otological Society, Inc., shall be

- to advance and promote medical and surgical otology/neurotology and lateral skull base surgery in adult and pediatric patients including the rehabilitation of individuals with hearing and balance disorders.
- to encourage, promote, and sponsor research in otology/neurotology and lateral skull base surgery and related disciplines.
- to conduct an annual meeting of the members for the presentation and discussion of scientific papers and the transaction of business affairs of the Society.
- to publish the peer reviewed papers and discussions presented during the scientific program and the proceedings of the business meetings.

EDUCATIONAL MISSION STATEMENT

The Educational Mission of the American Otological Society is to foster dialogue on, and dissemination of information pertaining to advances in the understanding and management of otologic and neurotologic disorders. It is expected that the CME program of the AOS will enhance the competency of the participant in otology/neurotology and lateral skull base surgery.

Goals & Objectives: The overall goal of this course is to provide up-to-date information pertaining to advances in the understanding and management of otologic and neurotologic disorders. The **target audiences** are otologists, neurotologists, and otolaryngologists with specific interests in otologic and neurotologic disorders.

After attending this meeting, the participants will have a better understanding of:

Implantable Hearing Devices

Advances in Cochlear Implants

Surgical Treatment of Disorders of Eustachian Tube Function
resulting in more effective patient care to achieve improved hearing.

First Author/Presenter's signature on the following statements were required on all papers submitted to the American Otological Society. The author was advised that the submitted paper becomes the property of *Otology & Neurotology* and cannot be reprinted without permission of the Journal.

FULL DISCLOSURE POLICY STATEMENT

In accordance with the ACCME Essential Areas and Policies, it is the policy of the American Otological Society to ensure balance, independence, objectivity and scientific rigor in all of its educational activities. All faculty participating in the American Otological Society's sponsored activities are expected to disclose to the audience the existence of any significant financial or other relationships with the manufacturer(s) of any commercial product(s) or provider(s) of any commercial service(s) discussed in an educational presentation. The purpose of this form is to identify and resolve all potential conflicts of interests that arise from financial relationships with any commercial or proprietary entity that produces healthcare-related products and/or services relevant to the content you are planning, developing, or presenting for this activity. This includes any financial relationships within the last twelve months, as well as known financial relationships of your spouse or partner. The intent of this policy is not to discourage speakers who have relationships with commercial entities from presenting, but to identify these relationships to the listeners so that they may form their own judgments. It remains for the audience to determine whether the speaker's outside interest may reflect a possible bias in either the exposition or the conclusions presented. Failure to disclose this information on submission forms, or failure to return this disclosure form will result in exclusion from this activity and from future CME activities for up to two years. The American Otological Society is committed to the non-promotional advancement of knowledge and science and to a free exchange of medical education in otology and neurotology.

PUBLICATION STATEMENT

The material in this abstract, (Name of Abstract), has not been submitted for publication, published, nor presented previously at another national or international meeting and is not under any consideration for presentation at another national or international meeting including another COSM society. The penalty for duplicate presentation/publication is prohibition of the author and co-authors from presenting at a COSM society meeting for a period of three years.

Submitting Author's Signature (required)

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(Design nutritional supplements that have high content of
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Any presentations, conversations, exhibits, or other meeting communications, including description of the use of drugs or devices, does not imply nor constitute endorsement of any company, product, application or use by the American Otological Society.

NOTES

Friday, May 2, 2008

12:00 Registration

12:30 Business Meeting

(Restricted to Members)

Room: Mediterranean Ballroom - Salon 4

Minutes of the Annual Meeting 2007

Introduction of New Members

Election of Nominating Committee

Report of the Secretary-Treasurer

Report of the Editor-Librarian

1:00 Scientific Program

(Open to Non-Members)

Room: Mediterranean Ballroom - Salon 4

1:00 Remarks by the President

Clough Shelton, MD

Presidential Citation

M. Jennifer Derebery, MD

James L. Parkin, MD

Rodney C. Perkins, MD

1:10 Introduction of Guest of Honor

H. Richard Harnsberger, MD

Guest of Honor Presentation

Decision Support in the 21st Century

Moderators: *Clough Shelton, MD*

Paul R. Lambert, MD

1:31 Recurrent Ipsilateral Infranuclear Facial Paralysis

Arvind Kumar, MD

Richard Wiet, MD

1:40 Assessing Stapes Piston Position Using Computed Tomography

Yoav Hahn, MD

Hilary A. Brodie, MD, PhD

1:49 Long-Term Success of Four Piston Stapes Prostheses Evaluated by Product-Survival Procedure

Charles A. Mangham, Jr., MD, MS

Jacqueline Neel, MS

Hannah F. Mangham

1:58 Discussion

NOTES

- 2:03 **Automatic Identification and 3-D Rendering of Temporal Bone Anatomy**
Jack H. Noble, BS
Benoit M. Dawant, PhD
Frank M. Warren III, MD
Omid Majdani, MD, PhD
Robert F. Labadie, MD, PhD
- 2:12 **Imaging the Human Tympanic Membrane Using Optical Coherence Tomography**
Majestic Tam, MD
James Ridgway, MD
Hamid Djalilian, MD
Brian JF Wong, MD, PhD
- 2:21 **Biopolymer Released Dexamethasone Prevents Tumor Necrosis Factor-Alpha Induced Loss of Auditory Hair Cells: Implications Toward Development of a Drug Eluting Cochlear Implant Electrode**
Thomas R. Van De Water, PhD
Christine T. Dinh, BS
Scott Haake, BS
Shibing Chen, MD
Richard Vivero, MD
Kimberly Hoang, BS
Adrien A. Eshraghi, MD, MSc
Thomas J. Balkany, MD
- 2:30 **Resveratrol, an Extract from Grapes and Red Wine, and Age-Related Hearing Loss**
Michael Seidman, MD
Ilaaf Darrat
Wenxue Tang
Uma Bai Hao Jiang
Joseph Media
Alexander Nakeff
Wayne S. Quirk
- 2:39 **Discussion**
- 2:45 **Break with Exhibitors**
- 3:15 **Reccurence Rate of Cholesteatoma with Kaplan-Meier Survival Analysis**
Yasuo Mishihiro, MD
Masafumi Sakagami, MD, PhD
Tadashi Kitahara, MD, PhD
Takeshi Kubo, MD
- 3:24 **Current Bacteriology of Suppurative Otitis: Resistant Patterns and Outcomes Analysis**
James E. Saunders, MD
Ryan P. Raju, MD
Wayne E. Berryhill, MD
Gregory Blakely, MD
Johne Boone, BS
Nathan Hales, MD

NOTES

- 3:33 **Bone Conduction Hearing Level and Clinical Characteristics in Patients with Eosinophilic Otitis Media Associated with Bronchial Asthma**
Yukiko Iino, MD
Kozue Kodama
Hajime Usubuchi
Rika Otake
Takeharu Kanazawa
Yasushi Ohta
- 3:42 **Functional Regeneration of the Mastoid Air Cells by In Situ Tissue Engineering for Intractable Otitis Media**
Shin-ichi Kanemaru, MD, PhD
Masaru Yamashita, MD, PhD
Hiroo Umeda, MD
Harukazu Hiraumi, MD
Tatsunori Sakamoto, MD
Koichi Omori MD, PhD
Juichi Ito, MD
- 3:51 **Atresia Repair: Surgical Results When Performed before Medpor® Microtia Reconstruction Compared to Following Rib Graft Microtia Reconstruction**
Joseph B. Roberson, Jr., MD
John F. Reinisch, MD
Tahl Colen, MD
- 4:00 **Habitual Sniffing and Eustachian Tube Function in Middle Ear Cholesteatoma**
Masafumi Sakagami, MD, PhD
Shigeto Ota, MD
Yasuo Mishiro, MD
- 4:09 **Discussion**
- 4:14 **Panel: Controversies in Pediatric Cochlear Implantation: Meningitis, MR Imaging and Bilateral Implantation**
Moderator: *John K. Niparko, MD*
Presenters:
Craig A. Buchman, MD
Howard W. Francis, MD
Barry E. Hirsch, MD
J. Thomas Roland, MD
- Discussants:** *Thomas J. Balkany, MD*
Bruce J. Gantz, MD; Gerard O'Donoghue, MD
Lorry G. Rubin, MD; Nancy M. Young, MD
- 4:59 **Discussion**
- 5:04 **Adjournment**
- 5:10 **AOS Members Group Photograph (Location to be announced)**

NOTES

Saturday, May 3, 2008

7:00 Business Meeting
(Restricted to Members)
Room: Mediterranean Ballroom - Salon 4

REPORT OF THE

- A. Board of Trustees of the Research Fund**
- B. American Board of Otolaryngology**
- C. Award of Merit Committee**
- D. American College of Surgeons**
- E. American Academy of Otolaryngology-HNS**

Report of the Audit Committee

Report of the Membership Development Committee

Report of the Nominating Committee

Unfinished Business

New Business

7:30 Scientific Program - (Open to Non-Members)
Room: Mediterranean Ballroom - Salon 4

Moderators: *Clough Shelton, MD*
Paul R. Lambert, MD

7:30 Temporal Effects of a Combination of Antioxidant Drugs on the Treatment of Acute Acoustic Trauma
Chul-Hee Choi, PhD
Kejian Chen, PhD
Angelica Vasquez-Weldon, BS
Ronald L. Jackson, PhD
Robert A. Floyd, PhD
Richard D. Kopke, MD

7:39 Spiral Ganglion Cell Loss Is Unrelated to Segmental Cochlear Sensory System Degeneration
Fred H. Linthicum, Jr., MD
Jose N. Fayad, MD

7:48 Functional Studies Reveal New Mechanisms for Deafness Caused by Connexin Mutations
Xi Lin, PhD
Wenxue Tang, MD
Qing Chang, MD, PhD
Shoab Ahmad, PhD
Benjamin Stong, MD
Grace Leu, MD

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- 7:57 **Risk Factors for Hearing Loss in US Adults: Data from the National Health and Nutrition Examination Survey, 2001-2002**
Yuri Agrawal, MD
John K. Niparko, MD
- 8:06 **Discussion**
- 8:11 **Panel: Update on Disorders and Surgery of the Eustachian Tube**
Moderator: *Dennis S. Poe, MD*
Presenters:
Charles D. Bluestone, MD
Sujana Chandrasekhar, MD
Elias M. Michaelides, MD
- 8:56 **Discussion**
- 9:01 **EarLens Transducer Behaviors in High Field Strength MRI Scanners**
Michael H. Fritsch, MD
Jonathan P. Fay, PhD
- 9:10 **Intra Operative Electromyography and Surgical Observations as Predictive Factors of Facial Nerve Outcome in Vestibular Schwannoma Surgery**
Olivier Sterkers, MD, PhD
Isabelle Bernat, MD
Alexis Bozorg Grayeli, MD, PhD
Gonzalo Esquia, MD
Zhihua Zhang, MD
Michel Kalamarides, MD, PhD
- 9:19 **Vestibular End-Organ and Balance Deficits Following Meningitis and Cochlear Implantation Correlate Poorly with Functional Outcome**
Sharon L. Cushing, MD
Blake C. Papsin, MD
Susan I. Blaser, MD
Adrian James, MA, BM BCh
John A. Rutka, MD
Karen A. Gordon, PhD
- 9:28 **A Model to Determine the Financial Performance of Cochlear Implant Programs**
Douglas D. Backous, MD
Erin Ressler, MS
- 9:37 **Implanting Common Cavity Malformations Using Intraoperative Fluoroscopy**
Daniel H. Coelho, MD
Susan B. Waltzman, PhD
J. Thomas Roland, Jr., MD
- 9:46 **Discussion**

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- 9:51 **Break with Exhibitors**
- 10:15 **Foreign Body Granuloma of the Inner Ear Following Cochlear Implantation. One Possible Cause of a Soft Failure?**
Joseph B. Nadol, Jr., MD
Donald K. Eddington, PhD
Barbara J. Burgess
- 10:24 **Hearing-in-Noise Benefits Following Bilateral Simultaneous Cochlear Implantation Continue to Improve Four Years after Implantation**
Rose J. Eapen, MD
Emily Buss, PhD
Marcia S. Clark, AuD
Harold C. Pillsbury III, MD
Craig A. Buchman, MD
- 10:33 **Cochlear Implant and Hearing Aid: A New Approach to Optimize the Fitting in This Bimodal Situation**
Annerose M. Keilmann, Prof. Dr. med
Andrea Bohnert, MTAF
Jan Gosepath, Dr. med. habil
Wolf J. Mann, Prof. Dr. dr. h.c. mult.
- 10:42 **Objective Measures of Cochlear Stimulation through the Round Window**
Herman A. Jenkins, MD
James R. Easter, MS, ME
Brian M. Conn, BS, MBA
James F. Kasic, MS, MBA
- 10:51 **Basic Science Lecture: Pathological Semicircular Canal Afferent Signals Transmitted to the Brain During Benign Positional Vertigo and Their Biomechanical Origins**
Richard D. Rabbitt, PhD
- 11:11 **Discussion**
- 11:16 **The Round Window Implant: The Last Chance for Hearing Restoration in Mixed Hearing Losses**
Vittorio Colletti, MD
Marco Carner, MD
Sheila Veronese, PE
Liliana Colletti, PhD
- 11:25 **The EarLens System: An Innovative Sound Transduction Method**
Rodney Perkins, MD
Jonathan P. Fay, PhD
Michael T. Murray, MD
Lisa Olson, MS
Sunil Puria, PhD

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- 11:34 **Hearing Restoration: Improved Multi-talker
Speech Understanding**
Sunil Puria, PhD
Andy Vermiglio, MS
Jonathan Fay, PhD
Sig Soli, PhD
- 11:43 **Vibrant Soundbridge Implantable Hearing Device:
Long- and Short-term Results**
Charles M. Luetje, MD
Sandra A. Brown, MA, CCC-A
Robert D. Cullen, MD
- 11:52 **Successes and Complications of the BAHA System**
Jack J. Wazen, MD
Dayton Young, MD
- 12:01 **Discussion**
- 12:06 **Introduction of Incoming AOS President**
Joseph B. Nadol, Jr., MD
- 6:30 **President's Reception & Dinner Dance**
(Members and Invited Guests Only)

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Jay T. Rubinstein, MD, PhD
Debara L. Tucci, MD
P. Ashley Wackym, MD

COSM 2009

142nd AOS Annual Spring Meeting

May 29-30, 2009

**JW Marriott Desert Ridge Resort & Spa
Phoenix, Arizona**

Abstract Deadline: October 15, 2008

Abstract submission form

Website—www.americanotologicalsociety.org

E-Mail—segossard@aol.com

Journal Requirements/Instructions to Authors/Presenters

The journal of *OTOLOGY & NEUROTOLOGY* no longer accepts paper manuscripts. All manuscripts must be submitted online two weeks prior to the annual meeting, via the journal's website: <https://www.editorialmanager.com/on/>. Instructions for registering, submitting a manuscript, and the author guidelines can all be found on the Editorial Manager site: <https://www.editorialmanager.com/on/>.

One copy of the manuscript (.pdf format) is to be submitted electronically to the AOS Administrative Office.

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Recurrent Ipsilateral Infranuclear Facial Paralysis

Arvind Kumar, MD; Richard Wiet, MD

Objective: The purpose of this paper is to underscore the importance of an exhaustive investigation of all patients with recurrent ipsilateral infranuclear facial paralysis.

Study Design: Retrospective case review.

Setting: Tertiary referral center.

Patients: The names of the patients included in this study were extracted from our database of unilateral facial paralyses. Four patients with ipsilateral, recurrent facial paralysis were identified. All were women and their ages ranged from 22 to 55 years. The number of recurrences ranged from 2-18. The interval between attacks ranged from one month to one year. The facial paralysis was complete in three out of the four patients at the time of presentation. The fourth patient, at the time of presentation, had normal facial function.

Intervention: All four of these patients were re-imaged with fine cut CT scans in axial, coronal and sagittal planes, and MRI scans with special pulse sequences. This despite the fact that both studies had been completed previously.

Main outcome measures: In all four patients a specific lesion was diagnosed and three patients have undergone surgery.

Results: The diagnoses reached were glomus tumor at the geniculate ganglion, mucoepidermoid tumor involving the facial nerve in the mastoid segment and in the parotid schwannoma of the facial nerve at the tympanic segment and probable viral infection of the tympanic and mastoid segments. This last patient is awaiting surgery.

Conclusions: "All that palsies is not Bell's"

2.
**Assessing Stapes Piston Position Using
Computed Tomography**

Yoav Hahn, MD; Hilary A. Brodie, MD, PhD

Hypothesis: Temporal bone computed tomography scanning in the postoperative stapedotomy patient is inaccurate in assessing stapes piston position within the vestibule.

Background: Post-stapedotomy patients that have persistent vertigo often undergo CT scanning to assess the position of the stapes piston within the vestibule in order to rule out overly deep insertion. Vertigo is a recognized complication of the deep piston and CT evaluation is often recommended. The accuracy of CT scan in this setting is undetermined.

Methods: Stapedotomy was performed on 12 cadaver ears and stainless steel McGee pistons were placed. The cadaver heads were then scanned using a fine cut temporal bone protocol. Temporal bone dissection was performed with microscopic measurement of the piston intrusion into the vestibule with two independent measures. These values were compared with depth of intrusion measured on CT scan by four independent measures.

Results: The CT scan measurement of intra-vestibular piston penetration was 0.25 mm to 1.4 mm longer than the anatomic measurement ($p < 0.01$). Two independent anatomic measures were performed during cadaveric dissection and were identical on 66% of the measures and only 0.1 mm different on 33% of the measures.

Conclusions: High-resolution temporal bone CT scan is not a valid study to assess intra-vestibular piston measurement after stapedotomy. CT scan consistently overestimated the penetration of the piston within the vestibule and can lead to inaccurate assessment of piston position within the vestibule.

Long-Term Success of Four Piston Stapes Protheses Evaluated by Product-Survival Procedure

**Charles A. Mangham Jr., MD, MS
Jacqueline Neel, MS; Hannah F. Mangham**

Objective: To determine if modifications to a first-generation stapes prosthesis have improved long-term hearing results.

Study design: Retrospective chart review.

Setting: Private practice.

Patients: 283 ears in 255 consecutive patients who had primary stapes surgery during 1990-2000 and in 2005.

Intervention: The devices were examined sequentially in the following order: first-generation Teflon-wire (52), Teflon-ribbon (30), double-bend Teflon-ribbon (168) and titanium CliP® piston (33).

Main outcome measures: AAO-HNS guidelines including four frequency pure-tone average (PTA), success rate (gap < 10 dB), and Kaplan-Meier product-survival procedure.

Results: Mean 1-year PTA air-bone gap and success rate (84 to 97%) were similar for the four devices. The Kaplan-Meier procedure was used to examine both short and long-term success. The three Teflon pistons had greater long-term success than the CliP® piston. Although the Teflon-ribbon pistons had a lower failure rate than the Teflon-wire in the first 5 years, all three of the Teflon pistons accumulated 7-13% additional failures by the 15th year. Of the surgical failures, 85% of the patients with Teflon pistons had incus necrosis, and all of the CliP® piston patients had an unstable connection to the incus.

Conclusions: All four of the piston designs had 1-year results that met common standards for adequate success, but accumulated additional prosthesis-related failures over time. Superiority of two the Teflon-ribbon pistons in the first 5 years after surgery may be explained by their ability to delay but not eliminate incus necrosis. Suggestions for a better incus connection will be presented

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Automatic Identification and 3-D Rendering of Temporal Bone Anatomy

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Hypothesis: Using atlas-based registration, vital anatomy of the middle ear can be automatically identified in CT scans and used to create 3-D renderings.

Background: While difficult to master, surgeons compile 2-D data from CT scans to envision 3-D anatomy. Computer programs exist which can render 3-D surfaces but are limited in that middle ear structures, e.g. the facial nerve, can only be rendered after being manually identified. Herein, we present results from novel computer algorithms which automatically identify temporal bone anatomy from unknown CT scans based on an atlas of a “normal” patient and mathematical models of the structures of interest.

Methods: Using registration and segmentation methods, the facial nerve, chorda tympani, cochlea, ossicles, and external ear canal were automatically identified from temporal bone CT scans of 14 patients. To measure the accuracy of the identification algorithms, the structures were then manually identified. Error was quantified by measuring the distance from each false positive voxel to the manually identified structure (FP) and from each false negative voxel to the automatically identified structure (FN).

Results: For the 14 CT scans; the average maximum error distances for FP and FN (\pm standard deviation) were calculated to be $0.68\pm 0.06\text{mm}$ and $0.86\pm 0.12\text{mm}$ for the facial nerve.

Conclusions: The automated anatomy identification algorithms were extremely accurate with maximum error no greater than 4 voxels. As will be seen from demonstrative figures, this information is useful in understanding spatial relationships of middle ear anatomy.

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Imaging the Human Tympanic Membrane Using Optical Coherence Tomography

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Objective: Optical coherence tomography (OCT) is a diagnostic imaging modality that employs low coherence light with interferometry to produce high-resolution cross-sectional images of living tissues. Using this technology we have characterized the human tympanic membrane in the office clinic setting in a non-invasive manner.

Study Design: Prospective clinical trial.

Setting: Tertiary care center, Hospital

Patients: Inclusion criteria: Newborn and older, infant/children/minor accompanied by parent or guardian

Exclusion criteria: subject unable to understand or carry out instruction or refusal to participate.

Materials and Methods: Ten healthy adult subjects were evaluated in preoperative and postoperative states. Each subject underwent direct microscopic examination prior to OCT imaging to ensure optimal visualization and imaging of the tympanic membrane and associated subsites including the annulus fibrosis, pars tensa, pars flaccida and umbo. The OCT probe was introduced into the ear canal under direct visualization to ensure precise placement of the probe. In addition, any visible pathologies or abnormalities were imaged.

Results: Systematic imaging of the tympanic membrane was performed with characterization of the epithelial and collagenous layers. The overall membrane thickness was clearly demonstrated and quantified as well as the membrane relationship with underlying bony structures.

Conclusion: The ability to non-invasively study otologic microstructures in the clinical setting is essential in the treatment of diseases of the ear. OCT could potentially offer the otolaryngologist the imaging capability to characterize pathologies such as cholesteatoma, lesions of the external canal, and chronic otitis media, in addition to patients who have undergone mastoidectomy, tympanoplasty and other otologic surgical procedures. This imaging modality holds the promise to becoming a valuable technology in the characterization of the tympanic membrane and associated otologic structures.