

CURRICULUM VITAE

(Harvard format)

Name: Steven Marc Zeitels
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 Massachusetts General Hospital
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Place of Birth: New York, New York

Education:

1978 B.A. Boston University
 1982 M.D. Boston University School of Medicine: Boston, MA, (6 Year Medical Program)

Postdoctoral Training:

Internship General Surgery
 7/82-6/83 Boston City Hospital and University Hospital, Boston, MA

Residency Otolaryngology - Head and Neck Surgery
 7/83-6/87 Boston University - Tufts University Combined Program, Boston, MA

Fellowship Head and Neck Oncological Surgery
 7/87-6/88 Boston University and Boston Veterans Affairs Medical Center, Boston, MA

Licensure and Board Certification:

1984 Massachusetts License Registration
 1988 American Board of Otolaryngology

Academic Appointments

7/88-6/90	Assistant Professor: Otolaryngology - Head and Neck Surgery	Boston Univ. School of Med.
7/88-6/89	Senior Clinical Inst.: Otolaryngology - Head and Neck Surgery	Tufts Univ. School of Med.
7/89-1/92	Clinical Assistant Prof.: Otolaryngology - Head and Neck Surgery	Tufts Univ. School of Med.
7/90-12/91	Clinical Assistant Prof.: Otolaryngology - Head and Neck Surgery	Boston Univ. School of Med
7/90-10/92	Instructor: Department of Otology and Laryngology	Harvard Medical School
1/92-6/94	Adjunct Assistant Prof.: Otolaryngology - Head and Neck Surgery	Boston Univ. School of Med.
1/92-6/94	Lecturer: Otolaryngology - Head and Neck Surgery	Tufts Univ. School of Med.
10/92-9/96	Assistant Professor: Department of Otology and Laryngology	Harvard Medical School
10/96-10/07	Associate Professor	
10/96-6/04	Department of Otology and Laryngology	Harvard Medical School
7/04-10/07	Department of Surgery	Harvard Medical School
10/07-present	Professor: Department of Surgery	Harvard Medical School
12/04-present	Eugene B. Casey Chair of Laryngeal Surgery	Harvard Medical School

3/06-present Senior Fellow and Mentor: Holmes Society

Harvard Medical School

Hospital Appointments:

7/88-1999 Staff Surgeon: Boston Veteran's Administration Medical Center

7/90-9/93 Assistant in Otolaryngology: Massachusetts Eye and Ear Infirmary

9/93-1/97 Assistant Surgeon in Otolaryngology: Massachusetts Eye and Ear Infirmary

9/97-2/01 Associate Surgeon in Otolaryngology: Massachusetts Eye and Ear Infirmary

1/98-6/04 Clinical Associate in Surgery: Thoracic Surgery Div.: Massachusetts General Hospital

11/98-04 Director: Division of Laryngology: Massachusetts Eye and Ear Infirmary

9/99-present Consulting Staff: Boston Children's Hospital Medical Center

2/01-present Surgeon in Otolaryngology: Massachusetts Eye and Ear Infirmary

7/04-12/07 Associate in Surgery: Thoracic Surgery Division: Massachusetts General Hospital

1/08-present Visiting Surgeon: Thoracic Surgery Division: Massachusetts General Hospital

Other Professional Positions, Major Visiting Appointments:

2004-present Affiliated Faculty of the Harvard-MIT Division of Health Sciences & Technology

2006-present Board of visitors: New England Conservatory

Hospital and Health Care Organization Service Responsibilities:

7/87-6/94 Staff and teach head and neck oncological surgery and phonosurgery
Head and Neck Service, Boston Veterans Affairs Medical Center

7/90-6/04 Staff and teach head and neck oncological surgery and phonosurgery
Head and Neck Service, Massachusetts Eye and Ear Infirmary

9/91-2000 Treatment clinic for neurolaryngological disorders including laryngeal dystonias with botulinum toxin in collaboration with the Department of Neurology, Massachusetts General Hospital

10/92-6/04 Review objective vocal-assessment data during voice rounds
Voice and speech physiology laboratory, Massachusetts Eye and Ear Infirmary

1997-present Develop & manage laser-based laryngeal surgery - Wellman Center of Photomedicine clinical & research program. Massachusetts General Hospital

7/04-present Conceive, direct and develop a laryngeal surgery and voice disorders program
Massachusetts General Hospital

7/04-present Direct and develop treatment clinic for neurolaryngological disorders including laryngeal dystonias with botulinum toxin at the Massachusetts General Hospital

Major Administrative Responsibilities:

- 7/89-6/92 Associate Chief: Otolaryngology Section: Boston Veterans Affairs Medical Center
- 7/89-6/90 Director of Research: Otolaryngology / Head and Neck Surgery: Boston University Sch. of Medicine
- 12/92-7/04 Associate Medical Director: Voice and Speech Laboratory: Massachusetts Eye and Ear Infirmary
- 11/93-1997 Physician Advisor: Occurrence Screening: Massachusetts Eye and Ear Infirmary
- 7/97-6/04 Director: Harvard Laryngology Fellowship: Massachusetts Eye and Ear Infirmary
- 11/98-6/04 Director: Division of Laryngology: Massachusetts Eye and Ear Infirmary
- 3/03-6/04 Board of Surgeons: Massachusetts Eye and Ear Infirmary
- 7/04-present** Director: Center for Laryngeal Surgery and Voice Rehabilitation - Massachusetts General Hospital
- 7/04-present** Director: Laryngology and Laryngeal Surgery Fellowship: - Massachusetts General Hospital

Major Committee Assignments:

Medical School

- 1989-1991 Ph.D. thesis committee for Nadeem Afridi, M.D.
Department of Biochemistry: Boston University School of Medicine
- 1990 Search committee for a speech - voice scientist
Department of Otology & Laryngology: Harvard Medical School
- 1999 Chairman: search committee for a Laryngologist
Department of Otology & Laryngology: Harvard Medical School
- 2004 Chairman: search committee for a Laryngeal Surgeon
Department of Surgery: Massachusetts General Hospital and Harvard Medical School
- 2005 Continuing Medical Education Committee: Harvard Medical School

Hospital

- 4/92-6/94 Massachusetts Eye and Ear Infirmary [MEEI]: Physicians Staff Inc.
Board member for hospital activities
- 1995 Search committee for a basic scientist investigating laryngeal physiology, [MEEI]
- 1997 Dana Farber Partners Cancer Center: Head and Neck Disease Center
Guidelines and Outcomes Subcommittee
- 2000-6/04 Surgical Case Review Committee, [MEEI]

Professional Societies:

- 1982-present Massachusetts Medical Society
- 1982-present American Medical Association
- 1983-present American Academy of Otolaryngology - Head and Neck Surgery
- 1990-present Society of University Otolaryngologists
- 1990-present New England Otolaryngological Society
- 1990-present Massachusetts Society of Otolaryngologists
- 1991-present National Association of Teachers of Singing

1991-present	American Broncho-Esophagological Association
1991-present	American College of Surgeons
1991-present	American Society of Laser Medicine and Surgery
1992-present	American Head and Neck Surgery
1992-present	Society of Head and Neck Surgeons
1994-present	Peabody Society, Harvard Medical School
1994-present	American Laryngological, Rhinological, and Otological [Triological] Society
1995-present	American Laryngological Association
1995-present	International Society for the History Society for of Otolaryngology
1998-present	Collegium Medicorum Theatri
2002-present	Alpha Omega Alpha Honor Medical Society
2002-present	European Laryngological Society
2004-present	Massachusetts General Hospital Surgical Society
2005-present	Boston Surgical Society
2006-present	New England Surgical Society

Leadership in Professional Societies

American Broncho-Esophagological Association

3/94-3/96	Liaison between the ABEA and the Speech, Voice and Swallowing Disorders Committee of the American Academy of Otolaryngology - Head and Neck Surgery
5/97-5/99	Councilor
5/98-5/99	Chairman: Difficult Airway Committee
5/99-5/03	Treasurer
5/03-5/04	President elect
5/04-5/05	President

Society for the History of Otolaryngology

9/96-9/98	Secretary - Treasurer
6/99-6/00	Vice President

American Academy of Otolaryngology - Head and Neck Surgery

9/96-present	Museum / Archives Advisors
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Voice Foundation

7/00-03	Scientific Advisory Board
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Committee Assignments in Professional Societies:

American Academy of Otolaryngology - Head and Neck Surgery

3/92-9/98	Self Instructional Package Subcommittee
9/93-2001	History and Archives Committee
11/93-present	Speech, Voice, and Swallowing Disorders Committee
9/96-present	Neurology Subcommittee
9/99-2001	Research Awards Committee

American Broncho-Esophagological Association

5/97-5/99	Audit Committee
5/98-5/99	Difficult Airway Committee
5/02-present	Oncology Committee

American Laryngological Association

2/97-5/99	Laryngeal Fellowship Committee: to establish training curricula and requirements
12/97-5/99	Education Committee: American Laryngological Voice and Education Research Foundation
6/97-6/99	Research Committee for Grant Awards in Laryngology
1999-2001	Resident Award Committee

American Otological, Rhinological, & Laryngological (Triological) Society
1996 [Eastern Section]: Resident Research Award Committee

American Board of Otolaryngology / American Academy of Otolaryngology
1996-1997 Writing Committee: Recertification Study Guide

Society of Head and Neck Surgeons
1997-1998 Publications Committee

American Head and Neck Society
7/98-2000 Research Committee & History Committee

Editorial Activities:

Editorial Board

1996-2002 Journal of Voice
1997-2003 Otolaryngology Head and Neck Surgery [International Section]
1997-2007 Journal of Laryngology and Otology
1997-2000 Phonoscope
2001-present Annals of Otology, Rhinology, and Laryngology
2001-present Harvard Medical School: InteliHealth.com

Guest Editor

1998-99 Operative Techniques in Otolaryngology - Head and Neck Surgery: *Phonosurgery I & II*

Invited Reviewer

1994-2000 Annals of Otology, Rhinology, and Laryngology
1997-present Otolaryngology Head and Neck Surgery
1995-present Laryngoscope Journal
1997-present Head and Neck
1999-present Archives of Otolaryngology - Head and Neck Surgery
2003 Menopause
2004 Lasers in Surgery and Medicine
2005 New England Journal of Medicine
2005 American Journal of Transplantation
2006-present Surgery

Awards and Honors:

1975-79 Boston University Trustee Scholarship

1984 **Pediatric Tracheal Resection*: Resident award - First place, New England Otolaryngological Society

1994 **Premalignant Epithelium and Microinvasive Cancer of the Vocal Fold: The Evolution of Phonomicrosurgical Management*
The American Laryngological, Rhinological, & Otological [Triological] Society
Candidate's thesis distinguished for excellence: Honorable Mention

1994 Honored Guest: **Care of the Voice for the Classical Vocalist*
Tanglewood and Boston Symphony Orchestra Choir, Symphony Hall, Boston, MA

- 1994 Honored Guest: **The Evolution of Phonomicrosurgical Management of the Vocal Fold Cover*
Northeastern New York Eye Ear, Nose and Throat Society, Albany, NY
- 1995 Honor award for teaching service: American Academy of Otolaryngology - Head and Neck Surgery
- 1995 Honored Guest: **Physiology & Care of Human Voice*. National Assn of Teachers of Singing, Boston Chapter
- 1996 Annual Arnold Grossman Lecturer in Laryngology: Montreal General Hospital, McGill University
- 1997 Honored Guest: Philadelphia Laryngological Society, College of Physicians, Philadelphia, PA
- 1997 Honored Guest: Cincinnati Otolaryngological Society, Cincinnati, OH
- 1998 Casselberry Award: American Laryngological Association: **Adduction Arytenopexy: A New Procedure for Paralytic Dysphonia and Implications for Medialization Laryngoplasty*
- 1998 Honored Guest Lecturer: **Jacob Da Silva Solis-Cohen: America's First Head & Neck Surgeon*
Solomon Solis-Cohen Medical and Literary Society, Philadelphia, PA
- 1998 Lewis H. Wright Memorial Distinguished Lecturer: **Origin & Development of Laryngoscopy & Laryngology*
Annual Meeting of the American Society of Anesthesiology, Orlando, FL
- 1999 Honored Guest: Israel Otolaryngology - Head and Neck Surgery Society, Tel Aviv, Israel
- 1999 Honored Guest: Israel Speech & Hearing Association: Annual Meeting, Dead Sea, Israel
- 1999 Honored Guest: 1st Annual meeting of the Brazilian Society of Laryngology & Voice, Sao Paulo, Brazil
- 1999 Honored Guest: Annual meeting of the British Voice Association, Nottingham, England
- 2000 Honored Guest: Graduation; Department of Otolaryngology – Head and Neck Surgery
University of Utah School of Medicine, Salt Lake City, UT
- 2000 **Phonomicrosurgery*: Invitational Instructional Video
Committee on Medical Motion Pictures of the American College of Surgeons, Chicago, IL
- 2000 Honored Guest: **Two Centuries of Medical Management of the Human Voice*
Annual Sylvan Stool History of Medicine Lecturer: CR Reynolds Medical History Society
University of Pittsburgh School of Medicine, Pittsburgh, PA
- 2001 Honored Guest: 70th Annual Clinical Conference: Research Study Club of Los Angeles
- 2001 Honored Guest: **Phonomicrosurgery, *Laryngoplastic Phonosurgery*. New Engl. Otolaryngology Soc.
- 2001 Honored Guest: San Diego Academy of Otolaryngology – Head and Neck Surgery
- 2001 Honored Guest - Graduation: Boston University Seven-Year Liberal Arts / Medical Education Program
**The Spirit of Individuality in the Development of a Career in Medicine and Surgery*
- 2001 Honored Guest: Annual meeting Chilean Society of Otolaryngology – Head and Neck Surgery. Pucon, Chile
- 2002 Alpha Omega Alpha Honor Medical Society: The annual Boston Univ. School of Medicine Alumni Inductee
- 2002 Honored Guest & Keynote Lecture: **Phonomicrosurgery in Singers and Performing Artists*
Collegium Medicorum Theatri Annual Meeting, Madrid, Spain

- 2002 Honored Guest: **Phonosurgical Treatment of Early Glottic Cancer*
First Charles Vaughan Lecture in Head & Neck Surgery. Boston University School of Medicine, Boston MA
- 2002 Keynote Lecture: **Chevalier Jackson and American Bronchology*
World Congress for Bronchoesophagology, Boston, MA
- 2002 Honored Guest: **Phonosurgery*, Cedars-Sinai Medical Center, Los Angeles, CA
- 2002 Honored Guest: Symposium on Voice Surgery: Spanish Soc. of ORL – Head & Neck Surgery, Malaga, Spain
- 2002 Honored Guest: Oregon Society of Otolaryngology - Head & Neck Surgery, Portland, OR
- 2002 Honored Guest, Invited Lecturer and Corresponding Member: **Phonomicrosurgical Techniques*
European Laryngological Society, Brussels, Belgium
- 2002 Eiji Yanagisawa Instructional Course Lecturer: **New Procedures in Laryngoplastic Phonosurgery*
Annual meeting: American Academy of Otolaryngology – Head & Neck Surgery, San Diego, CA
- 2002 Honored Guest & Keynote Lecturer: **Phonosurgical Treatment of Early Glottic Cancer*
Annual meeting: New Zealand Society of Otolaryngology – Head & Neck Surgery, Taupo, NZ
- 2002 Honored Guest: Symposium on Voice Disorders & Phonosurgery
Green Lane Hospital: Department of Otolaryngology - Head and Neck Surgery
Auckland University School of Medicine: Auckland, New Zealand
- 2003 Honored Guest: Los Angeles Society of Otolaryngology – Head and Neck Surgery
- 2003 Honored Guest: Michigan Society of Otolaryngology – Head and Neck Surgery, Detroit, MI
- 2003 Honored Guest: Rhode Island Society of Otolaryngology Head and Neck Surgery, Providence, RI
- 2003 Henry J. Rubin Memorial Lectureship: **Voice Surgery and the Art of Laryngeal Stroboscopy*
Cedars-Sinai Medical Center, Los Angeles, CA
- 2003 Annual George Barber Lecturer Dept. of Surg.: **Laryngology & the Origin of Minimally-Invasive Surgery*
Honored Guest: Graduation; Division of Otolaryngology – Head and Neck Surgery
University of Alabama Medical School, Birmingham, AL
- 2003 Honored Guest: Annual meeting; Connecticut Soc. of Otolaryngology Head & Neck Surg. Cromwell, CT
- 2003 Annual Lawrence Boies Lecturer: Dept. of Otolaryngology, University of Minnesota, Minneapolis, MN
- 2003 Honored Guest: Annual meeting; Spanish Soc. of Otolaryngology – Head & Neck Surg., Madrid, Spain
- 2003 Honored Guest: Annual meeting; Nassau Surgical Society, Uniondale, NY
- 2004 Honored Guest and Keynote Lecturer Mexican Soc. of Otolaryngology Head & Neck Surg., Mex. City, Mex.
- 2004 Annual Goldberg Lecturer: Department of Surgery, Baystate Medical Center, Springfield, MA
- 2004 Distinguished Service Award: American Academy of Otolaryngology - Head and Neck Surgery
- 2004 President: American Broncho-Esophagological Association

- 2004 Honored Guest: International Symposium on the Professional Voice, Salzburg, Austria
- 2004 Honored Guest: 5th Quadrennial Pan-European Cong. Otolaryngology Head & Neck Surg., Rhodes, Greece
- 2005 Honored Guest: International Association of Phonosurgeons, Madrid, Spain
- 2005 Honored Guest & Karl Storz Lecturer: **Pediatric Laryngology & Phonosurgery: Past, Present, & Future*
Annual meeting of the American Society of Pediatric Otolaryngology, Las Vegas, Nevada
- 2005 Honored Guest and Keynote Lecture: **A Brief History of Laryngology and Phonosurgery*
Pan European Voice Conference, Royal Academy of Music, London, England
- 2005 Honored Guest: Annual meeting British Voice Association, London, England
- 2005 Honored Guest and Keynote Lecturer: **Advances in Phonosurgery*
Annual meeting Australian Voice Association, Sydney, Australia
- 2006 Honored Guest & Lecturer: Boston Surgical Society **Laryngeal & Voice Surgery: Past, Present & Future*
- 2006 Honored Guest and Keynote Lecture: **Phonosurgical Treatment of Glottic Cancer*
Annual meeting Japan Laryngological Association, Kumamoto, Japan
- 2006 Chevalier Jackson Lecturer: **Concepts and Culture of Innovation*
Annual meeting of the American Broncho-Esophagological Association, Chicago IL
- 2006 Honored Guest: ** Medialization Techniques for Glottal Incompetence*
British Academic Conference in Otolaryngology, Birmingham, England
- 2007 Honored Guest: **Laryngeal and Voice Surgery*: Charles River District Medical Society, Boston, MA
- 2007 Honored Guest and Keynote Lecture: **Phonomicrosurgery Glottic Cancer and Dysplasia*
New York Center for Voice and Swallowing, San Juan, Puerto Rico
- 2007 Honored Guest and Keynote Lecture: **Phonosurgical Techniques & Instrumentation “The Cutting Edge”*
13th International Endoscopy Meeting, Rady Children’s Hospital, San Diego, CA.
- 2007 Boston University School of Medicine Distinguished Alumnus Award (2 honorees)
- 2008 Baker Lecture in Laryngology: Columbia University College of Physicians and Surgeons, New York, NY

In the ‘Honored Guest’ lectureships, SMZ was either the sole guest of the organization or one of very few invitees, whose participation was supported/funded by the organization or university medical center.

Visiting Professorships: International

- 4/90 Department of Otolaryngology - Head and Neck Surgery
Auckland University School of Medicine: Auckland, New Zealand
- 4/96 Department of Otolaryngology - Head and Neck Surgery
Montreal General Hospital: McGill University, Montreal, Quebec
- 11/98 Department of Otolaryngology - Head and Neck Surgery

Technion School of Medicine, Bnai Zion Medical Center: Haifa, Israel

- 11/98 Department of Otolaryngology - Head and Neck Surgery
University of Navarra School of Medicine: Pamplona, Spain
- 2/99 Department of Otolaryngology - Head and Neck Surgery
Tel Aviv University Medical School: Meir Hospital, Tel Aviv, Israel
- 11/01 Department of Otolaryngology - Head and Neck Surgery
Fundação Faculdade Federal de Ciências Médicas de Porto Alegre, Porto Alegre. Brazil
- 8/04 Department of Otolaryngology - Head & Neck Surgery
Simmelweis Medical School, Budapest, Hungary
- 9/05 Department of Otolaryngology – Head and Neck Surgery
St. Vincent’s Hospital, University of New South Wales Medical School, Sydney, Australia
- 4/06 Department of Otolaryngology – Head and Neck Surgery
Kumamoto University, Kumamoto, Japan
- 12/06 Department of Otolaryngology – Head and Neck Surgery
Pontificia Universidad Catolica De Chile, Santiago, Chile
- 10/07 Department of Otolaryngology – Head and Neck Surgery
Dalhousie University School of Medicine, Halifax, Nova Scotia, Canada

Visiting Professorships: National

- 12/91 Department of Otolaryngology - Head and Neck Surgery
Vanderbilt University School of Medicine, Nashville, TN
- 4/94 Department of Otolaryngology - Head and Neck Surgery
Albany Medical School: Albany, NY
- 7/95 Department of Otolaryngology - Head and Neck Surgery
Mount Sinai School of Medicine: New York, NY
- 8/96 Department of Surgery: Division of Head and Neck Surgery
Memorial Sloan Kettering Cancer Center: New York, NY
- 11/97 Department of Otolaryngology - Head and Neck Surgery
University of Cincinnati College of Medicine: Cincinnati, Ohio
- 2/98 Department of Otolaryngology - Head and Neck Surgery
University of Pittsburgh School of Medicine
- 10/98 Department of Otolaryngology - Head and Neck Surgery
State University of New York Health Science Center at Brooklyn
- 6/00 Department of Otolaryngology - Head and Neck Surgery
University of Utah: Salt Lake City, Utah
- 1/01 Department of Otolaryngology - Head and Neck Surgery
University of California: San Diego, California

- 4/02 Department of Otolaryngology - Head and Neck Surgery
New York Medical College: Tarrytown, New York
- 7/02 Department of Otolaryngology - Head and Neck Surgery
University of Oregon: Portland, Oregon
- 10/02 Department of Otolaryngology - Head and Neck Surgery
University of Connecticut: Farmington, Connecticut
- 1/03 Department of Surgery: Division of Head and Neck Surgery
Memorial Sloan Kettering Cancer Center: New York, NY
- 6/03 Division of Otolaryngology - Head and Neck Surgery
University of Alabama: Birmingham, Alabama
- 11/03 Department of Otolaryngology - Head & Neck Surgery
University of Minnesota, Minneapolis, Minnesota
- 9/06 Department of Vocal Arts
The Julliard School, New York, NY
- 1/08 Department of Anesthesia
Memorial Sloan Kettering Cancer & Cornell University Medical Center: New York, NY
- 3/08 Department of Otolaryngology - Head and Neck Surgery
Boston University School of Medicine

Part II: Research, Teaching, and Clinical Contributions

A. Narrative report:

My efforts have been distributed relatively proportionately between research, teaching, and clinical activities. In part, this is due to the fact that a substantial component of the clinical work is incorporated into clinical-research trials. In 1998 a Division of Laryngology was instituted at the MEEI, which I directed until my move to the MGH in 2004. During my 14 years at the MEEI, our group established new approaches, and in some cases new paradigms, for the treatment of benign and malignant disorders of the larynx. To facilitate further development of clinical and research alliances with the MGH and MIT, the principals of our group moved to the MGH and a new *Center for Laryngeal Surgery and Voice Rehabilitation* was created. This initiative is a resurrection of the HMS-MGH alliance in Laryngology, which was the first of its kind in the US (~1870-1925).

My primary research interests and contributions have been in the design, development, and dissemination of surgical innovations in the upper-aerodigestive tract. This is facilitated by an extremely busy clinical practice in laryngeal surgery in which I attend complex cases in laryngeal cancer, paralytic dysphonia, and phonotraumatic lesions in world-renown vocalists. More than 15 new procedures have been introduced along with 2 patented laryngoscopes primarily designed to facilitate endoscopic partial laryngectomy for varied laryngeal cancers. This effort is represented in an atlas of endoscopic laryngeal surgery and more than 125 scientific articles, book-chapters, and videotapes almost entirely concentrated in these areas, as well as >250 presented papers/lectures. This body of work has facilitated widespread adoption of many of these procedures domestically and abroad illustrated by numerous invitations to author chapters in colleagues' textbooks in addition to many invited lectureships and awards.

I have been training residents throughout my career with frequent invitations to teach in other residency programs (20 visiting professorships). I also mentor HMS students interested in Otolaryngology and instituted the Harvard Laryngology-Phonosurgery post-residency fellowship, one of the first in the USA. The graduates have almost all assumed academic positions in Laryngology (see page 20). Apart from these primary commitments, I participate in doctoral and post-doctoral training in the Langer Laboratories (MIT) as well as undergraduate and graduate lecturing for speech pathologists and conservatory vocalists at a number of institutions. I conceived and directed 4 highly-rated HMS *Voice Surgery* CME courses in recent years and a more comprehensive course is scheduled for October 2005 sponsored by the MGH Department of Surgery. My national CME teaching contributions have been recognized by American Academy of Otolaryngology – Head and Neck Surgery having received that organization's 'Honor Award' and the 'Distinguished Service Award'.

For the past 5 years, I have expended substantial effort directing the *Voice Restoration Research Program*. I conceived and obtained funding for this collaborative initiative with the help of HMS, and recruited investigators at MGH and MIT. Co-investigators include Robert Langer, Rox Anderson, and Robert Hillman. The goal of this research (Part IIC) is to design implant materials to restore lost pliability to vocal-fold mucosa, which is the etiology of most human hoarseness, irrespective of benign or malignant etiology, even vocal aging. At present, approximately 15 MDs and Ph.D.s are working on this project with varied skills in optical imaging, laser physics, engineering (chemical, biochemical, tissue), biomechanical modeling, voice science, and surgery.

The aforementioned endeavors have raised public awareness of laryngeal and voice disorders. It has been featured in the Harvard Medical Alumni Journal, the Harvard Magazine and the Boston University Alumni Journal and discussed extensively in print media, radio, and television both nationally and internationally [i.e. Good Morning America, New York Times, Boston Globe, NPR, BBC, Nightline, New York - LA - Boston television news]

B. Research Funding Information:Past:

- 1987-1988 United Cancer Council **PI**
Development of a Tissue Culture Model of Human Upper Aerodigestive Tract Atypia
- 1988-1989 American Cancer Society **PI**
Oncogene Expression in Head and Neck Cancer
- 1990-1993 W. L. Gore & Associates Inc. **PI**
The Use of Gore-tex Suture and PTFE Patch Graft to Support an Endoscopic Laryngeal Closure
- 1993-1995 NIH - NIDCD **PI: Robert Hillman, Ph.D., Co-PI: Steven Zeitels, M.D.**
Objective Assessment of Vocal Hyperfunction
- 1996 American Laryngological Ass. **PI**
The Origin and Development of Laryngology
- 1999 W. L. Gore & Associates Inc. **PI**
Unrestricted educational grant
- 1995-2000 NIH - NIDCD **PI: Robert Hillman, Ph.D., Co-PI: Steven Zeitels, M.D.**
Objective Assessment of Vocal Hyperfunction: Competing Continuation
- 1996-2000 Partners Ctr. Procedural Med. **PI: Steven Zeitels, M.D., Co-PI: R. Rox Anderson**
Endoscopic Reversible Laryngeal Closure to Prevent Chronic Aspiration
- 1996-2000 W.M. Keck Foundation **PI: Robert Hillman, Ph.D., Co-PI: Steven Zeitels, M.D.,**
Voice [Artificial Larynx] Project
- 1999-2002 VA / Div. of Rehab. Research **PI: Robert Hillman, Ph.D., Co-PI: Steven Zeitels, M.D.**
Development of an Improved Electro-larynx Communication System
- 1993-2004 Professor Demetre Souretis Memorial Fund (private donors) **PI**
Established to support research & training in laryngology, voice disorders, & head and neck surgery
- 2000-2003 Advisory Board Foundation **PI: Steven Zeitels, M.D.**
CoPIs: R. Rox Anderson, M.D., Robert Hillman, Ph.D., Robert Langer, Ph.D.
Voice Restoration Subsequent to Vocal Fold Scarring
- 2004-2005 NIH-NCI **PI: Rakan Ahmad, Ph.D - OmniGuide Communications**
Consultant: Steven Zeitels, M.D.
Fiber delivery of CO2 lasers for laryngeal carcinoma

Current:

- 2002-2007 Eugene B. Casey Foundation **PI: Steven Zeitels, M.D.**
CoPIs: R. Rox Anderson, M.D., Robert Hillman, Ph.D., James Kobler, Ph.D., Robert Langer, Ph.D.
Voice Restoration Subsequent to Vocal Fold Scarring (see below)
- 2003-2007 Community Foundation for the National Capital Region
Program PI: Steven Zeitels, M.D.
Development of surgical techniques and clinical trials
PI: Steven Zeitels, Co-PI: Robert Hillman
Development of a vocal-fold bio-implant
PI: Robert Langer, Co-PI: Steven Zeitels

Development of vocal-fold diagnostic and therapeutic lasers

PI: R. Rox Anderson, **Co-PI: Steven Zeitels**

Voice Restoration Subsequent to Vocal Fold Scarring (see below)

- 2004-2008 NIH – NIDCD PI: Robert Hillman, Ph.D., **Co-PI: Steven Zeitels, M.D.**,
Development of voice neural prosthesis technology
- 2005-2008 Advisory Board Foundation **PI: Steven Zeitels, M.D.:**
CoPIs: Robert Hillman, Ph.D., Robert Langer, Ph.D.
Voice Restoration Subsequent to Vocal Fold Scarring: *Renewal* (see above)
- 2007-2008 Pentax Co.
Unrestricted educational training grant for post-residency training Laryngeal Surgery Research Fellow

C. Report of current research activities

1. **Pulsed-angiolytic laser treatment of microinvasive vocal fold cancer: PI**

During the past 8 years, SZ and Rox Anderson (RA) collaborated to develop angiolytic treatment of epithelial dysplasia and papillomatosis of the larynx, which led to FDA approval for the treatment approach. A pilot study revealed great success for selected microinvasive vocal-fold cancer by eradicating the disease and restoring the voice. The initial effort was done with a 585nm pulsed-dye laser and is now being done with a 532nm pulsed-KTP laser. This approach uniquely combines RA's theory of *selective photoangiolysis* with Folkman's *cancer angiogenesis* theory. This new cancer treatment employs non-ionizing radiation to treat the disease resulting in enhanced vocal function while preserving all conventional treatment options: endoscopic and transcervical resection as well as radiotherapy. Now that the initial patients are disease free for > 4 years, the work is scheduled for presentation nationally and internationally over the next year. Because vocal-fold cancer rarely metastasizes, intercurrent disease is less critical than other sites of the head and neck. In turn, the concept is being substantially developed to extend its indications to larger lesions by incremental-staged management similar to conventional radiotherapy and chemotherapy.

2. **Pulsed-angiolytic laser treatment of vascular lesions of performing vocalists: PI**

Subepithelial ectasias and varices of the vocal fold can lead to intractable and recurrent hemorrhage in all styles of performers. All prior treatment techniques required interruption of the epithelium to eradicate these subepithelial phonotraumatic vascular malformations. This can result in mucosal scarring and a poor vocal outcome. The initial effort was done with a 585nm pulsed-dye laser and the technique is now done with a recently-configured 532nm pulsed-KTP laser. The initial trial has been completed and presented at the American Laryngological Association. A wide array of performing vocalists are now seeking this approach for these common phonotraumatic angiomas since it is the only technique that does not disturb the vocal epithelium. The work is has been published in the Annals of Otolaryngology, Rhinology, and Laryngology, discussed in the Wall Street Journal and featured in a National Geographic documentary.

3. **532nm pulsed-KTP laser treatment of laryngeal dysplasia: PI**

This is the first use of a pulsed KTP laser for these laryngeal pathologies. It is used in the operating room under general anesthesia during microlaryngoscopy and as an office-based procedure with local anesthesia (see below). It is an extension of the investigators' work with the 585nm pulsed-dye laser, however the current paradigm is substantially more successful. The work has been recently presented at the annual meetings of the American Broncho-esophagological Association and the Japan Laryngological Association. The work is has been published in the Annals of Otolaryngology, Rhinology, and Laryngology and discussed on National Public Radio and the BBC.

4. **Office Based Laser Laryngeal Surgery: PI**

The investigators created this surgical paradigm to treat laryngeal epithelial diseases several years ago. This approach is now spreading nationally and internationally. The first CME course to teach this

technique will be held later this year as a collaborative effort between Harvard CME and the MGH Center for Laryngeal Surgery (Department of Surgery). The work has been published in the Annals of Otolaryngology, Rhinology, and Laryngology, discussed in the Wall Street Journal and demonstrated in a National Geographic documentary.

5. **Laser partial laryngectomy by means of a flexible fiber: PI**

There has been significant increased worldwide interest in endoscopic CO₂ laser partial laryngectomy procedures due to diminished morbidity. These procedures were conceived ~30 years ago by SZ's mentors (Geza Jako, Stuart strong, Charles Vaughan). During the past 3 decades, this surgical approach has been limited in part, by the lack of a fiber-based laser delivery system, which is important for facile tangential cutting/dissection. New laser technologies have evolved so that fiber-based soft-tissue laser dissection is now feasible. SZ has completed a large-mammal investigation (supported by an NIH-SBIR grant) demonstrating the efficacy of one of these technologies in endoscopic partial laryngectomy. We are currently engaged in a human trial for endoscopic partial laryngectomy with a new Thulium fiber-based laser that was developed to dissect brain tissue. Preliminary data suggests that this laser has substantially enhanced our ability to perform endoscopic partial laryngectomy procedures, which has resulted in substantially diminished morbidity and short hospitalizations.

6. **Botulinum toxin use in the treatment of laryngeal and pharyngeal stenosis: PI**

Stenosis of the larynx is one of the most difficult problems to solve in Laryngeal surgery. We have instituted the use of Botulinum toxin to chemically splint the intrinsic musculature of the larynx. By temporarily paralyzing selected vocal musculature, we have preliminary results that suggest that it is possible to endoscopically remobilize the cricoarytenoid joint in selected stenosis cases. Such remobilization of the arytenoids led to tracheotomy decannulation and has not been previously reported. This chemical technology has also facilitated a new minimally invasive endoscopic cricopharyngeal myotomy to treat Zenker's diverticulum and cricopharyngeal achalasia.

Voice Restoration Research Program

a. **Synthetic biomaterials for regeneration of vocal fold layered microstructure: Co-PI**

Lost mucosal pliability is the etiology of ~90% of human hoarseness. SZ conceived this effort, which is based in the Langer laboratories at MIT. We are working on derivatives of available substances such as hyaluronic acid so that they can be photochemically altered after implantation in vocal folds to regulate visco-elasticity and slow degradation.

b. **Tissue culture modeling of the regeneration of vocal fold layered microstructure: Co-PI**

This effort is also being done in the Langer Laboratories and is similar to the above project in its goal. However, it is a more complex strategy that would potentially provide a long-term solution. By providing pluripotential fibroblasts or stem cells in a scaffold, it is more likely that the environment of the mucosa can be reproduced (i.e. extra-cellular matrix proteins).

c. **Subepithelial fat autograft into the phonatory mucosa: PI**

In late 2005, success was achieved for the first time injecting fat into the subepithelial superficial lamina propria of the phonatory mucosa resulting in enhanced pliability and vocal-fold vibration. An aggressive initiative has been instituted, which has been funded to accelerate the roadmap for routine management. New injection delivery systems being developed as well as aerodynamic dissecting devices. Another full-time basic researcher has joined the MGH Voice Restoration Research Program in the Department of Surgery. This individual will be working on the development of adipocyte stem cells for this project in collaboration with the Langer Laboratories at MIT.

d. **Measuring mechanical properties of the vocal fold: Co-PI**

There are no instruments currently available to surgeons to assess and objectively measure the rheologic properties of vocal-fold mucosa. As stated above, restoring mucosal pliability is paramount for optimally treating most human hoarseness. Our voice-science group in the MGH Department of Surgery (Robert Hillman, Jim Kobler, James Heaton) is currently pursuing several pathways to design instruments that are

user-friendly for surgeons to objectively assess mucosal stiffness. These instruments will be valuable to analyze the pathological state but also to assess the surgical intervention real time in the operating room.

e. **Optical coherence tomography (OCT) of human vocal folds: Co-PI**

This work is being done under the direction of Rox Anderson and Johannes de Boer in the Wellman Center of Photomedicine at the MGH. At present, there is not technology available to image the layered microstructure of the vocal fold. OCT is a promising avenue to provide this imaging given its success in coronary arteries and the fact that a majority of information that is valuable for analyzing vocal fold pathology only requires a depth of ~2mm, which is the current limit of OCT. It is also based on a catheter system, which will make it suitable to use both in the office as well as the operating room. Our hope is that we will not only be able to image the collagen associated with scar, but that we will be able to distinguish dysplasia (intra-epithelial) from microinvasion. Understandably, this could have profound value in other mucosal dysplasia sites such as the esophagus (Barretts), cervix, bladder, etc..

D. Report of Teaching:

1. Local Contributions:

a. Medical School Courses

Boston University School of Medicine
1986-1991 Physical Diagnosis Course
Lecturer: 20 medical students, 4 hours

Boston University and Tufts University Schools of Medicine
1988-1992 Head and Neck Anatomy Course
Lecturer and Preceptor: 0-4 medical students; 10-15 residents, 10 hours

1988-1992 Crash Course in Otolaryngology - Head and Neck Surgery
Lecturer: 0-4 medical students; 10-15 residents, 4 hours

Harvard Medical School
1994 Physical Diagnosis Course: Peabody Society
Lecturer and Preceptor: 10-15 medical students, 3 hours

b. Graduate Medical - Hospital Courses

Harvard Medical School / Massachusetts Eye and Ear Infirmary
1991-2000 Head and Neck Anatomy Course
Lecturer: 0-4 medical students; 4-8 residents, 2-4 fellows, 8 hours

1993-2004 Laryngeal Physiology
Lecturer: 0-4 medical students; 4-8 residents, 2-4 fellows, 8 hours

1994 Staging and Mapping Head and Neck Cancer for Data Collection
Lecturer: 0-3 students, 10-15 residents, 4 hours

Massachusetts Eye and Ear Infirmary /Massachusetts Institute of Technology
1994-2004 Anatomy and Physiology of the Larynx
Lecturer: Speech and Hearing Science Course, 5-8 graduate student, 6 hours

Other College and University Teaching:

Berklee College of Music
1991-present Visiting Artist Series
Anatomy and Physiology of Voice for the Performing Artist
50-100 undergraduate and graduate students, 3-6 teachers, 6 hours

Harvard University: Department of Linguistics

1992 Anatomy and Physiology of the Larynx and Voice Production
Lecturer: 15-20 undergraduate and graduate students, 2-3 teachers, 6 hours

Tanglewood Music School

1993-1997 Anatomy and Physiology of Voice for the Classical Singer
Lecturer: 20-50 undergraduate and graduate students, 2-5 teachers, 8 hours

Boston University

a. Voice Department / School for the Arts

1994-2000 Anatomy and Physiology of Voice for the Performing Artist
Lecturer: 75-100 undergraduate and graduate students, 4-8 teachers, 5 hours

b. Sargent College

1994-2001 Medical and Surgical Management of Voice Disorders
Lecturer: 30-40 graduate students, 5 hours

New England Conservatory

1994-present Care of the Voice for the Performing Artist
Lecturer: 30-60 students, 0-10 teachers, 6 hours

Boston Conservatory

1997 Care of the Voice for the Performing Artist
Lecturer: 80-120 students, 5-10 teachers, 6 hours

Massachusetts College of Pharmacy

1998 Laryngeal physiology: Lecturer: 15 students, 2 teachers, 5 hours

Harvard American Repertory Theatre

2000 Lecturer: 25 students, 1 teacher, 6 hours

Longy School of Music

2002 Lecturer: 25 students, 5 teachers, 6 hours

c. Local Invited Teaching Presentations

Hospital Lectures:

- 8/85 Otolaryngological Emergencies
Boston City Hospital Emergency Room Conference, 5 hours
- 2/87 Malignant Melanoma of the Head and Neck
Lahey Clinic Medical Center: Head and Neck Tumor Conference, 4 hours
- 2/90 Laryngeal Physiology and Aspiration
Boston University: Pulmonary Grand Rounds, 5 hours
- 6/90 Endoscopic Management of Supraglottic and Hypopharynx Cancer
Tufts - New England Medical Center: Department of Radiation Oncology, 6 hours
- 6/90 Laryngeal Spaces and Compartments
Boston University & Tufts University: Departments of Otolaryngology, 8 hours
- 1/91 Phonosurgical Rehabilitation of the Paralyzed Vocal Fold

- Massachusetts General Hospital: Thyroid Conference, 6 hours
- 12/91 A Rational Approach to Neck Dissections and Data Collection
Vanderbilt University: Dept. of Otolaryngology - Head and Neck Surgery, 5 hours
- 4/92 Botulinum Toxin for Spasmodic Dysphonia [Laryngeal Dystonias]
Massachusetts Eye and Ear Infirmary, 6 hours
- 11/92 Anatomy and Physiology of Voice and Phonosurgical Intervention
Waltham and Weston Hospital. Waltham, MA, 4 hours
- 5/95 Laryngeal Anatomy, Physiology and Pathology
Department of Surgery: Thoracic Surgical Seminar, Massachusetts General Hospital, 5 hours
- 1/96 Laryngeal Physiology and Laryngeal Dystonias
Department of Neurology, Massachusetts General Hospital, 6 hours
- 1/96 Phonomicrosurgery
Grand Rounds: Otolaryngology - Head and Neck Surgery, Mass. Eye and Ear Infirmary, 5 hours
- 4/96 Update in Laryngology
Focus on Voice Therapy, Beth Israel Hospital, Harvard Medical School, 5 hours
- 6/96 Movement Disorders of the Larynx
Department of Neurology, Massachusetts General Hospital, 4 hours
- 12/96 Phonomicrosurgery
Annual meeting of the Massachusetts Eye and Ear Infirmary, 5 hours
- 1/97 Laryngoscopy and Laryngology
Grand Rounds: Department of Anesthesia, Massachusetts General Hospital, 7 hours
- 9/98 Laryngoscopy and Laryngology
Grand Rounds: Department of Anesthesia, Children's Hospital Medical Center, 6 hours
- 3/00 Update in Phonosurgery
Dept. of Otolaryngology, Tufts / New England Medical Center, 5 hours
- 4/00 Laryngology & Voice Disorders: 2000
Grand Rounds: Melrose – Wakefield Hospital, 5 hours
- 5/00 Advances in Phonosurgery
Department of ORL - Head and Neck Surgery, SUNY Health Science Center at Brooklyn, 5 hours
- 1/01 Phonosurgical Management of Early Glottic Cancer, New Procedures in Laryngoplastic Phonosurgery
Naval Medical Center: San Diego, 10 hours
- 1/03 Innovations in Phonosurgery
Center for Minimally Invasive Technology: Massachusetts General Hospital, 6 hours
- 11/03 *Phonosurgical Treatment of Glottic cancer, *Phonomicrosurgery of Benign Lesions
Dept. of Otolaryngology – Head & Neck Surgery, University of Minnesota, 10 hours
- 3/05 Laryngoscopy and Laryngology: Grand Rounds – Department of Anesthesia

- Massachusetts General Hospital, Boston, MA, 6 hours
- 7/05 Laryngeal and Voice Surgery: Grand Rounds – Department of Surgery
Massachusetts General Hospital, Boston, MA, 6 hours
- 4/06 Laryngeal and Voice Surgery: Grand Rounds – Pulmonary
Massachusetts General Hospital, Boston, MA, 6 hours
- 7/06 Laryngeal and Voice Surgery: Grand Rounds – Department of Surgery
Massachusetts General Hospital, Boston, MA, 6 hours
- 8/07 Update in Laryngeal Surgery: Grand Rounds – Department of Surgery
Massachusetts General Hospital, Boston, MA, 6 hours

d. Continuing Medical Education

Harvard Medical School CME Leadership

- 10/95 Harvard Course on Phonosurgery and Voice Disorders Boston, MA ~100 hours
Zeitels, S.M. [Course Director and Developer], Hillman, R.E.
* The Origin of Laryngology & Phonomicrosurgery, * Microlaryngoscopic Instrumentation, * Phonomicrosurgical Management of Atypia & Glottic Cancer
- 1999 Harvard – Jefferson Voice Surgery Course, New Orleans, LA ~100 hours
Zeitels, S.M. [Course Director and Developer], Sataloff, R.T.
* The Origin of Laryngology & Phonomicrosurgery, * Microlaryngoscopic Instrumentation, *Nodules, Polyps, Reinke’s Edema, *Varices & Ectasias, Papilloma & Atypia, *Glottic Cancer, *Vocal Reconstruction of Cancer Defects, *Thyroplasty Type-I - Medialization Laryngoplasty, *Adduction Arytenopexy, Arytenoid Adduction, & Cricothyroid Subluxation
- 2000 Harvard - Jefferson Voice Surgery Course, Washington D.C. ~100 hours
Zeitels, S.M. [Course Director and Developer], Sataloff, R.T.
* History & Instrumentation, *Principles & Techniques, *Nodules, Polyps, Reinke’s Edema, *Varices & Ectasias, Papilloma & Atypia, *Glottic Cancer & Phonosurgical Reconstruction, *Medialization Laryngoplasty, Adduction Arytenopexy, & Cricothyroid Subluxation
- 2002 Harvard Medical School Voice Surgery Course, San Diego, CA ~100 hours
Zeitels, S.M. [Course Director and Developer], Hillman, R.E.
* History & Instrumentation, *Principles & Techniques, *Nodules, Polyps, Reinke’s Edema, *Varices & Ectasias, Papilloma & Atypia, *Glottic Cancer & Phonosurgical Reconstruction, *Medialization Laryngoplasty, Adduction Arytenopexy, & Cricothyroid Subluxation
- 2005 Harvard Medical School: Laryngeal Surgery & Voice Rehabilitation
Zeitels, S.M. [Course Director and Developer], Hillman, R.E.
* History of Laryngology & Phonosurgery, *Principles & Techniques, *Cysts, Nodules, Polyps, Reinke’s Edema, Varices & Ectasias, *Vocal Fold Scarring, Sulcus Vocalis & Webs, *Glottic stenosis: Endoscopic Treatment & Reconstruction, *Transcervical Medialization Laryngoplasty, *Adduction Arytenopexy, & Cricothyroid Subluxation
- 2006 Harvard Medical School: Office-Based Laser Laryngeal Surgery
Zeitels, S.M. [Course Director and Developer], Burns, J.A.
*Photoangiolytic lasers, *Case presentations

- 2007 Harvard Medical School: Laryngeal Framework Voice Surgery
Zeitels, S.M. [Course Director and Developer], Burns, J.A.
 *History of vocal Fold Paralysis Management, *Reconstruction of Cancer Defects

Regional CME Courses:

- 4/91 Lasers in the Larynx: The Supraglottis
 Lecturing Surgeon: The Harvard Update in Laser Medicine and Surgery, 6 hours
- 6/91 Principles and Advances of Surgical Management of Laryngeal Neoplasia
 Lecturing Surgeon: Advances in Head and Neck Surgery for the Practicing Surgeon
 Massachusetts Eye and Ear Infirmary: Harvard Medical School, Boston, MA, 7 hours
- 10/91 Hoarseness and Voice Disorders: Lecturing Surgeon: Practical Otolaryngology for the Non-Otolaryngologist
 Massachusetts Eye and Ear Infirmary: Harvard Medical School, Boston, MA, 5 hours
- 12/91 Laser Surgery of the Supraglottis and Lower Pharynx
 2/92 Guest Lecturer: Vanderbilt University Laser Course, Nashville, TN, 8 hours
- 3/92 Lasers in the Larynx; Lecturing Surgeon: The Harvard Update in Laser Medicine and Surgery
 Harvard Medical School, Boston, MA, 6 hours
- 6/94 *Minimally Invasive Surgery of the Larynx with Phonosurgical Considerations
 Lecturing Surgeon: Update in Laser Medicine and Surgery of the Upper Aerodigestive Tract
 Harvard Medical School, Boston, MA, 7 hours
- 7/94 *Phonomicrosurgical Management of Benign Vocal Fold Lesions
 *Phonomicrosurgical Management of Premalignant and Malignant Vocal Fold Lesions
 Lecturing Surgeon: Phonosurgery Course, University of Wisconsin, Madison, WI, 10 hours
- 5/95 Hoarseness and Voice Disorders, Otolaryngology for the Primary Care Physician
 Massachusetts Eye and Ear Infirmary: Harvard Medical School, Boston, MA, 4 hours
- 11/95, *Neurology & Voice Disorders: Evaluation and Treatment with Botulinum Toxin
 1998- Electromyography and Clinical Neurophysiology
 2004 Department of Neurology: Harvard Medical School, Boston, MA 5 hours
- 11/95 Panel Discussant: * Benign Vocal fold Pathology, * The Scarred Vocal Fold
 Guest Lecturer: *Phonomicrosurgical Techniques
 Advances in Diagnosis & Treatment of Voice Disorders. Columbia University, NY, NY, 8 hours
- 5/96 *Management of the Performing Artist, *Phonomicrosurgery for Benign and Malignant Lesions
 Lecturer and Panel Discussant, 10 hours
 Savannah Laryngeal Symposium: Center for Laryngeal and Voice Disorders, Savannah, GA
- 6/98 *Phonomicrosurgical Management of Benign Glottic Lesions, *Laser Use in the Oral Cavity & Oropharynx
 Guest Lecturer: University of Iowa Head & Neck Laser Course, Iowa City, IA, 8 hours
- 10/99 Guest Lecturer: *Endoscopic Surgical Evaluation, *Endoscopic Management of Supraglottic Carcinoma
 Comprehensive Care of Laryngeal Carcinoma: Department of Otolaryngology - Head and Neck Surgery
 Mount Sinai School of Medicine, New York, N.Y., 5 hours
- 1999- Lecturer: Laryngeal Anatomy: Update in Anesthesia
 2002 Department of Anesthesia, Harvard Medical School, Boston, MA 5 hours

- 6/00 *Phon microsurgical Management of Benign Lesions. Endoscopic Management of Vocal Fold Cancer
Guest lecturer: Spring Forum 2000: Otolaryngology, Univ. of Utah, Salt Lake City, UT, 8 hours
- 11/02 *Rehabilitation and the Radiated Larynx
Guest Lecturer: Rehabilitation & Wound Healing Problems in Head & Neck Surgery
Harvard Medical School, Boston, MA, 6 hours
- 11/02 *New Procedures for Phonosurgical Reconstruction for Paralytic Dysphonia
Guest Lecturer: Dysphagia and Swallowing Disorders, 5 hours
Columbia University College of Physicians & American Broncho-Esophagological Assn., New York, NY
- 4/03 *New Procedures for Laryngeal Framework Surgery, *Phonosurgical Treatment of Glottic Cancer
Guest Lecturer: Update in Voice Surgery. University of Washington School of Medicine, Seattle, WA, 8 hours
- 10/03 *Laryngoplastic Phonosurgery, *Phon microsurgery for benign and Malignant Lesions
Guest Lecturer: Connecticut Otolaryngology Society, Cromwell, CT 8 hours
- 3/07 *A Brief History of Laryngology and Phonosurgery,, *Phon microsurgery for Benign Lesions
New York Center for Voice and Swallowing, San Juan Puerto Rico 8 hours

National CME Courses:

- 9/90 Selected CO2 Laser Applications for Laryngeal Surgery
Davis, R.K., **Zeitels, S.M.** [Course Developer] 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/91 Advanced Surgical Management of the Oropharynx
Zeitels, S.M. [Course Director and Developer] 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/92 Surgical Management of the Pharynx
Zeitels, S.M. [Course Director and Developer], Fabian, R.L 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/91- Endoscopic Management of the Supraglottis and Lower Pharynx
9/93 Davis, R.K., **Zeitels, S.M.**, [Course Director, Course Developer] 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/91- Conservation Surgery of the Larynx: Open and Endoscopic Approaches
9/94 Shapshay, S.M., **Zeitels, S.M.** [Course Developer] 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/93 Mandible Sparing Approaches to the Oropharynx
Zeitels, S.M. [Course Director and Developer] 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/95- Endoscopic Management of Vocal-Fold Atypia and Early Glottic Cancer
9/99 **Zeitels, S.M.** [Course Director and Developer] 8 hours
Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/96- Advanced Phon microsurgery, Zeitels, S.M.** [Course Director and Developer] 10 hours
9/06 Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/98 Workshop in Direct Laryngoscopy, **Zeitels, S.M.**, Flint, P.
Society for Airway Management: Challenges for the Millennium, Boston, MA 6 hours

- 9/99- Adduction Arytenopexy & Cricothyroid Subluxation: New Procedures for Paralytic Dysphonia
 9/06 **Zeitels, S.M.** [Course Director and Developer] 10 hours
 Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/04 Pediatric Voice Disorders, Hartnick, C., **Zeitels, S.M.** 6 hours
 Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery
- 9/05- Pulsed Angiolytic Lasers in Otolaryngology – Head & Neck Surgery
 9/06 **Zeitels, S.M.** [Course Director and Developer] 10 hours
 Annual Meeting: American Academy of Otolaryngology - Head and Neck Surgery

e. Advisory and Supervisory Responsibilities

Boston VA Medical Center: Boston University and Tufts University Medical Schools

7/88-6/94 Head and Neck Oncology Service; attending in health care org. & ambulatory clinic
 0-3 medical students; 3 residents, [40 hours/ week, 7/87-6/92. 20 hours/week 7/92-6/94]

Massachusetts Eye and Ear Infirmary: Harvard Medical School

1990-2004 Head and Neck Service: attending in health care org. & ambulatory clinic
 0-3 medical students; 2 residents, [15 hours 7/90-6/97, 5 hours/week 7/97-6/04]

Fellowship in Laryngology and Phonosurgery

7/97-present Continuous one-to-one mentoring all year: 40 hours/week

Massachusetts Institute of Technology

2002-2004 Doctoral committee and mentor: Maria Hahn 60 hours/year
 Departments of Chemical & Electrical Engineering, & Langer Labs

2003-2005 Post-doc mentor: Xinqiao Jia 60 hours/year
 Departments of Chemical & Electrical Engineering, & Langer Labs

f. Teaching Leadership

- 1997-2003 MEEI Fellowship in Laryngology and Phonosurgery: Director and Developer
 2004-present MGH Fellowship in Laryngeal Surgery: Director and Developer

Special accomplishments: We live in a communication-based society in which human vocal function is of paramount importance in the workplace as well as for the psycho-social health of individuals. This increasing voice dependence has created a tremendous need for subspecialized laryngeal surgeons in the USA despite the fact that a majority of trainees from Otolaryngology residency programs cannot acquire the necessary skill-sets during typical training. Recognizing this, the fellowship was created to begin addressing this training deficit. To date, all but one of the trainees has assumed full-time academic positions and 3 new academic programs have been instituted from these individuals.

g. Names of trainees

Laryngology and Laryngeal Surgery Post-residency Fellowship Program ,
 Director and Developer

7/97-6/98	Ilan I. Hochman, M.D. {Tel Aviv University}
7/98-6/99	Rosemary Desloge, M.D. {Cornell University}
7/99-6/00	John K. Jarboe, M.D. {Massachusetts Eye & Ear Infirmary: HMS part time}
7/00-6/01	Ramon Franco, M.D. {Massachusetts Eye & Ear Infirmary: HMS full time}
7/01-6/02	Seth Dailey, M.D. {University of Wisconsin (Madison)}
7/02-6/03	James Burns, M.D. {Massachusetts General Hospital: HMS full time}
7/04-6/05	Adam Klein, M.D. {Emory University}

7/05-6/06	Lee Akst, M.D. {Loyola University Stritch School of Medicine}
7/06-6/07	Mathew Broadhurst, M.D. {Brisbane, Australia}
7/07-7/08	Jonathan Lahav, M.D. {Tel Aviv Israel}
7/07-7/08	Steven Feinberg {University of California: Irvine}

International Post-residency Laryngology & Laryngeal Surgery Research Fellowships

9/99-9/00	Nadia Spanou, M.D. {Athens, Greece}
1/01-12/01	Marcelo Mauri, M.D. {Porte Allegre, Brazil}
7/05-present	Mathew Broadhurst, M.D. {Brisbane., Australia}
5/06-6/08	Gerardo Lopez Guerra, M.D. {Barcelona, Spain}
4/07-4/09	Yoshi Kumai, M.dD. {Kumumoto, Japan}

Harvard Medical Student Mentorship {subsequent residency training program}

1996	Traci Vaughn, M.D. {Tulane University}
2003-04	David Rosow, M.D. {Columbia University}

International Medical Student Mentorship

1990	Sonja Ruh, M.D. {Medical School of Hannover}
1997	Alexander Radu, M.D. {CHUV Hospital, Lausanne}
2001	Barbara Elias, M.D. {University Hospital Groningen}

2. Regional, National or International Contributions

a. Invited Presentations: Regional

- 10/85 Orbital Pseudotumors
Zeitels, S.M., Shapshay, S.M., New England Otolaryngological Society, Burlington, VT
- 6/90 Endoscopic Treatment of Early Cancer of the Supraglottic Larynx & Lower Pharynx
Zeitels, S.M., Vaughan, C.W., Pacific Coast Oto-Ophthalmological Society, Vancouver, British Columbia
- 6/90 Transhyoid (Suprahyoid) Pharyngotomy for Advanced Oropharynx Cancer
Zeitels, S.M., Vaughan, C.W., Pacific Coast Oto-Ophthalmological Society, Vancouver, British Columbia
- 10/90 Endoscopic Management of Supraglottic Disorder
Gacek, M., **Zeitels, S.M.**, New England Otolaryngological Society, Boston, MA
- 4/91 Endoscopic Management of the Supraglottis and Lower Pharynx
Massachusetts Eye and Ear Infirmary Alumni Meeting, Boston, MA
- 6/91 Phonomicrosurgery of the Vocal Fold Cover
Boston University / Tufts University Otolaryngology Alumni Meeting, Boston, MA
- 3/92 Phonomicrosurgery for Early Glottic Neoplasia
Brown University Head and Neck Oncology Lecture Series, Providence, RI
- 4/92 Phonomicrosurgery for Early Field Cancerization of the Glottis
Lauretano, A, **Zeitels, S.M.**, New England Otolaryngological Society, Boston, MA
- 6/92 The Anterior Cervical Approach for Tongue Base Cancer
Boston University / Tufts University Otolaryngology Alumni Meeting, Boston, MA
- 7/92 Biomechanics of the Voice and Breathing
- 7/93 Keynote Speaker: The McClosky Institute of Voice Therapy, Boston, MA

- 4/93 Larynx and Hypopharynx Neoplasms: Head and Neck Tumor Lecture Series
Tufts - New England Medical Center, Boston, MA
- 6/93 Phonomicrosurgery of the Vocal Fold Cover [Update]
Boston University / Tufts University Otolaryngology Alumni Meeting, Boston, MA
- 8/96 Phonomicrosurgery for Benign and Malignant Pathology
Columbia College of Physicians and Surgeons, New York
- 12/97 The Origin of Laryngology: the Study of Voice and Singing
Harvard Medical School Countway Library Associates
- 4/98 *Laryngoplastic Phonosurgery for Blunt Trauma to the Larynx: Wong, R., **Zeitels, S.M.**
*Phonomicrosurgery, *Adduction Arytenopexy: A new procedure for Paralytic Dysphonia: **Zeitels, S.M.**,
New England Otolaryngological Society, Boston, MA
- 4/98 *Phonomicrosurgery for Benign Glottic Lesions, *Adduction Arytenopexy: A New Procedure for Paralytic
Dysphonia Boston University School of Medicine, Boston, MA
- 10/98 *Phonomicrosurgery for Benign Glottic Lesions, *Adduction Arytenopexy: A New Procedure for Paralytic
Dysphonia
State University of New York Health Science Center at Brooklyn
- 11/98 Neurolaryngology, Guest Lecturer: Department of Neurology, Brown University
- 10/99 Care of the Voice for the Performing Artist
Guest Lecturer: National Association of Teachers of Singing [Boston Chapter], Boston Conservatory
- 1/00 *Laryngeal Framework Surgery & Cricothyroid Joint Subluxation, Microlaryngoscopy: Advances &
Refinements Guest Lecturer: Phonosurgery & Voice Update 2000, Univ. of Pittsburgh School of Medicine,
Pittsburgh, PA
- 1/01 *Phonomicrosurgical Management of Benign Lesions
San Diego Academy of Otolaryngology – Head & Neck Surgery
- 1/06 Care of the Voice for the Performing Artist
Guest Lecturer: National Association of Teachers of Singing [New England Chapter], MGH

a. Invited Presentations: National

- 4/88 Laser Epiglottectomy: Indications and Technique
Zeitels, S.M., Vaughan, C.W.
Paper presentation: American Laryngological Association, West Palm Beach, FL
- 9/89 The Adjustable Supraglottiscope
Zeitels, S.M., Vaughan, C.W.
Paper presentation: American Academy of Otolaryngology - Head and Neck Surg., New Orleans, LA
- 4/90 Endoscopic Management of Early Supraglottic Cancer
Zeitels, S.M., Vaughan, C.W.
Paper presentation: American Laryngological Association, West Palm Beach, FL
- 9/90 Reinke's Space Infusion Needle
Zeitels, S.M., Vaughan, C.W.

- Paper presentation: American Academy of Otolaryngology - Head and Neck Surgery, San Diego, CA
- 9/90 CO₂ Laser Airway Restoration of Obstructing Laryngeal Tumors
Zeitels, S.M., Davis, R.K., Shapshay, S.M., Vaughan, C.W.
Paper presentation: American Academy of Otolaryngology - Head and Neck Surgery, San Diego, CA
- 5/91 Understaging Supraglottic Cancer: The Preepiglottic Space Considered
Zeitels, S.M., Kirchner, J.A., Vaughan, C.W.
Paper presentation: American Laryngological Association, Waikoloa, Hawaii
- 5/91 Squamous cell carcinomas of the head and neck demonstrate significantly elevated of cathepsin B and L-like enzyme activities
Carlson, J.A., Murnane, M.J., **Zeitels, S.M.**, Domanowski, G.F.
American Association for Cancer Research, Houston, TX
- 6/92 “Reinke’s Space” Infusion for Microflap Surgery of the Vocal Fold Cover
Zeitels, S.M., Vaughan, C.W.
21st Annual Symposium: Care of the Professional Voice, Philadelphia, PA
- 1/93 Tongue-Base Resection With Partial Supraglottic Laryngectomy
Zeitels, S.M., Vaughan, C.W.
Paper presentation: Eastern Section; Triological Society, New York, NY
- 5/94 External Counter-Pressure & Internal Distension for Optimal Exposure of the Anterior Commissure
Zeitels, S.M., Vaughan, C.W.
Paper presentation: American Broncho-Esophagological Association, West Palm Beach, FL
- 1/95 Laser Versus Cold Instruments for Microlaryngoscopic Surgery; **Zeitels, S.M.**
Paper presentation: Eastern Section: The Triological Society, Pittsburgh, PA
- 4/95 The Hyoepiglottic Ligament in Supraglottic Cancer: **Zeitels, S.M.**, Kirchner, J.A.
Paper presentation: American Laryngological Association, Palm Desert, CA
- 5/95 The Submucosal Infusion Technique in Phonomicrosurgery: Kass, E., **Zeitels, S.M.**
Paper presentation: American Broncho-Esophagological Association, Palm Desert, CA
- 6/95 Laser Versus Cold Instruments for Microlaryngoscopic Glottal Surgery: **Zeitels, S.M.**
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 10/95 Submucosal Infusion Techniques and Vocal Outcomes
Zeitels, S.M., Hillman, R.E.
Pacific Voice Conference, San Francisco, CA
- 5/96 Phonatory Mechanisms Associated with Reinke’s Edema
Zeitels, S.M., Hillman, R.E., Bunting, G.W., Vaughan, T.L.
Paper presentation: American Laryngological Association, Orlando, FL
- 1/97 Soft-Palate Reconstruction With a “SCARF” Superior Constrictor Advancement Rotation Flap: **Zeitels, S.M.**
Paper presentation: Eastern Section; Triological Society, Boston, MA
- 4/97 Botulinum Toxin for the Treatment of Spasmodic Dysphonia: **Zeitels, S.M.**
Skills Workshop: American Academy of Neurology, Boston, MA

- 5/97 Assessment of Vocal Function Using Simultaneous Aerodynamic, Electroglottographic, and Calibrated Videostroboscopic Measures: Hillman, R.E., Kobler, J., **Zeitels, S.M.**,
Paper presentation: American Laryngological Association, Scottsdale, AZ
- 6/97 The Development of Criteria for Referring Singers to a Voice Laboratory for Assessment
Doyle, P.B., **Zeitels, S.M.**, Hillman, R.E.
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 6/97 Salient Characteristics of Patients with Posterior Laryngeal Granulomas and Ulcerations
Zeitels, S.M., Hillman, R.E., Radu, A
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 6/97 Phonomicrosurgical Resection of Glottal Papillomatosis
Zeitels, S.M., Sataloff, R. T.
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 10/97 Phonomicrosurgery: **Zeitels, S.M.**
Philadelphia Laryngological Society, Philadelphia College of Physicians
- 5/98 Adduction Arytenopexy: A New Procedure for Paralytic Dysphonia with Implications for Implant Medialization
Zeitels, S.M., Hochman, I., Hillman, R.E.
Paper presentation: American Laryngological Association, Palm Beach, FL
- 5/98 Analysis of the Forces & Position Required for Direct Laryngoscopic Exposure of the Anterior Vocal Folds
Hochman, I., **Zeitels, S.M.**, Heaton, J.T.
Paper presentation: American Laryngological Association, Palm Beach, FL
- 6/98 *Efficacy of Behavioral Voice Therapy Methods for Treating Women with Vocal Nodules: Hillman, R.H.,
Doyle, P.D., Holmberg, E., Milstein, C., **Zeitels, S.M.**, Phonomicrosurgical Management of Vocal Fold Polyps:
Hochman, I., **Zeitels, S.M.**, Hillman, R.: Screening Program for Vocal Pathology in Vocal Arts Students:
Hochman, I., **Zeitels, S.M.** Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 9/98 *The Otolaryngologist's Perspective of the Difficult Airway: **Zeitels, S.M.**
Society for Airway Management: Challenges for the Millennium, Boston, MA
- 1/99 Phonomicrosurgery at the Anterior Glottal Commissure: Myths and Realities
Desloge R., **Zeitels, S.M.**
Paper presentation: Eastern Section: Triological Society, Providence, RI
- 5/99 Cricothyroid Subluxation: A New Innovation to Enhance the Voice with Laryngoplastic Phonosurgery
Zeitels, S.M., Desloge, R.B., Hillman, R.E., Bunting, G.
Paper presentation: American Laryngological Association, Palm Desert, CA
- 5/99 A Universal Modular Glottiscope System: The Evolution of a Century of Design and Technique for
Direct Laryngoscopy: **Zeitels, S.M.**
Paper presentation: American Broncho-Esophagological Association, Palm Desert, CA
- 5/99 Horace Green: The First Specialized American Airway Surgeon: **Zeitels, S.M.**
Paper presentation: American Head and Neck Society, Palm Desert, CA
- 5/99 Phonomicrosurgical Management of Singers and Performing Artists
Zeitels, S.M., Desloge, R.B., Hillman, R.E., Doyle, P.
Paper presentation: American Laryngological, Rhinological, and Otolological Society, Palm Desert, CA

- 6/99 Migration of Teflon Extrinsic to the Larynx
Desloge, R.B., **Zeitels, S.M.**
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 6/99 Phonosurgical Reconstruction Subsequent to Early Glottic Cancer Resection
Desloge, R.B., **Zeitels, S.M.**, Bunting, G., Hillman, R.E.,
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 1/00 Gore-Tex Reconstruction for Dysphonia: **Zeitels, S.M.**
Millennium Symposium: American Laryngological Voice, Research & Education Fdn., New York, NY
- 5/00 Stroboscopic Assessment of Vocal Fold Keratosis and Glottic Cancer
Colden, D., **Zeitels, S.M.**, Hillman, R.E. Jarboe, J.K., Bunting, G., Spanou, K.
American Broncho-Esophagological Association
- 7/00 Medialization Laryngoplasty with Gore-Tex for Voice Restoration Secondary to Glottal Incompetence
Zeitels, S.M., Jarboe, J., Hillman, R.E.
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 7/00 Phonosurgical Reconstruction of Glottic Cancer Defects
Jarboe, J., **Zeitels, S.M.**, Hillman, R.E.
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 7/00 Adenoidectomy and Tonsillectomy in Performing Artists. Jarboe, J., **Zeitels, S.M.**, Elias, B.
The Voice Symposium: Care of the Professional Voice, Philadelphia, PA
- 7/00 Moderator: Arytenoid Surgery, Guest Lectures: *Limitations of Conventional Medialization Thyroplasty,
*Direct Laryngoscopes, *New Laryngoscope Design, *Variations on Arytenoid Repositioning
Sixth Biennial Phonosurgery Symposium: National Center for Voice and Speech, Madison, WI
- 5/01 Voice & Treatment Outcome from Phonosurgical Management of Early Glottic Cancer
Zeitels, S.M., Hillman, R.E., Franco, R.A., Bunting, G.
Paper presentation: American Laryngological Association, Desert Springs, CA
- 5/01 585nm Pulsed-Dye Laser Treatment of Glottal Papillomatosis
Franco, R.A., **Zeitels, S.M.**, Anderson, R.A., William A. Farinelli, W.A.
Paper presentation: American Broncho-Esophagological Association, Palm Desert, CA
- 9/01 Endoscopic Management of Glottic Cancer
Joint meeting of the American Academy of Otolaryngology – Head & Neck Surgery &
Sociedade Brasileira de Cirurgia de Cabeça e Pescoco, Denver, CO
- 11/01 Managing Laryngeal Cancer: Update on Phonosurgery, Vocal Rehabilitation, & Outcomes
Zeitels, S.M., Bunting, G.W., Hillman, R.E.
American Speech & Hearing Association, New Orleans, LA
- 5/02 585nm Pulsed-Dye Laser Treatment of Glottal Dysplasia
Franco, R.A., **Zeitels, S.M.**, Anderson, R.A., William A. Farinelli, W.A.
Paper presentation: American Laryngological Association, Boca Raton, FL
- 5/02 Phonomicrosurgery in Singers & Performing Artists, Objective Outcomes, Management Theories & Future Directions
Zeitels, S.M., Hillman, R.E., Desloge, R.A., Mauri, M., Dailey, S.H.
Paper presentation: American Broncho-Esophagological Association, Boca Raton, FL

- 5/03 Suspension Laryngoscopy Revisited: **Zeitels, S.M.**, Burns, J.A., Dailey, S.H.
Paper presentation: American Broncho-Esophagological Association, Nashville, TN
- 5/03 Micro-Stereo-Laryngoscopic Lipoinjection
Burns, J.A., **Zeitels, S.M.**, Dailey, S.H.
Paper presentation: American Broncho-Esophagological Association, Nashville, TN
- 5/03 Office-based Treatment of Glottal Dysplasia and Papilloma with the 585 Pulsed Dye Laser and Local Anesthesia
Zeitels, S.M., Franco, R.A., Dailey, S.H., Burns, J., Hillman, R.E., Anderson, R.R.
Paper presentation: American Laryngological Association, Nashville, TN
- 5/04 Initial Report on Pediatric Trans-nasal Flexible Endoscopic Digital Stroboscopy
Hartnick, C.J., **Zeitels, S.M.**
Paper presentation: American Society for Pediatric Otolaryngology, Phoenix, AZ
- 5/04 585nm Pulsed-Dye Laser Treatment of Glottal Cancer: Proof of Concept and a Possible Harbinger of Future Treatment Philosophy, **Zeitels, S.M.**, Hillman, R.E., Anderson, R.R.
Paper presentation: American Broncho-Esophagological Association, Phoenix, AZ
- 5/04 Imaging the Vocal Fold Mucosa with Optical Coherence Tomography
Burns, J.A., **Zeitels, S.M.**, Anderson, R.R., Kobler, J., Pierce, M.C., de Boer, J.F.
Paper presentation: American Laryngological Association, Phoenix, AZ
- 5/05 Hollow-Core Optical Fiber Delivery for the CO2 Laser Fiber: Implications for Laryngeal Cancer Surgery
Zeitels, S.M., Kobler, J.B., Heaton, T., Faquin, W.
Paper presentation: American Broncho-Esophagological Association, Boca Raton, FL
- 5/05 Further Imaging the Vocal Fold Mucosa with Optical Coherence Tomography
Klein, A., **Zeitels, S.M.**, Kobler, J., Pierce, M.C., de Boer, J.F.
Paper presentation: American Laryngological Association, Boca Raton, FL
- 4/06 Soft-Tissue Effects of 532nm Pulsed-KTP Laser on Excised Calf Vocal Folds
Akst, L.M, Kobler, J.B., Burns, J.A., Broadhurst, M.S., Anderson, R.R., **Zeitels, S.M.**,
Paper presentation: American Society for Laser Medicine and Surgery
- 4/06 Effects of 585nm Pulsed-Dye Laser Settings on Vessel Ablation in the Avian Chorioallantoic Membrane: Implications for Vocal-Fold Mucosal Photoangiolytic
Broadhurst, M.S., Kobler, J.B., Akst, L.M, Burns, J.A., Anderson, R.R., **Zeitels, S.M.**,
Paper presentation: American Society for Laser Medicine and Surgery, Boston, MA
- 4/06 Thermal Effects of Thulium and Carbon Dioxide Lasers on Excised Calf Vocal Folds
Akst, L.M, Kobler, J.B., Burns, J.A., Broadhurst, M.S., Anderson, R.R., **Zeitels, S.M.**,
Paper presentation: American Society for Laser Medicine and Surgery, Boston, MA
- 5/06 Pulsed Angiolytic Laser Treatment of Ectasias and Varices in Singers. **Zeitels, S.M.**, Akst, L.A., Burns, J.A., Hillman, R.E., Broadhurst, M.S., Anderson, R.R.. Annual meeting of the American Laryngological Association. Chicago, IL 2006
- 5/06 Comparison of a Flexible Laryngoscope with Calibrated Sizing Function to Intraoperative Measurement
Kobler, J.B., Rosen, D.I., Burns, J.A., Akst, L.M., Broadhurst, M.B., **Zeitels, S.M.**, Hillman, R.E. Annual meeting of the American Laryngological Association. Chicago, IL 2006
- 5/06 Office-Based 532nm Pulsed-KTP Laser Treatment of Glottal Papillomatosis and Dysplasia. **Zeitels, S.M.**, Akst, L.A., Burns, J.A., Hillman, R.E., Broadhurst, M.S., Anderson, R.R. Paper presentation: Annual meeting

of the American Broncho-Esophagological Association. Chicago, IL 2006

- 5/06 Ambulatory Monitoring of Disordered Voices. Hillman, R.E., Heaton, J.T., Masaki, B.S., **Zeitels, S.M.**, Cheyne, H.A. Paper presentation: Annual meeting of the American Laryngological Association. Chicago, IL 2006
- 5/06 Office Based and Microlaryngeal Applications of a Fiber-based Thulium Laser. **Zeitels, S.M.**, Burns, J.A., Akst, L.A., Hillman, R.E., Broadhurst, M.S., Anderson, R.R. Paper presentation: Annual meeting of the American Broncho-Esophagological Association. Chicago, IL 2006
- 5/06 Effects of 532 nm Pulsed-KTP Laser Parameters on Vessel Ablation in the Avian Chorioallantoic Membrane: Implications for Vocal-Fold Mucosa. Broadhurst, M.S., Akst, L.A., Burns, J.A., Kobler, J.B., Heaton, J.T., Anderson, R.R., **Zeitels, S.M.** Paper presentation: Annual meeting of the American Laryngological, Otological, & Rhinological Society. Chicago, IL 2006
- 2/07 Microflap Laryngoplasty For Treating An Anterior Commissure Web With Papillomatosis. Akst, L.A., Broadhurst, M.S., Burns, J.A., **Zeitels, S.M.** Paper presentation: American Laryngological, Otological, & Rhinological Society. Marco Island, FL
- 2/07 Burns, J.A., **Zeitels, S.M.**, Akst, L.A., Broadhurst, M.S., Hillman, R.E., Anderson, R.R. 532nm Pulsed-KTP Laser Treatment of Laryngeal Papillomatosis Under General Anesthesia. Paper presentation: American Laryngological, Otological, & Rhinological Society. Marco Island, FL
- 4/07 Thermal Damage During Thulium Laser Dissection of Laryngeal Soft Tissue is Reduced with Air-Cooling: An ex-vivo Calf Model Study. Burns JA, Kobler JB, Heaton JT, Lopez-Guerra G, Anderson RR, **Zeitels SM.** Paper presentation: American Broncho-Esophagological Association, San Diego, CA
- 4//07 The Chick Chorioallantoic Membrane (CAM) As A Model To Simulate Human True Vocal Folds. Broadhurst, M.S., Kobler, J.B., Burns, J.A., Akst, L.A., **Zeitels, S.M.** Paper presentation: American Broncho-Esophagological Association, San Diego, CA
- 4/07 Using Ambulatory Monitoring to Compare Voice Use of Talkers With and Without Vocal Pathology in Similar Occupations. Cheyne, H.A., Heaton, J.T., **Zeitels, S.M.**, Hillman, R.E. Paper presentation: American Laryngological Association, San Diego, CA
- 11/07 Team Management of Voice Problems in Professional Voice Users. Hillman, R.E., Stadlerman-Cohen, T., Burns, J.A., **Zeitels, S.M.**, American Speech & Hearing Association, Boston, MA
- 11/07 Voice Surgery 2007: State-of-the-Art & Future Directions. **Zeitels, S.M.**, Burns, J.A., Hillman, R.E., American Speech & Hearing Association, Boston, MA

International Presentations

- 3/88 Endoscopic Management of Supraglottic Carcinoma with the CO₂ Laser
New Zealand Otolaryngological Society, Christchurch, New Zealand
- 8/88 Voice Preservation Using Induction Chemotherapy Plus Radiation Therapy as an Alternative to Laryngectomy: Long Term Follow Up
Karp, D., Carter, R., Vaughan, C.W., Willet, B., **Zeitels, S.M.**, Hong, W.K.
Paper presentation: Second International Conference on Head and Neck Cancer, Boston, MA
- 4/90 Management of Laryngeal Carcinoma, Management of the N₀ and N₁ Neck
Department of Otolaryngology, Auckland University: Auckland, New Zealand

- 9/90 A Model for Multidisciplinary Data Collection for Cervical Metastasis
Zeitels, S.M., Domanowski, G., Vincent, M., Vaughan, C.W.
Paper presentation: 3rd International Conference: Head & Neck Oncology Research, Las Vegas, NV
- 9/90 An In Vitro System for Study of Differentiation Modulators in Head and Neck Cancer
Afridi, N.A., Niles, R.M., **Zeitels, S.M.**, Domanowski, G.F.
Paper presentation: 3rd International Conference Head & Neck Oncology Research, Las Vegas, NV
- 5/92 Microflap Vocal Fold Cover Surgery for Atypia and Early Glottic Cancer
Paper presentation: Second International Symposium of Phonosurgery, Amsterdam, Netherlands
- 7/92 Endoscopic Treatment of Supraglottic and Hypopharynx Cancer
Zeitels, S.M., Koufman, J.A., Davis, R.K., Vaughan, C.W.
Paper presentation: 3rd International Conference on Head and Neck Cancer, San Francisco, CA
- 3/94 A Brief History of Transoral Management of Larynx Cancer
Paper presentation: Second World Conference on Laryngeal Cancer, Sydney, Australia
- 10/94 Phonomicrosurgery of the Vocal Fold for Benign and Malignant Disease
Hadassah Hospital, Jerusalem, Israel
- 6/96 Infrapetiole Exploration of the Supraglottis for Exposure of the Anterior Glottal Commissure
Paper presentation: The International Association of Phonosurgeons, Philadelphia, PA
- 6/96 The Combined Role of Objective Vocal Assessment and Voice Therapy in the Clinical Management of Patients Undergoing Microsurgery. R. Hillman, G. Bunting, P. Doyle, **S. Zeitels**
Paper presentation: International Association of Phonosurgeons & The Voice Symposium, Phil., PA
- 7/96 Phonomicrosurgical Treatment of Early Glottic Cancer and Carcinoma in Situ [CIS]
Paper presentation: 4th International Conference on Head and Neck Cancer, Toronto, Canada
- 9/97 Jacob Da Silva Solis Cohen: Americas First Head and Neck Surgeon
Paper presentation: International Society for the History of Otolaryngology, Washington D.C.
- 2/99 *Phonomicrosurgery for Benign Pathology, *Phonomicrosurgery for Early Glottic Cancer,
*Laryngoplastic Phonosurgery: Old and New Techniques
Israel Otolaryngology - Head and Neck Surgery Society, Tel Aviv, Israel
- 2/99 Evaluation and Treatment of Voice Disorders
Israeli Speech & Hearing Association: Annual Meeting, Dead Sea, Israel
- 6/99 Phonomicrosurgery in Performing Artists: Paper Presentation: Collegium Medicorum Theatri, Aspen, CO
- 11/99 Vocal Fold Anatomy. Fourth British Voice Association Stroboscopy Course, Nottingham, England
- 11/99 * New Procedures for Paralytic Dysphonia, *Advances in Phonosurgical Techniques for Benign and Malignant Lesions, *History and Development of Phonosurgery
Annual Meeting of the British Voice Association, Nottingham, England
- 11/99 *Phonomicrosurgical Management of Benign Lesions, *Phonosurgical Management of Glottic Cancer,
*Phonomicrosurgical Mangmnt. of Supraglottic Cancer, *Instrumentation for Endolaryngeal Microsurgery, *
New Procedures for Paralytic Dysphonia, *Origin and Development of Laryngoscopy & Laryngology
Annual Meeting of the Brazilian Society of Laryngology & Voice, Sao Paulo, Brazil

- 5/00 Selective endoscopic management of early glottic cancer: the role of cold instrument microflap excision
I. Hochman, **S. Zeitels**, D. Fliss, Y. Rappaport,
European Federation of Otolaryngological Societies, Berlin, Germany
- 10/00 *New Procedures for Paralytic Dysphonia,
*A Universal Modular Glottiscope: The Evolution of a Century of Direct Laryngoscopes
6th International Association of Phonosurgeons Conference, Venice, Italy
- 6/02 A Laryngeal Surgical Dissection Station
Dailey, S.H., Kobler, J., **Zeitels, S.M.**
Paper presentation: World Congress for Bronchoesophagology
- 11/02 *Phon microsurgical Management of Benign Lesions, *A Brief History Of Laryngology and Phonosurgery,
New Procedures In Laryngoplastic Phonosurgery
Annual meeting: New Zealand Society of Otolaryngology – Head & Neck Surgery, Taupo, NZ

b. Professional and Educational Leadership Roles Related to Teaching

National

- 6/93 Guest Faculty & Panel Discussant: Endoscopic Surgery of the Larynx:
Alesi, D., Benninger, M., Gould, W., Von Leden, H., **Zeitels, S.**
The Voice Symposium, Philadelphia, PA
- 6/95 Guest Faculty & Panel Discussant: Complex Cases in Phonosurgery
C. Ford, R. Sessions, J. Spiegel, H. Tucker, P. Woo, **S. Zeitels**
The Voice Symposium, Philadelphia, PA
- 4/96 Benign Voice Disorders: Cherry Blossom Conference
Conference Developers: M. Benninger, C. Ford, R. Sataloff, P. Woo, **S. Zeitels**
*Phon microsurgery: History & Instrumentation, *Surgical Management of Polyps, Nodules & Cysts
American Academy of Otolaryngology - Head and Neck Surgery, Washington, D.C.
- 6/97 Moderator & Guest Faculty: Challenging cases in phonosurgery
Panelists: J. Abitbol, D. Krause, P. Pontes, H. Tucker, P. Woo
The Voice Symposium, Philadelphia, PA
- 5/98 Panel Discussant: Laser Surgery for Larynx Cancer
H. Biller, B. Haughey, R. Ossoff, S. Shapshay, **S. Zeitels**
American Laryngological Association
- 5/98 Panel Discussant: Difficult Airway
D. Eibling, R. Davis, A. Herlich, W. McGuirt, **S. Zeitels**
American Broncho-Esophagological Association
- 6/98 *Chairman: Medical Session 1A, *Challenging Cases in Surgical Management of Voice Disorders
Panelists: J. Abitbol, R. Casiano, C. Ford, D. Krause, G. Woodson, **S. Zeitels**
*Our Worst Surgical Results: How We Managed Them
The Voice Symposium, Philadelphia, PA
- 9/98 Phonosurgery & Phonomedicine: Novel Techniques & Advances: Voice, & Swallowing Disorders Committee
Panelists: C. Ford, J. Koufman, M. Rontal, C. Rosen, R. Sataloff, P. Woo, **S. Zeitels**
American Academy of Otolaryngology - Head & Neck Surgery, San Antonio, TX
- 9/98 Guest Faculty: The Otolaryngologist's Perspective of the Difficult Airway, Difficult Airway Soc., Boston, MA

- 6/99 *Chairman: Medical Session 1A
*Challenging Cases in Voice Surgery in Adults and Children
Panelists: C. Ford, S. Gray, R. Heuer, D. Kraus, **S. Zeitels**
The Voice Symposium, Philadelphia, PA
- 7/00 *Voice Surgery: Panelists: M. Abaza, J. Abitbol, M. Hess, P. Woo, **S. Zeitels**
*Complications in Voice Surgery: Panelists: M. Benninger, R., J. Spiegel, C. Richard Stasney, **S. Zeitels**
The Voice Symposium, Philadelphia, PA
- 9/00 Management of Common Voice Problems: Voice committee of the American Academy Otolaryngology HNS
Panel moderator: **Zeitels, S.M.** Panelists: Casiano, R., Gardener, G., Hogikyan, N., Koufman, J., Rosen, C.
American Academy of Otolaryngology - Head and Neck Surgery, Washington, D.C.
- 9/01 20th Century Innovations in Laryngology
Invited Presentation: **Zeitels, S.M.**
American Academy of Otolaryngology - Head and Neck Surgery, Denver, CO
- 5/02 *Phonosurgical Treatment of Early Glottic Cancer
Panel: "Endoscopic Treatment of Larynx Cancer"
Davis, R.K., Haughey, B., Nettekville, J., Pearson, B., Steiner, W., **Zeitels, S.M.**
American Laryngological Association, Boca Raton, FL
- 5/02 *585nm Pulsed Dye laser Treatment of Glottal Disease
Panel: "New Technology in Otolaryngology – Head and Neck Surgery"
Panelists: Aviv, J., Postma, G., **Zeitels, S.M.**
American Broncho-Esophagological Association, Boca Raton, FL
- 9/03 *585nm Pulsed Dye laser Treatment of Glottal Papillomatosis
Invited Presentation: **Zeitels, S.M.**
American Academy of Otolaryngology - Head and Neck Surgery, Denver, CO
- 1/05 Laryngology Section. Moderator: **Zeitels, S.M.**
American Laryngological, Rhinological & Otological Society: Eastern Section. New York, NY
- 5/05 Panel developer & moderator: Foresight in Laryngology: a 2020 Vision
Anderson, R.R., Blitzer, A., Hillman, R.E., **Zeitels, S.M.**
American Broncho-Esophagological Association, Boca Raton, FL
- 9/05 *Phonosurgical Reconstruction of Glottic Cancer Defects
Invited Panelist: Emerging Role of Transoral Laser Microsurgery in Organ Preservations of the Head & Neck
Annual meeting of the American Academy of Otolaryngology - Head and Neck Surgery, Los Angeles, CA
- 3/06 *Photoangiolytic as Treatment for Early Glottic Cancer
Invited Speaker: Festschrift for Eugene M. Myers. University of Pittsburgh School of Medicine. Pittsburgh, PA
- 9/06 *Phonosurgical Reconstruction of Glottic Cancer Defects
Invited Panelist: Emerging Role of Transoral Laser Microsurgery in Organ Preservations of the Head & Neck
*Adduction Arytenopexy for Treatment of Vocal-fold Paralysis
Invited Panelist: Neurolaryngology subcommittee – Arytenoid procedures
Annual meeting of the American Academy of Otolaryngology - Head and Neck Surgery, Toronto, Canada
- 2/07 Laryngology Section. Moderator: **Zeitels, S.M.**
American Laryngological, Otological, & Rhinological Society. Marco Island, FL

International

- 9/90 Prognostic Factors in Head and Neck Cancer, Panel Moderator: Weber, R.S., **Zeitels, S.M.**
Third International Head and Neck Oncology Research Conference, Las Vegas, NV
- 2/94 Guest Lecture: *The Anterior Cervical Approach for Tongue-Base Cancer
P. Bradley, S. Collins, L. DeSanto, P. Donald, J. Freeman, E. Myers, A. Noyek, J. Shah, **S. Zeitels**
Head and Neck Oncology Meeting, Auckland, NZ
- 2/94 *Supraglottic Cancer: Treatment Controversies: Laser Management , * Supraglottic Cancer: Staging and Treatment Options: Endoscopic Management of Early Glottic Cancer: Laser Surgery
Guest Faculty and Panel Discussant, 2nd World Conference on Laryngeal Cancer, Sydney, Australia
- 2/95 *Endoscopic Treatment of Laryngeal Cancer, *Partial vs. Subtotal Laryngectomy,
*Voice Rehabilitation After Laryngeal Cancer Treatment, * Vocal Cord Paralysis,
Bronchoaspiration, * Treatment of Parastomal Recurrences:
Guest lectures & Faculty P. Catalano, H. Goepfert, J. Medina, S. Schantz, J. Shah, M. Urken, **S. Zeitels**
First International Interinstitutional Congress on Head and Neck Cancer, Mexico City, Mexico
- 6/96 Guest Faculty & Panel Discussant: Challenging Cases in Laryngeal Microsurgery
J. Abitbol, P. Biggers, M. Bouchayer, P. Woo, **S. Zeitels**
The International Association of Phonosurgeons & The Voice Symposium, Philadelphia, PA
- 6/96 Chairman: Medical Management of Professional Singers
Chairman: Gastroesophageal Reflux Disease: Otolaryngological Manifestations
The International Association of Phonosurgeons & The Voice Symposium, Philadelphia, PA
- 6/96 Guest lecture & Faculty: Phonomicrosurgery for Benign and Malignant Lesions
R. Davis, L. DeSanto, H. Dedo, J. Gluckman, J. Kirchner, B. Pearson, M. Strome, Troost, T., **Zeitels, S.**
Update on Head and Neck Surgery in the USA, Goettingen, Germany
- 7/96 Moderator: Laryngeal Transplantation. Strome, M., **Zeitels, S.**
4th International Conference on Head and Neck Cancer, Toronto, Ontario
- 10/96 Chairman & Guest Faculty: *The Evolution of Phonomicrosurgical Management of Vocal-Fold Atypia
*Phonomicrosurgical Management of Epithelial Atypia and Microinvasive Cancer
International Conference on Epithelial Hyperplastic Lesions of the Larynx, Lubiana, Slovenia
- 3/97 Chairman: Laryngeal Laser Surgery, Paper pres.: Phonomicrosurgical Treatment of Early Vocal-Fold Cancer
Panel Member and Guest Faculty: Minimally Invasive Surgery for Early Laryngeal Cancer
XVI World Congress of Otorhinolaryngology - Head and Neck Surgery, Sydney, Australia
- 4/98 * History of Laryngoscopy, Voice Surgery, and Instrumentation, * Laser Physics, * Carcinoma: T1-T2
Guest Faculty: Third International Workshop on Laser Voice Surgery & Voice Care, Paris France
- 2/99 Guest Faculty: * Successful Phonomicrosurgery: Pitfalls and Techniques
Panel Member and Guest Faculty: Challenging Cases in Phonosurgery
Paper: *Adduction Arytenopexy & Crico-Thyroid Subluxation: New Procedures For Paralytic Dysphonia
International Association of Phonosurgeons & World Voice Consortium, Sao Paulo, Brazil
- 3/99 * History of Laryngoscopy, Voice Surgery, and Instrumentation, * Carcinoma: T1-T2
Guest Faculty: Fourth International Workshop on Laser Voice Surgery & Voice Care, Paris France

- 9/99 *Phonomicrosurgical Management of Early Glottic Cancer
Guest Faculty: First International Workshop on Laser Surgery in ENT: State of the Art, Antwerp, Belgium
- 7/00 *Evaluation of Early Laryngeal Cancer: Techniques and Pitfalls
Guest Faculty: 5th International Conference on Head and Neck Cancer, San Francisco, CA
- 10/00 *CO2 Laser Versus Cold Instrument Mucosal Dissection, *The Immobile Vocal Fold
Guest Faculty: 6th International Association of Phonosurgeons Conference, Venice, Italy
- 5/02 *Phonosurgery in Singers
Guest Faculty & Panelist: Collegium Medicorum Theatri, Madrid, Spain
- 10/02 *A Brief History of Laryngology and Phonosurgery, * New Procedures for Paralytic Dysphonia
Guest Faculty: Annual meeting: New Zealand Society of Otolaryngology – Head & Neck Surgery, Taupo, NZ
- 8/03 * Laser vs. Cold Instruments in Phonomicrosurgery, * Innovations in Phonosurgery
Panelist and Guest Faculty: Pan-European Voice Conference, Graz, Austria
- 11/03 Guest Faculty: *The Future of Phonosurgery, *Phonosurgical Treatment of Glottic Cancer, * Laryngeal Framework Surgery, *Pediatric Phonomicrosurgery.
Annual meeting of the Spanish Society of Otolaryngology – Head & Neck Surgery, Madrid, Spain
- 8/04 Guest faculty: *Phonosurgical Treatment of Early Glottic Cancer: Invited Lunch with the Professors
6th International Conference of Head & Neck Cancer. Washington, DC
- 8/04 Guest lecturer: *Phonosurgical Treatment of Performing Vocalists: Invited
6th International Voice Symposium. Salzburg, Austria
- 9/04 Moderator:* Difficult Cases in Phonosurgery , Guest Faculty: * Phonosurgical Treatment of Early Glottic Cancer, Laryngeal Framework Surgery for Paralysis & Cancer
5th Quadrennial Pan-European Cong. Otolaryngology Head & Neck Surgery, Rhodes, Greece
- 2/05 Guest Faculty: *Vocal Fold Scar: Preventing it Today and Reconstructing it in the Future
European laryngological Society, Madrid, Spain
- 2/05 Guest Faculty: *Laryngeal Framework Surgery, *Pulsed-Dye laser Treatment of Laryngeal Pathology
International Association of Phonosurgeons, Madrid, Spain
- 9/05 Guest Faculty: *Improving Surgical Standards of Practice, *Laryngoplastic Phonosurgery
Annual meeting Australian Voice Association, Sydney, Australia
- 9/05 Guest Faculty: *Laryngology: Looking into the Future, *Benign Vocal Pathology, *Innovative Management of Early Malignancy. Pan-European Voice Conference & British Voice Association, London, England
- 4/06 Guest Faculty: * Phonomicrosurgical Treatment of Benign Lesions, Addition Arytenopexy & Laryngeal Framework Surgery. Annual meeting Japan Laryngological Association. Kumamoto, Japan
- 7/06 Guest Faculty: * Future Training in Laryngeal Surgery: The USA Perspective, * Phonosurgical Treatment of Dysplasia & Glottic Cancer, * A Brief History of Laryngology and Phonosurgery, *New Lasers in Laryngeal Surgery: Angiolytic to Cutting
British Academic Conference in Otolaryngology: quadrennial conference. Birmingham, England

3. Teaching awards

- 1997 Honor award for teaching service: American Academy of Otolaryngology - Head & Neck Surgery (AAOHNS)

2004 Distinguished Service Award: American Academy of Otolaryngology - Head and Neck Surgery

Both of these awards are given in recognition of educational service contributions to the American Academy of Otolaryngology - Head and Neck Surgery. The distinguished service award was conferred to ~ 10 individuals in 2004 and the membership of the AAOHNS is ~8,400.

E. Report of Clinical Activities

1. Description of Clinical practice

I have a full-time academic clinical practice in the Department of Surgery of the Massachusetts General Hospital and have spearheaded the recently created Center for Laryngeal Surgery and Voice Rehabilitation at the MGH. My team and I are working in a new state-of-the-art voice-center facility, which was built by the MGH to accommodate my practice along with our group including a junior staff surgeon, a post-residency fellow, 2 dedicated speech pathologists and 4 Ph.D. voice scientists. My subspecialty practice is one of the busiest of its kind encompassing all aspects of laryngeal surgery especially as it relates to voice and airway problems. This includes: a. malignant diseases, b. lesions (papillomatosis, polyps, nodules etc.), neurologic disorders (paralysis, dystonias, parkinsonism), stenosis, and trauma. Based in part on this extensive clinical experience, and our clinical studies, and research initiatives, I have been invited to serve on the editorial staff of 5 journals.

2. Patient load

I see ~45 patients on my primary clinic day with frequent spillover 5-10 patients/week on other days, both inpatient (MGH) and outpatient. I spend 2 full days doing procedures in the main operating room of the MGH. I also spend ½ day performing office-based laser laryngeal procedures under local anesthesia or doing laryngeal electromyography with or without botox injections. I manage many of the most complex cases in laryngeal surgery. This is evidenced by the fact that approximately half of my new laryngeal cancer cases are MDs or retain doctoral degrees and many have sustained failed management at other institutions. A large number of my surgical cases come from out-of-state and many are international. I manage many performing vocalists from conservatory students and recreational singers to elite artists. Some of the latter, who have publicly disclosed their management to raise awareness of voice care include Julie Andrews, Cher, Steven Tyler, Denyce Graves, and Frederica von Stade. Being called on to enhance Ms. Andrews' voice subsequent to prior failed surgery is illustrative of the types of cases that I receive. I have surgically restored the voice of a number of classical vocalists, who perform regularly at the Metropolitan Opera in NYC.

3. Clinical contributions

My career has been focused on surgical innovation having designed more than 15 new laryngeal and pharyngeal procedures as well as two patented laryngoscopes. Many of those techniques are illustrated in my 'Atlas of Phonomicrosurgery', which is the most comprehensive atlas of endoscopic laryngeal surgery written to date. It is comprised of approximately 1000 microsurgical color images taken from a library of >40,000. My group and I have established the state-of-the-art in many areas of laryngeal surgery, especially as it relates to early vocal-fold cancer. Our published cure rate is comparable or better than any in the literature, however, our phonosurgical resection and reconstruction techniques have led to voice results that are superior to others. Our vocal outcomes from 3 procedures that I designed to surgically reconstruct paralytic dysphonia also comprise the only data demonstrating that patients can achieve 2 octaves of pitch-frequency range despite a unilateral vocal-fold paralysis. I received the Casselberry Award from the American Laryngological Association for designing one of these procedures. That award was only conferred 24 times since its inception in the early 1900s and never to a Boston surgeon.

For a number of years, I have explored the application of new laser technologies in collaboration with Rox Anderson of the Wellman Laboratories. We have forged promising new pathways in the use of a 585nm pulsed-dye laser (PDL) for a number of recalcitrant aerodigestive tract lesions [i.e. papillomatosis, mucosal dysplasia]. The resulting publications are developing into an inevitable paradigm shift in management and have led to recent broad FDA approval for the upper aerodigestive tract. Furthermore, using light to alter the subepithelial microcirculation [photoangiolytic] in vocal folds to normalize dysplastic mucosa is a unique advancement. Remarkably, we are now doing this procedure routinely in the clinic with a flexible laryngoscope. This is a unique advancement since laryngeal dysplasia and papillomatosis were treated solely in the operating room and typically with general anesthesia in the 20th century. During the past year we created a new model for angiolytic laser treatment of laryngeal lesions by employing a

532nm Pulsed-KTP laser. Given that this is a substantial advancement over our prior work, this technology has rapidly evolved as a new state-of-the-art. To further demonstrate this technology, we will conduct the first educational program in office-based laryngeal surgery in October 2006 as a Harvard CME course, which will include live surgery and a hands-on laboratory session.

Having spent more than a decade perfecting phonosurgical techniques for resecting lesions in performing vocalists, I was invited in 2000 by the American College of Surgeons to make an educational video for their library illustrating these methods. Subsequent to that, we published the largest series of microsurgical cases in singers ever compiled and the only one to date with objective vocal-outcome data. In that work, we established new methods of surgery as well as new principles of understanding the impact of a variety of lesions on vocal-fold vibration.

I have expended significant effort in educating all types of caregivers about hoarseness and its management since many diseases and/or lesions remain untreated for years despite easily discernable hoarseness to the untrained ear. Even early vocal-fold cancer is probably preceded by dysplastic lesion(s) that are present for many years. Patients avoid seeking care when they are hoarse because the voice often deteriorates slowly while waxing and waning in quality. Furthermore, dysphonia is seldom associated with pain or bleeding, and there is a pervasive phobia of *throat cancer*. This effort to raise awareness is illustrated by a 'Current Concepts' article entitled "Laryngology and Phonosurgery: Past Present and Future" in the New England Journal of Medicine in 2003.

4. Other relevant information about clinical role

At present, I am the immediate past President of the American Broncho-Esophagological Association, a group instituted in 1917 to advance the study and management of upper-aerodigestive tract diseases. Recognition of my contributions by peers is evidenced in Part I of my vita. I have received more than 50 awards and honored lectureships primarily for achievements laryngeal surgery. I have been called on to share our work with many residency programs, city and state societies, national and international organizations as well as many country's national societies. By invitation, I wrote the chapter on endoscopic voice surgery for the recertification guide of the American Academy of Otolaryngology – Head and Neck Surgery.

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