TRANSACTIONS

AMERICAN LARYNGOLOGICAL ASSOCIATION

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MINUTES OF THE EXECUTIVE SESSIONS

REPORT OF THE SECRETARY

Dr. Garrett reported that the membership through April 2010 included 139 Active Fellows, 65 Emeritus Fellows, 46 Corresponding members, 5 honorary members, and 6 Associate members, and 38 Post-Graduate Members for a total membership of 299. She reminded Council that pertaining to the Active Fellowship category, there is a cap of 150 and it is anticipated that we may reach that number within the next couple of years due to a number of post-graduate members meeting the criteria to become active fellows.

A total of 195 ballots were mailed to all eligible fellows for receipt 30 days prior to the 131st Annual Meeting. A total of 85 ballots were returned by fax or mail and approximately 9 were returned as undeliverable (forwarding notification expired, no longer at this address, etc.). One ballot was not properly ranked which resulted in not being able to give a numerical ranking to candidates so it was not included in the calculation and averaging.

Respectfully submitted,
C. Gaelyn Garrett, MD
Secretary

REPORT OF THE TREASURER

Dr. Benninger presented an overview of the financial report for 2009. He stated that a total of $57K was received as members’ dues and $15K, which is paid in two annual payments of $7500 each, from publications. However, because our annual operating expenses are approximately $96K, the Association has to rely on investment revenue for the difference. Although the investment interest was approximately $100K, we still lag behind due to the loss of $217K in 2008. We’ve managed to reduce some expenses; however, the fee we pay for ACS increases annually. The contributions from Council members have helped the Council must realize that we must balance the budget by being very cautious with expenditures, find other sources of revenue. It is important that we look at dues revenues and to maximize the monies received from publication.

Respectfully submitted,
Michael S. Benninger, MD
Treasurer

REPORT OF THE HISTORIAN-EDITOR

Dr. Courey reported the Transactions through 2007 are now available on the website. It is anticipated that the 2008 Transactions will be available in a few months as they are undergoing the final review. The 2009 transactions are waiting a few presentations and will be completed once those are received. Hard copies of the transactions are printed by Maxine upon request from individuals only.

As for the website, the development of it continues to proceed nicely. Based on Council’s request, email addresses were removed from public view. Fellows may log in using the membership login page and obtain email addresses of other fellows.

Dr. Courey explained that he was in the process of creating a separate member directory for non-members that will be open to public access. This directory will have primary practice address and phone numbers.

This year abstracts were submitted to the website and there were no reported problems. Eighty-five (85) abstracts were submitted for processing by the Administrator. One withdrew prior to the program committee receiving them for review.

Respectfully submitted,
Mark S. Courey, MD
Historian-Editor
RECIPIENTS OF THE DE ROALDES AWARD

1928    Chevalier L. Jackson
1931    D. Bryson Delavan
1934    Harris P. Mosher
1937    Lee Wallace Dean
1943    Ralph A. Fenton
1949    George M. Coates
1951    Arthur W. Proetz
1954    Louis H. Clerf
1959    Albert C. Furstenberg
1960    Dean M. Lierle
1961    Frederick T. Hill
1966    Paul H. Holinger
1970    Francis E. LeJeune
1973    Lawrence R. Boies
1976    Anderson E. Hilding
1979    Joseph H. Ogura
1982    John J. Conley
1985    John A. Kirchner
1987    Walter P. Work
1988    DeGraaf Woodman
1989    John F. Daly
1990    Joseph L. Goldman
1991    William W. Montgomery
1992    M. Stuart Strong
1993    Douglas P. Bryce
1994    Paul H. Ward
1995    Hugh F. Biller
1996    Byron J. Bailey
1997    George A. Sisson, Sr.
1998    Stanley M. Blaugrund
1999    Jerome C. Goldstein
2000    Thomas C. Calcaterra
2001    Eugene N. Myers
2002    Robin T. Cotton
2003    Gayle E. Woodson
2004    Robert H. Ossoff
2006    Stanley M. Shapshay
2007    W. Frederick McGuirt, Sr.
2008    Robert T. Sataloff
2009    Andrew Blitzer
2010    Marshall Strome

RECIPIENTS OF THE CASSELBERRY AWARD

1923    George Fetterolf
       and Herbert Fox
1928    Ralph A. Fenton
       and O. Larsell
1929    Richard A. Kern
       and Harry P. Schenck
1929    Edward H. Campbell
1931    Arthur W. Proetz
1934    Anderson C. Hilding
1936    Francis E. LeJeune
       and Joel J. Pressman
1939    H. Marshall Taylor
       and Brien T. King
1940    French K. Hansel
1941    Noah D. Fabricant
1946    Paul H. Holinger
1949    Henry B. Orton
1962    Hans von Leden
1966    John A. Kirchner
       and Barry D. Wyke
1968    Joseph H. Ogura
1985    H. Bryan Neel III
1987    Joseph J. Fata
1991    James L. Koufman
1993    Frank E. Lucente
1994    Ira Sanders
1998    Steven M. Zeitels
1999    Clarence T. Sasaki
2006    Kiminori Sato
2009    Randal C. Paniello
2010    Priya Krishna
RECIPIENTS OF THE NEWCOMB AWARD

1941 Burt R. Shurly
1942 Francis R. Packard
1943 George M. Coates
1944 Charles J. Imperatori
1947 Harris P. Mosher
1948 Gordon Berry
1949 Gordon B. New
1950 H. Marshall Taylor
1951 John D. Kernan
1952 William J. McNally
1953 Frederick T. Hill
1954 Henry B. Orton
1955 Thomas C. Galloway
1956 Dean M. Lierle
1957 Gordon F. Harkness
1958 Albert C. Furstenberg
1959 Harry P. Schenck
1960 Joel J. Pressman
1961 Chevalier L. Jackson
1962 Paul H. Holinger
1963 Francis E. LeJeune
1964 Fred W. Dixon
1965 Edwin N. Broyles
1966 Lyman G. Richards
1967 Joseph H. Ogura
1968 Walter P. Work
1969 John A. Kirchner
1970 Louis H. Clerf
1971 Daniel C. Baker, Jr
1972 Alden H. Miller
1973 DeGraaf Woodman
1974 John J. Conley
1975 Francis W. Davison
1976 Joseph L. Goldman
1977 F. Johnson Putney
1978 John F. Daly
1979 Charles F. Ferguson
1980 Charles M. Norris
1981 Stanton A. Friedberg
1982 William M. Trible
1983 Harold G. Tabb
1984 Daniel Miller
1985 M. Stuart Strong
1986 George A. Sisson
1987 John S. Lewis
1988 Douglas P. Bryce
1989 Loring W. Pratt
1990 William W. Montgomery
1991 Seymour R. Cohen
1992 Paul H. Ward
1993 Eugene N. Myers
1994 Richard R. Gacek
1995 Mark I. Singer
1996 H. Bryan Neel III
1997 Haskins K. Kashima
1998 Andrew Blitzer
1999 Hugh F. Biller
2000 Robert W. Cantrell
2001 Byron J. Bailey
2002 Gerald B. Healy
2003 Steven D. Gray
2004 Charles W. Cummings
2005 Roger L. Crumley
2006 Charles N. Ford
2007 Robert H. Ossoff
2008 Gayle E. Woodson
2009 Marvin P. Fried
2010 Diane Bless

RECIPIENTS OF THE GABRIEL F. TUCKER AWARD

1987 Seymour R. Cohen
1988 Charles F. Ferguson
1989 Blair Fearon
1990 Gerald B. Healy
1991 John A. Tucker
1992 Bruce Benjamin
1993 John N. G. Evans
1994 Joyce A. Schild
1995 Robin T. Cotton
1996 Haskins K. Kashima
1997 Lauren D. Holinger
1998 Philippe Narcy
1999 Bernard R. Marsh
2000 Trevor J. I. McGill
2001 Donald B. Hawkins
2002 James S. Reilly
2003 Ellen M. Friedman
2004 C. Martin Bailey
2005 William P. Potsic
2006 Amelia F. Drake
2007 Colin Barber
2008 Seth Pransky
2009 William Crysdale
2010 Charles Myer III

RECIPIENTS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION AWARD

1988 Frank Netter
1989 Shigeto Ikeda
1990 Hans Littmann
1991 Arnold E. Aronson
1992 Michael Ter-Pogossian
1993 C. Everett Koop
1994 John C. Polanyi
1995 John G. Batsakis
1996 Ingo Titze
1997 Matina Horner
1998 Paul A. Ebert
1999 Bruce Benjamin
2000 M. Stuart Strong
2001 Eugene N. Myers
2002 Catherine D. DeAngelis
2003 William W. Montgomery
2004 David Bradley
2005 Herbert Dedo
2006 Christy L. Ludlow
2007 John A. Kirchner
2008 Gerald B. Healy
2009 Stanley M. Shapshay
2010 Clarence T. Sasaki
RECIPIENTS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION
RESIDENT RESEARCH AWARD

1990  David C. Green
1991  Timothy M. McCulloch
1991  Ramon M. Esclamado
1992  David H. Henick
1993  Gregory K. Hartig
1994  Sina Nasri
1995  Saman Naficy
1996  Manish K. Wani
1997  J. Pieter Noordzij
1998  Michael E. Jones
1999  Alex J. Correa
2000  James C. L. Li
2001  Andrew Verneuil
2002  Dinesh Chhetri
2003  Andrew Karpenko
2004  Ichiro Tateya
2005  Samir Khariwala
2006  Suzy Duflo
2007  Idranil Debnath
2008  Taha Shipchandler
2009  David O. Francis
2010  David O. Francis

RECIPIENTS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION
YOUNG FACULTY RESEARCH AWARD

1991  Paul W. Flint
1992  Yasuo Hisa
1993  Jay F. Piccirillo
1994  Hans J. Welkoborsky
1995  Nancy M. Bauman
1997  Ira Sanders
1998  Kiminori Sato
1999  Tuenehisa Ohno
2000  Steven Bielamowicz
2001  John Schweinfurth
2002  Dinesh Chhetri
2003  Tack-kyun Kwon
2005  Samir Khariwala
2006  Suzy Duflo
2007  I-Fan Theodore Mau
2008  Bernard Rousseau
2009  Tsunehisa Ohno
2010  I-Fan Theodore Mau
THE MEMORIAL AND LARYNGOLOGICAL RESEARCH FUNDS

The Council earnestly requests that Fellows of the Association give consideration to making a special bequest to these important funds, or to becoming a Benefactor.

MEMORIAL FUND DONORS

Daniel C. Baker, Jr  George Fetterolf  Lyman G. Richards
John F. Barnhill    Joseph L. Goodale    Myron J. Shapiro
August L. Beck      William E. Grove    Burt R. Shurly
Gordon Berry        Gordon F. Harkness  Mark I. Singer
Stanley M. Blaugrund Frederick T. Hill    Lester T. Sunderland
William E. Casselberry George E. Hourn    H. Marshall Taylor
Cornelius G. Coakley Samuel Johnston    Walter H. Theobald
Lee Wallace Dean    John S. Lewis      John A. Tucker
Arthur W. De Roaldes H. Bryan Neel III  Francis L. Weille
Fred W. Dixon        James E. Newcomb  Eiji Yanagisawa
Charles F. Ferguson  Henry B. Orton

BENEFACTORS

Sally Sample Aall  Thomas C. Galloway  Harry P. Schenck
Mrs Daniel C. Baker, Jr    Joseph L. Goldman  Oliver W. Suehs
Edwin N. Broyles  Robert L. Goodale  William M. Tribble
Louis H. Clerf    Edley H. Jones    Gabriel F. Tucker, Jr
Seymour R. Cohen  A. P. Marchessini  DeGraaf Woodman
John J. Conley    Francis H. McGovern  Zelda Radow Weintraub
John F. Daly      Charles M. Norris    Cancer Fund, Inc
Francis W. and Mrs Davison  Samuel Salinger
Stanton A. Friedberg  Sam H. Sanders

19
One hundred and thirty two years. 1878. The year of the founding meeting of the American Laryngological Association in Buffalo, New York. Much has transpired since, in history and in medicine. One of the oldest of the medical specialty societies, the ALA, represents not only the unique perspective of a small group of passionate physicians but also the values of healthcare and society. The ALA is a microcosm of medicine: it reflects where we have come from, the foundation of its history; the value of teaching and learning – education; patient care in all of its variations; the research that is the underpinning of what we do and what we hope to do; the global nature of medicine, and how we share our knowledge with colleagues worldwide and just as importantly how we learn from others; the continuing value of the experience and knowledge of those that have come before us; and the absolute support, love and encouragement of those closest to us – our families.

Five years before the founding of the ALA, Dr. Clinton Wagner, a prominent New York surgeon who had studied laryngology in Europe, invited a group or nine physicians to his home on October 13, 1973. These nine, who had interest in the new specialty of laryngology, had positions in local clinics for diseases of the throat throughout New York. Indeed that same year, Wagner had help found the Metropolitan Throat Hospital in New York City. The gathering occurred less than 20 years after Manuel Garcia first visualized the interior of the larynx with a mirror and sunlight. The purpose of this meeting was to organize the New York Laryngological Society “not only for the mutual improvement and the advancement and enlargement of their limited knowledge of the subject, but for the purpose of establishing on a solid footing with the medical profession at large the specialties of rhinology and laryngology in the country.” Interestingly, these individuals knew from the outset that laryngology cannot be viewed as a highly focused single anatomically based science, but should be considered as one aspect of the entire aerodigestive tract. This society was the first such organization of laryngologists in the world and served as a stimulus to the entire profession for the advancement of medical specialism. This effort was not taken up kindly by others in the United States and abroad. Sir Morell
Presidential Address

Mackenzie took this concept and in 1888, founded the British Laryngological Association, after he addressed the New York Laryngological Association on “Hemorrhage after Tonsillectomy” in 1882. ¹Dr Jacob Solis-Cohen and an original honorary member of the NY Association was chided by the eminent surgeon, Dr Samuel Gross in Philadelphia, as a practitioner who was leaving the ranks of legitimate medicine to be engaged in a narrow specialty. Gross could not understand “why he devotes most of his time to a cubic inch of the human anatomy.”² Frank Davis of Chicago proposed the foundation of a national society, the American Laryngological Association, which was then established in June 3, 1978 in Buffalo, New York. Wagner was a founding member.³

As recognition of the seminal efforts of the New York Laryngological Society, its founders and its continuous activities that are of value and vibrant to this day, I wish to award a Presidential citation which will be accepted by the current President, Dr Mark Persky.

Teaching and thereby learning have been a fundamental precept of medicine and the ALA. Physicians hope to heal, but also pass on their art and science to others and the next generation to come. For otolaryngologists, this begins in earnest during residency. As a program Director of two residencies, I realize what a major effort this is for the teacher, if he or she is to be effective. Individuals acquire knowledge and retain it by many different methods. Classrooms, lectures, seminars are time tested but one-on-one engagement may be the most effective. This is particularly the case when procedures are taught and supervised and intense feedback and interaction is required.⁴ The ALA has begun this personal interaction with our mentorship program, in which Fellows can aide Post-Graduate Members, those recently completing laryngology fellowships, in designing, completing and writing their Triologic theses, a requisite for admission to the ALA.

One such mentor for me has been Dr Hugh Biller. In July, 1970, my first rotation as a resident in the Washington University ORL training program was on the Ogura service. Rounds stated very early, with many patients on the service, up to 40. As walk rounds progressed that first day with all level of residents discussing supraglottics, hemis, partial laryngopharyngectomies and the patient management, I was lost on the jargon and concepts. Dr Biller came over to me as I must have appeared shell shocked, and said not to worry. I will learn all of this and he made himself available at all times. His response was not unique to me, but to all of the Washington University residents. And it continued after Dr Biller went on to become Chairman of the Otolaryngology Department at Mount Sinai Medical Center in 1972. Dr Biller has been the consummate surgeon (operating ambidextrously), teacher in small and large venues, and educator through numerous articles that both described new techniques and then later review in detail their value and shortcomings.

To Dr Hugh Biller, who represents to me the model of a teacher in medicine, I would like to award this Presidential citation. But it is not only the faculty or most knowledgeable senior physicians who teach us the most. I am certain that all in this room recall a resident or more who played a major role during their training. These sessions occurred on rounds, on the phone, in hallways, in the operating room, socially and wherever residents gathered. The time taken was invaluable to each of us. I probably learned more about practical surgical technique from my senior residents during cases than the faculty.

One resident however stands out over time. His patience and willingness to teach was a defining attribute. Most impressive however was his compassion and the unique ability to
Presidential Address

express this in a public venue. A talk during residency at Grand Rounds on death and dying, using our patients who we related to so closely, emotionally moved everyone in the audience, whether faculty or other residents. This uncanny ability to express deep feelings in a public forum was present over 30 years ago and continues to this day as exemplified by his recent Presidential Address to the Sectional meetings of the Triologic Society, where his topic was how we can learn from the values of Walt Disney. For his role as an exemplar of the learning that we receive from our fellow residents and colleagues, I have asked Dr Frank Lucente to be our Guest of Honor, and he will address us shortly.

Research, whether clinical or more basic, has been synonymous with medicine for centuries. I am sure we all have made some attempt in this arena, to varying extent. Some of us have made this our life’s work, others just briefly early in our careers. Regardless, I am certain all physicians realize the absolute necessity of inquiry whether in the most basic realms or the broadest clinically applied areas. It is how we expand our knowledge, sometimes to simply answer that enigmatic question, but most often with the ultimate goal of benefitting the patients in our care. An example of patient centered investigation will be the State-of-the Art presentation at this meeting. In the past, this presentation has been a talk by an expert. This year’s topic is robotic laryngeal surgery and with a subject so ground-breaking, we have 3 experts on a panel moderated by the ALA Secretary, Dr Gaelyn Garrett. The panelists are Drs Bert O’Malley, Richard Smith and Daniel Brasnu all of whom have contributed to our field already.

The ALA has been and continues to be dedicated to the value of research, hoping to stimulate this exploration by junior and senior laryngologists. The commitment of time must come from the investigator, but the funding often needs to be external and is often difficult to obtain. The ALA has a research fund that was established years ago. These grants are reviewed through the Centralized Otolaryngology Research Efforts, or CORE, process. The need for infusion of funds to allow grants to be awarded is a challenge. The raising of these dollars may be more difficult than doing the research.

The ALA has been blessed with an individual who has understood the value of exploration in laryngology. Dr Matina Souretis Horner began her career in clinically applied research at Bryn Mawr College and later at the University of Michigan, where she received her PhD. Her work made a profound difference in the understanding of the motivations for success and failure, particularly in women. She went on to become the sixth and youngest President of Radcliffe College helping to move Harvard and Radcliffe to no longer have limits on the number or women to be admitted to either school. She became the head of TIAA-CREF, a position she held until a few years ago.

She, with Dr Gerald Healy and others, established the American Laryngological Voice Research and Education Foundation, or ALVRE, in 1996. Dr Horner did this because she saw the need when her father, Demetri Souretis, was stricken with laryngeal cancer. The ALVRE grants continue to be given to foster understanding of disorders of the voice and larynx. Dr Horner’s efforts helped to raise over a quarter of a million dollars. Without her support and fundraising the ALVRE fund would not be available today. The ALVRE is administered through the ALA.

On behalf of the ALA and the research that Dr Horner has and will help nurture, I present this Presidential citation.

Patient care is at the heart of what we do in medicine. We all have a different perspective as what defines us as physicians and specifically as laryngologists. I take the broad view that although we are named by our interest in the unique structure that in many ways separates from all other species,
Presidential Address

laryngology is also closely intertwined with those areas that surround the larynx, both anatomically and physiologically. This concept of the “unified airway” seems to be evident even by the ALA founders. The larynx is impacted by our environment, the sinonasal and aerodigestive tracts, by medication and a myriad of other influences. Broad thinking and the ability to see the “big picture” is a special gift. Although many of us may possess this gift, few are given the opportunity to use this wide, expansive perspective to benefit patients, education, research and healthcare. One such individual is our Baker Lecturer, Dr. Michael M. E. Johns, the Chancellor of Emory University. From the beginning of his career, patient centered care has been a hallmark of his work. I will say more during his lecture introduction, however Dr. Johns has exemplified the role an otolaryngologist can play in the field of medicine, as a practitioner, teacher, educator and leader, all focusing on the betterment of the health of patients.

Medicine is a worldwide endeavor. Much of what we know has emanated from the United States, but laryngologists were early to realize the value of international influences. The founders of the ALA received their introduction to the specialty in cities such as Paris, Vienna and London. The very early ties with Dr. Mackenzie are indicative of this international vision. We have maintained and fostered this interface with our Corresponding Fellows who come from all points of the globe. They have brought with them new concepts, surgical techniques and fundamental research. This meeting reflects their critical role in laryngologic knowledge in the panel with members from France, Germany and Japan: Drs. Jean Abitbol, Daniel Brasnu, Steffan Maune, Tadashi Nagashima, and Wolfgang Steiner.

Personally, my narrow perspective was broadened years ago on a trip to Paris. It was there that I met Professor Henri Laccourreye and Daniel Brasnu. I had been trained by Dr. Joseph Ogura in partial laryngeal procedures, but what I saw when visiting Laennec Hospital was eye opening. Supracricoid partial laryngectomy and reconstruction with cricohyoidopexy were largely unknown in the America. With publications in the English literature and lectures and visits crossing the Atlantic, this knowledge was disseminated by the French group.

The ALA is indebted to its friends and colleagues from around the world who teach us and share their experience and expertise with us. In recognition of the importance of laryngologists worldwide and with the realization that from this sharing grows deep friendship, I offer a Presidential citation to Daniel Brasnu, Chief of Otorhinolaryngology - Head and Neck Surgery at the European Georges Pompidou Hospital, Paris, an outstanding surgeon, an educator of physicians and a true humanitarian through his efforts in Asia and Israel.

As physicians, we look forward to the next breakthrough, often not looking over our shoulders to what had been achieved and learned before. The rapidity of searching our literature through sources on the internet has greatly benefitted us in learning for the wisdom of our predecessors. The Emeriti Fellows of the ALA are such an invaluable resource. I have asked some of these Emeriti to share the podium of this meeting with us as moderators to offer commentary for the exceptional papers to be presented over the next two days.

Medicine is an intense endeavor. I dare say that over a professional lifetime, it may be the hardest work an individual can pursue. Intelligence, dedication, compassion, open-mindedness, and forgiveness are but a few attributes that are the hallmarks of a physician. For most, if not all of us, this work takes the support of others close to us. We need to share our good works and failures with people who will understand and sustain our efforts – our families. When our professional life is over, we hope to be remembered by the patients we have cared for, but it is truly our families who will be
there with us. I know and have seen it time and time again, that we perform best as physicians when we have the families there to share our lives. For me this has been a joy. For this and more reasons than I can enumerate, I offer Presidential citations to my wife, Rita and my two daughters, Jaimie Dockray and Karen Jacob.

The ALA has an incredible future, brighter than I have seen in years. Its membership is being infused with graduates of laryngology fellowship programs. The ALA will sponsor a match for laryngology fellowships beginning in 2012 overseen by the National Resident Matching Program. The initial meeting for this process is taking place here in Las Vegas. There are developing areas of exploration such as robotic surgery, office based laryngology, the aging voice, the unified airway, laryngopharyngeal reflux and the defining of chronic laryngitis. This meeting is the venue to disseminate this latest in these fields.

So the ALA, having been in existence for more than 130 years, reflects all of medicine. We cannot just view ourselves as caretakers of a few cubic anatomic centimeters, but rather as physicians who are the experts in the study and science of the larynx, the structure that is essential for communication, emotion, joy and humanity. I am exceedingly proud to be a Fellow and truly humbled to be the President of this society that is a mirror of medicine. Thank you.
PRESIDENTIAL CITATIONS

Marvin P. Fried, MD
Bronx, NY

The following individuals were honored by Dr. Fried with Presidential Citations

Hugh Biller, MD
Wells, ME

Daniel Brasnu, MD
Paris, FRANCE
Presidential Citation

The Fried family:

Mrs. Rita Fried

Matina Horner, PhD.,
Cambridge, Massachusetts
Presidential Citation

New York Laryngological Society
(Mark Persky Accepting)
Dr Lucente and I have known each other since residency as I mentioned before. After his training, he came to New York.

In 1984, he became Chairman of the Department of Otolaryngology at New York Medical College – New York Eye and Ear Infirmary and in 1990 became Chairman at SUNY – Downstate and Long Island College Hospital. He has been Vice President and Coordinator for Instruction Courses at the AAO-HNS. He has been President of the SUO.

He has co-author or edited 15 book and 200 scientific publications. He now serves as Vice Dean for Graduate Medical Education for SUNY Health Science Center at Brooklyn and Chief of Academic Affairs at Long Island College Hospital. He has received the SUNY Chancellor’s Award of Distinction in Teaching and in 2001 was honored with the Teacher of the Decade from the Department of Otolaryngology. He is a member of the Executive Board of the Laryngoscope and is the current president of the Triological Society.

He has a passion for the arts, travel and cooking. But mostly, he has been an example and mentor to hundreds of future otolaryngologists and a dear friend to countless more.

I am pleased that he is this year’s ALA Guest of Honor.
PRESENTATION OF
THE AMERICAN LARYNGOLOGICAL ASSOCIATION AWARD
TO
CLARENCE SASAKI, MD
New Haven, Connecticut
PRESENTATION OF THE GABRIEL F. TUCKER AWARD
TO
Charles Myer, III, MD
Cincinnati, Ohio

JOHN A TUCKER, MD

I thank the Council and President Crumley for the honor to present this award. The Gabriel F. Tucker Medal for contribution to pediatric laryngology depicts the image of Gabriel F. Tucker, Sr. & Junior together.

Gabriel F. Tucker, Sr. was the first associate of Dr. Chevalier Jackson from 1918 to 1930 at Jefferson University, The University of Pennsylvania and The Graduate School. He succeeded Dr. Jackson as professor and chairman of Broncho-Esophagology & Laryngeal Surgery at the University of Pennsylvania and The Graduate School of Medicine in 1930.

Gabriel F. Tucker, Jr. was a pioneer in whole origin sectioning in the study of laryngeal cancer creating a collection of 150 laryngeal specimens. In 1975 he left Philadelphia and The Jackson Clinic at Temple University and succeeded Dr. Paul Holinger at Chicago Memorial Children’s Hospital as chief of pediatric otolaryngology. He held this position until his untimely death in 1986.

In 1932, Gabriel F. Tucker, Sr.’s topic in his chairman’s address to the AMA Section Council was the infant larynx. He described the unique aspects of the pediatric larynx and the first endoscopic calibration together with Professor Oscar Batson, the dimensions of the infant larynx including the glottis and subglottis. A 4mm subglottis was being considered a subglottic stenosis.

This year’s recipient of the Gabriel F. Tucker Award specializes in pediatric otolaryngology and is a well-known speaker, author, and editor on disorders of the ear, nose, and throat. Charles Myer III received his medical degree from the University of Alabama at Birmingham Medical School and completed his residency in otolaryngology at the University of Cincinnati. This was then followed by a fellowship in Pediatric Otolaryngology at the Children’s Hospital of Pittsburgh.

Currently, he is a Professor of Otolaryngology at the University of Cincinnati College of Medicine, where he also serves as Vice-Chairman and Director of the residency program. Additionally, he is a Professor of Otolaryngology, Head and Neck Surgery at University Hospital in Cincinnati. He has special interests in general pediatric otolaryngology, head and neck tumors, airway problems, congenital abnormalities, and sinus disease.
He has been president of SENTAC and ASPO and Chair of AAP Section of Otolaryngology and Bronchoesophagology and has authored numerous articles, as well as co-authoring the books *A Practical Approach to Pediatric Otolaryngology* and *Practical Pediatric Otolaryngology*. He continues to be active authoring numerous publications and giving presentations on local, regional, national, and international basis.

It is my distinct honor to present to Dr. Myer, in recognition of service to the field of pediatric otolaryngology, the Gabriel F. Tucker, M.D. Award.
INTRODUCTION OF THE THIRTY-SIXTH
DANIEL C. BAKER, JR. MEMORIAL LECTURER
MICHAEL M. E. JOHNS, MD

MARVIN P. FRIED, MD, FACS

The Daniel C. Baker, Jr. Lectureship was established in 1975 by the Baker Family, and Dr Baker’s friends, patients and colleagues, in his memory and in appreciation for his dedication to the field of Laryngology. Dr Baker was President of the ALA in 1974 and a recipient of the Newcomb Award in 1971.

Our Baker Lecturer, Dr. Michael M.E. Johns received his otolaryngology training at the University of Michigan. He went on to the University of Virginia, after serving in the US Army Medical Corps, becoming Chair there, and then to Johns Hopkins as Chairman, ultimately becoming Dean. He then led the health sciences at Emory University from 1996 to 2007, and then became Emory University’s fifth Chancellor, his current position. He has been a major contributor to our literature, largely in the realm of head and neck surgery.

As a leader in healthcare at both Hopkins and Emory, he helped create outstanding centers of excellence in all aspects of health services. In particular, at Emory he has lead the development of one of the nation's preeminent health centers in education, research and patient care. His forward thinking continues to benefit Emory University as their Chancellor.

Today, this nation could well be at a significant milestone in healthcare. The current highly controversial legislation will need to be implemented before the ramifications are known. Dr Johns not only has consulted to Congress and Presidents in this arena, but also has been instrumental in formulating concepts that go far beyond the fiscal issues that make up the vast bulk of the current legislation.

We are truly privileged to have Dr Johns here to address this critical topic with us.
THIRTY-SIXTH DANIEL C. BAKER, JR. MEMORIAL LECTURE

Health Reform Conundrums
MICHAEL M. E. JOHNS, MD

President Fried, members of the American Laryngological Association and guests, it is an honor to be invited to give the Daniel C. Baker Jr. Lecture. Dr Baker was a leader, innovator and change agent. He not only embraced change but he shaped it for the betterment of his patients and our specialty.

When Marvin Fried invited me to give this lecture and asked me to address Heath Care Reform back in the fall of 2009, there appeared to be less than a 50% chance that any health care legislation would be passed. Those odds seemed to diminish to zero when Scott Brown was elected to the Senate in Massachusetts last January. Yet against all the odds and a large plurality of the general public opposing the proposed health reform on March 21, the House passed the Senate Bill HR 3590 and the bill was signed into law five weeks ago on March 23rd by President Obama and four weeks ago he signed into law HR 4872, the Health Care and Education Reconciliation Act. Taken together, this is historic legislation representing the largest change to our health care system since the passage of Medicare and Medicaid in 1965 some 45 years ago when many in this audience were not yet born.

Over the last 15 months, I have had the opportunity and the responsibility to spend many days on The Hill representing our institution and visiting senators, representatives and their staffers.

I have had a call to the White House and have served as a weekly convener of 12 leading Academic Medical Centers to focus on the specific issues in the various versions of proposed health reform bills that had focus on Academic Medical Centers. This was not my first experience as I had led an influential group known as the Saturday Morning Working Group during the Clinton’s effort to reform health care 16 years ago.

So much is on the table - we have reached the end of the beginning. There is a great deal of work left to be done. There is still a role for you to be a change agent and to shape the change that will come. So let me tell you in the brief time I have about why the road to
reform is so difficult; what the highlights of the legislation are; what impacts us as physicians; and, a few suggestions as to how we might chart our own destiny as responsible physicians, who want to do what is best for our patients and society, while at the same time protect the values and principles we believe in.

I call your attention to the article that Jon Saxton and I wrote. I recommend it to you. You might see that, had the book been published when it was supposed to be, back in October, the country might have been spared a lot of misery!

This definition of complex adaptive systems is by Bill Rouse of Georgia Tech University and taken from a report produced by a health policy group that I co-chaired at the time, called the Blue Ridge Academic Health Group. The main point here is that complex adaptive systems are not command and control systems, but instead are self-organizing, with few if any real overall control points. So they are very difficult to “organize” or to change so that they can, in some systematic way, be oriented towards particular policy outcomes.

- 95% of voters have health insurance
- 80% of the insured do not use their health insurance in any given year
- Of the 20% who do ~80% are happy with their care

So the status quo is much more comfortable than change for almost everyone because of complexity, proposed taxes, general confusion, the political debate, the media, compromises and the public’s general lack of understanding.

And, oh, by the way, there is also this: These are our jobs at stake. One person’s health care cost saving is another person’s job!

The following slide and the next are from a front page story in BusinessWeek that some of you may have seen . . .

The chart starts at February 2001, which is the peak month for nonfarm employment. The top line is the broad private health sector. The bottom line is the rest of the private sector. Each line measures the difference in employment between that month and Feb 2001.

You can see that non-health private sector employment is no higher than it was when this recession started. Meanwhile, health care employment steadily rose. The same is true in this recession in that the Health Care sector was the only sector that showed any growth.

So, given how unpleasant it is to contemplate major reforms to a system that is so vast, complex and important, making a major change is a little like having to pass this! Health care reform is very hard medicine to take!

Today, an average of 82 randomized controlled trials are published each day in the medical literature. An internist would have to read and remember 19 of them each day to keep up. This just isn’t possible. As a result, all too often, patients are not getting all of the Daniel C. Baker, Jr. Lecture
recommended clinical and preventive care that they should.

I remember when this came out. Asked my leadership team, do we know how we’re doing? What if we put up a billboard saying we do it right 55% of the time? These Costs are obviously not sustainable.

- Personal:
  - Medical problems contribute to half of all bankruptcies in the U.S.
    - 700,000 households annually
    - 700,000 children
    - 600,000 spouses, elderly parents and other dependents
    - Over 75 percent of those bankrupted by medical problems were insured at the start of the bankrupting illness.

- Corporate
  - “The rising cost of health benefits is the biggest issue on our plate that we can’t solve.... Health care is out of control – it’s a system that’s broken.”

    -- William Clay Ford, Chairman of Ford Motor Company

- Federal and State

Health care today is that California’s medical care – its medical knowledge, its medical technology – is as strong and vibrant as a bodybuilder. Yet our health care system itself is a sick old man.

-- California Gov. Arnold Schwarzenegger

Recognize these? These goals were spelled-out in great detail in the 2001 report from the IOM, Crossing the Quality Chasm. This was one of a long series of studies, beginning in some sense with the 1999 report, To Err is Human, and continuing up to the present, where we, as a profession, set the goal of significant health care reform.

In addition, the IOM called for the creation of a national capability for comparative effectiveness research. And there was virtual consensus among almost every policy and professional organization that we need to move towards a value-driven, evidence-based and integrated health system that made access to quality care available to everyone.

This is, of course, the House vote on March 21. Last week I met with the chief of staff of a powerful congressman from California and the legislative director of a powerful senator from Connecticut said when the house was passing this bill, didn’t have the votes and didn’t know whether would pass until 4:00 pm. The reconciliation required some further fixes too.
And it was soon followed by the vote on the reconciliation bill . . .

Of course, not everyone was pleased!

The fact all doctors are portrayed in cartoons with head mirrors whereas you know only we use them

But, while the bill is going to be a work in progress for years to come, with many provisions phasing in over the course of a decade, and court challenges, and many aspects that Congress will want to revisit, and with more than 500 regulations to be written. Nevertheless, we can talk about many provisions that will likely be enacted and make a huge difference in who gets access to health care.

Coverage: The new law expands coverage to 32 million people through a combination of public program and private-sector health insurance expansions. Its key provisions include: insurance reforms, including administrative simplification provisions; a mandate for individuals to have insurance; employer responsibility to provide or contribute to health insurance; low-income subsidies to help individuals purchase insurance; an expansion of those eligible for Medicaid; the creation of state-based health insurance “exchanges.” It also calls for new, non-profit, consumer-owned and -oriented plans (or CO-OPs), as well as multi-state health plans overseen by the Federal Office of Personnel Management to compete with other private health plans in the state insurance exchanges.

Here is a sampling of important provisions related to reforming the insurance market place and expanding coverage so that it is affordable:

Now: small business tax credit up to 35% of premiums starting in 2010 tax year.

Now: states can expand Medicaid to childless adults up to 133% of federal poverty level.

June 2010: Temporary state high-risk pools for uninsured people with pre-existing conditions for people with medical problems who have been rejected by insurers and have been uninsured at least six months. Also, temporary reinsurance program for early retirees to begin.

September 2010: Health plans can’t impose lifetime limits or unreasonable annual limits on dollar value of coverage. Insurers can’t rescind coverage, except for enrollee fraud. Insurers must cover dependents up to age 26.

2013: States must expand Medicaid to all non-Medicare eligible individuals with incomes up to 133% of federal poverty line. Insurers can’t impose pre-existing condition exclusions. Premium rates can only vary depending on family size, rating area, age and tobacco use.

2014: Individual mandate begins. Sliding scale subsidies become available for individuals at 400% of federal poverty level.

2015: State based insurance exchanges must be self-sustaining.
2017: States must pay a share of the new Medicaid expansion.

2018: Excise tax on “Cadillac” plans starts.

Now I want to quickly mention a number of provisions that will most directly affect physicians. Many of these will have direct effects on our workforce and many are designed to incentivize changes, including the employment of more nurses in basic care services, a more team medicine, and to address workforce distribution issues. There, of course, remains some basic questions about whether we will have enough physicians to manage this larger insured population, and here, I mean, subspecialists as well as primary care specialists.

- 10 percent incentive payments for primary care physicians. All physicians in family medicine, internal medicine, geriatrics and pediatrics whose Medicare charges for office, nursing facility and home visits comprise at least 60 percent of their total Medicare charges will be eligible for a 10 percent bonus payment for these services from 2011–16.

- 10 percent incentive payments for general surgeons performing major surgery in health professional shortage areas. All general surgeons who perform major procedures (with a 10- or 90-day global service period) in a health professional shortage area will be eligible for a 10 percent bonus payment for these services from 2011–16.

- 5 percent incentive payment for mental health services. For 2010, Medicare will increase payment for psychotherapy services by 5 percent.

Geographic payment differentials. The national average “floor” on Medicare’s geographic payment adjustment (commonly known as the GPCI) for physician work expired at the end of 2009. The law re-establishes that floor in 2010. Physicians in 56 localities in 42 states, Puerto Rico and the Virgin Islands will benefit from these geographic payment adjustments.

Medicare quality reporting incentive payments extended. Incentive payments of 1 percent in 2011 and 0.5 percent from 2012–2014 will continue for voluntary participation in Medicare’s Physician Quality Reporting Initiative (PQRI).

An additional 0.5 percent incentive payment will be made to physicians who participate in a qualified Maintenance of Certification Program (quality practice-based learning programs through specialty boards). Following the practice now in place for hospitals, beginning in 2015 physician payments will be reduced if they do not successfully participate in the PQRI program. In 2015, the penalty will be 1.5 percent; in subsequent years it will be 2.0 percent.

The “Reconciliation” Bill:

Raised Medicaid payments to family medicine physicians, general internists and pediatricians for evaluation and management services and immunizations to at least Medicare rates in 2013 and 2014.

Provides 100 percent federal funding for the incremental costs to states meeting this requirement.
In the area of administrative simplification, beginning in 2010, national rules will be developed and implemented between 2013 and 2016 to standardize and streamline health insurance claims processing requirements.

Physicians should benefit from the changes because it will be easier to track claims and, in many cases, should improve physician revenue cycles and lower overhead costs.

There was no specific solution to the Med Mal problem contained in the legislation. However, there is a substantial commitment to modeling reform solutions. While not sufficient, this at least opens door to continued discussion and reform. We need to shape this!

The Secretary of Health and Human Services is authorized to award five-year demonstration grants to states to develop, implement and evaluate alternative medical liability reform initiatives, such as health courts and early offer programs, beginning in 2011.

In the meantime, Medical liability protections under the Federal Tort Claims Act will be extended to officers, governing board members, employees and contractors of free clinics.

Incorporating certain medical liability reforms in comprehensive health care reform, including:

• Provisions modeled after the laws in California or Texas, which include reasonable limits on non-economic damages.
• Alternatives to civil litigation, such as health courts and early disclosure and compensation offers;
• Protections for physicians who follow established evidence-based practice guidelines;
• Protections for physicians volunteering services in a disaster or local or national emergency situation

In preventive services beginning in 2010, Medicaid will be required to cover tobacco cessation services for pregnant women. In 2011, cost-sharing for recommended preventive services will be eliminated in Medicare and Medicaid. Medicare payments for certain preventive services will be increased to 100 percent of payment schedule rates (that is, co-payments will be eliminated), and incentives will be available to encourage Medicare and Medicaid beneficiaries to complete behavior modification programs.

In the private sector, beginning in 2010, health plans will be required to provide a minimum level of coverage without cost-sharing for preventive services such as immunizations, preventive care for infants, children and adolescents, and additional preventive care and screenings for women.

We have seen the conundrum of where we came from and the complexity of getting to where we are. I have shown you a small part of the reform and the direction we are heading, some of the impact on physicians and now we need to shift to thinking about how we shape where we want this to go, especially because I have always believed that if
we focus on what is good for our patients and best principles for our practice of medicine, people will listen.

The SGR is based on the following factors:

Estimated change in fees for physician's services.

Estimated change in beneficiaries enrolled in Medicare's fee-for-service program.

Estimated growth in real gross domestic product (GDP) per capital.

Estimated change in expenditures due to law and regulation

Workforce and Graduate Medical Education: The law provides grants and loans to enhance workforce education and training, to support and strengthen the existing workforce, and to help ease health care workforce shortages. It creates the National Health Care Workforce Commission to analyze the supply, distribution, diversity and skill needs of the health care workforce of the future. Most importantly, the law does not reduce indirect medical education funding to teaching hospitals, and allows for a redistribution of unused residency positions as a way to encourage increased training of primary care physicians and general surgeons. Unfortunately, it does not increase sufficiently the overall number of residency training positions, which the AHA will continue to pursue. But it does not expand GME which is essential to providing care to the expanded numbers of covered lives.

Finally, the most important thing we can do is to continue to be better physicians every day and to take leadership in modeling and advancing the very best in practice and innovation.

We must be leaders in creating evidence-based guidelines. Guidelines work. I’ve seen it and there is a vast evidence pool to support it. Think of Atul Gawande’s checklist book. We must look at our assumptions and our routine practices. For instance, do we do too much pediatric sinus surgery, just because we now have endoscopic technologies and can do this without significant scarring?

Look at what Peter Pronovost at Hopkins did with his check list for central venous lines?

What if we put evidence based guidelines in hands of patients and families and let them monitor them along with us?! Make them full partners. That will also change their behaviors and make them part of the healing process.

Time to reinvent training. Have been talking about this for 15 years. I’m not going to tell you how to do this. But I know we can train general otolaryngologists so as to take a year out of their training and actually train them for the practice they will actually do. And doing this we can free up additional residency slots, addressing workforce issues.

We are going to hear a lot about creating accountable care organizations over the coming years. And we should! An accountable care organization is a learning organization. It’s an exciting
place to practice medicine and do the very best for our patients. All of us can contribute and learn in such environments in ways that will only mean better health care and better outcomes every day.

So, yes! Change is hard. It goes against much of our instincts and interests, at least in the short run. Change is uncomfortable and threatens our sense of security and professional autonomy. But that shouldn’t deter us. As physicians, we are problem solvers. That is our calling and our strength. That is what our patients expect of us and, in a larger sense, it is what our nation expects of us. We have the power to guide the future of health care. Let’s be those leaders. Let’s be the ones that shape the future. As long as we are working to benefit our patients and stay focused on the quality of their care, they will support us in what we need so we can do our jobs better.

As the partisanship we’ve seen recently shows us, physician leadership is needed at the highest levels and at every level. Let’s be those leaders.
Prevalence of Laryngeal and Pharyngeal Symptoms in Patients with Environmental Allergy

Avani P. Ingle, MD; Sarah K. Wise, MD; Melissa Rotella, NP-C; Michael M. Johns II, MD

INTRODUCTION: While allergic patients typically present with nasal and ocular symptoms, environmental allergies may be responsible for laryngeal and pharyngeal complaints.

METHODS: Retrospective review of patients undergoing allergy skin testing from November 2006 to October 2009. Patients with positive tests to 5 or fewer antigens were classified as “mild reactors”; those with positive tests to 11 or more antigens were classified as “extensive reactors”.

RESULTS: Fifty patients were included. Laryngeal and pharyngeal symptoms were present in 10 of 22 (45.5%) mild allergy reactors, and in 11 of 28 (39.3%) extensive reactors. There was no significant difference between the mild and extensive reactor groups for laryngeal and pharyngeal symptoms (p = 0.78). Cough was the most common complaint, seen in 20% of patients. No patient complained of dysphonia or hoarseness.

CONCLUSION: Laryngeal and pharyngeal symptoms are not delineated by allergy severity. Dysphonia is a rare complaint in the allergic patient.

Acidic Contents of Laryngopharyngeal Reflux Weaken Vocal Fold Epithelial Barrier Function

Elizabeth Erickson, MS, CF-SLP; Mahalakshmi Sivasankar, PhD, CCC-SLP

Over 50% of patients with voice problems are posited to have laryngopharyngeal reflux (LPR). In LPR, gastric contents contact the vocal fold epithelium and potentially weaken epithelial barrier function. This study investigated the differential effects of common gastric contents (acid and pepsin) on vocal fold epithelial barrier function using both electrophysiology and light microscopy techniques. Porcine vocal fold epithelia (N = 56) were exposed to one of three challenges: (i) Luminal Pepsin (pH7); (ii) Luminal Pepsin + Acid (pH3); and (iii) Luminal Acid (pH3). Low pH (pH3) but not neutral pH (pH7) significantly increased vocal fold permeability. Follow-up investigations revealed that the increased permeability was solely due to acid exposure. Challenges at acidic pH deteriorate vocal fold epithelial barrier function and may increase vocal fold susceptibility to mechanical damage and inhaled pathogens and pollutants. The application of these findings to developing optimal treatments for LPR will be presented.
**Hoarseness Misattributed to Reflux: Sources and Patterns of Error**

Lucian Sulica, MD

The ubiquity of signs of laryngopharyngeal reflux signs can lead to misattribution of symptoms to this disorder. Twenty-six patients carrying a diagnosis of reflux alone presenting for second-opinion evaluation were identified from among 381 new patients presenting with a chief complaint of hoarseness over a 6 month period. Patients specifically referred for further workup were excluded. Average duration of reflux treatment was 10.6±9.0 weeks. In no case was reflux alone the cause of hoarseness. Eleven (42%) had phonotraumatic lesions, nine (34%) had neurologic disorders, 5 (19%) had age-related changes, and one (4%) was infectious. Twenty-two (85%) abnormalities were diagnosed by dynamic laryngeal examination with improved optics, including stroboscopy. Only four (15%) represent disorders routinely diagnosed with flexible fiberoptic laryngoscopy. Hoarse patients with no apparent cause for dysphonia other than reflux after flexible laryngoscopy, or who fail to improve with appropriate treatment, should undergo further investigation rather than continued treatment.

**Inter-Versus Intra-Rater Reliability of the Reflux Finding Score in The Paediatric Larynx**

Shiraz Ahmed, MD; Mike W. Saunders, MD; David D. Pothier, MSc

Laryngopharyngeal reflux (LPR) has been associated with many otolaryngological disorders. The gold standard of pH monitoring is not commonly undertaken, but physical signs of LPR have been described and collated as a reflux finding score (RFS). This has not been validated in children. ENT surgeons were shown a series of twenty digital video clips of paediatric rigid laryngoscopies. The first ten were unique clips, but the second series of ten were repeats of the original ten clips that had been rotated on two planes. The participants were asked score each clip. Inter rater reliability was poor (Krippendorff’s alpha ranged from r=0.06 to r=0.32). Intra-rater reliability was better, (ranging from r=0.19 to r=0.46, but less than the level required for a reliable staging system (r=0.8). Domains within the scoring system were subject to substantial variability. These data suggest that the RFS cannot be applied to children in a consistent way.
Reevaluation of Gastroesophageal Reflux as a Risk Factor for Laryngeal Cancer

David O. Francis, MD; Bevan Yueh, MD, MHP; Albert L. Merati, MD; Ernest A. Weymuller Jr., MD; Charles Maynard, PhD; Gayle Reiber, MPH, PhD

INTRODUCTION: The relationship between gastroesophageal reflux disease (GERD) and cancer of the larynx is not fully elucidated. This case-control study aimed to determine whether GERD increases odds of developing this malignancy.

METHODS: Rates of GERD among cases with laryngeal cancer identified in the Veteran’s Administration database (2000-2006) were compared to controls; multivariate logistic regression measured the association between GERD and cancer.

RESULTS: 14,449 cases were matched 1:1 with controls. After adjusting for tobacco and/or alcohol use, no relationship was seen between GERD and laryngeal cancer in general (AOR 1.01, 0.92 – 1.12, p=0.780). However, in subsite analysis, GERD was associated with 42% increased odds of developing glottic cancer (AOR 1.42, 1.12 – 1.80, p=0.003).

CONCLUSIONS: GERD did not increase the overall risk of laryngeal cancer, but in subsite analysis, did specifically increase the risk of developing glottic cancer. These results challenge the previously reported strength of association between GERD and laryngeal cancer.

Transoral Laser Microsurgery for T1a Glottic Cancer – A Review of 404 Cases

Alexios Martin, MD; Carsten E. Palme, MD; Petra Ambrosch, MD; Ralph M. W. Roedel, MD; Martina Kron, PhD; Wolfgang Steiner, MD

INTRODUCTION: A variety of therapeutic options with good oncological results exist for treatment of T1a glottic cancer. Traditionally external beam radiotherapy has been favored over surgical excision given the non-invasive nature of this approach. This notion has been challenged by the emergence of transoral laser microsurgery (TLM).

PROCEDURES: A retrospective chart review was carried out. All patients with untreated T1a glottic SCC were eligible. Voice quality was analyzed. End points for statistical analysis were locoregional recurrence, patients dying as a result of glottic SCC, overall survival and larynx preservation.

RESULTS: Four hundred and four patients were eligible for inclusion. Five-year Kaplan-Meier estimates: local control 86.8%, overall survival 87.8%, disease specific survival 100%, larynx preservation 98%. Low complication rate (1%), the majority of patients had either normal or mildly dysphonic voices.

CONCLUSIONS: TLM for T1a glottic SCC is a treatment modality with excellent oncological and functional results.
Scientific Sessions

Pharyngeal Closure with Endoscopic Stapler after Total Laryngectomy

Chih-Kwang Sung, MD; Ramon A. Franco Jr., MD

OBJECTIVES: Total laryngectomies (TL) are performed as primary or salvage therapy for laryngeal carcinoma. Pharyngotomy closure is typically performed using manual sutures. Previously described closed stapling techniques do not allow direct evaluation of surgical margins and are limited to endolaryngeal disease. We describe an open technique for pharyngotomy closure using a mechanical stapling device.

METHODS: A retrospective review of seven TL from May 2008 to September 2009 utilizing an Ethicon GIA 45 endostapler.

RESULTS: Seven patients (6 male, 1 female), mean age 68, received TL (6 salvage, 1 primary) with endostapler closure and primary tracheoesophageal puncture (TEP). Average time to swallowing was 11.9 days (range 2-27) and mean hospital stay 6.6 days (range 3-9). Fistula incidence was 29% (2/7).

CONCLUSIONS: Mechanical stapling is a simple method for post-laryngectomy open pharyngotomy closure. This technique allows evaluation of margins, easy primary TEP, and the opportunity for early swallowing and shorter hospital stays.

3D Arytenoid Movement Induced by Vocal Fold Injections

I-Fan Theodore Mau, MD, PhD; Kent Weinheimer, BS

INTRODUCTION/OBJECTIVES: 1. To create a high-resolution, 3D reconstruction of cricoarytenoid subluxation to understand its anatomy and functional consequence. 2. To examine the role of cricoarytenoid ligament in prevention of anterior arytenoid subluxation.

STUDY DESIGN/METHODS: Development of image processing algorithms and case study. Axial CT images of a larynx with a subluxed arytenoid were processed with custom MATLAB routines to create a versatile 3D reconstruction. Geometries of the subluxed and non-subluxed arytenoids were quantitatively compared. Position of the cricoarytenoid ligament from historical histologic sections was also examined with 3D reconstruction.

RESULTS: The anteromedially subluxed arytenoid has an inferoposteriorly displaced vocal process, resulting in an elongated vocal fold. Posterior displacement of vocal process has not been described previously. Comparison with 3D position of the cricoarytenoid ligament suggests the ligament does not prevent anterior subluxation as commonly believed.

CONCLUSIONS: Selective 3D reconstruction is a powerful tool for advancing understanding of cricoarytenoid joint mechanics.
Scientific Sessions

Organ Preservation Surgery for Laryngeal Squamous Cell Carcinoma: Low Incidence of Thyroid Cartilage Invasion

Dana Hartl, MD, PhD; Guillaume Landry, MD; Stephane Hans, MD, PhD; Patrick Marandas, MD; Daniel F. Brasnu, MD

OBJECTIVE: Determine the incidence and risk factors for thyroid cartilage invasion in early- and mid-stage laryngeal cancer.

PATIENTS AND METHODS: Retrospective review (1992-2008) of endolaryngeal tumors treated by open partial laryngectomy with at least partial resection of the thyroid cartilage. Preoperative laser, radiation therapy or chemotherapy were excluded. Tumor stage, subsites, vocal fold (VF) mobility, CT scan and histopathological cartilage status were recorded.

RESULTS: 360 patients were treated for tumors staged T1 (33%), T2 (52%) or T3 (15%) by vertical (26%), supracricoid (62%) or supraglottic partial laryngectomy (12%). The thyroid cartilage was invaded in 8.9% of cases. Abnormal VF mobility was significantly related to thyroid cartilage invasion (Fischer’s exact, p<.0001). Neither anterior commissure involvement nor CT scan were related to cartilage invasion.

CONCLUSIONS: Thyroid cartilage invasion was rare but more frequent if VF mobility was impaired. This has implications for transoral resection which avoids unnecessary cartilage resection, unlike open surgery.

The Effects of Trophic Factor Combinations on Regenerating Vagal Motoneurons in Vitro

Bryan R. McRae, MD; Stacey L. Halum, MD; Geoffrey P. Aaron, BS

OBJECTIVES: While vagus nerve (VN) injury is a common cause of dysphonia and dysphagia, direct study of brainstem-derived VN motoneurons in culture has been limited. In this study, our recently-developed technique for obtaining dissociated VN motoneuron cultures was used to assess the growth responses of regenerating VN motoneurons to combinations of different neurotrophic factors. Study design: In vitro experiment, mammalian cells.

METHODS: Primary VN motoneurons were obtained from the nucleus ambiguus of adult rats. Dissociated motoneurons were then incubated in combinations of trophic factors (GDNF, BDNF, and CNTF). Neurite outgrowth and branching patterns were determined for each pair.

RESULTS: Optimal combinations of trophic factors with regards to neurite branching and outgrowth were identified and compared with the individual factors’ growth effects.

CONCLUSION: This study demonstrates that VN motoneurons can be derived and maintained in culture. The model facilitates the study of VN regeneration in response to various trophic factor combinations.
Scientific Sessions

Phoniatic Results (PR) of Bilateral Vocal Cord Palsy (bVCP) Treated by Endoscopic Arytenoid Lateropexy (EAL)

Gyorgy Smehak, MD; Laszlo Szakacs, MD; Alice Szamoskozi, MD; Laszlo Rovo, MD, PhD

OBJECTIVES: bVCP can be treated with different methods, which usually do not provide good voice quality. EAL is a reversible technique based on the arytenoid abduction with a suture. Preservation of laryngeal structures ensures the reversibility and good PR afterwards.

METHODS: We assessed the PR (acoustics, perception, videostroboscopy and self-evaluation) of EAL in terms of reversibility and the postoperative phonation on 32 consecutive bVCP patients with one year follow up.

RESULTS: Thirteen patients experienced complete motion recovery of at least one of their vocal cords with PR comparable to normal parameters. Eight patients had incomplete vocal cord recovery, with slightly impaired voice quality. Six patients had socially acceptable voice, but false vocal cord phonation. Five patients had complete palsy with poor phoniatric outcome.

CONCLUSION: EAL ensures voice quality preservation in case of temporary paralysis and it may provide good voicing in cases of partial recovery of the vocal cords.

Non-Invasive Determination of Laryngeal Sensory Nerve Conduction: Findings in Normals and Neuropathic Patients

Jonathan M. Bock, MD; Safwan Jaradeh, MD; Thomas Prieto, PhD; Albert L. Merati, MD; Robert J. Toohill, MD; Joel H. Blumin, MD

INTRODUCTION: We report a new surface technique for studying sensory conduction in the superior laryngeal nerve (SLN).

METHODS: Surface stimulation of the vagus nerve 7-10 cm proximal to a surface electrode placed over the cricothyroid muscle was performed in controls and in subjects with needle electromyographic-confirmed laryngeal neuropathy. Cathodal stimulation was applied beneath the mastoid process, behind the posterior edge of the sternocleidomastoid muscle; conduction parameters were determined.

RESULTS: Non-invasive SLN conduction nerve studies were performed on healthy volunteers (n=28) as well neuropathic subjects (n=27). Age and gender were not significantly different between groups. Compared to controls, the neuropathic subjects had statistically significant differences in baseline-to-peak amplitude, conduction velocity, and intra-subject side-to-side amplitude ratio (p<0.05) of the SLN as determined by the surface conduction technique.

CONCLUSIONS: Laryngeal sensory nerve conduction can be determined non-invasively. This study provides a reproducible method for electrophysiological evaluation of a sensory branch of the superior laryngeal nerve.
Scientific Sessions

Reanimation of the Bilaterally Paralyzed Canine Larynx with an Implantable Stimulator

Kenichiro Nomura, MD; Isamu Kunibe, MD; Akihiro Katada, MD; Rajshri Nainthia, BS; Yike Li, MD; Cheryl Billante, PhD; Yasuaki Harabuchi, MD; David L. Zealear, PhD

The aim of this study was to examine the efficacy and the safety of bilateral stimulation of paralyzed posterior cricoarytenoid (PCA) muscle to restore vocal fold abduction over the long term (8-20 months). Four canines were implanted and paralyzed by recurrent laryngeal nerve neurorrhaphy. Stimulated and spontaneous glottal area was measured endoscopically in anesthetized animal. Exercise tolerance was measured on a treadmill in awake animal. Swallowing study was performed endoscopically and radiographically. During the denervation phase, ventilatory compromise and stimulated response were minimal. During the reinnervation phase, paradoxical inspiratory closure obstructed the airway resulting in severe ventilatory compromise and exercise tolerance of less than 1 minute. Bilateral stimulation restored glottal area and exercise tolerance to normal. There was no evidence of aspiration. Lead integrity was improved by prevention of device migration. In conclusion, ventilation and activity level could be restored to normal without aspiration by a bilateral nonsynchronized stimulator.

Quantitative Laryngeal Electromyography (LEMG): Turns Analysis in Healthy Adults and Patients with Recurrent Laryngeal (RLN) Neuropathy

Melissa McCarty Statham, MD; Clark A. Rosen, MD; Sanjeev D. Nandedkar, PhD; Michael C. Munin, MD

The objective of this study was to develop normative data in controls for turns to amplitude analysis of the thyroarytenoid-lateral cricoarytenoid muscle complex (TA-LCA) and to compare results to patients with subacute recurrent laryngeal nerve (RLN) mononeuropathy. In this retrospective case-control study, we performed concentric needle LEMG of the TA-LCA in 21 controls and 16 patients with unilateral VFP. Quantified turns and mean amplitude/turn were measured for ≥10 epochs/individual. A linear-scale cloud was constructed for both controls and patients. The median age of controls and patients was similar (50.7 vs 48.5 years). In controls, regression analysis comparing mean amplitude per turn to the root-mean-square amplitude demonstrated high correlation (R=0.82). In controls, a normal cloud for the TA-LCA was delineated with mean amplitude 334 µV and 450 turns/second. Turns analysis from patients showed mean amplitude 299 µV and 290 turns/second. Very few data points in patients showed >400 turns/second, and mean turns were statistically different from controls (p=0.002). Our study is the first to describe interference pattern analysis in the TA-LCA in healthy adults and patients with unilateral VFP. In patients with unilateral vocal fold paralysis, we found a decreased number of turns during a range of phonatory effort compared to controls.
**Scientific Sessions**

**Medialization vs. Reinnervation for Unilateral Vocal Fold Paralysis: A Multicenter Randomized Clinical Trial**

Randal C. Paniello, MD; Julia D. Edgar, PhD; Dorina Kallogieri, MD, MPH; Jay F. Piccirillo, MD

PURPOSE: Medialization laryngoplasty (ML) and laryngeal reinnervation (LR) as treatments for unilateral vocal fold paralysis (UVFP) were compared in a multicenter, randomized clinical trial.

METHODS: Qualified, consenting patients underwent either ML or LR. Voice results were compared pre-treatment and at 6 and 12 months post-treatment using untrained listener ratings (ULR), GRBAS scores, and voice-related quality of life (VRQOL) scores.

RESULTS: 24 patients from 9 sites completed the study, 12 in each group. There were no significant intergroup differences in pre-treatment variables. At 12 months, the study groups showed no significant differences in ULR, GRBAS or VRQOL scores. However, patient age significantly affected the LR, but not the ML, group results. The age<52 LR subgroup had significantly (p<0.05) better scores than the age>52 LR subgroup, and trended better than the age<52 ML subgroup. The age>52 ML subgroup results were significantly better than the age>52 LR subgroup.

CONCLUSION: ML and LR are both effective surgical options for patients with UVFP. Reinnervation should be considered in younger patients, while medialization should be favored in older patients.

**The Effect of Decorin in Vitro and Ex Vivo in a Porcine Model of Vocal Fold Scarring**

Priya Krishna, MD; Michael Regner, MS; Joel Palko, MS; Fang Liu, BS; Steve Abramowitch, PhD; Jack Jiang, MD, PhD; Alan Wells, MD, DMSc

Vocal fold scar eludes optimal treatment. We studied effects of decorin on pig vocal fold lamina propria fibroblasts in vitro and on rheology and biomechanics of excised larynges and vocal folds. Fibroblast monolayers were scratched and treated with decorin 20ug/ml, TGF-b1 10ng/ml, and HGF 200ng/ml. Image analysis and western blot was performed. Eleven pigs underwent vocal fold stripping and vocal fold injection with decorin, saline or HGF primed fibroblasts. Larynges were harvested day 30 and underwent rheometry or ex vivo measurements. Monolayer wound closure was decreased in decorin versus TGF-b1 treated fibroblasts (p<0.0005). Blots showed decreased collagen production after 24 hours decorin exposure. Tan delta (0.20) for decorin and fibroblast treated samples trended towards normal values. Biomechanical testing demonstrated phonation threshold pressure as statistically different between decorin and HGF primed fibroblast groups (p<0.05). Decorin decreases wound contraction and may improve laryngeal biomechanics in a porcine vocal fold scar model.
Scientific Sessions

Effects of Thyroarytenoid and Cricothyroid Muscle Activation Levels on Phonation Onset Pressure, Vocal Fold Length, and Fundamental Frequency

Dinesh K. Chhetri, MD; David Berry, PhD; Juergen Neubauer, PhD

The complex interactions between the cricothyroid (CT) and thyroarytenoid (TA) muscles in phonation were studied using an in vivo canine model. Each CT and TA muscle pairs were stimulated at eleven levels of graded stimulation from threshold to maximal contraction for a total of 121 unique CT/TA activation level conditions. Phonation threshold pressure (Pth), vocal fold length (Lvf), and fundamental frequency (Fo) were measured at each condition. TA activation (aTA) increased Pth at all CT activation (aCT) levels. However, aCT increased Pth at low aTA but decreased Pth at higher aTA levels. TA and CT were antagonistic in control of Lvf, and Lvf changed linearly with aCT and aTA levels. aCT was responsible for increasing Fo, while aTA decreased Fo at all aCT. These results demonstrate the complex antagonistic roles of the CT and TA muscles in control of Fo and phonatory effort.

Quantitative Analysis of Videokymography (VKG) in Normal and Pathologic Voice Folds: A Prospective Study

Giorgio Peretti, MD; Cesare Piazza, MD; Francesca Del Bon, MD; Stefano Mangili, MD; Giovanna Cantarella, MD; Marcello Calisti; Claudia Manfredi

VKG captures high speed images of the vocal folds independently from the periodicity of the acoustic signal. Aim of this study is to introduce a software to objectively measure specific parameters of vocal fold vibration. We evaluated 24 subjects (10 normal, 7 with benign lesions, and 7 after cordectomies) using a VKG camera with a 70° telescope during phonation. Images were analyzed by a software developed by us. Different parameters were considered, including the ratio between the duration of open and closed phase within the glottal cycle (Roc), and the ratio between the amplitude of the vibration of one vocal fold with respect to the contralateral (Ramp). Mean values for Roc and Ramp in normal subjects were 1.33 and 1.07, for benign lesions 2.42 and 1.38, and after cordectomies 1.65 and 1.18. Quantitative analysis of VKG is useful for objective evaluation of vibratory patterns in normal and pathologic vocal folds.
Treatment Success of Age-Related Voice Fold Atrophy

Jackie Gartner-Schmidt, PhD; VyVy Young, MD; Clark A. Rosen, MD

Age-related dysphonia has been estimated to occur in 12%-35% of the population. Treatment success for voice therapy/surgery is unclear. Review of treatment outcomes related to voice therapy and surgery for all patients with vocal fold atrophy over the age of 55 during a 2-year period was performed. The pre/post VHI-10 served as the primary metric. Treatment improvement was defined as a pre/post delta VHI-10 of 5 or more. Two hundred and fifty-six patients fit the inclusion/exclusion criteria and were divided into the following groups: no treatment desired; surgery alone; voice therapy alone; voice therapy/surgery. Over two thirds desired no treatment (198/256). Thirty-seven percent of the voice therapy only group showed improvement and 14% of those went on to have surgery. Twenty-nine percent improved after surgery. Most elderly patients with vocal fold atrophy opted for no treatment. Thirty-eight percent responded to either voice therapy or surgery following voice therapy.

532-Nanometer Potassium Titanyl Phosphates (KTP) Laser-Induced Expression of Selective Matrix Metalloproteinases (MM) in the Rat Larynx

Pavan S. Mallur, MD; Milan R. Amin, MD; Ryan C. Branski, PhD

Though the 532nm KTP laser is utilized for vocal fold pathology, little is known about the mechanism of action. Previously, we described a model for KTP-induced injury in the rat larynx. This study uses the model to determine the KTP-induced histological changes and expression of MMP subtypes in the rat larynx. Endoscopic injury of rat vocal folds with the KTP laser was followed by gross and histological analyses, and mRNA quantification of MMP subtypes and inflammatory markers. Our study revealed healing of the vocal fold mucosa by seven days, and an immediate inflammatory infiltrate with no subsequent ultrastructural changes. MMP-3 expression increased transiently. No changes were seen in the expression of MMP-9, an MMP involved in extracellular matrix (ECM) remodeling, or TGF-β, a profibrotic cytokine. These data suggest that the KTP laser induces a modest inflammatory response, selective MMP expression, and no long-term fibrotic processes in a clinically relevant simulation.
Role of Tumor Necrosis Factor-Alpha (TNF-ALPHA) in Wound Repair in Human Vocal Fold Fibroblasts

Xia Chen, MD; Susan Thibeault, PhD

Normal wound repair in the vocal fold depends on interaction between secreted cytokines and local cells. TNF-alpha is a pleiotropic cytokine and apoptotic molecule that appears to be a mediator in inflammation and fibrosis. The purpose of this study was to evaluate the response of human vocal fold fibroblasts in three dimensional (3D) cell culture to provide insight as to whether TNF-alpha may be a therapeutic target to improve vocal fold wound healing. In 3D, TNF-alpha (0.5-100ng/ml) was shown to down-regulate hVFF ECM related mRNA transcript levels -- Collagen I, Collagen III, fibronectin and TIMP3. At low dosages (0.5-10ng/ml) TNF-alpha up-regulated TGF-beta1 mRNA it down-regulated TGF-beta1 levels. TNF-alpha inhibited hVFF proliferation in a dose-dependent manner. These data reveal that TNF-alpha neutralization may be a potential therapeutic target for the study of the amelioration of fibrosis related vocal fold scarring.

Inflammatory Signaling in Human Vocal Fold Fibroblasts

Ryan C. Branski, PhD; Hang Zhou, MD; Diane Felsen, PhD; Dennis H. Kraus, MD

Investigation regarding pathways associated with the acute inflammatory response in mesenchymal cells is critical to the development of novel, physiologically-based therapies for vocal fold injury and fibrosis. We investigated the in vitro effects of pro-inflammatory mediators on cyclo-oxygenase (COX)-2, its upstream regulatory proteins and its downstream product, prostaglandin (PGE)2 in our immortalized human vocal fold fibroblast cell line (HVOX). In HVOX, interleukin (IL)-1β regulated NF-κB mRNA expression, activation, and nuclear translocation as well as both transcription and translation of COX-2. IL-1β increased PGE2 synthesis, but also increased basal expression of membrane-bound prostaglandin receptors, suggestive of both autocrine and paracrine control of prostaglandin signaling in HVOX. The COX-2/PGE2 signaling pathway is particularly relevant given that it is upregulated in vocal fold lesions in contrast to the lower airway where decreased PGE2 is associated with fibrosis. In addition, this pathway is amenable to pharmacological inhibition.
**Scientific Sessions**

**Long-Term Outcomes of Injection Laryngoplasty in Patients with Potentially Recoverable Vocal Fold Paralysis**

Lindsey Arviso, MD; Adam M. Klein, MD; Clyde C. Mathison, MD; Michael M. Johns II, MD

**INTRODUCTION:** Injection laryngoplasty (IL) is commonly used as a temporary intervention for vocal fold paralysis (VFP) while awaiting spontaneous recovery, compensation, or definitive intervention. This study seeks to define the long-term outcomes of patients with potentially recoverable RLN injury treated with IL.

**METHODS:** A single institution retrospective review performed from January 2004 to July 2008 for patients with potentially recoverable VFP who had IL.

**RESULTS:** Of 81 total injections for this situation in 71 patients, 45 patients had greater than 6-month follow-up after IL (9 month overall mean follow up). Eleven patients (24%) had full recovery of their paralysis within an average of 7 months. Three partially recovered (2%) and 17 (38%) compensated well, obviating further intervention. Only fourteen (31%) required further definitive intervention. The majority (69%) of patients required no further intervention after IL.

**CONCLUSION:** This study demonstrates significant long-term improvement after IL performed using temporary materials.

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**The Prevalence, Diagnosis, and Management of Voice Disorders in a National Ambulatory Medical Care Survey (NAMCS) Cohort**

Simon R. A. Best, MD; Carole Fakhry, MD, MPH

**PURPOSE:** Describe prevalence, presentation and management of voice complaints (VC) in a national cohort of ambulatory patients.

**METHODS:** Retrospective analysis of 2006 NAMCS database.

**FINDINGS:** Of 29,392 outpatient encounters, 0.23% and 2.9% of total and otolaryngology visits, respectively, were for VC. In comparison to patients without VC, those with VC were similar in age (49.4% vs. 45.4%, p=0.18), more likely female (73.1% vs. 59.0%, p=0.02), Caucasian (88.0% vs. 82.4%, p=0.02), current smoker (16.4% vs. 10.6%, p=0.02) and acute onset (57.3% vs. 31.1%, p=0.003). The most common diagnostic procedure was fiberoptic laryngoscopy (24%). Primary laryngeal pathology (27%) was more commonly diagnosed than infectious (19%), or gastrointestinal pathology (10%). 19% and 12%, respectively were prescribed antibiotics or anti-reflux medication, and 9% referred to another specialist or voice therapy (12%).

**CONCLUSION:** Nationwide, VC are uncommon, however this study contributes to an understanding of their prevalence, outpatient presentation and management before otolaryngology encounter.
Cross-Sectional Imaging of Vocal Fold Mucosal Wave Dynamics with Triggered High-Speed Optical Coherence Tomography

James B. Kobler, PhD; Ernest W. Chang, BS; Steven M. Zeitels, MD; Seok-Hyun Yun, PhD

Functional laryngeal video imaging is very useful clinically, but is limited to surface views and can be difficult to quantify. We therefore adapted optical coherence tomography (OCT) for capturing calibrated cross-sectional movies of vibrating vocal folds, with high temporal, spatial and depth resolution. Novel technology was developed for triggering high-speed optical-frequency-domain-OCT on phonatory fundamental frequency, as in video-laryngeal-stroboscopy. Excised calf hemi-larynges were imaged during phonation. Phonatory and imaging parameters were varied to examine mucosal motion and characterize factors affecting motion-capture quality. We obtained unique high-resolution, coronal, cross-sectional movies with 100-200 frames/cycle. Mucosal wave deformations, including motion of epithelium and lamina propria were observable and quantifiable. Oscillatory stability and tissue velocity were identified as key factors influencing movie quality. Motion OCT is feasible and provides new opportunities for relating dynamic vocal fold biomechanics to epithelial and sub-epithelial anatomy. This non-contact technology has potential for incorporation into endoscopes for office-based clinical applications.

Does It Really Exist – the Post Thyroidectomy Syndrome Following Thyroidectomy?: Prospective Comparative Analysis of Open vs. Endoscopic Thyroidectomy

Seung Won Lee, MD; Jae Wook Kim, MD; Jae Yong Lee, MD; Yoon Woo Koh, MD

INTRODUCTION: The purpose of this study was to prospectively evaluate and confirm the post thyroidectomy syndrome (PTS) through the subjective and objective analyses of conventional open thyroidectomy vs. endoscopic thyroidectomy.

METHODS: Prospective nonrandomized clinical trials, From Jan 2008 to Jun 2009, 210 consecutive conventional open thyroidectomies (OPEN group) and endoscopic thyroidectomies (ENDO group) were performed. Of the 210 patients, 75 patients completed the subjective and objective evaluation prior to surgery, 1 and 6 months after surgery, respectively. Subjective parameters included perceptual analysis (GRBAS scale), stroboscopic or flexible fiberscopic analysis, voice handicap index, and five point visual analog scales for vocal fatigue, singing difficulty, high pitch phonation difficulty, swallowing difficulty, neck discomfort and hypesthesia. Objective parameters included acoustic & aerodynamic analysis (MPT, Jitter, shimmer, HNR, Max F0, Min F0) and contact quotient of EGG.

RESULTS: For the ENDO group (n = 36), the operating time and recovery time of PTS duration were significantly longer than the OPEN group (n = 39) (P <.01). However, presence of PTS was not related to the size of tumor, operating time, T stage, RAI therapy, and operative techniques (P >.05). For the OPEN group, two objective and five subjective parameters get worse at postoperative one month, among them two subjective parameters persisted until postoperative six months (P <.05). For the ENDO group, three objective and six subjective parameters get worse at postoperative one month, among them three subjective parameters persisted until postoperative six months (P <.05).

CONCLUSION: PTS really exists following simple thyroidectomy and it is very common for both OPEN and ENDO group. Most of parameters gradually improved over the time. However, some subjective parameters especially for singing and high pitched voice persisted until postoperative 6 months.
Scientific Sessions

Development of Artificial Tracheal Prosthesis: Semicircular Shape Polyurethane Scaffold

Han Su Kim, MD; Hyun Hee Cho, MD; Ja-Hyun Lee, MD; Hwal Suh, DDS, PhD; Sung Min Chung, MD, PhD; Jae-Yol Lim, MD; Hong-Shik Choi, MD, PhD

The purpose of this study was to develop an artificial prosthesis for use in the reconstruction of a partial tracheal defect. Semicircular shape porous scaffold was made from polyurethane (PU). Polyethylene glycol was grafted onto the inner surface of the PU scaffold to act as a surfactant. The variable sizes of scaffolds were transplanted into nine beagles. Endoscopic and histology examinations were performed monthly (From 1 month to 6 month after transplantation). The scanning electron microscopy was performed to evaluate the ultra-structure. Six of nine beagles studied survived to the expected date. The histological examination showed that a large amount of fibrous tissue had grown through the pores of the porous scaffold. Ciliated respiratory mucosa was restored on the surface of PU scaffold. Normal ciliary movement was noted on the high speed digital videocamera. The semicircular shape PU scaffold could be ready-made type prosthesis for tracheal reconstruction.

Effect of Cricopharyngeal Surgery on the Pharynx

Jacqui E. Allen, MBChB; Cheryl J. White, MA, SLP-CCC; Rebecca Leonard, MS, PhD; Peter C. Belafsky, MD, PhD

Cricopharyngeal dysfunction (CPD) ranges from asymptomatic CP bar to Zenker’s diverticulum. Consequences of CPD include dilation of the pharynx and reduced pharyngeal constriction. Relief of obstruction helps symptoms but effects on dilation and constriction are unknown. The purpose of this study was to evaluate pharyngeal measures before and after CP intervention. Methods Forty seven patients with CPD on videofluoroscopy underwent CP intervention followed by repeat fluoroscopic study. Objective measures of pharyngeal area and constriction were obtained. Paired t-tests and ANOVA were employed. Results Pharyngeal constriction and pharyngoesophageal segment (PES) opening improved significantly post-intervention (p<0.002); pharyngeal dilation was unchanged. PES opening improved more with CP myotomy than with dilation and botulinum toxin. Conclusions Relief of CP obstruction by surgery or dilation improves pharyngeal constriction and PES opening. Dilation of the pharynx due to prolonged outlet obstruction does not improve. CP myotomy appears more effective than dilation or botulinum toxin in relieving obstruction.
The Effect of Office-Based Laryngeal Surgery on Hemodynamic Stability

Katherine C. Yung, MD; Mark S. Courey, MD

Office based laryngeal surgery is a relatively new innovation and is becoming widespread in practice. One advantage is the avoidance of general anesthesia. However, changes in hemodynamic stability during office procedures have not been studied. This is a retrospective review of 31 patients who underwent unsedated laryngeal, esophageal, or tracheal procedures. Medical records were reviewed for demographics, baseline vital signs including heart rate (HR), blood pressure (SBP and DBP), and oxygen saturation (O2), and vital signs during the procedure. The mean change in HR was 14.6 (p<.0001), mean change in DBP was 18.5 (p<.0001), mean change in SBP was 33.1 (p<.0001), and mean change in O2 was 0.8 (p<.01). Older age groups had significantly higher baseline DBP (p=.02) and SBP (p=.0006), as well as procedural SBP (p=.0007). Change in DBP and SBP was not correlated with age. Significant changes in hemodynamic stability occur during office laryngeal procedures. Clinicians should be aware of this risk and consider monitoring during procedures.

CO2 Laser-Assisted Microsurgery for Intracordal Cysts: Technique and Results on 49 Patients

Marc Remacle, MD; Kassira Amoussa, MD; Jacques Jamart, MD; Georges Lawson, MD

Microsurgery for intracordal cysts is challenging because of the closeness with the vocal ligament and the risk of inducing a scar. In this retrospective study, our experience with the CO2-laser scanning system (Acublade®) is reported on 49 patients. There were 40.8% epidermoid cysts and 59.2% mucous retention cysts. A quarter of the patients had bilateral cystic lesions. Fifty-nine percent had a controlateral lesion, other than a cyst. The mean follow up time was 160 days. We noted a statistically significant improvement in the grade of the dysphonia according to the Hirano’s perceptual scale (G pre=2, G post=1, p=0.02); the vocal handicap index (VHI pre= 51, VHI post=28, p=0.001) and the maximal phonation time in all the patients (MPT pre=11, MPT post=12.7, p=0.033). In the professional voice subgroup (20/49 patients), there was a significant improvement in the frequency range. The CO2-laser scanning system is reliable in the treatment of intracordal cysts.
Long-term Results of Calcium Hydroxylapatite (CAHA) Vocal Fold Injection for Glottal Incompetence

Thomas L. Carroll, MD; Clark A. Rosen, MD

Twelve month post-injection augmentation data with CaHA for glottal incompetence demonstrated excellent results. This paper provides long term follow-up data (24 – 60 months) on a new cohort of patients. A retrospective review was performed from a single institution. Subjects were included if they received a CaHA injection at least 24 months prior and had no further laryngeal surgery during follow up. The VHI-10 scores were used as the primary outcome metric. Twenty subjects amassed 26 post-24 month data points. At an average follow up of 37 months, a statistically significant deterioration from best post-injection VHI-10 score to the post-24 month score was observed (P<.001). 4/7 subjects at 24 months and 5/7 subjects at 36 months showed deterioration to near pre-injection or worse than pre-injection VHI-10 scores. CaHA can provide effective VF augmentation for up to 24 months. Most subjects lost the benefit of the material between 24-36 months post-injection.

Analysis of Laryngeal Framework Surgery: 10-Year Follow-up to a National Survey

VyVy Young, MD; Thomas G. Zullo, PhD; Clark A. Rosen, MD

Laryngeal framework surgery (ML/AA) is common treatments for vocal fold paralysis and glottal incompetence. Little information is known about incidence of ML/AA surgery nationwide, especially success and complication rates. A 25-item questionnaire was mailed to 6644 otolaryngologists. The response rate was 22.5% (n=1492). 62% perform ML/AA, representing 26,321 procedures. The complication rate was 0.97%; granulation tissue comprised 38% and infection 36.6% of all complications. Years of practice were equivalent between those with complication rate <0.10 versus >0.10 (p=0.33). 0.8% implant extrusion and 5.4% revision rates were found. The most common revision was placement of a larger implant (14.4% of all revisions). Revision rate was lower for those with more experience but unaffected by number of procedures done. Comparisons made to the 1998 study demonstrate an increased use of ML/AA (average 26 ML/surgeon in the last decade compared to 12ML/surgeon seen previously). The complication rate is decreased, while revision rate is unchanged.
3D Analysis of Cricoarytenoid Subluxation

I-Fan Theodore Mau, MD, PhD

Introduction/Objectives: 1. To create a high-resolution, 3D reconstruction of cricoarytenoid subluxation to understand its anatomy and functional consequence. 2. To examine the role of cricoarytenoid ligament in prevention of anterior arytenoid subluxation.

Study Design/Methods: Development of image processing algorithms and case study. Axial CT images of a larynx with a subluxed arytenoid were processed with custom MATLAB routines to create a versatile 3D reconstruction. Geometries of the subluxed and non-subluxed arytenoids were quantitatively compared. Position of the cricoarytenoid ligament from historical histologic sections was also examined with 3D reconstruction.

Results: The anteromedially subluxed arytenoid has an inferoposteriorly displaced vocal process, resulting in an elongated vocal fold. Posterior displacement of vocal process has not been described previously. Comparison with 3D position of the cricoarytenoid ligament suggests the ligament does not prevent anterior subluxation as commonly believed.

Conclusions: Selective 3D reconstruction is a powerful tool for advancing understanding of cricoarytenoid joint mechanics.

A Murine Model of Subglottic Granulation

Ankona Ghosh, MD; Kevin Leahy, MD, PhD; Sunil Singhal, MD; Eugene Einhorn, MD; Paul Howlett, MD; Noam Cohen, MD, PhD; Natasha Mirza, MD

To develop a functional model of laryngotracheal granulation tissue by inducing direct airway irritation in transplanted mouse laryngotracheal complexes (LTCs). LTCs from C57BL mice were harvested and divided into 3 groups: (i) uninjured (ii) mechanical injury and (iii) chemical injury. Donor LTCs from each group were placed in dorsal subcutaneous pockets of recipient mice. Each week, the transplanted LTCs were harvested, tissues were fixed, sectioned and counter-stained. Representative slides were reviewed by a blinded pathologist to grade the formation and degree of granulation. Transplantation of LTC into a recipient subcutaneous pocket results in a viable airway able to undergo wound remodeling. Direct airway irritation induces the formation of granulation tissue under the disrupted epithelium of airway mucosa, seen as early as 2 weeks, most noticeably after chemical injury. Preliminary results indicate that the murine model may serve as a replicable and reliable model for airway granulation tissue.
**Scientific Sessions**

**A New Endolaryngeal Suture Technique Using a Silicon Piece: A Simple and Convenient Method**

Tack-Kyun Kwon, MD, PhD; Ji-Hun Mo, MD; Myung-Whun Sung, MD; Kwang Hyun Kim, MD

Endolaryngeal suture of the vocal fold mucosa is always challenging for most laryngologists. The authors introduce a new endolaryngeal suture technique using silicon piece. A sliced silicon piece was grasped with a curved forceps, than a needle holder with a 6-0 vicryl suture needle on the tip was introduced, stick the needle into the silicon through the mucosa. The silicon piece can hold the needle as it was placed and we can simply take the needle off the mucosa without any inadvertent mucosal injury. To evaluate the efficacy of this new technique we had 5 doctors perform 3 different endolaryngeal tasks, and compare with conventional suture technique. The time took performing these tasks significantly reduced with a new technique. The participants reported the easiness in handling needle with their non-dominant hand and in changing the direction of a needle. The author concluded that this technique is a simple and convenient option for endolaryngeal suture.

**A New Endolaryngeal Thread Guide Instrument (ETGI) for Arytenoid Lateropexy (AL)**

Laszlo Rovo, MD, PhD; Shahram Madani, MD; Gyorgy Smehak, MD; Balazs Sztano, MD; Valeria Majoros, MD; Jozsef Jori, MD, PhD

OBJECTIVES: In our study, we assessed the ETGI designed for a simple minimally invasive, endoscopic management of bilateral vocal cord immobility (bVCI)

METHODS: Prospective study of consecutive 34 bVCI patients (22 paralyses, 12 ankyloses). The ETGI utilizes a built-in, movable curved blade allowing a suture thread to be guided in-and-out between the internal laryngeal cavity and the exterior surface of the neck. The endoscopic creation of a double loop around the mobilized arytenoid cartilage causes abduction, thereby providing airway restoration.

RESULTS: 32 patients showed remarkably improved breathing ability. Twelve cases experienced complete and 13 cases incomplete recovery of at least one of their vocal cords with socially acceptable phonation. Seven patients had complete paresis with aphonia.

CONCLUSIONS: The AL is an effective, immediate and long term dynamic solution for various types of bVCI. The ETGI facilitates this method with the rapid and safe creation of fixating suture loops at specific laryngeal locations.
Abductor Paralysis after Botox Injection for Adductor Spasmodic Dysphonia

Naren Venkatesan, MD; Michael M. Johns II, MD; Edie R. Hapner, PhD

Botox injections into the thyroarytenoid muscles are the current standard of care for Adductor Spasmodic Dysphonia. Reported adverse effects include a period of breathiness, throat pain, and difficulty with swallowing liquids. We report a novel complication, bilateral abductor paralysis following Botox injections for ADSD. An analysis of 452 patients receiving Botox injections for SD between 2000 and 2009 revealed 352 patients treated for ADSD. Demographics and treatment history were noted for all patients. Eight patients suffered bilateral abductor paralysis, manifesting as dyspnea upon exertion. Seven patients recovered after a brief period of activity restrictions while one underwent a tracheotomy. Most patients resumed Botox injections subsequently. Bilateral abductor paralysis has an incidence of 0.29% with Botox injections for ADSD. Extravasation of Botox around the muscular process of the arytenoid to the posterior cricoarytenoid muscles is the probable cause. The resulting temporary paralysis is best managed through watchful waiting and activity restrictions.

Actinomycosis of Post-Glottic Rib Graft

Jennifer Y. Lee, MD; Kevin P. Leahy, MD, PhD

PURPOSE: Actinomycosis of the larynx is an uncommon infection. We report actinomycosis of a post-glottic rib graft as a cause of subglottic narrowing, which has not been previously reported. We describe the diagnosis and treatment of actinomycosis of the larynx.

PROCEDURE: This is a case report of a patient with pathology-proven, actinomycosis of a posterior rib graft from a laryngotraceal reconstruction for subglottic stenosis.

RESULTS: Actinomycosis is successfully treated with a course of antibiotics. The subglottic narrowing resolved with complete regeneration of the mucosa.

CONCLUSION: Actinomycosis of a post-glottic rib graft is a rare cause of subglottic narrowing that should be considered in stenosis despite treatment. It can be successfully diagnosed and managed.
Acute Healing of Vocal Fold Microflap Defects in a Rabbit Model

Atsushi Suehiro, MD; Jonathan Bock, MD; Erik R. Swanson, MD; Bernard Rousseau, PhD

The purpose of the current study was to establish a rabbit vocal fold microflap wound model. Sixteen New Zealand white rabbits were used. Transoral direct suspension laryngoscopy was performed using a pediatric laryngoscope. For the microflap procedure, eight rabbits received an incision into the epithelium of one vocal fold using a sickle knife. Mucosal elevation was then performed through this incision using a curved flap elevator. The contralateral vocal fold was left intact to serve as control. A separate group of eight rabbits underwent minimal removal of mucosa via superficial biopsy to serve as a comparison group. Acute healing of microflap and biopsy defects was evaluated histologically. Results revealed less overall thickness of the epithelium and contraction of the lamina propria on post-procedure day 3 and 7 in the microflap group versus biopsy comparison group. Future studies are planned to examine the effects of experimentally induced phonation on microflap healing.

An Evidence Based Approach to the Diagnosis and Treatment of Arytenoid Joint Dislocation

Sanjay Morzaria, MD; Edward J. Damrose, MD

The diagnosis and treatment of arytenoid joint dislocation is controversial. The purpose of this study is to develop a clear clinical pathway for evidence-based diagnosis and management of arytenoid joint dislocation. A systematic literature review was performed using the terms arytenoid cartilage and dislocations or subluxations. 141 cases were reported in the literature. The most common etiologies included intubation and external laryngeal trauma. Physical exam findings alone lacked specificity for the diagnosis of dislocation. The combination of physical exam findings, laryngeal EMG and fine-cut CT imaging showed high specificity. Direct laryngoscopy was the diagnostic gold-standard. Improved voice outcomes were achieved with closed reduction. There was no correlation between the timing of intervention and voice quality. In conclusion, arytenoid dislocation is rare. There is no single diagnostic test. Closed reduction provides improved voice outcome compared to speech therapy. The voice outcome does not correlate with the timing of intervention.
An Unusual Complication of Vocal Fold Lipoinjection: Case Report and Review of the Literature

VyVy N. Young, MD; Clark A. Rosen, MD

Vocal fold lipoinjection has been used to address various laryngeal pathologies, with few reported complications. We present an unusual case of neck abscess following lipoinjection and review literature describing complications of this procedure. The patient presented with lifelong hoarseness secondary to vocal fold paralysis after PDA ligation. She underwent an unremarkable bilateral lipoinjection. Three weeks later, she presented with neck swelling, erythema, and pain. Imaging confirmed a superficial anterior neck abscess; incision-and-drainage was performed. She has recovered well and appears to have suffered no adverse effect on her voice. Vocal fold lipoinjection is a generally safe procedure, with few associated complications. We describe the first reported case of a neck abscess following lipoinjection, likely a result of fat traversing the cricothyroid membrane and serving as a nidus for infection. Contributing factors include anatomic features versus overinjection. The otolaryngologist is advised to remain conscious of this potential complication when performing lipoinjection.

Androgen Treatment and Recovery of Function Following Recurrent Laryngeal Nerve (RLN) Injury in the Rat

Amy L. Pittman, MD; Todd J. Brown, PhD; Gina N. Monaco, BSE; Eileen M. Foecking, PhD; Lee M. Akst, MD; Kathryn J. Jones, PhD, PT

BACKGROUND: Androgen therapy demonstrates promise in other nerve injury models but has never been applied to RLN injury.

OBJECTIVE: Establish a crush injury model studying therapeutic potentials of androgens in RLN injury. Methods: Adult rats underwent standardized crush injury of left RLNs and received androgen or sham therapy. Direct laryngoscopic assessment of vocal cord mobility was performed before, immediately following, and 1, 2, 3, or 4 weeks after injury. Tissue harvest was performed at sacrifice for planned histologic analysis of nerve recovery.

RESULTS: Of 20 rats examined, all exhibited paralysis following injury with gradual recovery complete by 4 weeks. Behavioral data analysis indicates the benefit of androgen treatment relative to controls. Additional cases and histological analyses are ongoing.

CONCLUSIONS: This crush injury model creates reproducible and standardized vocal cord paralysis allowing for study of possible therapies. Androgens speed RLN recovery and are potentially exciting for further translational research.
Scientific Sessions

Anosmia Following Intranasal Cidofovir Injection for Recurrent Respiratory Papillomatosis: A Case Study

Brent Feldt, MD; Robert L. Eller, MD

REPORT OF A CASE: Recurrent respiratory papillomatosis (RRP) is a benign disease of the upper aerodigestive tract that affects patients of all ages. Recent investigations have shown cidofovir to be a promising adjunctive treatment for RRP. We present a case of a woman with RRP who suffered anosmia following intranasal injection of cidofovir. This is the only known case report of intranasal injection of cidofovir temporally associated with anosmia. Further investigations into the use of cidofovir need to be conducted to better understand short and long-term effects.

Benign Lesion Regression as a Function of Parameter Selection with the 532-Nanometer Potassium Titanyl Phosphate (KTP) Laser

Pavan S. Mallur, MD; Milan R. Amin, MD; Bobby Tajudeen, BS

The 532nm KTP laser is a clinically versatile laser. However, variability exists in the selection of laser parameters for benign laryngeal pathology. This study examines the effect of altering wattage and pulse width on benign lesion regression with the KTP laser. We reviewed all patients treated with KTP laser for laryngeal pathology in a single institution. Laser parameters and pathology were recorded. Disease regression was recorded as a change in percent length of the true vocal fold of the lesion. For hemorrhagic polyps or leukoplakia, wattage of 20 to 30 with pulse width of 20-30 milliseconds induced greater than 50% of disease regression in all patients. Granuloma or papilloma showed decreased lesion regression with similar parameters, and typically required larger wattage and pulse width as part of additional procedures. These data suggest that established parameters for specific entities may help predict the degree of lesion regression in vocal fold pathology.
Scientific Sessions

Bilateral Paraglottic Abscesses after Collagen Injection

Joseph Goodman, MD; Nitin Patel, BSc; Matthew Clary, MD; Steven Bielamowicz, MD

OBJECTIVES: 1. Review laryngeal anatomy and indications for injection laryngoplasty. 2. Review the medical literature regarding complications of injection laryngoplasty.

METHODS: Case report and review of the literature.

RESULTS: We present a case report of a 33 year old woman with lupus who presented with hoarseness, fever and worsening dyspnea six months after bilateral injection laryngoplasty with glutaraldehyde cross-linked bovine collagen for vocal cord paresis. A CT scan revealed bilateral paraglottic abscesses. She was admitted and treated with a protracted course of intravenous antibiotics, which provided improvement of her symptoms; however, after switching to oral antibiotics, she again became increasingly hoarse and dyspneic. Repeat CT scan showed persistence of the bilateral paraglottic abscesses. She was taken urgently to the operating room for suspension microlaryngoscopy and drainage of the abscesses. CONCLUSIONS: Glutaraldehyde cross-linked bovine collagen has been used safely for injection laryngoplasty for many years. While hypersensitivity reactions to bovine collagen are known to occur, the cross-linked form is thought to have less immunogenicity. Increased reactions to exogenous collagen have been reported in patients with connective tissue diseases. Hypersensitivity testing has been advocated, but recent reports argue that this may be unnecessary. Our experience lends weight to the argument that testing may be indicated in patients with underlying collagen-vascular disease, such as lupus.

Bilateral Valleeular Cysts as a Cause of Dysphagia: Case Report and Literature Review

Steven Michael Olsen, MD; Jonathan Romak, MD; Dale Ekbom, MD

Cysts of the Valleeula are rare, accounting for 10.5-20.1% of all laryngeal cysts. Most reported cases in the literature address vallecular cysts as a cause of upper airway obstruction in infants or difficult intubation in adults. Valleeular cysts may present with diverse symptoms pertaining to voice, airway and swallowing. While authors have alluded to the occurrence of multiple valleular cysts, to our knowledge, no specific cases have been reported. We review the existing literature and report a rare and illustrative case of a 70-year-old woman who presented with dysphagia from massive bilateral vallecular cysts. The patient underwent direct laryngoscopy and cyst excision with CO2 laser. Follow up revealed complete resolution of her dysphagia. Valleeular cysts, although rare, should be considered in the differential diagnosis of globus, dysphonia, dysphagia, odynophagia and dyspnea. Surgical removal is frequently curative.
Botulinum Neurotoxin Treatment of Spasmodic Dysphonia – Quality of Life Outcomes

Daniel Novakovic, MBBS, MPH, BSc; Joanna D’Elia, MD; Andrew Blitzer, MD, DDS

Laryngeal Botulinum Toxin (BONT) injection is a well-established symptomatic treatment for Adductor Spasmodic Dysphonia (ADSD). Injections may produce a period of breathiness, voice weakness and dysphagia for liquids. A recent study using VR-QOL outcomes questions the overall benefit of BONT describing limited functional improvement with “good voice” for only 1/3 of the period between successive injections. AIM: To examine longitudinal effects of BONT for ADSD upon quality of life

STUDY DESIGN: Prospective cohort study

METHODS: ADSD patients completed qualitative evaluation of voice function after each BONT injection using the percentage of normal function (PNF) scale. Other parameters measured included VHI, duration of effect, PNF scores for best/current function & complications.

RESULTS: 100 patients treated continuously between Jan 2006 and Dec 2008 with an individuated regime (dose, pattern & schedule) were selected from our database. We present our findings with respect to botox dosage, functional outcomes, duration of effect and complications.

Delayed Aphonia with Vocal Fold Immobility Secondary to Muscle Fibrosis after Blunt Laryngeal Trauma

Aric Park, MD; Mika Sumiyoshi, BS; Thomas L. Carroll, MD

Blunt laryngeal trauma is most frequently associated with motor vehicle accidents, sports related trauma, pugilistic insult or strangulation. We present the unique case of a 23 year old male with delayed onset aphonya two weeks after blunt neck trauma. A flexible laryngoscopy revealed a right true vocal fold (TVF) immobility and transglottic gap. CT scanning demonstrated a fractured, subluxed right inferior cornu of the thyroid cartilage, positioned between the posterior thyroid cartilage ala and the PCA and LCA muscles. Laryngeal EMG demonstrated normal ipsilateral nerve conduction. Intraoperatively, the fractured cornu was excised from the fibrotic intrinsic muscles. Endolaryngeal palpation demonstrated improved lateral excursion of the right arytenoid. Carboxymethylcellulose was injected into the immobile side for symptomatic relief of dysphonia early in the recovery period. A three-month postoperative examination showed essentially normal TVF mobility and a subjectively normal voice. A brief review on blunt laryngeal trauma and its management is presented.
Scientific Sessions

Endoscopic Arytenoid Adduction with Calcium Phosphate Cement

Akihiro Shiotani, MD, PhD; Masayuki Tomifuji, MD, PhD; Koji Akaki, MD, PhD

Previously, we reported the feasibility of injection laryngoplasty with calcium phosphate cement (CPC) for unilateral laryngeal paralysis. CPC is a self-hardening, injectable paste, which recrystallizes to calcium hydroxyapatite after injection. Here, we present an improved procedure for arytenoid adduction. Under general anesthesia, with an intubation tube of a small diameter, the entire larynx, including the bilateral vocal folds and arytenoid cartilages, was exposed with a Weerda distending operating laryngoscope or FK-laryngopharyngoscope. A rigid videolaryngoscope connected to a CCD camera was used for wide-field visualization. The arytenoid cartilage on the paralyzed side was palpated to determine the degree of adduction; thereafter, CPC was injected onto the lateral side of the vocal process, and the arytenoid cartilage was fixed in the adducted position by crystallized CPC. With this procedure, endoscopic arytenoid adduction was successfully performed in 10 cases, and injection laryngoplasty may be indicated for patients with a wide posterior glottal gap.

Expression of Fibronectin (FN) Splice Variants, Interleukin-1β (IL-1β), and Collagens in Vocal Fold Mucosa (VFM) During Subglottic Injury in Rabbits

Ha-Sheng Li-Korotky, MD, PhD; Patricia A. Hebda, PhD; Vlad Sandulache, MD, PhD; Nancy Lo, BS; Brynn Saeler, MS; Chia-Yee Lo, MS; Mark Barsic, BS; Joseph E. Dohar, MD, MS

BACKGROUND: FN is a family of 20 isoforms generated by variant gene splicing. Age-dependent expression of FN-EDA splice variant may help differentiate regenerative fetal healing from scarring.

PURPOSE: To delineate correlations between splice-variant-FNs and inflammatory and scarring-associated molecules in injured VFM.

METHOD: Adult rabbits underwent cricothyroidotomy and CO2-laser-induced subglottic injury, which also extended into adjacent VFM. At 12, 24, 48, and 72hrs VFM mRNA was measured for total FN, FN-splice variants EDA and V, collagens I and III, and IL-1β.

RESULTS: Dose-dependent induction of FN-EDA was detected at 48 and 72hrs after 5-watts injury and at 72hrs after 2-watts injury. IL-1β was induced at 24hrs and remained elevated at 72hrs in 5-watts injuries versus 2-watts injuries. At 72 hrs, collagen-I was up-regulated whereas collagen-III was suppressed.

CONCLUSION: Expression of the FN-EDA domain correlates with induction of IL-1β and increased collagen I/III ratios, suggesting that FN-EDA may contribute to VFM scarring.
Scientific Sessions

Factory Contributing to Laryngeal Injury from Prolonged Intubation

Joyce Colton House, MD; J. Pieter Noordzij, MD; Susan Langmore, PhD; Bobby Murgia, MS; Nadia Chan, MS4

The factors leading to laryngeal injury due to intubation are poorly understood. This study seeks to determine if duration of intubation, size of endotracheal tube, and/or type of endotracheal tube impact the degree of vocal fold immobility and other laryngeal injury upon extubation. 61 adult patients intubated for more than 48 hours were examined by fiberoptic nasolaryngoscopy shortly after extubation. 41% of patients had some degree of vocal fold immobility. However, neither the duration of intubation, the size of endotracheal tube, nor the type of endotracheal tube significantly affected the degree of laryngeal injury including vocal fold immobility. Additionally, none of the collected demographic information (age, race, gender, height, weight) significantly affected the degree of laryngeal injury. The duration of intubation, type of endotracheal tube, and size of endotracheal tube do not significantly correlate to the incidence of vocal fold mobility and degree of laryngeal injury noted after prolonged intubation.

How Do We Produce a Loud Voice?: Evidence for a New Mechanism

Sid Khosla, MD; Shanmugam Murugappan, PhD; Ephraim Gutmark, PhD

INTRODUCTION: It is known that increasing vocal fold closing speed (VFCS) will increase voice intensity, and that increasing subglottal pressure (SP) will increase VFCS. The current hypothesis is that increasing SP increases maximum lateral displacement (MLD) which increases VFCS; however, this relationship has not been experimentally demonstrated. This work measures the relationship between VFCS, MLD and the negative pressures produced by the intraglottal vortices (NPPIV).

METHODS: Using methodology previously published by our group, the MLD, VCFS, and NPPIV were determined for different subglottal pressures during phonation for 4 excised canine larynges. RESULTS: The Pearson correlation coefficients (PCC) between VFCS and NPPIV were 0.98 with a p value of 0.001, while the PCC between VFCS and MLD were 0.65 with a p value of 0.156. CONCLUSION: This work does not support the current hypothesis but does support the theory that intraglottal vortices are important for determining voice intensity.
Idiopathic Ulcerative Laryngitis

C. Blake Simpson, MD; Lucian Sulica, MD; Gregory N. Postma, MD; Clark A. Rosen, MD; Milan R. Amin, MD; Mark S. Courey, MD; Michael M. Johns II, MD

Ulcerative laryngitis, initially described by Rakel, et al is a distinct clinical entity that presents after a prolonged upper respiratory infection with cough and is characterized by bilateral ulcerations of the mid-membranous vocal folds. The purpose of this paper is to characterize this disorder over the entire disease course. The study is a multi-institutional retrospective review from eight clinical sites over a 5-year period. Fourteen cases were identified that had adequate videostroboscopic data from the initial presentation to the resolution of the vocal fold ulcerations. All patients were female with a median age of 47.4. The average time from initial presentation to the otolaryngologist to resolution of the disease was 3.2 months. In the majority of the patients (64%) there were persistent vibratory abnormalities after resolution of the ulcerations. This is the first multi-institutional study to define the complete disease course of this rare entity.

Injection Laryngoplasty with Micronized Dermis: A Ten Year Experience with 515 Injections in 465 Patients

Peak Woo, MD; Melin Tan, MD

INTRODUCTION: It has been 10 years since micronized dermis has been used for correction of glottic insufficiency. This report reviews its role and lessons learned.

METHOD: Retrospective review from a single clinician.

RESULTS: The indications were for vocal fold paralysis, atrophy, scar and degenerative diseases. The material is best when placed into the membranous vocal fold just lateral to the vocal ligament. With the exception of premature absorption, complication was less than 0.1%. If injection was limited to augmentation to the mid-line and when less than 0.4 cc was used, premature absorption was noted. Over injection was needed and prompted the development of a trans-cervical approach to prevent implant extrusion. Bilateral injection was often necessary in patients with atrophy. The median injected material has increased from 0.6 cc to 1.4 cc over the decade. Re-injection and additional procedures can be expected in 10%. In 25 patients followed for greater than 1 year, gradual absorption was noted about 2.5 years after the initial injection.

CONCLUSION: Despite the problems of inconsistency in preparation, slow absorption over time and need for over-injection, micronized dermis is a safe augmentation allograft material that has long-term (>1 year) stability. It can be used for temporary or permanent vocal fold augmentation.
Intubation vs. Unspecified Laryngeal Granulomas: 49 Cases of Retrospective Analysis

Yoshihiko Kumai, MD, PhD; Kohei Nishimoto, MD; Takashi Aoyama, MD; Narihiro Kodama, SLP; Eiji Yumoto, MD, PhD

Intubation Laryngeal Granuloma (ILG) is known to be one of the common complications of endotracheal intubation. On the other hand, patients with no obvious cause of LG can be categorized as unspecified LG (ULG). We compared the results of our treatment for these two types of LG; 15 cases of ILG versus 34 cases of ULG, which occurred and treated between 1998 and 2008. Clinical course, especially the treatment outcome, treatment period and the presence of black spot were retrospectively reviewed and compared between these two groups. Resolution rate was much better in ILG (14/15 vs 22/34). Average of treatment period was significantly shorter in ILG (129 days vs. 276 days, P<0.05). There was no significant difference in the presence of black spot after LG resolved (5/15 vs. 9/34). This retrospective study suggested that ILG can be categorized apart from ULG in terms of formulating the treatment plan.

Laryngopharyngeal Stenosis Status Post Chemoradiation Therapy

Michael DeMarcantonio, MD; John Sinacori, MD

INTRODUCTION: Laryngopharyngeal stenosis is a rare complication of chemoradiation. The stenosis may occur cephalad to the hypopharynx at the level of the base of tongue (BOT). Patients may present with a combination of dysphagia and/or respiratory distress. Our study seeks to present this severe complication and review treatment success.

PROCEDURE: Four patients were identified with laryngopharyngeal stenosis and subsequently underwent laryngoscopy with CO2 laser excision of stenosis. Each patient was then followed for at least 9 months.

RESULTS: All patients had a history of BOT carcinoma treated with chemoradiation. A total of 8 laser excisions were performed during the series. Despite treatment, 1 patient remained tracheostomy dependent and one required laryngectomy.

CONCLUSIONS: Laryngopharyngeal stenosis with dysphagia and/or respiratory distress is a severe complication of the treatment of BOT carcinoma. New therapies and techniques will need to be developed and applied to help prevent and treat this difficult complication.
Long-Term Functional Outcome of Patients with Glottic Carcinoma Treated with Unilateral Laser Cordectomy and Postoperative Voice Treatment

Annerose Keilmann, MD, PhD; Wolf Mann, MD, PhD

Preservation of function is still an ongoing debate between different treatment modalities for laryngeal cancer. In a prospective longitudinal trial 17 patients treated with laser surgery for Tc1s, T1 or T2-tumour of the vocal cords received voice therapy and were examined 1, 2, 3, 41/2, 6 and 12 months postoperatively. Besides videolaryngostroboscopy each examination included history, phonetogram of the speaking and the singing voice, a language specific hoarseness diagram and a questionnaire (Voice Handicap Index; VHI 12 in German). While stroboscopical and acoustic parameters improved gradually over time, this was initially also true for the VHI, however there was a deterioration noted after 3-6 months for subjective assessment while objective parameters improved. This discrepancy between objective findings and patient satisfaction over time has to be considered.

Maturing of Human Vocal Fold Scar after Cordectomy

Yo Kishimoto, MD, PhD; Shigeru Hirano, MD, PhD; Ichiro Tateya, MD, PhD; Shin-ichi Kanemaru, MD, PhD; Juichi Ito, MD, PhD

OBJECTIVE: The features of human scarred vocal folds have rarely been reported and how the scar changes with time is not well known. The present study aims to investigate maturing process of human scarred vocal folds caused by cordectomy in terms of vibratory and aerodynamic functions.

MATERIALS AND METHODS: 10 patients who underwent cordectomy in Kyoto University Hospital are enrolled in this study. Acoustic and aerodynamic analyses and videostroboscopic examination were used to evaluate the temporal changes of scarred vocal folds.

RESULTS: NMWA, NGG, MPT, MFR and APQ appear to stabilize about 6 months after the procedure in the majority of cases, however, PPQ and NHR varied individually.

CONCLUSIONS: There were individual variations in temporal changes of vocal functions of scarred vocal folds after cordectomy. In terms of vibratory and aerodynamic functions, it is suggested that it takes at least half a year for maturation of vocal fold scarring.
Management of Cancer Metastatic to the Paranasal Sinuses: A Case Report

Jason Roberts, MD; Archana Siddalingappa, BS; Christopher Brook, BS

Cancer metastatic to the paranasal sinuses often presents with ophthalmologic and facial deformities, as well as insomnia, anosmia and aguesia. These diminutive tumors are difficult to effectively treat often leading to poor quality of life and ultimately patient demise. Although breast cancer is a common cancer affecting over 150,000 women each year, rarely is metastatic breast cancer found within the sinuses. We report a case history of a 40-year-old patient with breast cancer metastatic to the paranasal sinuses. Because her tumor demonstrated resistance to radiation therapy, an endonasal approach with debulking of the tumor was performed with post-operative chemotherapy. Four months post-operatively, our patient has decreased proptosis, is without facial pain, and has no sinonasal or visual complaints. While providing a better understanding of this tumor metastasis through a review of the literature, our report provides an alternative plan of care for suspected metastases to the paranasal sinuses.

Modification and Testing of a Pneumatic Dispensing Device for Controlled Delivery of Injectable Materials

James T. Heaton, PhD; James B. Kobler, PhD; Mark P. Ottensmeyer, PhD; Gerardo Lopez-Guerra, MD; Sandeep S. Karajanagi, PhD; James A. Burns, MD; Steven M. Zeitels, MD

INTRODUCTION: Vocal fold (VF) injections of viscous materials are typically performed using hand-operated syringes; however, this method can be imprecise due to accumulation of back-pressure and effort-related tremor.

METHODS: A non-medical, foot-pedal-triggered device for dispensing viscous materials was modified by adding a volume-tracking linear transducer and a digital readout. In bench tests, bovine VFs were injected with fluids/materials of different viscosities (saline, glycerol, hydrogel and liposuctioned fat) through narrow-bore needles using a range of driving pressures and air-pulse durations. The device was further evaluated in 50+ in-vivo VF injection experiments.

RESULTS: Device function was precise and repeatable, with high correlations (typically R-squared>.95) between the readout and direct measures of volume, even at small outputs (5µl/pulse). Foot-pedal control enabled surgeons to make steady, accurate injections into ferret and dog VFs during phonosurgery.

CONCLUSIONS: This VF injection system shows promise for development to enhance human phonosurgery by increasing injection control and precision.
Scientific Sessions

Novel Robotic Controller for Carbon-Dioxide (CO2) Laser Micromanipulator
Outperforms Expert Human Manual Control

Yu-Tung Wong, MD; Joseph Giallo, PhD; Robert Buckmire, MD

OBJECTIVES: To introduce a novel method of combining robotics and the CO2 laser micromanipulator to provide excellent accuracy and precision that outperforms human manual control.

METHODS: We developed a portable robotic controller that appends to a standard CO2 laser micromanipulator. Accuracy, laser beam path reproducibility, and consistency of ablation depth were compared between automated robotic control and manual micromanipulator control driven by up to six expert users. Both CO2 laser live fire and Helium-Neon laser beam video tracking techniques were employed.

RESULTS: Automation demonstrated superiority over manual control in accuracy (path error greater than 1 mm, 2.56% versus 14.89%), laser beam path reproducibility (divergence, 21.42 versus 65.84 mm²), and consistency of ablation depth (variance, 0.206 versus 2.63 mm²). All results statistically significant (p<0.05).

CONCLUSIONS: Robotic micromanipulator control enhances accuracy and repeatability for specific laser tasks. Computerized control opens opportunity for alternative control interfaces, safety features, and image-guided ablation.

Pediatric Laryngeal Tuberculosis: A Case with Difficult Diagnostic Challenges

Ethan Handler, MD; Tara Greenhow, MD; Joshua A. Gottschall, MD

Laryngeal tuberculosis (LTB) is rare in the pediatric population. Most cases present clinically as sequelae of pulmonary tuberculosis (PTB). We present a case of a 12-year-old girl with Trisomy 21, hoarseness, cough and papillomatous lesions of the larynx. Histopathologically, suppurative non-caseating granulomas were noted. She had no history of PTB. AFB stain, cultures, chest x-ray and PPD were negative. She was treated empirically with antibiotics and antacids with symptomatic improvement. Nearly 1 year later, her symptoms worsened. Repeat debridement and studies were negative for TB. The patient subsequently required tracheotomy. An enlarged pretracheal lymph node was sampled and bronchial washings were obtained. AFB was noted in the lymph node, and the cultures were ultimately positive for Mycobacteria Tuberculosis. This patient underwent RIPE therapy and was subsequently decanulated. This case highlights the insidious nature of LTB and importance of diligence in obtaining a diagnosis.
Scientific Sessions

Post Cricoid Mucosal Advancement Flap – An Effective Treatment for Posterior Glottic Pathology

Hussein Samji, MD, MPH; Edward Damrose, MD

Surgical management of posterior larynx pathology, particularly with vocal fold hypomobility, presents a challenging reconstructive problem for the laryngologist. The posterior glottis can be approached either endoscopically or via laryngofissure. Combined with the postcricoid mucosal advancement (PCMA) flap, scar and neolasm in this region can be successfully resected, preserving and improving glottic function. Four patients underwent posterior glottic reconstruction, two open and two endoscopic approaches, three for vocal fold immobility and airway compromise secondary to scar, one for an extensive granular cell tumor. In all cases, the posterior glottic pathology was successfully resected and flaps proved viable. All patients were successfully decannulated postoperatively, and all resumed normal oral alimentation. Voice quality was stable or improved in all. There were no perioperative or postoperative complications. Conclusion: Surgical reconstruction with the PCMA flap is a viable treatment for posterior laryngeal pathology and can be performed effectively by either traditional laryngofissure, or endoscopy.

Postcricoid Hemangioma in an Adult: First Reported Case

Lindsay Reder, MD; Sunil Verma, MD; Neils Kokot, MD

INTRODUCTION: A hemangioma of the postcricoid region is a lesion that, to date, has been reported only in infants and young children. Reported here is a case of a postcricoid hemangioma in an adult patient.

CASE: A 38 year-old female presented with progressive dysphagia and weight loss over several months. Physical examination and imaging demonstrated a mass suspicious for a vascular lesion in the postcricoid area. The patient underwent transoral carbon dioxide laser microsurgery, and final pathological examination showed a hemangioma. She is doing well four months after surgery, with an excellent voice, resolution of dysphagia, and no evidence of recurrence.

RESULTS: To our knowledge, there have been no reports of adult patients diagnosed with a postcricoid hemangioma. We report the presentation and treatment of this entity.

CONCLUSION: Postcricoid hemangiomas are rare lesions that occur mostly in pediatric patients. We present a case of an adult with a postcricoid hemangioma treated effectively with transoral laser microsurgery.
Prospective Study of Patient Tolerance and Outcomes in Awake Percutaneous Injection Laryngoplasty

Hakan Birkent, MD; Maya Sardesai, MD; Albert L. Merati, MD

INTRODUCTION: Percutaneous injection laryngoplasty in the awake patient (IL) is a treatment option for glottal insufficiency. Outcomes and patient tolerance of IL has not been widely studied in a prospective manner.

METHODS: Twenty-three subjects enrolled; 20 had complete data. Their self-reported injection experience, voice handicap index (VHI), CAPE-V, and GRBAS were evaluated prior to and 2 months post-IL.

RESULTS: The subjects’ mean VHI improved from 62 to 43 (p<0.05, paired t-test) following IL with bovine collagen. CAPE-V demonstrated a beneficial trend (40.6 pre-IL, 31.4 post-IL), as did the overall GRBAS (1.92 pre-IL, 1.65 post-IL); but neither were statistically significant (p>0.05, paired t-test). As measured by visual analog scales, patient perceptions about IL revealed moderate apprehension; afterwards, subjects noted that IL was not as uncomfortable as anticipated.

CONCLUSIONS: IL continues to be an effective method of treating glottal insufficiency, although self-report of improvement was greater than that noted by perceptual assessment. Post-IL VHI is still notably impaired in many patients.

Residual Motor Function in Bilateral Laryngeal Paralysis

Gayle E. Woodson, MD

Patients with neurogenic bilateral vocal fold motion impairment have varying degrees of airway obstruction and variable response to surgical procedures to enlarge the glottis. Variations in residual or recurrent muscle activity could account for much of these differences. To assess patterns of muscle action, videolaryngoscopy recordings of thirty patients were reviewed, assessing phonatory adduction, inspiratory abduction, and active adduction during inspiration. 18 patients had some phonatory adduction of both vocal folds, and 11 had phonatory adduction of one vocal fold. Only one patient had no observable adduction with phonation, and that patient had paradoxical inspiratory adduction of the left vocal fold. Active adduction during inspiration was observed in 13 patients, and was bilateral in 2. Active abduction with sniff was only observed in 6 patients. CONCLUSION: The predominant residual activity in bilateral paresis is adductor, and paradoxical inspiratory adductor activity is common. These adductor forces could counteract surgical efforts to widen the glottis.
Scientific Sessions

Risk Factors for Injection into the Superficial Lamina Propria Layer During Injection Laryngoplasty

Jagmeet Mundi, MD; Dinesh Chhetri, MD

Injection of the augmentation material into the superficial lamina propria (SLP) layer is a major complication of injection laryngoplasty (IL). We performed a retrospective review of a case series to identify risk factors associated with this complication. 113 consecutive patients undergoing in-office IL with crosslinked bovine collagen using percutaneous technique were identified. Before and after laryngeal videoendoscopy and clinician’s perceptual ratings of patient’s voice were reviewed. Improvement in vocal function and quality was noted in 109/113 patients. Four patients (2.6%) had poor outcome due to SLP injection. All four were female and had low body mass index. No other major complications or hypersensitivity reactions were noted. Results show that superficial injection is a rare complication of IL and that the female larynx is particularly susceptible, likely due to its smaller dimensions. Higher incidence of SLP injection reported in the literature may be due to variable injection techniques and augmentation materials.

Sleep-related Deglutition in Patients with Sleep Apnea-Hypopnea Syndrome Under CPAP Therapy

Kiminori Sato, MD, PhD; Hirohito Umeno, MD; Shun-ichi Chitose, MD; Tadashi Nakashima, MD

Deglutition is a vital function, and a clearance of the pharynx by swallowing is important to protect the airway. Sleep-related deglutition and respiratory phase patterns in patients with obstructive sleep apnea-hypopnea syndrome (OSAHS) under CPAP (continuous positive airway pressure) therapy were investigated. Sleep-related deglutition under CPAP therapy was examined in ten severe adult OSAHS patients using time-matched recordings of polysomnography and electromyography of the thyrohyoid and suprahypoid muscles and compared with deglutition before CPAP therapy. Under CPAP therapy, swallowing was infrequent during sleep. The deeper the sleep stage, the lower the mean deglutition frequency. Most deglutition occurred in association with spontaneous electroencephalographic arousal. And swallows followed by inspiration were markedly reduced (11.8%). Sleep-related deglutition and respiratory phase patterns had normalized. CPAP therapy improved not only apnea-hypopnea during sleep and sleep structure but also sleep-related deglutition, especially respiratory phase patterns associated with deglutition.
**Scientific Sessions**

**Slow-Release Nanoparticle Encapsulated Delivery System for Laryngeal Therapeutics**

Michael M. Johns II, MD; Vasantha L. Kolachala, PhD; Oswaldo A. Henriquez, MD; Samantha Shams, BA; Justin S. Golub, MD; Mauricio Rojas, MD; Ravi V. Bellamkonds, PhD

Injectable encapsulated polylactide-co-glycolide (PLGA) nanoparticles offer a potential slow release delivery system for therapeutics in the larynx. PLGA nanoparticles were loaded with Texas Red-Dextran (NPTR) and Hepatocyte growth factor (NPHGF). In vitro release was determined for each over time. In vivo release of NPTR was assessed in the murine vocal fold. NPHGF bioactivity was measured in vitro. In-vitro release kinetics show slow release of NPTR, and NPHGF over 12 to 14 days. In vitro NPTR release correlated with in vivo results. In vivo presence of NPTR occurred up to 7 days compared to 1 day for TR control. NPHGF demonstrated slow release over an extended period and was shown to be bioactive by reducing procollagen transcription in vitro. PLGA encapsulated agents show promise as an effective tool for providing sustained release of biologically active therapeutics in the larynx.

**Squamous Cell Carcinoma Arising from Teflon Granuloma**

Alan R. Grimm, MD; John M. Schweinfurth, MD

**INTRODUCTION:** Teflon® granulomata following injection medialization are known to occur over a long period of time. Progression to invasive carcinoma has not previously been described.

**METHODS:** A case of a squamous cell carcinoma arising from the true vocal cord of a patient who had previously undergone a Teflon® medialization procedure over thirty years ago is described. This patient presented with the complaint of several years worsening dysphonia and dyspnea. Exam was consistent with granuloma formation; however intraoperative examination demonstrated a more extensive lesion. Biopsies subsequently revealed squamous cell carcinoma coexistent with a foreign body, giant-cell reaction consistent with Teflon® granuloma.

**RESULTS:** Review of literature demonstrates no previous evidence of squamous cell carcinoma arising from Teflon® related giant cell reaction. Discussion Pathologic findings in this case represent evidence of malignant transformation of a Teflon® granuloma.

**CONCLUSION:** The chronic inflammation associated with Teflon granuloma may give rise to invasive carcinoma.
The Role of Conservation Surgery in Laryngeal Chondrosarcoma

Maria L. Wittkopf, MD; Sarah L. Rohde, MD; James L. Netterville, MD

INTRODUCTION: Laryngeal chondrosarcoma (LC) is rare. Traditional treatment involves aggressive surgery often requiring total laryngectomy (TL). The purpose of this study is to develop treatment algorithms focusing on laryngeal preservation.

PROCEDURES: A retrospective examination of all patients treated for LC in the last ten years at the Vanderbilt University Department of Otolaryngology was performed. All patients were treated surgically. If deemed appropriate from a disease-control standpoint, patients were offered conservation laryngeal surgery (CLS). Pre- and post-operative laryngeal exam photodocumentation and videostroboscopic evaluation were obtained.

RESULTS: Nine patients were identified. The two patients with aggressive grade chondrosarcoma as well as the oldest patient in the series were treated with TL. The remaining six patients underwent CLS. All patients were treated successfully. All patients treated with CLS maintained their nasopharyngeal airway, voice, and swallowing.

CONCLUSIONS: Based on our experience, CLS is an appropriate treatment option for LC patients who meet criteria.

To Present a Novel Pathway for Resident Education in Laryngology

Sunil Verma, MD; Seth Dailey, MD

PURPOSE: To present a novel pathway for resident education in laryngology

METHODS: Canine larynges were dissected by otolaryngology residents in a temporal bone lab using the laryngeal dissection station. Endoscopic procedures such as subepithelial infusion, creation of a microflap, and epithelial resection were performed with use of the microscope and microinstruments. Using the same specimen, participants then dissected a hemilarynx from outside-in, identifying important structures and anatomical relationships. Participants performed procedures on the remaining hemilarynx including variations of laryngoplasty and hemilaryngectomy.

RESULTS: Canine larynges strongly resemble human larynges and are easily employed in a teaching model. They are more easily acquired and are less expensive than human larynges.

CONCLUSION: A laryngeal dissection course utilizing a canine larynx and laryngeal dissection station was successful in teaching residents anatomy as well as endoscopic and open procedures via an ex-vivo model.
Scientific Sessions

Tracheotomy Technique and Complications: A Single Institution Comparison between Otolaryngologist and Non-Otolaryngologist Surgeons

Jonathan Y. Ting, MD; Stacey L. Halum, MD

BACKGROUND: Tracheotomy technique and management can differ between otolaryngologist and non-otolaryngologist surgeons. This study aims to determine at one institution if there are technical differences between otolaryngologist and non-otolaryngologist surgeons, and if these differences impact patient outcomes.

METHODS: All tracheotomies performed at our institution from 2003-2008 were reviewed. Indication, operating surgeon, technique, complications, and time to decannulation and hospital discharge were recorded.

RESULTS: A total of 894 tracheotomies were performed, 394 by otolaryngologists and 500 by non-otolaryngologists. The commonest indication for tracheotomy was ventilator dependence. The overall complication rate was 1.9% (1.7% for otolaryngologists and 2.0% for non-otolaryngologists). The rate of complications requiring operative reintervention was 0.76% for otolaryngologists and 1.2% for non-otolaryngologists.

CONCLUSION: There was a non-significant trend towards lower complication rates in tracheotomies performed by otolaryngologists. Further studies are warranted to determine if these patterns are similar nationwide, and if guidelines could be implemented to improve tracheotomy technique and management.

Utility of Injection Laryngoplasty in the Management of Post Thyroidectomy Vocal Cord Paralysis

Seung Won Lee, MD; Jae Wook Kim, MD; Jae Yong Lee, MD; Yoon Yoo Koh, MD; Young Ik Son, MD

OBJECTIVES: This prospective study investigated the safety and efficacy of injection laryngoplasty in the management of post-thyroidectomy vocal cord paralysis (VCP).

STUDY DESIGN: Prospective clinical study. Methods: From Mar. 2005 to Dec. 2008, 174 consecutive injection laryngoplasties were performed in patients with unilateral glottic insufficiency. This included 34 patients with post-thyroidectomy vocal cord paralysis (VCP): 15 with transient VCP (TVCP) and 19 with permanent VCP (PVCP). Percutaneous injection was performed under local anesthesia into the vocalis muscle, using disposable 25G long needles through the cricothyroid membrane or directly through the thyroid cartilage. Patients completed acoustic aerodynamic, perceptual, stroboscopic, and voice handicap index (VHI) evaluations before and 3 and 6 months after the injection.

RESULTS: Injection laryngoplasty can be performed under local anesthesia without morbidity. Acoustic and perceptual parameters (GRBAS (grade, roughness, breathiness, asthenia, and strain), maximum phonation time, jitter, and shimmer), the voice handicap index (VHI), and grades of mucosal waves and glottic closure were significantly improved after the injection and they remained stable over 6 months in both the TVCP and PVCP groups (P < 0.05).

CONCLUSIONS: Based on these preliminary results, injection laryngoplasty improved the voice, and voice-related quality of life in patients with post-thyroidectomy VCP. It is a simple, safe, and useful method for rehabilitating post-thyroidectomy VCP patients.
Scientific Sessions

Viscoelastic Data on Currently Used and Promising Injectable Biomaterials

Steven Y. Chinn, BS; Marvin P. Fried, MD

INTRODUCTION: Viscoelastic properties are important in determining the potential of injectable biomaterials to augment and repair impaired vocal folds. We aim to analyze the current viscoelastic data on these materials.

METHODS: A MEDLINE search was performed, identifying 15 articles that addressed the viscoelastic properties of currently used and developing biomaterials.

RESULTS: Teflon, Gelfoam, Cymetra, and calcium hydroxyapatite achieved elastic moduli (G’) and dynamic viscosities (η) several orders of magnitude higher than that of normal vocal fold mucosa; bovine collagen and autologous fat had lesser G’ and η values. Derivatives of hyaluronic acid (HA) achieved viscoelastic properties that most resembled that of vocal fold mucosa.

CONCLUSIONS: Many currently used biomaterials are well suited for injection into deeper layers of the vocal cords to treat glottic insufficiency. Whereas these materials are overly stiff and viscous for treating damaged vocal fold mucosa, chemically modified HA derivatives are potential agents for this purpose.

Vocal Fold Augmentation with a New Gel Implant – Four Month Outcomes

Jacqui Allen, MBChB; Peter Belafsky, MD, PhD

There are several substances available for vocal fold (VF) augmentation. The purpose of this investigation was to report 4-month follow-up on a new FDA approval gel for VF augmentation.

METHODS: Forty-four patients prospectively recruited for VF injection augmentation were evaluated. Voice Handicap Index (VHI) and stroboscopy findings were documented at enrollment, one, three, and four month follow-up. Paired t-test was used for comparison of pre- and post-operative results.

RESULTS: Forty-two patients underwent 48 injections. The mean VHI at entry, 1, 3, and 4-months was 28 (+/-8), 18 (+/-9), 20 (+/-11), and 18 (+/-10) (p<0.0003). Stroboscopy revealed improved glottal closure, however, delayed stiffness was apparent at 3 months in 11/48 (23%). Average follow up was 4.4 months.

CONCLUSIONS: VF augmentation with Novielle Voice Gel has demonstrated significant improvements in VHI-10 at five months. The delayed onset of vibratory stiffness in 23% is concerning.
Vocal Fold Wound Healing Outcomes in Drug Resistant Protein Knockout Mice

Masaru Yamashita, MD, PhD; Diane M. Bless, PhD;
Nathan V. Welham, PhD

Stem cells are known to overexpress drug resistant proteins as part of a self-protective nuclear dye efflux phenotype. The purpose of this study was to examine differences in vocal fold mucosal wound healing outcomes in drug resistant protein knockout mice compared to wildtype control mice. Mice were subjected to unilateral vocal fold injury under endoscopic guidance. Laryngeal tissue was harvested one month post-injury and immunohistochemistry was performed against the extracellular matrix proteins procollagen type I, collagen types I, III and IV, fibronectin, decorin, elastin, and hyaluronic acid binding protein 2. Drug resistant protein knockout mice demonstrated significantly altered extracellular matrix protein abundance compared to wildtype control. Drug resistant protein knockout models may hold a key role in improved understanding of vocal fold tissue repair processes.

Voice Outcomes in Early Glottic Cancer Treatment: Comparison of Surgery and Radiation

Stephanie Misono, MD; Tanya K. Meyer, MD; Albert L. Merati, MD

PURPOSE: The objective of this systematic review is to compare voice outcomes for T1 glottic carcinomas treated with endoscopic excision to those treated with radiation therapy.

METHODS: Eligible studies were identified through PubMed searches spanning 1966 – 2009. Hand-searches through references from selected papers as well as searches through other databases are ongoing. Outcome data, including acoustic parameters, perceptual ratings, and functional and quality of life questionnaires, are collected.

RESULTS: Of the 72 studies identified initially, a large fraction presented voice outcomes in aggregate across different T stages of disease. Preliminary results from the focused review of T1 glottic carcinoma treatment indicate that voice outcomes are similar but not identical between treatment with endoscopic surgery and radiation therapy.

CONCLUSIONS: A more nuanced understanding of the effects of endoscopic surgery and radiotherapy on voice outcomes after treatment for T1 glottic carcinoma will allow improved counseling for newly diagnosed patients.
MEMORIALS

The University of Rochester Medical Center mourns the death of John P. Frazer, M.D., a chief of the former Division of Otolaryngology at the Medical Center who treated patients for 60 years. He died April 27 in Rochester at the age of 95.

A memorial service will be held at 3 p.m. Saturday, May 8, at the Rochester Academy of Medicine, 1441 East Avenue.

“John Frazer was a superb clinician teacher,” said C. McCollister Evarts, M.D., Distinguished University Professor and professor of orthopaedics at the Medical Center. “His commitment to his patients was exemplary as was his loyalty to this Medical Center. He was a true citizen of this institution.”

Seymour I. Schwartz, Distinguished Alumni Professor of Surgery at the Medical Center, recalled Dr. Frazer as “a dedicated member of the faculty and the University community.”

“He felt very strongly about the University and the Medical Center,” Schwartz said. “He was extremely kind and a total gentleman.”

After graduating from the School of Medicine and Dentistry in 1939, Dr. Frazer, a native of Rochester, N.Y., completed his training at the then Cornell-New York Hospital and Yale Medical School. From 1943 to 1946, he served as an instructor and acting chief of otolaryngology at Yale.

In 1948, Dr. Frazer began a private practice in otolaryngology in Honolulu. In Hawaii, he also served as a consultant at Tripler Army Hospital, the State Leprosarium and the Leahi Sanatorium.

Dr. Frazer returned to Rochester in 1963 to lead the Medical Center’s Division of Otolaryngology, a position he held until 1981. During his tenure, the Division of Otolaryngology, which was part of the Department of Surgery, developed the residency program to full specialty training. Dr. Frazer had a particular interest in ear surgery.

Arthur S. Hengerer, M.D., who succeeded Dr. Frazer as head of the division, said he saw patients until he was about 90.

“He lived through the growth of modern otolaryngology and the introduction of antibiotics,” said Hengerer, professor of otolaryngology, who also
remembered Dr. Frazer’s great sense of humor and love of storytelling.

John Norante, M.D., associate professor of otolaryngology, described Dr. Frazer as “an excellent clinician, a wonderful teacher, an inspiring leader and a cherished friend.”

Dr. Frazer loved hiking and climbing. He went hunting in autumn until he was 94. He attended the School of Medicine and Dentistry reunion in October.

Dr. Frazer was married to the late Doris Larsen Frazer. He is survived by two daughters, Tulle Frazer of Harpswell, Me., and Sherry Frazer of Thomaston, Me., and a grandson, Isaac Frazer Gerard.
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<td>1941</td>
<td>Arthur W. Proetz, Henry B. Orton</td>
<td>1977</td>
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<td>John J. Shea, Thomas C. Galloway</td>
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### Vice-Presidents (Presidents-Elect)

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### Secretaries and Treasurers

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<td>1879</td>
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<td>C. H. Knight</td>
<td>1900</td>
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<td>1882</td>
<td>D. Bryson Delavan</td>
<td>1895</td>
<td>H. L. Swain</td>
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### Secretaries

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<td>Harry P. Schenck</td>
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<td>1939</td>
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<td>1972</td>
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### Treasurers

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### Librarians

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### Librarian and Historian

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### Librarian, Historian and Editor

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<td>1964</td>
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DECEASED FELLOWS

Dates indicate original election to the Association

Honorary Fellows

1946  Alonso, Justo M., Montevideo, Uruguay
1914  Levy, Robert, Denver, CO
1992  Aschan, Gunnar K., Linköping, Sweden
1918  Lewis, Fielding O., Media, PA
1908  Barnhill, John F., Miami Beach, FL
1933  Lierle, Dean M., Iowa City, IA
1983  Birkett, Herbert S., Montreal, CN
1888  Mackenzie, John N., Baltimore, MD
1878  Bosworth, Francke H., New York, NY
1881  Mackenzie, Sir Morell, London, ENG
1940  Broyles, Edwin W., Baltimore, MD
1910  Masser, Ferdinand, Naples, Italy
1917  Coates, George M., Philadelphia, PA
1904  Mosher, Harris P., Marblehead, MA
1925  Clerf, Louis H., St. Petersburg, FL
1910  Moure, J. J. E., Bordeaux, France
1957  Conley, John J., New York, NY
1937  Nager, F. R., Zurich, Switzerland
1960  Daly, John F., Fort Lee, NJ
1930  Negus, Sir Victor E., London, ENG
1818  Dean, Lee Wallace, St Louis, MO
1818  Oliver, H. K., Boston, MA
1881  Delavan, D. Bryson, New York, NY
1878  Ono, Jo, Tokyo, Japan
1891  De La Sota y Lastra, Ramon, Seville, Spain
1906  Pierce, Norval Harvey, San Diego, CA
1893  de Roualdes, Arthur W., New Orleans, LA
1937  Portmann, Georges, Bordeaux, France
1923  Fenton, Ralph A., Portland, OR
1924  Proetz, Arthur C., St. Louis, MO
1879  French, Thomas R., Brooklyn, NY
1957  Ruedi, Luzius, Zurich, Switzerland
1936  Galloway, Thomas C., Evanston, IL
1932  Schall, LeRoy A., Boston, MA
1880  Garcia, Manuel, London, ENG
1909  Semon, Sir Felix, Great Missenden, England
1886  Gould, Wilbur J., New York, NY
1878  Solis-Cohen, J., Philadelphia, PA
1903  Harris, Thomas J., New York, NY
1973  Som, Max L., New York, NY
1971  Harrison, Sir Donald F. N., Surrey, England
1889  Swain, Henry L., New Haven, CT
1943  Hilding, Anderson C., Duluth, MN
1914  Thomson, Sir St Clair, London, ENG
1928  Hill, Frederick T., Waterville, ME
1903  Tilley, Herbert, London, ENG
1948  Holinger, Paul H., Chicago, IL
1914  Wagner, Clinton, New York, NY
1957  Huizinga, Eelco, Groningen, the Netherlands
1948  Williams, Henry L., Rochester, MN
1907  Jackson, Chevalier, Schwenksville, PA
1951  Woodman, DeGraaf, New York, NY
1878  Johnston, Samuel, Baltimore, MD
1890  Wright, Jonathan, Pleasantville, NY
1878  Lefferts, George Morewood, Katonah, NY
1902  Lermoyez, Marcel, Paris, France
1972  Arslen, Michele, Padua, Italy
1897  Lue, H., Paris, France
1942  Batson, Oscar V., Philadelphia, PA
1896  MacBeth, Ronald G., Oxford, England
1938  Blair, Vilray P., St Louis, MO
1896  MacDonald, Greville, Haslemere, England
1892  Browne, Lennox, London, England
1894  MacIntyre, John, Glasgow, Scotland
1903  McBride, P., York, England
1964  Cleves, Carlos, Bogota, Colombia
1920  McKenzie, Dan, London, England
1940  Colledge, Lionel, London, England
1919  McKernon, James F., New Canaan, CT
1901  Collier, Mayo, Kearsney Abbey, Kent, England
1880  Meyer, Wilhelm, Copenhagen, Denmark
1893  Desverine, Carlos M., Havana, Cuba
1896  Mygind, Holger, Copenhagen, Denmark
1946  Eggston, Andrew A., New York, NY
1919  Paterson, Donald Rose, Cardiff, Wales
1930  Emerson, Francis P., Franklin, MA
1941  Patterson, Norman, Herts, England
1961  Faaborg-Anderson, Kund, Nykobing, Denmark
1971  Rethi, Aurelius, Budapest, Hungary
1936  Fraser, John S., Edinburgh, UK
1919  Rogers, John, Jr, New York, NY
1887  Gougenheim, A., Paris, France
1894  Sajous, C. E. DeM., Philadelphia, PA
1901  Grant, Sir James Dundas, London, England
1924  Schaefer, J. Parson, Philadelphia, PA
1984  Holten, Edgar, Newark, NJ
1896  Schmiegelow, Ernst, Copenhagen, Denmark
1970  Hutchison, Jack R., Brisbane, Australia
1946  Segura, Eliseo, Buenos Aires, Argentina
1985  Inouye, Tetsuzo, Saitama, Japan
1940  Soto, E. Fernandez, Havana, Cuba
1919  Kelly, Adam Brown, Helensburgh, Scotland
1881  Thornton, Pugin, London, England
1978  Kleinsasser, Oskar, Marburg, Germany
1913  Turner, A. Logan, Edinburgh, UK
1881  Labus, Carlo, Milan, Italy
1936  Vialle, W., Lyons, France
1950  Larsell, Olof, Portland, OR
1926  Law, Frederick M., New York
1894  Wolfenden, R. Norric, Kent, England
1921  LeMaitre, Ferdinand, Paris

Corresponding Fellows

1978  Arauz, Juan Carlos, Buenos Aires, Argentina
1902  Lermoyez, Marcel, Paris, France
1918  Aschan, Gunnar K., Linköping, Sweden
1909  Lewis, Fielding O., Media, PA
1908  Barnhill, John F., Miami Beach, FL
1933  Lierle, Dean M., Iowa City, IA
1883  Birkett, Herbert S., Montreal, CN
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1881  Delavan, D. Bryson, New York, NY
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1880  Garcia, Manuel, London, ENG
1909  Semon, Sir Felix, Great Missenden, England
1886  Gould, Wilbur J., New York, NY
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1903  Harris, Thomas J., New York, NY
1973  Som, Max L., New York, NY
1971  Harrison, Sir Donald F. N., Surrey, England
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1943  Hilding, Anderson C., Duluth, MN
1914  Thomson, Sir St Clair, London, ENG
1928  Hill, Frederick T., Waterville, ME
1903  Tilley, Herbert, London, ENG
1948  Holinger, Paul H., Chicago, IL
1914  Wagner, Clinton, New York, NY
1957  Huizinga, Eelco, Groningen, the Netherlands
1948  Williams, Henry L., Rochester, MN
1907  Jackson, Chevalier, Schwenksville, PA
1951  Woodman, DeGraaf, New York, NY
1878  Johnston, Samuel, Baltimore, MD
1890  Wright, Jonathan, Pleasantville, NY
1878  Lefferts, George Morewood, Katonah, NY

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**Deceased Fellows**

**Emeritus Fellows**

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<td>Jerome A. Hilger</td>
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<td>1914</td>
<td>Mackenty, John E.</td>
<td>New York, NY</td>
<td>NY</td>
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<td>1881</td>
<td>Major, G. W.</td>
<td>Montreal, Canada</td>
<td></td>
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<td>1898</td>
<td>Makuen, G. Hudson</td>
<td>Philadelphia, PA</td>
<td>PA</td>
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<td>1948</td>
<td>Maxwell, James H.</td>
<td>Ann Arbor, MI</td>
<td>MI</td>
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<td>1879</td>
<td>McBurney, Charles</td>
<td>New York, NY</td>
<td>NY</td>
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<td>1927</td>
<td>McGinnis, Edwin</td>
<td>Chicago, IL</td>
<td>IL</td>
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<td>1936</td>
<td>McGregor, Gregor</td>
<td>Toronto, Canada</td>
<td>CA</td>
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<tr>
<td>1934</td>
<td>McKimme, O. A.</td>
<td>Washington, DC</td>
<td>DC</td>
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<tr>
<td>1895</td>
<td>McLaurin, John G.</td>
<td>Dallas, TX</td>
<td>TX</td>
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<td>1924</td>
<td>McSherry, Clinton II</td>
<td>Baltimore, MD</td>
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<td>1903</td>
<td>Meltzer, Philip E.</td>
<td>Boston, MA</td>
<td>MA</td>
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<td>1899</td>
<td>Montreuil, Fernand</td>
<td>Montreal, Canada</td>
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<td>1881</td>
<td>Morgan, E. C.</td>
<td>Washington, DC</td>
<td>DC</td>
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<td>1937</td>
<td>Morrison, Lewis F.</td>
<td>San Francisco, CA</td>
<td>CA</td>
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<td>1940</td>
<td>Morrison, William W.</td>
<td>New York, NY</td>
<td>NY</td>
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<td>1886</td>
<td>Mulholl, J. C.</td>
<td>St Louis, MO</td>
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<td>1878</td>
<td>Mullin, William V.</td>
<td>Cleveland, OH</td>
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<td>1914</td>
<td>Mungar, Carl E.</td>
<td>Waterbury, CT</td>
<td>CT</td>
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<td>1882</td>
<td>Murray, T. Morris</td>
<td>Washington, DC</td>
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<td>1881</td>
<td>Myster, H.</td>
<td>Buffalo, NY</td>
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<td>1893</td>
<td>Newcomb, James E.</td>
<td>New York, NY</td>
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<td>1893</td>
<td>Nichols, J. E. H.</td>
<td>New York, NY</td>
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<td>1895</td>
<td>Ogora, Joseph H.</td>
<td>St Louis, MO</td>
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<td>1897</td>
<td>Orton, Henry B.</td>
<td>Newark, NJ</td>
<td>NJ</td>
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<td>1894</td>
<td>Park, William H.</td>
<td>New York, NY</td>
<td>NY</td>
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<td>1924</td>
<td>Porcher, W. Peyre</td>
<td>Charleston, SC</td>
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<tr>
<td>1927</td>
<td>Porter, Charles T.</td>
<td>Boston, MA</td>
<td>MA</td>
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<tr>
<td>1954</td>
<td>Pressman, Joel J.</td>
<td>Los Angeles, LA</td>
<td>LA</td>
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<td>1908</td>
<td>Randall, B. Alexander</td>
<td>Philadelphia, PA</td>
<td>PA</td>
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<td>1882</td>
<td>Rankin, D. N.</td>
<td>Allegheny, PA</td>
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<td>1934</td>
<td>Richards, Lyman G.</td>
<td>Wellesley Hills, MA</td>
<td>MA</td>
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<tr>
<td>1902</td>
<td>Richardson, Charles W.</td>
<td>Washington, DC</td>
<td>DC</td>
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<tr>
<td>1930</td>
<td>Ridpath, Robert E.</td>
<td>Philadelphia, PA</td>
<td>PA</td>
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<tr>
<td>1945</td>
<td>Robb, James M.</td>
<td>Detroit, MI</td>
<td>MI</td>
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<td>1953</td>
<td>Roberts, Sam E.</td>
<td>Kansas City, MO</td>
<td>MO</td>
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<tr>
<td>1881</td>
<td>Robertson, J. M.</td>
<td>Detroit, MI</td>
<td>MI</td>
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<tr>
<td>Year Elected</td>
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<tr>
<td>1974 Alford, Bobby R., M.D., Baylor College of Medicine, One Baylor Plaza, #NA 102, Houston TX 77030-3498</td>
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<td>2006 Altman, Kenneth W., M.D., Ph.D., Dept of Otolaryngology, Mt. Sinai School of Medicine, One Gustave L. Levy Pl., Box 1189 New York, NY 10029</td>
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<tr>
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<td>2007 Bielamowicz, Steven, M.D., Dept. of Otolaryngology, Washington University Hospital, 2150 Pennsylvania Ave. NE., Suite 6-301, Washington, DC 20037</td>
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<tr>
<td>1994 Calarelli, David D., M.D., Dept. of Otolaryngology, Rush Presbyterian St. Luke’s Medical Center, 1653 West Congress Parkway, Chicago IL 60612</td>
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<tr>
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</table>
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Robbins, K. Thomas, M.D., Div. of OTO, Southern Illinois University School of Medicine, 301 N 8th St., Room 5B-501, Springfield, IL 62701
Rontal, Eugene, M.D., 28300 Orchard Lake Rd., Farmington MI 48334
Rontal, Michael, M.D., 28300 Orchard Lake Rd., Farmington MI 48334
2005 Rosen, Clark A., M.D., Eye & Ear Institute, 200 Lothrop Street, Ste 500, Pittsburgh, PA 15213-2546

2001 Ruben, Robert J., M.D., Montefiore Medical Ctr., 3400 Bainbridge Ave, 3rd Fl, Bronx NY 10467

2018 Sasaki, Clarence T., M.D., OTO Dept of Surgery, Yale University School of Med, PO Box 208041, New Haven CT 06520

1997 Sataloff, Robert T., M.D., D.M.A., 1721 Pine Street, Philadelphia PA 19103-6701

1981 Schaefer, Steven D., M.D., Dept. of ORL, New York Eye and Ear Infirmary, 14th Street at 2nd Avenue, New York NY 10003

1992 Schechter, Gary L., M.D., 120 Cardinal Lane, Cardinal VA 23025

1987 Schuller, David E., M.D., 300 W. 10th Ave., Ste. 519, Columbus OH 43210

2008 Schweitzer, Vanessa G., MD, 28738 Hidden Trail, Farmington Hill, MI 48334


1997 Shockley, William W., M.D., Dept. of Otolaryngology, Univ. of NC – Chapel Hill., G-0412 Neurosciences Hospital, CB 7070, Chapel Hill NC 27599-7070

2009 C. Blake Simpson, M.D., Dept of Otolaryngology, University of TX – San Antonio, 7703 Floyd Curl Drive, MSC 7777, San Antonio, TX 78229

1988 Singer, Mark I., M.D., Mount Zion Med Ctr., 2356 Sutter St., Fl. 4, San Francisco CA 94115

2009 Marshall E. Smith, M.D., Dept of Otolaryngology, University of Utah, 50 North Medical Dr., SC120, Salt Lake City, UT 84132

1995 Sofferman, Robert A., M.D., Div. of Otolaryngology, Fletcher Allen Health Care, West Pavilion 4, 111 Colchester Ave., Burlington VT 05401

1979 Specter, Gershon J., M.D., Dept. of Otolaryngology, Washington Univ School of Med, 517 S. Euclid, St. Louis MO 63110

1991 Strome, Marshall, M.D., Dept. of Otolaryngology, Cleveland Clinic Foundation, Mail Code A71, 9500 Euclid Avenue, Cleveland OH 44195

2006 Strome, Scott E., M.D., Dept of Otolaryngology, Univ. of Maryland Medical Center, 16 S. Eutaw St., Suite 500, Baltimore, MD 21201

1997 Stucker, Frederick J., M.D., Louisiana State University Med., Dept. of Otolaryngology, 1501 Kings Hwy. #33932, Shreveport LA 71103-4228

2010 Sulica, Lucian M.D.,

2004 Terris, David J., M.D., 4 Winged Foot Drive, Martinez, GA 30907

1982 Thawley, Stanley E., M.D., Washington Univ School of Med, 517 S. Euclid Avenue, St. Louis MO 63110

2008 Thompson, Dana M., M.D., M.S., Dept. of Otolaryngology, Cincinnati Children’s Hospital Medical Center, 3333 Burnet Ave., MLC 2018, Cincinnati, OH 45229

1989 Toohill, Robert J., M.D., Dept. of OTO, Medical College of Wisconsin, 9200 W. Wisconsin Ave., Milwaukee WI 53226

1979 Tucker, Harvey M., M.D., 3 Louis Drive, Pepper Pike, OH 44124

1973 Tucker, John A., M.D., 608 Ederer Ln., PO Box 13, Gwynedd Valley PA 19437

2004 Varvares, Mark A., M.D., 3635 Vista @ Grand, FDT-6, St. Louis., MO 63110

1996 Weber, Randal S., M.D., Univ of Texas, Dept of Otolaryngology – HNS, Unit 441, 1515 Holcombe Blvd., Houston, TX 77030


1991 Weisberger, Edward C. M.D., Indiana Univ Med Ctr., Rm. 0860, 702 Barnhill Drive, Indianapolis IN 46202-5230

1997 Weisman, Robert A., M.D., Div. of ORL– Head & Neck, UCSF Medical Center, 200 W. Arbor Dr., San Diego CA 92103-9891

1995 Weissler, Mark C., M.D., Div. of Otolaryngology, Univ. of NC – Chapel Hill., G-0412 Neurosciences Hospital, CB 7070, Chapel Hill NC 27599-7070

1994 Wenig, Barry L., M.D., Dept. of OTO, Evanston Northwestern Hosp., 1000 Central St., Ste. 610, Evanston IL 60201

1997 Wetmore, Ralph F., M.D., Div. of Otolaryngology, The Children’s Hospital of Philadelphia, 34th St. & Civic Center Blvd., Philadelphia PA 19104

1989 Weymuller, Ernest A. Jr., M.D., Dept. of Otolaryngology–Head & Neck Surgery, Univ. of Washington Medical Ctr., PO Box 356515, Seattle WA 98195-0001

1996 Woo, Peak, M.D., Dept. of Otolaryngology, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York NY 10029-6574

1994 Woodson, Gayle E., M.D., Div. of OTO, Southern Illinois University School of Medicine, 301 N 8th St., Room 5B-501, Springfield, IL 62701

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1995  Zeitels, Steven M., M.D., Dept. of Otolaryngology, Massachusetts Gen. Hospital, One Bowdoin Sq., Boston, MA 02114

Associate Fellows – 6

1996  Bless, Diane, Ph.D., Dept. of Otolaryngology, Univ. of Wisconsin Hospital, CHS F4/217, 600 Highland Ave., Madison, WI 53792

2009 Cleveland, Thomas Ph.D., Dept. of Otolaryngology, Vanderbilt University Medical Center, 7302 MCE South, Nashville, TN 37232-8783

1997  Hillman, Robert E., PhD., Dept. of Otolaryngology, Massachusetts General Hospital, One Bowdoin Sq., Boston, MA 02114

Ludlow, Christy L., PhD, National Institute of Health, 10 Center Dr., MSC 1416, Bethesda, MD 20892

2006 Murry, Thomas, PhD, Dept of Otolaryngology, Columbia Presbyterian Medical Center, 180 Ft. Washington Ave., HP 8-812, New York, NY 10032-3710

Thibeault, Susan L., PhD, Dept. of Otolaryngology, Univ. of Utah School of Medicine, 50 N. Medical Drive, Rm 3-C-120, Salt Lake, UT 84132

Honorary Fellows - 4

1991(1963) Kirchner, John A., MD, 12 Rimon Hill Rd., Woodbridge, CT 06525-1234

1984(1956) Norris, Charles Morgan, MD, 3401 Broad St., Philadelphia, PA 19140


1999  Titze, Ingo R., PhD, The University of Iowa, 330 WJSHC, Iowa City, IA 52242-1012

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1999  Abitbol, Jean, M.D., ENT Laser Surgery, 1 Rue Largilliere, Paris, 75010 FRANCE

1991 Andrea, Mario, M.D., Av. Egas Moniz, 1649-035, 1000 - Lisbon, PORTUGAL

1999 Antonelli, Antoninoi, M.D., Univ. of Brescia, P.LI Spedali Ciuiili 1 Brescia, 25100 ITALY

1985 Aprigliano, Flavio, M.D., Rua Terezina 19, St. Tereza, Rio de Janeiro, 20240 310 BRAZIL

1959 Bateman, Geoffrey, M.D., Thornley-Grafham, Petwork W. Sussex, GU28-0GA UK

1980 Benjamin, Bruce, M.D., 19 Prince Road, Killara, NSW, 2071, AUSTRALIA

1991 Bradley, Patrick J., M.D., 37 Lucknow Drive, Nottingham NG3 2UH, ENGLAND

1993 Brasnu, Daniel F., M.D., EHGP Dept of OTO, 20 Rue Leblanc, 75908 Paris, FRANCE

1995 Bridger, G. Patrick, M.D., 1/21 Kitchener Place, Bankstown 2200 NSW, AUSTRALIA

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2003 Eckel, Hans E., M.D., Dept. of Otorhinolaryngology, Univ of Cologne, LKH Klagenfurt St., Veiter Str 47, Klagenfurt A-9020 AUSTRIA

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