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TABLE OF CONTENTS

Annual Photos	14
Officers 2024-2025.....	17
Registration of Fellows.....	18
Minutes of the Executive Sessions	
Reports	
Secretary, Ted Mau, MD, PhD.....	20
Treasurer, Robert Buckmire, MD	20
Editor, Karen M. Kost, MD	21
Historian, Albert Merati, MD	21
Recipients of deRoaldes, Casselberry and Tucker Awards	22
Recipients of Newcomb and American Laryngological Association Awards	24
Recipients of Resident Research, Young Faculty/Practitioner Research and Seymour R. Cohen Research Awards	25
Dr. Eugene N. Myers International Paper and Dr. Robert H. Ossoff Post-Graduate Member Best Paper Awards	26
The Memorial and Laryngological Research Fund	26
Presidential Address: <i>Looking to the Future Together</i> Michael M. Johns III, MD	27
Introduction of the Guest of Honor: Michael M. E. Johns, MD.....	35
Presidential Citations	
Jeanne Hatcher, MD; Edie Hapner, PhD; Adam Klein, MD; Karla O'Dell, MD; Lindsey S. Reder, MD; Elizabeth Shuman, MD; Lauren Timmons Sund, CCC-SLP	36
Presentation of the American Laryngological Association Award to Gayle E. Woodson, MD Presentation by David O. Francis, MD.....	43
Presentation of the Gabriel F. Tucker Award to Karen Zur, MD Presented by Alessandro de Alarcon, MD	44
Presentation of the James Newcomb Award to Steven Sims, MD Presentation by Nausheen Jamal, MD	45
Presentation of the deRoaldes Award to Susan Thibeault, PhD, CCC-SLP Presentation by Norman Hogikyan, MD	46
Introduction of the 2024 State-of-the-Art Lecturer Michael M. Johns III, MD	47

State-of-the-Art Lecture: <i>Playing Doctor: Lights, Camera, Action</i> Adam D. Rubin, MD.....	48
Introduction of the Forty-Seventh Daniel C. Baker, Jr., MD Memorial Lecturer, Michael M. Johns III, MD	52
Daniel C. Baker, Jr., MD, Memorial Lecture: <i>Story Time: Key Moments in 30 Years of Laryngology</i> Clark A. Rosen, MD	53

PODIUM PRESENTATIONS

Evaluation of the Efficacy of Hyaluronidase Injection in Reinke’s Edema Treatment Necati Enver, MD; Fatmanur Atilgan, PA	62
A Multi-Center Observational Study of the Prevalence of Human Papilloma Virus Infection in Laryngologists Taylor G. Lackey, MD; Chloe Santa Maria, MD; Gary Gartling, PhD; Ryosuke Nakamura, PhD; Michael M. Johns III, MD; Ryan Branski, PhD; Milan R. Amin.....	62
Efficacy and Safety of Sodium Oxybate in Isolated Focal Laryngeal Dystonia: A Phase IIb Double-Blind Placebo-Controlled Cross-Over Randomized Intention-To-Treat Clinical Trial Kristina Simonyan, MD, PhD, Dr.Med; Lena C. O’Flynn, BA; Azadeh Hamzehei Sichani, MA; Steven J. Frucht, MD; Anna F. Rumbach, PhD; Nutan Sharma, MD, PhD; Phillip C. Song, MD; Alexis Worthley, BA	63
A Prospective Clinical Trial Comparing Daxibotulinumtoxina-lanm (DAXI) to Onabotulinumtoxina (BTXA) for Adductor Type Laryngeal Dystonia (ADLD) Alexandra D. D’Oto, MD; Claire E. Perrin, BS; Camryn R. Marshall, BS; VyVy N. Young, MD; Tanvi Rawat, BS; Desi Gutierrez, MA, CCC-SLP; Sarah L. Schneider, MS, CCC-SLP; Elizabeth A. Shuman, MD; Clark A. Rosen, MD	63
Vocal Fold Basal Cell Histologic Signature in Response to Inhaled Exposures Elizabeth Erickson-DiRenzo, PhD; Camille Liao; Akari Kimura, MD, PhD; Meena Easwaran, MS; Amir Golchin, MD; Patrick Kiessling, MD	64
The Protective Role of Hormonal Birth Control in Idiopathic Subglottic Stenosis Andrew Awadallah, BS; Yousuf H. Khalil, BS; Andrew J. Bowen, MD, MS; Hawa M. Ali, MD; Yan Li, PhD, MAS; Amy L. Rutt, DO; Eric S. Edell, MD; Matthew J. Koster, MD; Semirra L. Bayan, MD; Dale C. Ekbom, MD.....	64
Transcriptomic Predictors of Recurrence in Idiopathic Subglottic Stenosis (iSGS) Sheng Jie Ying, MSc; Peter YF Zeng, PhD; John W. Barrett, PhD; Patrick Macinnis, MI; Amir Karimi, BSc; Harrison Pan, BMSc; Nhi Le, BMSc; Kevin Fung, MD; Jennifer Anderson, MD; Anthony C. Nichols, MD; R Jun Lin, MD	65

Surgical Management of Idiopathic Subglottic Stenosis in Pregnancy: A Multi-Institutional Study	
Yousuf H. Khalil, BS; Andrew Awadallah, BS; Andrew J. Bowen, MD, MS; Monet McCalla, DO; Hawa M. Ali, MD; Eric S. Edell, MD; Matthew J. Koster, MD; David O. Francis, MD, MS; Seth H. Dailey, MD; Semirra L. Bayan, MD; Dale C. Ekbom, MD	66
Variables Affecting Time to Maximal Airway Improvement Following Endoscopic Airway Surgery for Patients with Subglottic Stenosis	
Zane Kaiser, BS; Robert Buckmire, MD; Rupali Shah, MD.....	
Cellular Effects of Estrogen and Progesterone in Idiopathic Subglottic Stenosis	
Hawa Ali, MD; Savita Ayyalasomayajula, MS; Michael Thompson, BS; Joshua Wiedermann, MD; Eric Edell, MD; Semirra Bayan, MD; Y. S. Prakash, MD.....	
Evaluation of the Efficacy of Laryngeal Reinnervation Techniques	
Pranati Pillutla, MD; Clare Moffatt, MD; Dinesh K. Chhetri, MD	67
Clinical Outcomes After Hyaluronic Acid Laryngeal Injection Augmentation	
Connor A. Keuchel, BA; Sarah E. Benyo, MD; Michael S. Benninger, MD; Austin J. Lee, BS; Benjamin Wajsborg, MD; Rebecca C. Nelson, MD; Paul C. Bryson, MD, MBA; William S. Tierney, MD, MS, MS	68
Factors Contributing to Laryngoplasty Revision: Insights from the Trinetx Database	
Christian Leonardo, BS; Alexander Bjorling, MD; Keith A. Chadwick, MD, MS.....	
Feasibility of Real-time Automated Vocal Fold Motion Tracking for In-Office Laryngoscopy	
Aki Koivu, PhD; Obinna Nwosu, MD; Mitsuki Ota, BS; Kristina Simonyan, MD, PhD, Dr.Med; Matthew Naunheim, MD.....	69
The Natural History of Vocal Fold Motion Recovery after Unilateral Vocal Fold Paralysis	
Rishi Suresh, MD; Lesley F. Childs, MD; Ted Mau, MD, PhD	69
Allograft Adipose Material (AAM) as a Novel Injectable for Injection Augmentation in Unilateral Vocal Fold Paralysis	
Chloe Santa Maria, MD, MPH; Michael M. Johns III, MD; Elizabeth A. Shuman, MD; Lauren Timmons Sund, CCC-SLP; Kacie La Forest, CCC-SLP; Neel K. Bhatt, MD; Yael Bensoussan, MD; Jake Morgan, MD; Karla O'Dell, MD	70
Superior Laryngeal Nerve Function in an Alzheimer's Disease Rat Model	
Zaroug Jaleel, MD; Mahdi Alghezi, BS; Carson Miller, BS; Byron Kim, BS; Stephen Leong, MD; David J. Perkel, PhD; Neel K. Bhatt, MD	70

The Reliability of Intraoperative Frozen Section in Glottic Lesions Suspected for Malignancy	
Hagit Shoffel-Havakuk, MD, MBA; Yonatan Lahav, MD; Yaniv Hamzany, MD; Gal Levi, MD; Daniel Ben Ner, MD; Nir Tsur, MD.....	71
Missed Opportunities: The Disconnect between Laryngologists and Lung Cancer Screening in Early Glottic Cancer Patients	
Taylor Stack, MD; John Henrich, MD; Robert A. Buckmire, MD; Rupali N. Shah, MD	71
Outcomes in Patients with Obstructive Sleep Apnea Undergoing Laryngeal Surgery in an Outpatient Setting	
Catherine Kartchner, BC; Keerthi Kurian, BS; Jacob Schwartz, BS; Nala Mckie, BS; Arpitha Shenoy, BS; James Daniero, MD, MS	71
Reproducibility and Variance Across Different Surgeons in Suspension Microlaryngoscopy Procedures	
Alexander Elamine, BS; Phillip Song, MD	72
Establishing a Clinical Model of Acute Laryngeal Injury to Investigate Pathological Scarring and Therapeutic Interventions	
Ryan Stepp, BS; Patrick Cottler, PhD; Nausin Ali, BS, MS; Adithya Reedy; Hannah Kenny; James Daniero, MD, MS.....	72
The Effectiveness of Transverse Cordotomy with Partial Arytenoidectomy in the Treatment of Bilateral Vocal Fold Immobility	
Jaynelle Gao, BS; Jonathan West, MD; Ryan Chung, BS; Michael M. Johns III, MD; Karla O'Dell, MD	73
Evaluating the Efficacy of L-DOPA MAP Gel for Acute Laryngeal Injury	
James Daniero, MD, MS; Patrick Cottler, PhD; Areli Rodriguez, PhD; Donald Griffin, PhD; Ryan Stepp, BS	73
Larger Endotracheal Tubes Are Associated with an Increased Risk of Post-Extubation Diet Modifications	
William Tierney, MD; Radhika Duggal, MA; Amy S. Nowacki, PhD; Kurt Ruetzler, MD; Yanyan Han, MS; Rebecca C. Nelson, MD; Paul C. Bryson, MD, MBA; Michael S. Benninger, MD; Martin B. Brodsky, PhD, ScM	74
Pediatric Laryngeal Trauma: An Epidemiological Study of Mechanisms, Management, and Outcomes using the National Trauma Data Bank	
William Moss, BS; Mia Girela, BS; Apathi Muralidhar, BS; Alvaro Moreira, MD, MSc.....	74
The Development of Laryngology in the United States and the Origin of the American Laryngological Association	
Steven M. Zeitels, MD; Eugene N. Myers, MD	75
Exploring Preprocessing Steps and Neural Networks for Stridor Characterization Through Voice Data	
Parsa Khorrami, MSc; Geetha Krishna Chaitanya Nama, BS; Utsav Kapoor, MS; James Anibal, BS; Jamie Toghranegar, PhD; Bridge2AI Consortium; Yael Bensoussan, MD	75

The Impact of Estrogen on Stromal Elements in Idiopathic Subglottic Stenosis Pathogenesis	
Emily Mace, MD; Evan Clark, BS; Edward Talatala, MD; Maxim Litvak, MD, PhD; Hongmei Wu, MD; Yueli Zhang, BS; Alexander Hillel, MD; Sam Collins, PhD; Jason Park, MD, PhD; Alexander Gelbard, MD	76
Effect of Serial Intralesional Steroid Injections (SILSI) and Clinical Predictors on Surgical Dilation Rate in Idiopathic Subglottic Stenosis (ISGS)	
R. Jun Lin, MD; Shengjie Ying, MSc; Peter YF Zeng, PhD; John W. Barrett, PhD; Patrick MacInnis, MI; Amir Karimi, BSc; Harrison Pan, BMSc; Nhi Le, BMSc; Kevin Fung, MD; Jennifer Anderson, MD; Anthony C. Nichols, MD	76
Computational Fluid Dynamics for the Evaluation of Patients with Idiopathic Subglottic Stenosis (iSGS)	
Zheng Hong Tan, PhD; Aspen Schneller, BS; Kai Zhao, PhD; Tendy Chiang, MD; Laura Matrk, MD	77
Unveiling a Mechanism of Immune Homeostasis in Trachea: Investigation of Immune Responses Following Synthetic Tracheal Scaffold Implantation in a Mouse Circumferential Tracheal Defect Model	
Jeon Seong, MD, MS; Hye Jeong Lee, PhD; Ji Suk Choi, PhD; Chae-Seo Rhee, MD, PhD; Joo-Young Park, DDS, PhD; Seong Keun Kwon, MD, PhD	77
SMAD Signaling Mediates the Atrophic Response of Vocal Fold Myoblasts In Vitro	
Masayoshi Yoshimatsu, MD, PhD; Ryosuke Nakamura, PhD; Renjie Bing, MD; Gary J. Gartling, PhD; Ryan C. Branski, PhD	78
Autologous Muscle Progenitor Cells Enhance Reinnervated Adductor Muscle Activity in the Rat Larynx	
Randal C. Paniello, MD, PhD	78
An Evaluation of Safety and Toxicity for Stem Cell-Based Vocal Fold Implants in Swine	
Desiree Delavary, BA; Jennifer P. Long, MD, PhD	79
A Multimodal Approach for Deep-Learning Classification of Vocal Fold Pathologies in Stroboscopy	
Rachel Kutler, BA; Sean A. Setzen, MD; Sruthi Surapaneni, BS; Yeo Eun Kim, BA; Courtney Tipton, MD; Michael Pitman, MD; Lucian Sulica, MD; Olivier Elemento, PhD; Anaïs Rameau, MD, MPhil, MS.....	79
Predictive Efficacy of CAPE-V, pVHI, and CVA in Detecting Vocal Fold Pathology in Children	
Nicholas Rossi, MD; Brenda Shen, MD; Amy S. Puckett, MA, CCC-SLP; Brad W. deSilva, MD; Gregory J. Wiel, MD	80
Advancing AI in Laryngology: Performance and Explainability of YOLO11 in Vocal Fold Polyp Detection	
Abhinita Mohanty, MS; Aisha Serpedin; Sanjana Kana, BS; Peter Yao, MD; Jenny Yau, BS; Olivier Elemento, PhD; Lucian Sulica, MD; Pegan Khosravi, PhD; Anaïs Rameau, MD, MPhil, MS	80
Age-Related Vocal Atrophy Data Generated by Glottic: An Application to Quantify Vocal Atrophy	
Mahdi Al-ghezi, BS; Mohamed A. Aboueisha, MD; Zaroug Jaleel, MD; Cara Sauder, PhD; Albert L. Merati, MD; Michael M. Johns III, MD; Neel K. Bhatt, MD.....	81

Placental-Derived Connective Tissue Matrix Injection During Microphonosurgery as an Adjunct to Promote Vocal Fold Healing	
Gabriel Sobczak, MD; Stacey Halum, MD; Patrick Finnegan, BS; Ananya Tadikonda, BS; Sunjay Anekal, BS.....	81

Intralesional Steroids Injection for Scar or Fibrous Vocal Fold Lesions: The How, Who and Why to Better Understand if There Is a Positive Benefit	
Isabela Schettini, MD; Christopher Dwyer, MD; Samantha Kridgen, SLP; Thomas Carroll, MD.....	82

Is Anyone Ever Cured From RRP?: Prolonged Treatment Gaps and Recurrence Patterns in Recurrent Respiratory Papillomatosis	
Sarah Gao, AB; Raymond J. SO, AB; Ronit Malka, MD; Lee M. Akst, MD; Alexander Hillel, MD; Kevin M. Motz, MD; Simon R.A. Best, MD.....	82

The Knight's Visor Flap: A Bipedicled Advancement Flap for the Treatment of Sulcus Vocalis	
Maria Mavrommatis, MD; Elliana K. Devore, MD; Benjamin M. Laitman, MD, PhD; Peak Woo, MD.....	83

ALA POSTERS

A Difficult Truth to Swallow: Gender Disparities in Academic Laryngology	
Anya Forma, BS; Morgan Meyer, BA; Rachel Akers, MS	84

A Rendezvous to Restore Swallowing: Factors in Procedural Success	
Anna Peever, BA; Karuna Dewan, MD	84

Ability to Adjust Head Position in A 3D-Printed Flexible Nasolaryngoscopy Model Improves Fidelity and Trainee Experience	
Felix Fernández-Penny, BS; Anna Christina Clements, MD; Michael Bindschadler, PhD; Ezgi Mercan, PhD; Huy Le, PhD; Tanya K. Meyer, MD; Seth Friedman, PhD; Maya G. Sardesai, MD, Med	85

Acquired Laryngotracheal Stenosis Following Intubation for Acute Cardiac Events	
Jocelynn Dorotan, BA, BS; Andrew Li, BA; Ahmed Soliman, MD	85

Airway Changes in Patients Intubated after Inhalation Injury	
Pragnya Dontu, MD; Anita Sulibhavi, MD; Catlin Chambers, MA, CCC-SLP; Maria Striano, MA, CCC-SLP; Alyse Voulo, MA, CCC-SLP; Lisa Rae, MD; Ahmed Soliman, MD	86

Analysis of the Surgical Etiology of Vocal Fold Paralysis and Need for Medialization	
John Gniady, MD; Brandon LaBarge, MD; Jeffrey Lorenz, MD	86

Anatomic Distribution of Fungal Laryngitis and Factors Influencing Treatment Duration	
Mollie Perryman, MD; Harrison Reeves, BS; Adam Kravietz, MD, MPH; Jake Morgan, MD; Nicolaus Knight, MS; C. Blake Simpson, MD.....	87

Assessing Gender and Age Bias for Detection of Vocal Fold Paralysis in the Preliminary Bridge2AI-Voice Dataset	
Trevor Pharr, BS; Ahmed Shahabaz, MS; Fahim Rahman, BS; James Anibal, BS; Mohamed Ebraheem, MS; Isaac Bevers, BS; Jamie Toghranegar, SLPD; Yael Bensoussan, MD	87
Association of Laryngeal Dystonia with Common Neurologic Disorders	
John Gniady, MD; Brandon LaBarge, MD; Jeffrey Lorenz, MD	88
Changes in Practice Patterns Among Laryngologists, 2010 to 2022 Medicare Analysis	
Malaak Saadah, BS; Scott Howard, MD, MBA; Paul Bryson, MD, MBA	88
Characterization of Serum C-Reactive Protein Values in Patients with Acquired Subglottic Stenosis	
Andrew Neevel, MD; Fatemah Ramazani, MD; Robbi A. Kupfer, MD	89
Chronic Bacterial and Sicca Laryngitis: A Systematic Review	
Lauren Howser, MD; Anuja Shah, BA; Johnathan Brown, MD; Shaun Nguyen, MD; Ashli O'Rourke, MD; Kristen Meenan, MD.....	89
Coblation for Laryngotracheal Stenosis	
Maria K. Pomponio, MD; Zachary Lamb, BS; Aaron J. Jaworek, MD	90
Comparative Analysis of Endotracheal Tube Cuff Pressure Dynamics: Implications for Safe Inflation Protocols	
Alexandria Harris, MD, MS; Carl Snyderman, MD, MBA	90
Comparative Three-dimensional Fine Structures of the Rabbit Vocal Fold Using Correlative Light and Electron Microscopy	
Kiminobu Sato, MD, PhD; Mengya Mark, MD, MSc; Xiaochuan Xu, MD, PhD; Bernard Rousseau, PhD, MMHC.....	91
Comparing the Sensitivity of Different Liquid Types on the Detection of Aspiration and Residue during Flexible Endoscopic Evaluation of Swallowing (FEES)	
Yuval Nachalon, MD; Eiman aAbu, MD; Nogah Nativ-Zeltzer, SLP; Liav Hayat, SLP; Yarden Ashkenazi, SLP; Yael Oestreicher-Kedem, SLP	92

Complications of Various Materials for Injection Laryngoplasty: A Systematic Review Anuja H. Shah, BA; Johnathan Brown, MD; Shaun A. Nguyen, MD; Ashli O'Rourke, MD; Kirsten Meenan, MD.....	92
Cricopharyngeal Myotomy Outcomes for Dysphagia in Inflammatory Myositis Maxwell Weng, BSE; Hye Chung, MD; Clare Moffatt, BS; Pranati Pillutla, MD; Dinesh Chhetri, MD	92
Daily Laryngeal Kinematics and Acoustics Throughout the Menstrual Cycle: A Longitudinal Single-Subject Case Study Sarah R. Kervin, MM, MS, CCC-SLP; Celia Sun, MS, CF-SLP; Geddy Warner, MM, PhD; Ryan Schwartz; Aaron M. Johnson, MM, PhD, CCC-SLP.....	93
Decoding Gender Differences in Cough Sounds with a Transformer Model Linh He, BS; Haomiao Li, MS; Siyan Wang, MS; Robin Zhao, BS; Sarah Kervin, MM, MS; Anaïs Rameau, MD, MPhil, MSc	93
Delineating Effects of Stress-Analogous, Low-Dose Cortisol Exposure on Human Vocal Fold Fibroblasts Wen-Hsuan Tseng, MD; Anumitha Venkatraman, PhD, CCC-SLP; John Binns, BS; Susan Thibeault, PhD, CCC-SLP	94
Depression in Patients with Subglottic Stenosis Peter Eckard, BS; Tory A. McKnight, MD; Alexa Pearce, BS; Ozlem E. Tulunay-Ugur, MD PhD.....	94
Dysphonia is Associated with Anxiety and Depression in the All of Us Research Program Michael W. Denham, MD, MS, MPhil; Lauren H. Tucker, BA; Hannah N.W. Weinstein, BA; Justin S. Golub, MD, MS; Hayley L. Born, MD, MS	95
Effect of Superior Laryngeal Nerve Block in Patients With Neurogenic Cough: A Systematic Review and Single-Arm Meta-Analysis Thamins Dias Delfino Cabral, MD; Bruno Dalla Vecchia Vendramini, MS; Jaime Plane, MS; Renata Knoll, MD; João Evangelista Ponte Conrado, MS	95
Enhancing Laryngeal Cancer Diagnosis with Dynamic Optical Contrast Imaging Yazeed Alhiyari, PhD; Solymar Torres, MD; Brandon Mo, BS; Maie St. Johns, MD, PhD	96
Epiglottic and Posterior Pharyngeal Wall Thickness after ACDF Mallory Peters, MD; Noah Spillers, BA; Nizar Tejani, MD; Karuna Dewan, MD	96
Examination of Ancestral Trends in Idiopathic Subglottic Stenosis Jarod Karom, BS; Molly Meeker, BS; Catherine Anderson, BS, QPR; Zachary Root, BS; Laura Matrkka, MD	97
Expanding Understanding of Voice Characteristics in Non-Binary Individuals Seeking Gender-Affirming Voice Care Camryn Marshall, BS; Sarah L. Schneider, MS; Desi Gutierrez, MA; Tyler W. Crosby, MD; Yue Ma, MD; Clark A. Rosen, MD VyVy N. Young, MD	97

Global Variations in Vocal Fold Sulcus Disorders

Nupur Kapoor Nerurkar, MBBS, DORL, MS (ENT); Lucian Sulica, MD;
Markus M. Hess, MD, PhD; Daniel Novakovic, MBBS, MPH; Meghna Shah, DLO;
Alexandra Li, BS; Zhou Hao Leong, MBBS, MRCSEd, Mmed(ORL) 98

How Does Singing Voice Change Across Popular Female Singers' Careers: A Longitudinal Analysis of Frequency and Repertoire Adaptation Using Machine Learning

Trevor Pharr, BS; Mohamed Ebraheem, MS; Megan Urbano, CCC-SLP; Yael Bensoussan, MD 98

Identifying an Accurate Anatomic Endoscopic Landmark for Injection of the Internal Branch of the Superior Laryngeal Nerve Using a Hybrid Novel 3D-Printed-Cadaveric Laryngeal Model

Yuki Tanigami, MD, PhD; Seth H. Dailey, MD 99

Injection Laryngoplasty Simulation Program for Otolaryngology Residents

Jennifer Silver, MD; Antonia Lagos-Villaseca, MD; Deema Almutawa, MD; Gabriella Le Blanc, MD;
Diego Albrich, MD; Luc Mongeau, PhD; Swen Groen, PhD; Karen M. Kost, MD 99

Innovating Treatments for Vocal Fold Scarring: Controlled Dexamethasone Delivery with a Novel Light-Activatable Implant

Denzel Ryan D. Cruz, BS; Nour Awad, MD; Avery Zheng, BS; Alexander Karabachev, MD; Charles Farbos de Luzan, PhD; Yoonjee C. Park, PhD; Gregory R. Dion, MD, MS 100

Large Language Models for Debiasing Patient Recruitment in Voice Data Generation Projects

Geetha Krishna Chaitanya Nama, BTech; Parsa Khorrani, MSc; Shrramana Ganesh Sudhakar, BTech;
Yosef Nafii, BS; Jamie Toghranegar, SLPD; Yael Bensoussan, MD; James Anibal, BS 100

Laryngeal Leishmaniasis: A Systematic Review

Joseph Celidonio, BS; Nicholas Hamilton, BS; Alexandra Filipowski, MPH; Raj Malhotra, BS;
Samantha Shave, BS; Kenneth Yan, MD, PhD; Rachel Kaye, MD 101

Long Term Effects of Temporary Vocal Fold Augmentation in Patients with Vocal Fold Atrophy with or without Vocal Fold Paralysis

Elizabeth A. Sell, MD, MSc; Nicholas Oberlies, MD; Matteo Coppola, BA; Libby J. Smith, DO 101

Metrics of Proficiency in a 3D-Printed Spatially-Calibrated Flexible Nasolaryngoscopy Trainer

Anna Christina Clements, MD; Felix Fernandez-Penny, BS; Michael Bindschadler PhD; Huy Le, BS;
Tanya K. Meyer, MD; Seth Friedman, PhD; Maya Sardesai, MD, Med 102

Myofascial Release Therapy Augments the Effect of Voice Therapy in Patients with Cervicalgia

Megan R. Gillespie, MD; Mandy Williams, BS; Ben Casey, BS; Mark R. Gilbert, MD 102

Narrow Band Spectrogram Parameters: What Do We Know?

Juliana Codino, PhD, CCC-SLP; Pasquale Bottalico, PhD; Adam Rubin, MD 103

Nebulized Ciprofloxacin-Dexamethasone Following Endoscopic Airway Surgery: Tolerability, Safety, and Adherence

Cyrus W. Abrahamson, BA; Abbey Landini, BA; Jasmine Stewart, MS; James A. Burns, MD; Jonathan P. Kunakose, MD, MS; Andrew Stein, MD 103

Novel Low-Tech Vocal Fold Injury and Inoculation Methods Reveal Innate Permeability of Vocal Fold Epithelium in a Mouse Model

Renee E. King, PhD, CCC-SLP; Ella T. Ward-Shaw, BS; Paul F. Lambert, PhD 104

Objective Findings of Instrumental Swallow Assessment in Unilateral Vocal Fold Paralysis: Comparison of High vs Low Vagal Injury

Madeline Marker, BA; Liam Gallagher, MD; Aanish Puri, BS; Jesse Hoffmeister, PhD, CCC-SLP;
Joslyn Kahn, MS, CCC-SLP; Heather Erickson, MS, CCC-SLP; Gina Cruciana, MA, CCC-SLP;
Raluca Gray, MD 104

Outcomes Following Cricopharyngeal Dilation and Botulinum Injection Predict Efficacy of Staged Myotomy: Utilizing a “Trial” Approach in Patients with Cricopharyngeal Dysfunction

Sophie E. Yu, BA; Lauren Schlegel, MD; Brett Campbell, MD; Stephanie Teng, MD;
Pavan S. Mallur, MD 105

Outcomes of Single Dose Platelet Rich Plasma Injections for Benign Dysphonia

Jacqueline Allen, MD; Georgia Mackay, MBChB; Camille Prigent, BHB 105

Oxygen Microenvironment of the Maculae Flavae of the Vocal Fold as a Stem Cell Niche

Kiminori Sato, MD, PhD; Shun-ichi Chitose, MD, PhD; Fumihiko Sato, MD, PhD; Kiminobu Sato, MD, PhD; Takeharu Ono, MD, PhD; Hirohito Umeno, MD, PhD 106

Patients' and Providers' Experience with Medialization Thyroplasty

Melissa Patty, MD; Elnaz Roohi, PharmD; Peter Rose, MD; Shamir Karmali, MD; Amanda Hu, MD 106

Patterns in the Use of Awake vs Asleep Vocal Fold Injection in the Treatment of Unilateral Vocal Fold Paralysis - A Large Payor Database Study

Tyler Crosby, MD; Clark A. Rosen, MD 107

Patterns of Benign Voice Disorders by Age and Sex in Treatment-Seeking Professional and Pre-Professional Singers

Sarah Kervin, MM, MS, CCC-SLP; Scott Sussman, MS, CCC-SLP; Rachel Coleman, MS, CCC-SLP;
Alexandra Quantz, MA, CCC-SLP; Ariana Seidman, MM, MS, CCC-SLP; Lucian Sulica, MD 107

Placental-Derived Connective Tissue Matrix as a Novel Treatment Option for Unilateral Vocal Fold Paralysis

Sunjay Anekal, BS; Ananya Tadikonda, BS; Gabriel Sobczak, MD; Lena Chen, MD;
Patrick Finnegan, BS; Stacey Halum, MD 108

Practice Trends in Laryngology - Neuromodulators for Treatment of Chronic Cough

Christopher Dwyer, MD; Thomas L. Carroll, MD; Jennifer J. Shin, MD;
Michael M. Johns III, MD 108

Prevalence of Esophageal Dysmotility in Muscle Tension Dysphonia Patients

Megan Saltsgaver, BS; Theo Covello, BA; Madison Cheung, BS; Weihai Zhan, PhD;
Abbey Carlson, MS, CCC-SLP; Inna A. Husain, MD 109

Prognostic Value of the Complete External Laryngeal Exam on Laryngoscopy Findings with the Introduction of a New Laryngeal Examination Score (LES)	
Anna Orr, MD; Emma Elbert, BS; Kelly Schmidt, MD; Mark R. Gilbert, MD	109
Prospective Analysis of Neurogenic Cough Factors on Quality of Life in Patients Undergoing Superior Laryngeal Nerve Block	
William Liu, BS; Andrew Peachman, BS; Zach Root, BS; Bilal Mohammad Alsavaf, MD; Brandon Kim, MD; Brad deSilva, MD; Laura Matrk, MD	110
Radial Incision versus Wedge Excision in Treatment of Idiopathic Subglottic Stenosis	
Yasine Mirmozaffan, BS; Zane Kaiser, BS; Rupali N. Shah, MD; Robert A. Buckmire, MD	110
Recurrent Laryngeal Nerve Damage Associated with Endotracheal Tube Cuff Pressure and Retraction in Anterior Cervical Spine Surgery	
Jonathan Goulazian, BS; Peter C. Gerszten, MD, MPH; Carl H. Snyderman, MD, MBA	111
Reconstruction of a Complete Cricothyroid Membrane Soft Tissue Defect Using a Synthetic Hybrid-Scale Fiber Matrix	
Karim Asi, MD; Andrew Tkaczuk, MD	111
Regenerative Effects of Basic Fibroblast Growth Factor (Bfgf) Injection into the Paralyzed Muscles of Patients with Laryngeal Paresis	
Keiichiro Okano, MD; Shigeyuki Mukudai, MD, PhD; Shigeru Hirano, MD, PhD; Mami Kaneko, PhD	112
Restylane Vocal Fold Augmentation: Assessing Safety and Duration of Efficacy	
Alayna Kinhead, BS; Wiktoria Gocal, MD	112
Revision Medialization Thyroplasty to Correct Acute Glottic Insufficiency in the Setting of Rapid Weight Loss on Semaglutide	
Katherine Xu, MD; Rachel Weitzman, MD, MPH; Michelle Yu, MD, MS; Babak Sadoughi, MD	113
Risk Factors for Vocal Fold Immobility After Lung Transplantation	
Rachel B. Kutler, BA; Margaret Barilka, MS, CCC-SLP; Evan Kennedy, MS, CCC-SLP; Jessell Posada, MS, CCC-SLP; Gabriela Rodrigues, MD, CCC-SLP; Sydney Pomenti, MD; Frank D'Ovidio, MD, PhD; Philippe Lemaitre, MD; Selim M. Arcasoy, MD, MPH; Michael J. Pitman, MD; Hayley L. Born, MD	113
Risk of Complications Following Medialization Thyroplasty in Patients on Anticoagulation	
Dylan Berton, MD; JaeHee Kim, BS; Kathleen Tibbetts, MD	114
Safety Profile in Hyaluronic Acid-Based Vocal Fold Injection Augmentation	
Noah Thornton, BS; Ryan Stepp, BS; Alezea Leder Macek, MD; James Daniero, MD, MS	114
Seasonality in Cough: The Influence of Environmental Physiology	
Anas Qatanani, MD; Michelle Nixon, PhD; Mudit Gupta, BA; Amanda Young, MS; Jennifer Rager, DO; Kenneth Altman, MD, PhD	115

Severe Wound Dehiscence Requiring Local Flap Reconstruction following Intralesional Steroid Injection in an Irradiated Patient With Airway Stenosis	
Jake Morgan, MD; Liyang Tang, MD; Karla O'Dell, MD	115
Singing Different Tunes: Vocal Health Beliefs of Vocalists and Vocal Health Professionals	
Isaac Lalakea Alter, AB; Michael W. Denham, MD, MS, Mphil; Evan Kennedy, SLP; Ryan Branski, PhD; Hayley L. Born, MD	116
Single-Cell Sequencing and Spatial Transcriptomics of Human Vocal Folds Reveals Heterogeneity of Fibroblast Populations	
Benjamin M. Laitman, MD, PhD; David M. Gonzalez, PhD; Daniel Charytonowicz, PhD; Ya-Wen Chen, PhD; Mark Courey, MD	116
Symptom Characteristics of Benign Vocal Fold Lesions	
Mark Lee, MD; Lucian Sulica, MD	117
The Effects of Testosterone Replacement Therapy on the Fundamental Frequencies of Post-Menopausal Women	
Stephanie Horton, MD; Anuja Shah, BS; Shaun Nguyen, MD; Nathaniel Baker, MS; Ashli O'Rourke, MD	117
The Epidemiology of Recurrent Respiratory Papillomatosis (RRP) in Adults: A Scoping Review	
Namra Desai, BHSc; Paolo Campisi, MD, MSc; R Jun Lin, MD, MSc; Jessica Trac, MD	118
The Power of Cognitive Aid Tools in Optimizing Emergency Airway Management: A Systematic Review	
Raisa Chowdhury, MSc; Ostap Orishchak, MD; Marco Mascarella, MD, MSc; Bshair Aldriweesh, MD; Mohammed Alnoury, MD; Jeffrey Yeung, MD, MSc; Lily HP Nguyen, MD, MSc	118
The Role of Laryngology Evaluation Prior to Voice Therapy for Parkinson-Related Dysphonia: Clinical Process Evaluation and Patient Outcomes	
John L. Wilson, MD, MS; Andy Goings, MS, CCC-SLP; Sophia Ellis, BS; Sheryl Maier, MA, CCC-SLP; G. Todd Schneider, MD, MS; Ellen L. Ferraro, MD	119
The Use of Laryngology Patient-Reported Outcome Measures to Screen for Vocal Fold Structural or Neurogenic Pathology in Patients with Dysphonia	
Ohad Cohen, MD; Aditya Mahesh, BS; Meredith Tabangin, MPH; Rebecca J. Howell, MD; Aaron D. Friedman, MD	119
Treatment of Anterior Glottic Webs Using a Single-Staged Coblation Technique	
Salena Ringenbach, BS; Cecilia G. Freeman, MD; Aaron J. Jaworek, MD	120
Trends in Laryngological Surgeries and Voice Services Among Patients with Gender Dysphoria	
Gillian Michaelson, BS; Lex Rakowski, MS, CCC-SLP; Nina W. Zhao, MD, MAEd	120

Trends in Laryngotracheal Injury from Consumer Products (2015-2022): Implications for Healthcare Planning in an Aging U.S. Population	
Thriaksh Rajan, BA; Humzah Quereshy, MD, MBA; Johnnie Rose, MD, PhD; N. Scott Howard, MD, MBA	121
Use of Stimulability Testing Among Laryngologists: High Value, High Variability	
Rachel Coleman, MS, CCC-SLP; Scott Sussman, MS, CCC-SLP; Elizabeth Young, MS, CCC-SLP; Laura Toles, PhD, CCC-SLP; Lucian Sulica, MD	121
Utility of the Unified Spasmodic Dysphonia Rating Scale (Usdrs) for Adductor Type Laryngeal Dystonia (ADLD)	
Camryn Marshall, BS; Sarah L. Schneider, MS, CCC-SLP; Clark A. Rosen, MD; VyVy N. Young, MD	122
Variations in Insurance Coverage for Voice Therapy in the United States	
Kevin B. Xiao, MD; Carlye B. Goldenberg, BS; Carson K. Gates, BS; Mark R. Gilbert, MD	122
Video Laryngoscope Assisted Injection Medialization Laryngoplasty	
Neelaysh Vukkadala, MD; Kaitlynne Y. Pak, MD; Victor Hsue, MD; Anca Barbu, MD	123
Vocal Fold Injection Augmentation (VFIA) - A Landscape Review	
James Daniero, MD, MS; Noah Thornton, BS	123
Vocal Process Granulomas: Insights and Management	
Amulya Vankayalapati, BS; Nour Awad, MD; Megha Mohanakrishnan, BS; Gregory R. Dion, MD, MS	124
Voice Change as a Result of Testosterone Supplementation in Cisgender Women: A Scoping Review	
Heli Majeeth, BS; Teresa Proctor, SLPD; Yin Yiu, MD	124
Voice Feminization: A Systematic Review Assessing Quality of Life	
Raisa Chowdhury, MSc; Jennifer Silver, MD, MSc; Eleni Philippopoulos, MIST; Karen M. Kost, MD	125
Voice Function After TLM Based on Detailed Classification of Vocal Fold Mucosal Dissection	
Mioko Fukahori, MD, PhD; Shun-ichi Chitose, MD, PhD; Takashi Kurita, MD, PhD; Fumihiko Sato, MD, PhD; Tomoki Ito, MD; Sachi Watanabe, MD; Umeno Hirohito, MD, PhD; Kiminori Sato, MD, PhD	125
Voice Outcomes after Endoscopic Intervention in Laryngotracheal Stenosis: A Systematic Review	
Aida M. Hasson, BA; Megan Saltsgaver, BS; Abbey Carlson, MS, CCC-SLP; Inna A. Husain, MD	126
What is a Control Cohort in Voice and Speech Biomarker Research: A Review of Definitions and Standardization Challenges	
Yosef Nafii, BS; Micah Boyer, PhD; Yael Bensoussan, MD; Bridge2AI-Consortium MS	126

MEMORIALS

William Lawson MD 128

Stanley Blaugrund, MD.....129

George A. Gates, MD.....130

W. Frederick McGuirt, MD..... 131

Officers 1879 – 2025 132

Roster of 2025 Fellows & Members..... 137

ALA Fellows - 2025



ALA Council – 2025



2025 ALA Council and Post-Graduate Members



OFFICERS 2024-2025

President.....	Michael M. Johns III, MD <i>Los Angeles, California</i>
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Historian	Albert Merati, MD <i>Seattle, Washington</i>
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Councilor-at-Large	Tanya K. Meyer, MD, MS <i>Seattle, Washington</i>

REGISTRATION OF FELLOWS

Active

AKST, Lee ANIS, Mursalin ARMSTRONG, William BARADES, Soly BELAFSKY, Peter BENNINGER, Michael BERKE, Gerald BLITZER, Andrew BLUMIN, Joel BOCK, Jonathan BRYSON, Paul BUCKMIRE, Robert BURNS, James CAMPISI, Paolo CARROLL, Thomas CASTELLANOS, Paul CHADWICK, Keith CHHETRI, Dinesh CHILDS, Lesley COHEN, Seth COUREY, Mark CRUMLEY, Roger DANIERO, James DE ALARCON, Alessandro EKBOM, Dale FRANCIS, David FRANCO, Ramon	GARRETT, C. Gaelyn GELBARD, Alexander GRILLONE, Gregory HALUM, Stacey HILLEL, Alexander HOGIKYAN, Norman HOWELL, Rebecca HU, Amanda JAMAL, Nausheen JOHNS, Michael M III JOHNSON, Romaine KOST, Karen KUPFER, Robbi LONG, Jennifer LOTT, David MALLUR, Pavan MAU, Ted MERATI, Albert MEYER, Tanya MIRZA, Natasha MOORE, Jaime O'DELL, Karla ONGKASUWAN, Julina PANIELLO, Randy PITMAN, Michael RAMEAU, Anaïs	REDER, Lindsay ROSEN, Clark ROSOW, David RUBIN, Adam RUTT, Amy SADOUGH, Baba SATALOFF, Robert SHUMAN, Elizabeth SIMPSON, C. Blake SMITH, Libby SMITH, Marshall SOLIMAN, Ahmed SONG, Phillip ST. JOHN, Maie SULICA, Lucian SYAMAL, Mausumi THOMPSON, Dana TIBBETTS, Kathleen VAN DAELE, Douglas VERMA, Sunil WOO, Peak YOUNG, VyVy ZEITELS, Steven ZUR, Karen
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<i>International</i>	<i>Emeritus</i>	<i>Associate</i>
ABITBOL, Jean ALLEN, Jacqui ATALLAH, Ihab FANG, Tuan Jen HIRANO, Shigeru KORN, Gustavo KWON, Seong Keun KWON, Tack-Kyun LEE, Seung-Won LOPEZ-GUERRA, Gerardo NERURKAR, Nupur SATO, Kiminobu SATO, Kiminori WANG, Chi-Te	JOHNS, Michael M. E. HEALY, Gerald METSON, Ralph MYERS, Eugene STROME, Marshall <i>Honorary</i>	BRANSKI, Ryan ERICKSON-DIRENZO, Elizabeth HAPNER, Edie MURRY, Thomas THIBEAULT, Susan

<i>Post-Graduate</i>		
ABU-GHANEM, Sara BHATT, Neel BORN, Hayley CATES, Daniel CLARY, Matthew CRAWLEY, Brianna DAVIS, Ruth DEWAN, Karuna DHAR, Shumon DWYER, Christopher GAO, William GARBER, David GIBERT, Mark HATCHER, Jeanne HOFFMAN, Matthew HRELEC, Candace HUSAIN, Inna	KAYE, Rachel KIRKE, Diana KOHLI, Nikita KRAVIETZ, Adam KUHN, Maggie KUPFER, Robbi LAW, Anthony LIN, R Jun MA, Yue MADDEN, Lindsay MALLUR, Pavan MARGET, Matthew MCGAREY, Patrick MEENAN, Kirsten MISONO, Stephanie MORRISON, Robert NAUNHEIM, Matthew	Paknezhad, Hassan PANOSSIAN, Haig RAPOPORT, Sarah SANTA Maria, Chloe SILVA MEREIA, Valeria SZYMANOWSKI, Adam TIBBETTS, Kathleen TIERNEY, William TRACY, Lauren TRITTER, Andrew VAHABZADEH-HAGH, Andrew WOOD, Megan Yiu, Yin

MINUTES OF THE BUSINESS MEETING

REPORT OF THE SECRETARY

The membership prior to the April 2025 election included 122 Active members, 72 Emeriti member including Corresponding Emeritus, 34 Corresponding members, 1 Honorary members, 12 Associate members and 109 Post-Graduate Members for a total membership of 350 Fellows and members.

Drs. Karla O'Dell, Rebecca Howell, Jaime Moore, Matthew Naunheim, Lindsay Reder and David Rosow were elected to Active Fellowship and Drs. Jacqui Allen was elected to International Fellowship. Drs. Ellen Friedman, Joseph Kerschner, Charles Myer III, Steven Parnes, and Randal Weber were elevated to Emeritus status.

After induction of the nominees, the 2025 roster reflects 129 Active members, 72 Emeriti members, 35 Corresponding members, 1 Honorary members, 12 Associate and 109 Post-

Graduate members, for a total membership of 356 Fellows and members. A total of 15 individuals candidates for Post-Graduate Membership were inducted.

These totals also reflect that we were notified of the passing of five members passed away since the 2024 annual meeting.

The Secretary also reported that the footprints for the 2026 and 2027 meetings have been finalized for Phoenix and Seattle, respectively. He confirmed that COSM is moving toward convention center with the hope of reduced costs. The selection process for the SLC Executive Director elected Dr. Brad Kessler who will replace outgoing director, Dr. Grillone.

Respectfully submitted,
Joel H. Blumin, MD
Secretary

REPORT OF THE TREASURER

The Treasurer's report and financial statements were prepared with the assistance of AME, our accounting partner. The Treasurer stated that the relationship between the ALA administrator and AME continues to work efficiently.

Dr. Buckmire reported that the finances of the Association continues to show positive revenue from the investment portfolio and payment of dues. We have received several donations resulting in the naming of three funds within the past year. Dues continue to be the major source of income but approximately 10% of the membership remain delinquent for the last year. This number is reduced due to the continuing efforts of our Administrator. He encouraged each fellow to pay any delinquent

amount so his/her membership remains in "good standing." The Council continues to maximize the Association's assets by controlling expenditures while maintaining the high level of services for the fellowship.

The Council continues to review expenses by eliminating the majority of expenses for the Winter Council Meeting by convening via Zoom.

The major fundraising is the annual Sustainers Fund Campaign. Each member is encouraged to donate as these funds will allow the Association to create and fund additional research grants such as the inaugural grant for Post-Graduate

Respectfully submitted,
Robert Buckmire, MD
Treasurer

REPORT OF THE EDITOR

Transactions

Dr. Kost reported that there was positive feedback from visitors to the website who

viewed the 2024 Transactions. With the historical Transactions dating back to 1897, the accessibility of the electronic copies

continues to be a favorite to our members as well as others who log in. Each document may be downloaded as a PDF and printed.

ALA Website

The traffic during the past year has increased dramatically. Visits to the site continue to rise and multiple search engines are being used. The majority of visits were from the United States with others from Asia, South America, and the UK.

She encouraged members to visit the website as new content is constantly added. To obtain a temporary password, log in to [Member's Area | American Laryngological Association \(alahns.org\)](https://www.alahns.org). Dr. Kost informed members to update his/her profile with the

accurate email address. This will assist in providing digital newsletter sand ballots and other member related information in a timely manner.

Publication

Dr. Kost reported a very high rate of manuscripts submitted for the 2023 annual meeting was received. Submitted manuscripts to the Laryngoscope reached a 40.16% acceptance rate. This rate also includes some manuscripts that originally were submitted for a poster presentation. This is indicative of the excellent quality of posters that increased the value to the contributor.

Respectfully submitted,
Karen M. Kost, MD
Editor

REPORT OF THE HISTORIAN

Dr. Merati reported on the overlaps with the PGM report by sharing that two of our most "historical" developments with the ALA membership occurred this year in that arena. Past-Presidents Berke and Ossoff committed significant resources to support the endeavors of our PGM community. Dr. Ossoff is funding the inaugural Post-Graduate Member Best Paper award. Dr. Berke's contribution will support the Post-Graduate Member Breakfast Symposium that is held during the annual meeting. Both of these will allow this group's growth to expand. The Association continues to welcome these expressions of support and passion for our beloved ALA.

Since our 2024 annual meeting, we were informed of the passing of five Emeritus Fellows. Dr. Stanley Blaugrund died on June 6, 2024; Dr. William Lawson

passed away on July 11, 2024; Dr. Frederick McGuirt, an ALA past president died on January 26, 2025; and Dr. George Gates transitioned on January 8, 2025. The administrative office was informed of the passing of Dr. Louis Lowry but information was not located of the date.

Finally, as a way of reminding our members about the lifespans of our work he honored those who served as our ALA Presidents from 10, 20, 30, 40 , and 50 years ago.

1974: Joseph Ogura
1984: Gabriel Tucker
1994: H Bryan Neel
2004: Robert Ossoff
2014: Gaelyn Garrett

Respectfully submitted,
Albert Merati, MD
Historian

RECIPIENTS OF THE DE ROALDES AWARD

Established in 1907, a medal is presented to an individual in recognition of outstanding accomplishments in the field of Laryngology.

1928 Chevalier L. Jackson
 1931 D. Bryson Delavan
 1934 Harris P. Mosher
 1937 Lee Wallace Dean
 1943 Ralph A. Fenton
 1949 George M. Coates
 1951 Arthur W. Proetz
 1954 Louis H. Clerf
 1959 Albert C. Furstenberg
 1960 Dean M. Lierle
 1961 Frederick T. Hill
 1966 Paul H. Holinger
 1970 Francis E. LeJeune
 1973 Lawrence R. Boies
 1976 Anderson E. Hilding
 1979 Joseph H. Ogura
 1982 John J. Conley
 1985 John A. Kirchner
 1985 Charles M. Norris
 1987 Walter P. Work
 1988 DeGraaf Woodman
 1989 John F. Daly



1990 Joseph L. Goldman
 1991 William Montgomery
 1992 M. Stuart Strong
 1993 Douglas P. Bryce
 1994 Paul H. Ward
 1995 Hugh F. Biller
 1996 Byron J. Bailey
 1997 George A. Sisson Sr.
 1998 Stanley M. Blaugrund
 1999 Jerome C. Goldstein
 2000 Thomas C. Calcaterra
 2001 Eugene N. Myers
 2002 Robin T. Cotton
 2003 Gayle E. Woodson

2004 Robert H. Ossoff
 2006 Stanley M. Shapshay
 2007 Frederick McGuirt, Sr.
 2008 Robert T. Sataloff
 2009 Andrew Blitzer
 2010 Marshall Strome
 2011 Gerald Healy
 2012 Robert T. Sataloff
 2013 James L. Netterville
 2014 Marvin P. Fried
 2015 C. Gaelyn Garrett
 2016 Steven M. Zeitels
 2017 Steven Gray
 (Posthumously)
 2018 Michael S. Benninger
 2019 Bruce Pearson
 2020-21 Charles N. Ford
 2022 Peak Woo
 2023 Sid Khosla (Posthumously)
 2024 Roger Crumley
 2025 Susan Thibeault

RECIPIENTS OF THE CASSELBERRY AWARD

The Casselberry Award has been established to encourage the advancement of the art and science of Laryngology. The Award is given for outstanding manuscripts or accomplishments in Laryngology and consists of a cash prize and a certificate from the Association. Competition for this Award will be limited to those persons whose abstracts are selected for consideration for inclusion in the Annual Scientific Program. Those wishing to compete for the Award must submit their entry on an American Laryngological Association abstract form followed by the submission of a manuscript by the designated deadline. The winner of the Award will be chosen by a committee and the Casselberry Award will be presented the Annual Scientific Meeting.

1923	George Fetterolf and Herbert Fox	1968	Joseph H. Ogura	2022	Neha Reddy, PatrickSchlegel,
1928	Ralph A. Fenton and O. Larsell	1985	H. Bryan Neel III		Yoonjeong Lee, Dinesh Chhetri
1929	Richard A. Kern and Harry P. Schenck	1987	Joseph J. Fata	2023	Hye Rhyn Chung, Yoongeog
1929	Edward H. Campbell	1991	James A. Koufman		Lee, Neda Reddy, Zhaoyan
		1993	Frank E. Lucente		Zhang, Dinesh Chhetri
		1994	Ira Sanders		
1931	Arthur W. Proetz	1998	Steven M. Zeitels	2024	Sang-Yoon Han, Seong Jeong,
1934	Anderson C. Hilding	1999	Clarence T. Sasaki		Seo Young Kim, Seong Keun
1936	Francis E. LeJeune and Joel J. Pressman	2006	Kiminori Sato		Kwon
		2009	Randal Paniello		
1939	H. Marshall Taylor and Brian T. King	2012	Priya Krishna, Michel Regner, Steve	2025	Sheng Jie Ying, MSc;
1940	French K. Hansel		Abramowitch		Peter YF Zeng, PhD; John
1941	Noah D. Fabricant				W. Barrett, PhD; Patrick
					Macinnis, MI; Amir
1946	Paul H .Holinger	2018	Seong Keun Won, Young Hawn Choi, Tae Ho Kim,		Karimi, BSc; Harrison
1962	Hans von Leden		, In Gu Kim, Jin H Lee		Pan, BMSc; Nhi Le,
					BMSc; Kevin Fung, MD;
1966	John A. Kirchner and Barry De.Wykle	2021	Mark Lee, Ted Mau, Lucian Sulica		Jennifer Anderson, MD;
					Anthony C. Nichols, MD;
					R Jun Lin, MD

RECIPIENTS OF THE GABRIEL F. TUCKER AWARD

Established in 1987, a medal is presented to an individual for significant contributions, either to the field of pediatric laryngology or to the Association, or both.

1987	Seymour R. Cohen	2000	Trevor J. I. McGill	2013	Andrew Inglis
1988	Charles F. Ferguson	2001	Donald B. Hawkins	2014	Linda Brodsky
1989	Blair Fearon	2002	James S. Reilly	2015	Dana Thompson
1990	Gerald B. Healy	2003	Ellen M. Friedman	2016	Michael Rutter
1991	John A. Tucker	2004	C. Martin Bailey	2017	Paolo Campisi
1992	Bruce Benjamin	2005	William P. Potsic	2018	Noel Garabedian
1993	John N. G. Evans	2006	Amelia F. Drake	2019	Marshall Smith
1994	Joyce A. Schild	2007	Colin Barber	2020-21	Ellen Deutsch
1995	Robin T. Cotton	2008	Seth Pransky	2022	Craig Derkay
1996	Haskins K. Kashima	2009	William Crysedale	2023	J. Paul Willging
1997	Lauren D. Holinger	2010	Charles M. Myer, III	2024	Reza Rahbar
1998	Philippe Narcy	2011	Mark Richardson	2025	Karen Zur
1999	Bernard R. Marsh	2012	George Zalzal		

RECIPIENTS OF THE NEWCOMB AWARD

1941	Burt R. Shurly	1971	Daniel C. Baker, Jr	1998	Andrew Blitzer
1942	Francis R. Packard	1972	Alden H. Miller	1999	Hugh F. Biller
1943	George M. Coates	1973	DeGraaf Woodman	2000	Robert W. Cantrell
1944	Charles J. Imperatori	1974	John J. Conley	2001	Byron J. Bailey
1947	Harris P. Mosher	1975	Francis W. Davison	2002	Gerald B. Healy
1948	Gordon Berry	1976	Joseph L. Goldman	2003	Steven D. Gray
1949	Gordon B. New	1977	F. Johnson Putney	2004	Charles W. Cummings
1950	H. Marshall Taylor	1978	John F. Daly	2005	Roger L. Crumley
1951	John D. Kernan	1979	Charles F. Ferguson	2006	Charles N. Ford
1952	William J. McNally	1980	Charles M. Norris	2007	Robert H. Ossoff
1953	Frederick T. Hill	1981	Stanton A. Friedberg	2008	Gayle E. Woodson
1954	Henry B. Orton	1982	William M. Tribble	2009	Marvin P. Fried
1955	Thomas C. Galloway	1983	Harold G. Tabb	2010	Diane Bless
1956	Dean M. Lierle	1984	Daniel Miller	2011	Jamie A. Koufman
1957	Gordon F. Harkness	1985	M. Stuart Strong	2012	Steven M. Zeitels
1958	Albert C. Furstenberg	1986	George A. Sisson	2013	Lauren Holinger
1959	Harry P. Schenck	1987	John S. Lewis	2014	Marvin P. Fried
1960	Joel J. Pressman	1988	Douglas P. Bryce	2015	Robert T. Sataloff
1961	Chevalier L. Jackson	1989	Loring W. Pratt	2016	Nicholas Maragos
1962	Paul H. Holinger	1990	William W. Montgomery	2017	Gerald Berke
1963	Francis E. LeJeune			2018	Peak Woo
1964	Fred W. Dixon	1991	Seymour R. Cohen	2019	Robert T. Sataloff
1965	Edwin N. Broyles	1992	Paul H. Ward	2020-21	James Netterville
1966	Lyman G. Richards	1993	Eugene N. Myers	2022	Ernest Weymuller
1967	Joseph H. Ogura	1994	Richard R. Gacek	2023	Gaelyn Garrett
1968	Walter P. Work	1995	Mark I. Singer	2024	Shigeru Hirano
1969	John A. Kirchner	1996	H. Bryan Neel III	2025	Steven Sims
1970	Louis H. Clerf	1997	Haskins K. Kashima		

RECIPIENTS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION AWARD

1988	Frank Netter	2000	Geza J. Jako	2014	Robert T. Sataloff
1989	Shigeto Ikeda	2001	Eugene N. Myers	2015	Robert H. Ossoff
1990	Hans Littmann	2002	Catherine D DeAngelis	2016	Gerald Berke
1991	Arnold E. Aronson	2003	William W Montgomery	2017	Roger Crumley
1992	Michael Ter-Pogossian	2004	David Bradley	2018	Eiji Yanagisawa
1993	C. Everett Koop	2005	Herbert Dedo	2019	Peak Woo
1994	John C. Polanyi	2006	Christy L. Ludlow	2020-21	Nobuhiko Isshiki
1995	John G. Batsakis	2007	John A. Kirchner	2022	Edie Hapner
1996	Ingo Titze	2008	Gerald B. Healy	2023	Andrew Blitzer
1997	Matina Horner	2009	Stanley M. Shapshay	2024	Charles N. Ford
1998	Paul A. Ebert	2010	Clarence T Sasaki	2025	Gayle E. Woodson
1999	Bruce Benjamin	2011	Lawrence DeSanto		
2000	M. Stuart Strong	2012	Minoru Hirano		
		2013	Harvey Tucker		

RECIPIENTS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION RESIDENT RESEARCH AWARD

1990 David C. Green	2002 Dinesh Chhetri	2016 Andrew M. Vahabzadeh Hagh
1991 Timothy M. McCulloch	2003 Andrew Karpenko	2017 Ian-James Malm
1991 Ramon M. Esclamado	2004 Ichiro Tateya	2018 Molly Naunheim
1992 David H. Henick	2005 Samir Khariwala	2019 Justin Ross
1993 Gregory K. Hartig	2007 Idranil Debnath	2020 Ioan A. Lina
1994 Sina Nasri	2008 Tara Shipchander	2021 Melissa Zheng
1995 Saman Naficy	2009 David O. Francis	2022 Evan Compton
1996 Manish K. Wani	2010 David O. Francis	2023 Benjamin M. Laitman
1997 J. Pieter Noordzij	2011 Jeffrey Houlton	2024 Delaney Sheenan
1998 Michael E. Jones	2012 Lowell Gurey	2025 Pranati Pillutla
1999 Alex J. Correa	2014 Boris Paskhover	
2001 Andrew Verneuil	2015 Andrea Park	
2000 James C. L. Li	2013 Yaniv Hamzany	

RECIPIENTS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION YOUNG FACULTY RESEARCH AWARD

1991 Paul W. Flint	2006 Suzy Duflo	2016 Ryo Suzuki
1992 Yasuo Hisa	2007 Tack-Kyun Kwon	2017 Astha Malhotra
1993 Jay F. Piccirillo	2008 Bernard Rousseau	2018 Catherine Sinclair
1994 Hans J. Welkoborsky	2009 Tsunehisa Ohno	2019 Yue Ma
1995 Nancy M. Bauman	2010 I-Fan Theodore Mau	2020 Yi-An Lu
1997 Ira Sanders	2011 David Francis	2021 Yael Bensoussan
1998 Kiminori Sato	2012 Mika Nomoto	2022 Gary Gartling
2000 Steven Bielamowicz	2013 Seung Won Lee	2023 Matthew Naunheim
2001 John Schweinfurth	2014 Jennifer Long	2024 Gary Gartling
2005 Dinesh Chhetri	2015 Nao Hiwatashi	2025 Masayoshi Yoshimatsu

SEYMOUR H. COHEN RESEARCH GRANT AWARD

The Seymour H. Cohen Award, established in 1999, with a bequest by the Cohen family. The Award is to be given to an outstanding candidate who must perform basic science research in the area of pediatric laryngology and/or pediatric neurolaryngology and be a citizen of the United States or Canada. The material must be approved and accepted for presentation at an Annual Meeting. The scope of the Award is limited to citizens of the United States of America and Canada. Should multiple candidates collaborate in the research, all authors must comply with the citizenship requirements. Dr. Cohen wish was for this Award only to be used for the funding of research in pediatric laryngology and/or pediatric neurolaryngology.

1999 Russell A. Faust, MD, PhD	2017 Matthew Clary, MD
2000 Chapman McQueen, MD	2019 Philip Weissbrod, MD
2001 Yolanda D. Heman-Ackah, MD	2020 Rupali Shah, MD
2009 Swapna Chandran, MD	2021 Ricardo Gottardi, MD
2014 Christopher T. Johnson, MD	2022
2015 Gregory R. Dion, MD	2023 Pranati Pillutla, MD
2016 Alexander Hillel, MD	2024 Laura Matrk, MD

THE EUGENE MYERS MD INTERNATIONAL PAPER AWARD

The Eugene N. Myers Award for International Laryngology, funded by Dr. Eugene Myers, is given on an annual basis associated with the annual meeting. A scientific submission (oral or poster) that represents excellence in scientific contribution to the field of laryngology with the first author based outside of the United States and Canada.

2023	Enrique Díaz-Ocampo	2025	Jeon Seong
2024	Seung-Won (Steve) Lee		

THE ROBERT H. OSSOFF DMD, MD POST-GRADUATE MEMBER BEST PAPER AWARD

Funded by Dr. Robert H. Ossoff, the Post-Graduate Member Best Paper Award is given at the annual meeting after a review and selection from submitted manuscripts by the PPG Steering Committee. Eligibility for this award is limited to Post-Graduate Members (PGM) who request consideration when submitting the abstract.

2023	Bhatt Neel	2025	Matthew Naunheim
2024	Yael Bensoussan		

THE MEMORIAL AND LARYNGOLOGICAL RESEARCH FUNDS

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

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President's Address

Looking to the Future, Together

Michael M. Johns III, MD
Los Angeles, California

Thank you all once again for coming to the 146th meeting of the American Laryngological Association. It has been a privilege to serve as your president for this past year, so I'm going to take the next couple of moments looking to the future together.

When I was in residency from 1996 to 2002, the field of modern laryngology was quite nascent. There were few fellowship-trained laryngologists, but I was fortunate enough to work with Dr. Norm Hogikyan, who inspired me towards the reemerging field. And as I learned more about laryngology and academic laryngology in the United States, my prime goal in my career was to become an active fellow of the American Laryngological Association. I knew that if I could achieve that goal, all the other elements of my professional goals would also be met. And I think there is a certain truth to that. And I hope all of you in the audience will seek to join the American Laryngological Association if you have not already.

The field of laryngology is incredibly bright and has changed a lot. When I finished my residency and my fellowship in 2003, there was probably 25 or 30 fellowship trained laryngologists in the U.S. Over the past 20 years, the field of laryngology was becoming more established as a discrete subspecialty of otolaryngology. And the field has matured substantially over this time. From the 25 to 35 fellowship training laryngologists and very few dedicated centers of excellence for laryngology alone, there are now nearly 400 fellowship trained laryngologists in the United States and interprofessional programs have flourished throughout the country. And with that, there have been more and more opportunities for laryngology fellowship training and more and more possibilities for dedicated careers in the subspecialty of laryngology.

Over the course of my time in the ALA, a variety of questions from big and small have



been raised. And, as it pertains to the ALA, important questions like: how to engage with this fine organization; questions regarding organizational transparency; issues regarding the role of the organization in helping fostering laryngology education; being a catalyst for laryngeal research and advancement and are we doing enough in that regard; pathways to membership and pathways for active fellows towards leadership roles within the ALA; are we excluding individuals we need in our organization?

As these questions have arisen, it became very clear that the ALA Council, a group of stewards of the organization, couldn't answer those questions alone. Thus, in 2023, we decided to step back and perform a membership-drive and professionally led strategic planning process to help answer some of these key questions that are rooted in our identity to help provide a framework for our years to come. I want to walk through that process and share the results.

Many of the questions we face are not new. Looking back in our transactions, in 1994, Ron Bailey during his presidential address talked about the last time a strategic planning process was undertaken for the ALA. This was 30 years

ago. I encourage you to look at our transactions in general. One of Dr. Chhetri's terrific accomplishments over his time on the council and presidency was getting all of our transactions acquired and scanned. They are all digitally available on our website. Take a look at that because there are just great reads in there.

In this strategic planning session as of the similar questions were addressed, important reflections and actionables came out. One was the need to grow and expand the American Laryngological Association membership, and so a membership expansion occurred. The goal of engaging young laryngologists evolved into our postgraduate membership category today, which lives on and is growing stronger. The importance for the ALA to be a catalyst for research was reinforced. The Neurolaryngology Study Group, which had been formed by Gayle Woodson and Roger Crumley years previously, was folded into the ALA around that time as well. Fellowship standards were discussed and led to the present laryngology fellowship curricular outline published on our website. This was a very productive process in 1994 that led to positive change in the ALA, and we thought this would be a good time to reflect and craft a strategic framework for us going forward.

So to that end, over the past year to year and a half, we have been actively engaged in this membership driven, professionally led strategic planning process. And when we sought out to do this, we wanted to enlist the support of an expert in this regard. We were fortunate enough to be connected with Rebecca Leven, who does this professionally. She led us through this process.

I want to talk about what the process looks like so all can understand where we came to some of our initiatives going forward. We started with an environmental scan. This included key stakeholder interviews first. Rebecca conducted hour-long sessions with about 15 individuals that included active fellows, councilors, past ALA presidents, PGM members, associate fellows, and individuals who had elected not to pursue fellowship in the ALA. And a lot of information was gleaned from these.

In parallel, a benchmarking exercise was performed with 3 similar organizations. We chose the ABEA, our natural partner, the

American Otologic Society, and also the American Society of Genitourinary Surgeons, which is a urology organization, very senior society with very limited membership, a bit like what the ALA looked like in 1994.

The data from those two components led to a full membership survey to which we got a very high response rate – Thank you all. We synthesized these data and then held a full day strategic planning session where we use our member-driven data to revisit and refine our mission and vision, define core values, establish strategic goals, and outline some initial tactics and strategies to achieve these goals. And now here we are in the early parts of our implementation planning.

I encourage you to take a look at the strategic plan summary that is available on the ALA website. We revisited the mission statement and reaffirmed that the ALA is a scholarly organization that elevates the practice of laryngology through education, training, and innovation. Our vision is that we will build a dynamic community of experts working together to advance the care of individuals with laryngeal disorders. We articulated the core values that emerged: community, integrity, scholarship, and innovation with scholarship being at our core. We want to build the bench for the future of laryngology scholarship, leading to innovation that advances our field and our community, all grounded in integrity. These core values are really important. Sometimes these exercises seem like there's really no tangible outcomes, but when important questions come up, that pertain to the principles, the core values of the organization itself, it is important to have these defined so we can go back to them to help guide us in the future.

From there, four specific broad goals were outlined: Goal one, advance the ALA's value to our members. Goal two, foster the next generation of leading laryngologists. Goal three, position the ALA as the premier platform for intellectual work and scholarship in laryngology. And goal four is to create a culture of inclusive excellence. With regards to our first goal, we identified a specific initiative around partnering, via liaison, with our sister organizations to advance and protect our field when it comes to

policy, payment, and research-making decisions.

And this past year, an important problem came up with respect to Medicare coverage botulinum toxin injections in the larynx. And through a collaborative partnership between the ALA, the ABA, and the AAOHNS, a very robust response was developed to CMS. And so far, we haven't seen those adverse changes come our way. And so that's just an example of that already in action.

Opportunities for engagement were a big concern that was raised as well as expanded opportunities for member participation. So, this became an important goal; to increase opportunities for engagement and participation in ALA activities and to develop robust ways to communicate with our membership. A Laryngology Advisory Network is being developed in conjunction with the ABEA as a new member benefit.

In terms of fostering the next generation of our leading laryngologists, the foundation for this, of this, of course, is our laryngology fellowship training and the ALA is well positioned to take a leadership role in ensuring that laryngology education is as best as it can be in the United States.

We wanted to reaffirm, rigorous scholarship standards to ascend to active fellowship in the ALA. The prime foundation for this is completion of the Triological Society thesis. With rare exception, and that will be required going forward. The Postgraduate Membership program has now been in place for well over a decade and a half, and it's time to revisit the structure and the ways that we can enhance engagement for our PGM category and support our postgraduate memberships in their journey towards becoming active fellows.

And for goal three, we want to be a catalyst for research and innovation and efforts to bring our research community together to synergize more effectively, of course, is part of that and so we're excited to field the Laryngology Research Collaborative in partnership with the ABEA. Dr. Chhetri launched our Post-Graduate Member Research Grant, which is the third ALA research grant. Additionally, we seek to curate new educational content for our membership.

Through all of this, we want to increase transparency in our organization, broaden the opportunities to serve in the ALA with more clear structure towards further leadership roles in the ALA. We want to include and support all of us in our organization and specifically make sure the ALA and the leadership of the ALA looks like our field in general, our very capable field. And we want to clearly articulate the ALA's leadership and governance structure. Clark Rosen, in one of his presidential newsletter messages, wrote what this looks like. And in my summer newsletter, we put a graphic that articulates this well, and it is included in our strategic plan document. So please do take a look at this.

So, we knew that to get these goals accomplished, we needed to look at our working operations and expand our committee structure. The Research Committee is becoming the Research Advancement Committee with an expanded membership and an expanded charge to become the catalyst for a scholarship and innovation going forward. There is establishment of a new Laryngology Fellowship Committee. This committee is going to be working on enhancing our laryngology fellowship infrastructure with a look towards standards of what laryngology fellowship training should look like. Our Membership Committee has now been expanded to become the Membership and Engagement Committee. This expanded group will be developing new opportunities for memberships to for our members to engage in the organization. There is another new committee, the Education, Communication and Outreach committee. There was a lot of feedback in the strategic planning process related to website updates, social media, and potential webinars and podcasts. These initiatives will be housed in our Education, Communication, and Outreach community. Lastly, our partnerships and liaisons were fairly fragmented in the organization, and we thought that to be able to best capitalize on our expertise and ability to synergize with our partner organizations, this would best be pooled together under a new Partnerships and Liaison committee.

While some of the low-hanging fruit has starting to move forward, there remains a lot of work to

be done. But through the strategic planning process and through the expansion of our committee structure, we have the footprint and the infrastructure to move forward successfully. Towards that end, the ALA is us and the ALA needs all of us. So please take a moment to complete our member engagement survey. We want to hear from you and how you would like to engage with the ALA. We have a significantly expanded the options for engagement and

participation, and we believe we have developed new infrastructure to make the ALA a more positive and effective organization for the laryngology community.

So, I thank you. I very much appreciate the honor and privilege of being able to serve in this position.

INTRODUCTION OF THE GUEST OF HONOR

Michel M. E. Johns, MD

Atlanta, Georgia

Michael M. Johns III, MD

Los Angeles, California

First, I'd like to introduce the Guest of Honor for this year's ALA meeting, and that is Michael M. E. Johns, M.D., also my father. My dad, who's an otolaryngologist, was born in Detroit, Michigan, in a household with very limited means. Education and hard work were instilled deeply however.

He worked his way through Wayne State for undergrad in Detroit, thinking he might want to be a pharmacist and then a physician. He worked hard, matriculated at the University of Michigan, and then went on to do his otolaryngology head and neck surgery residency there. He then spent two years at Walter Reed prior to joining the faculty at the University of Virginia, where he spent six years becoming vice chair of the department prior to becoming chair of the Department of Otolaryngology Head and Neck Surgery at Johns Hopkins University School of Medicine, where he served for six years prior to becoming dean of the School of Medicine itself.

Six years after that, he was recruited to Emory University to become the CEO of Emory Healthcare and the EVP of the Woodruff Health Sciences Center. He is an incredibly accomplished leader in academic healthcare and made substantial contributions in otolaryngology over the course of his journey.

He was a leader of the American Head and Neck Society, he was president of the American Board of Otolaryngology and he was executive secretary of the Triological Society for a number of years. He was The Archives of Otolaryngology Journal editor in chief. He ultimately was elected to the National Academy



of Medicine and served in a numerous leadership roles across academic health care at large. But to me, he's my dad. And I love him.

I love you, Dad. You've been my inspiration since I was really little. During our family vacations at the COSM meetings, where I knew nothing about otolaryngology, I did know that something good was happening. I knew you were making a difference in a positive way. And, you know, that really planted seeds in me early that definitely shaped my career. That led me to otolaryngology and what a joy it has been sharing moments with you over these years.

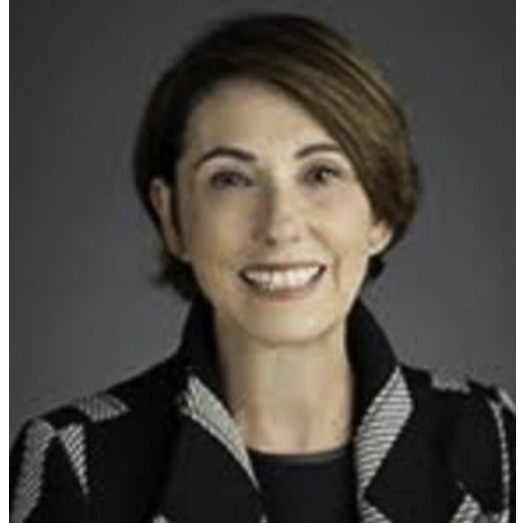
And I want to thank you so much for being my guiding light and inspiration. And thank you for coming to be the Guest of Honor at this year's ALA meeting. Please come forward and be recognized.

Presidential Citations

I am delighted to be able to honor several individuals with presidential citations, individuals who have made a positive impact on my career. First, I'd like to recognize my colleagues from the Emory Voice Center, Dr. Edie Hapner, Dr. Adam Klein, and Dr. Jeannie Hatcher.

Edie Hapner, PhD, CCC-SLP ***Birmingham, Alabama***

Dr. Hapner, what can I say? I couldn't have done anything that I have done without you. Dr. Edie Hapner and I met at Vanderbilt when I was doing my fellowship in laryngology and she was completing her PhD. She had 16 years of clinical experience in voice and upper air, which I'm so glad because I had zero. And after she completed her PhD, wanting to get back in a scholarly environment, joined me at Emory University to put the building blocks together for the Emory Voice Center. You've been my confidant over the years. You have brought joy to me in our clinics, at the meetings, in all the journeys we have been on together, from our fun Botox clinics to our roll into the hallway impromptu meetings. I am grateful for you.



Adam Klein, MD ***Atlanta, Georgia***

My next citation goes to Dr. Adam Klein. Dr. Klein and I met when he was interviewing for fellowships, and I was at Vanderbilt. And we had a great dinner together and realized we were like-minded folks. And he was training with Steve Zeitels at Mass General. And he did his residency at University of Connecticut before that. After completing his fellowship, he came and joined Edie and I at Emory and brought a unique set of skills and helped us grow our program. He has incredible leadership skills and has taken the Emory Voice Center to new heights and we miss you being here today

Dr. Klein and I have been on a long journey together. We've seen our kids grow up together. And I very much appreciate you trusting me in



an early part of your career. And I also couldn't have done it without you. Thank you, Adam.

Presidential Citations

Jeanne Hatcher, MD

Atlanta, Georgia

I'd like to recognize Dr. Jeannie Hatcher. Dr. Hatcher is a fellowship trained laryngologist at the Emory Voice Center and she joined the faculty, joined Adam and I after she completed her fellowship with Blake Simpson when he was at UT San Antonio and did a residency at Wake Forest prior to that and her arrival at Emory gave us critical mass to do things differently, grow our fellowship programs, grow our research, and grow our clinical endeavors. And it was that critical mass that lifted our program up. And we've had a great time along the way, have enjoyed our journey together. I thank you so much for



helping me along my journey and I am proud to recognize you with this presidential citation

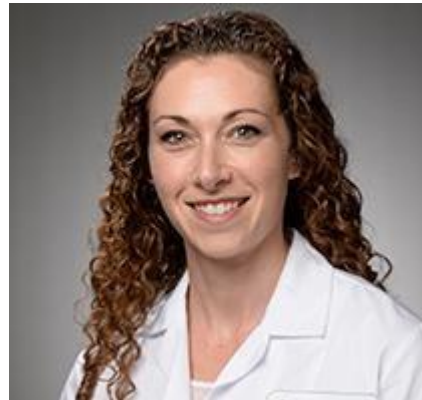
I'd now like to recognize my colleagues from the University of Southern California and the USC Voice Center: Dr. Edie Hapner, again, Dr. Lindsay Reder, Dr. Karla O'Dell, Lauren Timmons-Sund, and Dr. Elizabeth Shuman.

Lindsay Reder, MD

Los Angeles, California

Dr. Reder did her residency at the University of Southern California and then did a fellowship in laryngology at Mass. Eye and Ear with Ramon Franco and Phil Song prior to returning to the faculty at USC. She conquered a lot of the big barriers in establishing modern laryngology at an institution that really hadn't seen it previously.

And I joined the faculty at USC about a year and a half after she joined the faculty, and she made my arrival incredibly easy and has gone on to be an incredible scholar in laryngology, joining the Triological Society and the ALA. This year, we've had great times over the



years, and thank you so much for contributing to our group efforts

Presidential Citations

Karla O'Dell, MD *Los Angeles, California*

My next citation is for Dr. Karla O'Dell, who also did her residency at the University of Southern California prior to doing her laryngology fellowship at Oregon Health and Sciences University with Josh Schindler and Paul Flint prior to returning and joining the faculty at the University of Southern California.

Dr. O'Dell has distinguished herself as one of our finest airway surgeons in the world, has embraced challenges in laryngology, and I will say is just an incredible surgeon and physician, as well as energetic team member and future leader. Dr. Odell, I appreciate you day in and day out. You have made my time at the University of Southern California



fantastic, and we couldn't have done it without you

Lauren Timmons-Sund, SLP *Los Angeles, California*

My next citation goes to Lauren Timmons-Sund, speech-language pathologist, voice and upper airway specialist, and division director of speech-language pathology for the USC Voice Center. Now, Lauren came and joined the team really early when she was doing her speech-language pathology master's at California State University, Northridge. She came and joined Edie first as a volunteer and extern and then as a clinical fellow. Under Dr. Hapner's tutelage, she has risen to lead our speech-language pathology group within the USC Voice Center. She is a sound and leveling force in our group, incredibly hard worker, articulate speaker, and a growing



leader in our field. Lauren Timmons-Sund, I couldn't have done it without you.

Presidential Citations

Elizabeth Shuman, MD
Los Angeles, California

Last but not least, I'd like to recognize Dr. Elizabeth Shuman. Dr. Shuman did her residency at UCSF prior to coming to USC to do her fellowship with us.

Lucky us, she stayed on the faculty, has now been on the faculty at USC for two years and I thank you for joining us, for trusting our team, for adding to our team, for helping creating that critical mass to make it sustainable for all of us.

You are a true leader. You have EQ beyond any that I have seen, and I am grateful to you. Thank you.



PRESENTATION OF THE DEROALDES AWARD

Susan Thibeault, PhD, CCC-SLP

Madison, Wisconsin

Alexander Gelbard, MD

Nashville, TN

This year's recipient of the deRoaldes Award for 2025 is an exceptional clinician-scientist who has served as an ALA Associate Fellow since 2006. Dr. Susan Thibeault holds a Doctor of Philosophy from the University of Wisconsin-Madison and is certified by the American Speech Language Hearing Association. She currently serves as the Medical Director of Health Speech and Hearing Services at UW, Vice Chair for Research, Diane M. Bless Endowed Chair and Professor, and Voice Research Training Program Director.

Dr. Thibeault's research centers on investigating the biology of the vocal fold mucosa, with emphasis on inflammation, fibrosis, and scarring. She is also a member of the National Institute on Deafness and Other



Communication Disorders (NIDCD) Advisory Council. It is a privilege to announce Dr. Thibeault as the recipient of the 2025 deRoaldes Award.

INTRODUCTION OF THE GABRIEL F. TUCKER AWARD

Karen Zur, MD

Philadelphia, Pennsylvania

Alessandro deAlarcon, MD, MPH

Cincinnati, OH

The Gabriel F. Tucker MD Award, established in 1987 by Dr. Gabriel Tucker and his family, recognises individuals who have made significant contributions to the field of paediatric laryngology or to the Association.

This year's recipient, Dr. Karen Zur, serves as Chief of Otolaryngology at Children's Hospital of Philadelphia and Director of the Pediatric Voice Program. She holds the E. Mortimer Newlin Endowed Chair in Pediatric Otolaryngology & Human Communication and is a Professor of Otorhinolaryngology: Head & Neck Surgery at the Perelman School of Medicine, University of Pennsylvania.

Dr. Zur's background includes accomplishments as both a ballet dancer and classical pianist. She graduated from Yale University with a Bachelor of Science in Neuroscience and completed her medical degree at Albert Einstein College of Medicine in New York City. Her postgraduate training comprised a residency in Otorhinolaryngology: Head & Neck Surgery at Mount Sinai Hospital, NY, followed by a two-year fellowship in pediatric otolaryngology at Cincinnati Children's Hospital, where she founded the first comprehensive, data-driven multidisciplinary Voice Clinic at a children's hospital in the United States.

For nearly two decades, Dr. Zur has been at Children's Hospital of Philadelphia, where she established the institution's inaugural Pediatric Voice Clinic. Her clinical research investigates the effects of prematurity and intubation on vocal outcomes in children with unilateral vocal

fold immobility, along with postoperative results following recurrent



laryngeal nerve reinnervation and exploration of the microbiome of the larynx and tonsils. Dr. Zur has pioneered intravenous bevacizumab therapy for laryngotracheal/pulmonary papillomatosis in paediatric patients and actively advocates for ergonomic practices in medicine. Her service extends to national and international society boards, including her tenure as President of the American Broncho-Esophagological Association (ABEA).

It is a privilege to bestow the 2025 Gabriel F. Tucker MD Award upon Dr. Karen Zur.

PRESENTATION OF THE JAMES NEWCOMB AWARD

Steven Sims, MD

Chicago, Illinois

Mausumi Syamal, MD

Philadelphia, Pennsylvania

Dr. H. Steven Sims is currently the director of the Chicago Institute for Voice Care at University of Illinois at Chicago, where he is fully tenured as the Francis L. Lederer Professor in the Department of Otolaryngology. He is a laryngologist and board-certified Otolaryngologist as well as an accomplished musician, who uniquely blends his expertise and passions through professional voice care. A graduate of the Yale University School of Medicine, where he completed his residency training as the first African-American chief resident, Dr. Sims completed a research fellowship at the National Institute on Deafness and Communication Disorders and a clinical fellowship at the Vanderbilt Voice Center. He is an accomplished musician who plays trombone, bassoon and piano.

Dr Sims is an excellent laryngologist, but he is also a kind and talented person who has tirelessly championed the importance of Diversity, Equity and Inclusion. His commitment is perhaps best stated in his own words: *"My framework for diversity, equity, and inclusion reflects my musical background. I see diversity as imparting value to the differences and*



recognizing that individual contributions must be different to be powerfully blended. As a leader in the field of diversity, equity, and inclusion, my efforts always seek to acknowledge the depth of the disparities and the need for intentional, corrective actions."

It is our great honor to name Dr H. Steven Sims as the recipient of the 2025 Newcomb Award.

**PRESENTATION OF THE
AMERICAN LARYNGOLOGICAL ASSOCIATION AWARD**

Gayle E. Woodson, MD
Madison, Wisconsin

David Francis, MD
Madison, Wisconsin

The American Laryngological Association Award was established in 1987 as a mark of recognition and esteem for outstanding achievement, either in medicine or in another discipline, which has contributed significantly to laryngology and is presented to an individual at the annual meeting.

The recipient for 2025 is Dr. Gayle E. Woodson, an ALA former Council Member who served as the president in 2000. Dr. Woodson graduated from the Baylor College of Medicine and completed her general surgical residency at Johns Hopkins Hospital in Baltimore, MD, and decided to return to Baylor to pursue additional fellowship training in otolaryngology. She consequently completed further fellowship tenure in laryngology at the Institute of Laryngology and Otology in London, England. Dr. Woodson is a board certified otolaryngology specialist, and is fellowship trained in treatment of the larynx and advanced voice care.

She has treated thousands of patients throughout her career, from common, everyday voice issues to helping pioneer the way otolaryngologists treat the most complex larynx problems. Her research has been widely published in leading medical journals, and she is frequently invited to lecture at national and international conferences. Dr. Woodson's commitment to



advancing the science and art of laryngology has inspired countless trainees and colleagues in the field.

She has served as director and was appointed to the executive committee of the American Board of Otolaryngology, and has also acted as chair of the ENT Devices Panel at the Food and Drug Administration.

Although she retired as Division Chair at Southern Illinois University School of Medicine, she continues to serve the medical community in numerous capacities. We are very honored to present this 2025 ALA Award to Dr. Gayle E. Woodson.

INTRODUCTION OF THE 2025 STATE-OF-THE-ART LECTURER

Adam D. Rubin, MD
St. Clair Shores, Michigan

Michael M. Johns III, MD
Los Angeles, California

Adam D. Rubin, M.D. is a laryngologist, director of the Lakeshore Professional Voice Center, and Vice-President of the Lakeshore Ear, Nose & Throat Center. Dr. Rubin has had a life-long passion for the human voice. Before attending medical school, he was a professional actor and singer and performed in musicals and plays at off-Broadway and regional theaters, as well as in a national tour. He is passionate about treating patients with all voice disorders including those with vocal fold masses, vocal fold paralysis and paresis, spasmodic dysphonia, laryngeal tremor, dysplasia, and early glottic carcinoma.

Dr. Rubin started directing the Lakeshore Professional Voice Center in 2004, after completing a fellowship in Laryngology and Care of the Professional Voice at the American Institute for Voice and Ear Research. He graduated *summa cum laude* from Yale College and received his medical doctorate from Harvard Medical School. He is a Professor at the William Beaumont Oakland University School of Medicine and Clinical Professor at Michigan State University.

Dr. Rubin has written numerous scientific articles and book chapters and is a frequent speaker at national and international

meetings. In addition to being an ALA Active Fellow, he is a member of the American Academy of Otolaryngology, Triological Society, and American Broncho-Esophagological Association. He is the author of **The Vocal Pitstop: Keeping Your Voice On Track**, a concise, easy to understand handbook to provide the performer and serious voice user with the tools and tips necessary for voice and career preservation. Ron Livingston called his book, “the definitive owner’s manual for the professional voice,” and renowned singing teacher and voice pathologist Joan Lader described it as, “a book that should be on every singer’s bookshelf.”

Dr. Rubin loves teaching and mentoring medical students and residents. One of his biggest joys is hosting an annual World Voice Day concert to raise vocal health awareness and celebrate voice recovery with the Lakeshore voice team and our incredible patients. You can view performances on The Lakeshore Voice Center YouTube video channel. Dr. Rubin also sings and plays violin with two Lakeshore bands: Identity Crisis and, the Bossa Nova band, Identidade.

I am pleased to introduce our 2025 State-of-the-Art Lecture, Dr. Rubin.

ALA State of the Art Lecture

Playing Doctor: Lights, Camera, Action!

Adam D. Rubin, MD

“Fly me to the moon, Let me play among the stars.” Hello, everybody. Sorry, whenever I get in front of a microphone, I feel I should sing. I also tend to dance but I am going to spare you from that. I am truly honored to be the “State of the Art” speaker at the ALA. I was really touched, surprised, and humbled when Dr. Johns asked me to do this, as I am just a *somewhat* modest pseudoacademic private practice laryngologist. I was really shocked to hear that 10 inmates from a local prison broke out just to hear this lecture today! Nine of them are in the back row, so please say hello. But, as a pseudoacademic private practice laryngologist, what was the first thing I did when Dr. Johns asked me to give the State of the Art speech? I asked chat GPT, “What is a State of the Art Speech?” And, by the way, Chat GPT did not write this speech.

But Chat GPT revealed to me that A **“State of the Art” speech** is a presentation or lecture that summarizes and evaluates the current level of knowledge, research, or development in a specific field or area of study.” So, when I approached this speech I thought, “What am I going to say to an audience of highly accomplished researchers, academicians, and practitioners, many of whom are far more accomplished than I? Who am I to give this speech?” Maybe many of you are thinking the same thing right now. But another aspect of giving such a speech is to connect with the audience and try to inspire them. Well, in a previous life, it was my job to connect with, inspire and excite an audience, so I’m ready to give it a go. In today’s time, the best outcome measure for inspiration and excitement resulting from a speech is the percentage of audience members not on their cell phones, computers, or sleeping. I’m hoping for 50 %. But in any case,



I am going to take a different twist on the State of the Art speech and discuss the “Art of the State.”

For those of you who don’t know me, I was a professional actor and singer in the early 1990s. I was lucky enough to work a fair bit. Now, I had lost my hair when I was 12 from Alopecia. Here I am in my 7th grade middle school picture. And here I am in my 8th. Now one would be crazy to think that a 12-year-old boy with a bad comb-over would want to join a profession such as acting in which the favorite 3 words of any individual in that profession are “look at me!” Rather one would expect the opposite sentiment, “Don’t look at me!” But it was probably my instinct of “look at me” that helped me through alopecia totalis and led me to the stage.

But, anyway, in the early 90s there were not many bald 21-year-old actors, so I was a bit of a puzzle to casting directors. I often was cast as the tough guy or someone much older. Here I am at the Walnut Street theater in Philadelphia playing an older servant in a pre-broadway trial of a Russian musical that was a big hit in

Moscow. Which in general means it was NOT likely to get to Broadway. One of the leads suffered an acute vocal fold tear. He was seen and treated by Dr. Robert Sataloff – with whom 12 years later I did my laryngology fellowship.

Only once did I get to play a romantic lead. This was all the way back in high school when I got to play Tommy Albright in a production of Brigadoon. But, of course, they made me wear a wig. Which I didn't mind as much as having to wear this hot wool sweater under the lights. In any case, it was this path as a singer and love of the voice that got me into this incredible profession. I have to thank Dick Stasney, a fellow Yalie. He was one of a handful of laryngologists in the late 80s. My capella group, The Society of Orpheus and Bacchus (otherwise known as the SOBs) did a singing tour of Texas and I was fortunate enough to stay with him. He took me to his office, showed me my vocal folds and all these cool, tiny scissors and graspers, and I was hooked. I had found a profession that would meld my two interests of voice and medicine. Perhaps if I had been cast as a regular in Friends or Seinfeld, my path might have changed. But, I knew I had a great fallback.

So, I got into laryngology for the voice. Remember the voice. It seems a lot of people entering this field now are more passionate about swallowing and airway, which is great and needed. I don't want to undervalue the importance of caring for these two vital functions, but I don't want us to forget about the voice. I mean during Covid, remember how people were uplifted by hearing others' voices. Singers got together and posted performances and got hundreds of thousands of views to share beautiful voices on YouTube and other social media. I mean, people were not getting on-line to hear people swallow. You were not calling an old friend and having them listen to you breathe. Well, maybe occasional heavy panting for someone special, but all in all people needed to hear voices. Obviously, Covid did bring the airway to the forefront medically, and I'm aware

that the V comes after A,B,C. But it was people's voices that kept people going while we were all hiding in our houses.

But I've digressed. So, I went from acting and singing to laryngology. It's not unique in this day and age. But people who know my past often ask if I miss acting, and I tell them, "Well, I get to **play doctor** every day, which is pretty fun and gratifying most of the time." And sure, I'm reminded of the many people I acted with in college who are big or fairly big stars now, but hey, they don't get to take call. So, score one for the doc.

But I am a big believer that skills one develops as an actor can be quite effective whether you are talking one on one with a patient or with a patient's family, or with OR staff, or a hospital administrator...or giving a State of the Art speech.

Which brings me to the title of this speech: ***Playing Doctor: Lights, Camera, Action!*** And before you all think "Playing Doctor" is a play on words to what you might have done as a preteen as you were exploring with your neighborhood friend, that was not my intention. Though, I'm not going to say it isn't an added bonus.

We are all actors. We all play the role of doctor. And I am sure there are many of you out there thinking, what's he talking about. I'm not acting or pretending to be a doctor. I am a doctor. But, I would ask you - once you leave that office or hospital are you acting the same way? If so, I feel for your family as you must be constantly bombarding them with questions about their throat clearing.

And for those of you who ventured out of the science classes in college, Remember what *Jaques said to Duke Senior in Shakespeare's As You Like It:*

*All the world's a stage,
And all the men and women merely*

*players;
They have their exits and their
entrances,
And one man in his time plays many
parts...*

So how do we best perform our starring role? What can we borrow from the actor's toolbox to make us better doctors? Obviously, it is critical that we are believable when we play the role of doctor. So, how do we make sure we are convincing?

Well, just like the actor, we have to be well prepared. The actor must study the script diligently, make specific choices as to how they will play each scene, memorize their lines, know each step of the choreography or staging. The actor needs to know the time period, location, character back-story, relationships. One of the core principles of Konstantin Stanislavsky's system, which is at the core of almost all modern acting methodologies, is understanding the given circumstances to ground the performance in the context of the reality of the play.

We too need to be well-prepared. I would say 4 years of medical school and 5-7 years of training prepares us fairly well in many aspects, but it does not end there. Obviously, we have to know our lines and the best way to say them, we need to understand disease processes, know the steps of the procedures. But, with each patient, we need to understand the given circumstances and background which often are collected through history and records. Unfortunately, we often do not have the benefit of a 3-month rehearsal schedule to identify all this information, but we must try none-the-less in order to give our best performance.

Now let's look at some other similarities we have with actors:

We all get reviewed.

We all have scripts. How many times have you gone through the differential for chronic cough? Or the potential complications of a particular surgery. This script may have even been written by someone else: a mentor, something found in a textbook- and you memorized it. But you deliver it in your own specific way.

We all depend on an audience to do our jobs – well maybe not the pathologists and radiologists, but we do. Actors look for approval from the audience. We too look for approval... from our parents...well, initially. But we certainly look for approval from our audience, primarily patients and their families. And in order for both we physicians and actors to do our jobs well, we all have to connect with our audiences.

Now I don't want to confuse "Playing Doctor" with being fake or disingenuous. In fact, Stella Adler, a very famous acting teacher, described good acting as being real in an imaginary world. With each patient we see, we are being thrown into that patient's world. We are getting a lead role in that patient's production and how we play it will ultimately determine how we are received, whether there will be a second performance, and, how we get reviewed.

Let's talk about reviews. Our performances are reviewed. Often this is based on how we interact with the patient, sometimes even more than how much we have helped the patient. How can we ensure we give our best

performance every scene despite fatigue, stress, time restriction, and other antagonists in our scene so we get that 5-star review. Now, I was not surprised that Dr. Johns got a better review than I did. But then I realized he only had 10 reviews and 3 were from his mom.

Actors make choices. They read the lines, study the scene and can decide how they want to play it. We make choices. We can decide how we want to play this role. Do we want to be the somewhat arrogant physician who absolutely knows what's best and comes off cold and authoritarian? And if you look at how doctors are portrayed in classic works, such as Ibsen's *Enemy of the People* or many of Anton Chekhov's works, this was a very common choice and still made by some physicians in practice today.

A better review in this day and age will likely result from the choice of playing the more compassionate type, sharing the joy and pain with the patient. I would argue that choices often depend on from whom we are playing opposite. Some choices might be effective and successful with some patients, but not others. Some patients need nurturing, some need tough love. Actors look for what the objective is in the scene they are playing to help decide what choices they will make as they approach the scene. We too can use this methodology. The objective usually is we want to help this patient. Maybe it's just to reassure the patient the lump sensation in the throat is nothing to worry about. Maybe it's to encourage the

patient to get a second opinion. The choices we make as we play our role in each scene will determine how successful we are in reaching our objective.

One of the tricky elements of our theater, is that the patient is both audience and scene partner. As the audience, the patient is watching us to see if we appear trustworthy, and competent. As the scene partner, the patient is trying to connect with us to see if they *feel* they can trust their care to us.

There is something called the 4th wall, which originally was used to describe the proscenium opening in a theater through which the audience sees the action of a play. More recent usage is to mean the imaginary wall that separates the audience from the performer. Breaking the fourth wall when done purposefully and well can connect the performer with the audience. When not done well, it can be jarring and create distance between the two.

However, when the fourth wall is broken, the audience becomes a player in the scene. And again, for an effective scene, the players must connect. I would say the most important skill for 2 actors to connect on stage is listening. How convenient for us! We are treating voice disorders. We are **CONSTANTLY** listening. If we are effective listeners, not only will we likely connect with the patient, but we will also be able to identify the most likely site of pathology in the patient's vocal mechanism. Is this

an issue with vocal fold vibration, closure or resonance? Obviously, the more we know before looking, the more likely we will be able to identify even the most subtle pathology. But again, I digress. Ernest Hemingway offered this advice to young writers:

“When people talk listen completely. Don’t be thinking what you’re going to say. Most people never listen. Nor do they observe. You should be able to go into a room and when you come out know everything that you saw there and not only that. If that room gave you any feeling you should know exactly what it was that gave you that feeling.”

Another important element for connecting on stage is what’s called “being in the moment.” Being present. Not distracted. It’s essential for good listening. This can be challenging as a physician, when we are getting pages or phone calls from the hospital, or a family member is trying to get ahold of you, or you are worrying about your patient in the hospital with a leak after a cricopharyngeal myotomy. Once that clinic door is shut, however, we need to be present in our current scene. Sometimes, it is difficult, but the more we are in the moment, listening to everything our scene partner is saying, watching their every move, their every twitch, the more likely we are to connect with the patient and “crush” that scene.

There are schools of acting that focus on being in the moment and listening. The Meisner Technique is an approach to training actors. It was developed by American actor and

teacher Sanford Meisner. The technique is rooted in the teachings of Konstantin Stanislavski. It emphasizes honest, moment-to-moment responses between scene partners.

There are 4 main goals:

1. **Honesty:** Develop the capacity for authentic reactions without forced or “indicated” emotion (*are you faking your concern or is it genuine*).
2. **Listening & Observation:** Sharpen listening skills and an awareness of subtle shifts in a scene partner’s behavior.
3. **Impulse & Spontaneity:** Follow genuine impulses, both emotional and physical to keep the performance fresh and alive.
4. **Connection:** Cultivate a strong relational focus to stay grounded in the partnership rather than in one’s own head.

Now this may sound crazy, but I think we can strive to achieve some of these goals. And, as is the goal of the actor, we can give organic natural, believable performances that will resonate well with the patient and yield that 5-star review.

One of the landmark exercises Meisner used in his classroom was a repetition technique. In this technique, 2 actors stand face to face. One will say something about the other like “your hair looks nice today.” I don’t know why I chose that one, but....The other actor will repeat it back as a natural response. This will go on and on, with the goal of stripping away self-consciousness and pretense and forcing the actors to listen to each other and respond naturally. You’ll notice that the guy in this scene

seemed somewhat stiff, while the woman seems to have more natural reactions. Meisner starts to comment on that which is why he stops the scene. You'll also notice that Meisner had a laryngectomy as, coincidentally, he did have head and neck cancer.

I will tell you from experience that actors do all sorts of crazy, cooky activities to break down any metaphorical walls that might be blocking true emotions and feelings that might hinder their acting capabilities. Now I realize that most physicians aren't - how should we say...amenable to these kinds of activities that might seem kind of silly. In fact, I directed the 2nd year show at Harvard Medical School. This production is valued more than the first 2 years of education at the med school...and my acting experience and experience in the theater might have been the only reason I got accepted into the school. Well, at one of the first rehearsals, I tried to have everyone lie on their backs, focus on their breathing, repeating some specific phrases, rolling around a bit making contact with various other members of the ensemble. Needless to say, this did not go over very well. It was mostly interrupted with uncontrollable laughter and ridicule. So, I'd like to try it again now. If everyone could find a place on the floor. No, I jest. Although I expect with a bunch of laryngologists or otolaryngologists, it might go over better than it did at Harvard.

But this helps me segue into the next characteristic which most actors feel is critical to a good performance. When they do all these activities to "break down walls," they are trying to access what almost every actor will say is vital to an honest performance, and that is "vulnerability." Being open to experience, to hurt, to feel things. Now I am not sure that we as physicians can be "vulnerable" at all times. We certainly cannot let our emotions run rampant as we encounter some truly painful stories and situations. However, we can allow ourselves to feel, to have honest reactions (unless they are not appropriate or offensive) that will yield honest reactions from our scene partner which will help us understand and connect with them that much more. We don't have to build walls of security around us that make us become cold and oblivious to others pain and suffering. Perhaps at the very least we should always appreciate the privilege of getting the opportunity to be in a room and connect with someone at his, her or their most vulnerable, exposing their pain and fears.

Now sometimes your scene partner is not a very good actor. Perhaps they are closed off, perhaps they are not good listeners. That's when your acting skills will be truly challenged. It will be up to you to make that scene work one way or the other. Sometimes you have to fake it. – another methodology. In fact, when Dustin Hoffman and Laurence Olivier were filming *Marathon Man*, Dustin told Laurence he had been up for 3 days to

get into the right stage of mind for the performance, to which Sir Olivier replied, “Dustin, why don’t you just try acting? It’s much easier.” Now in those situations, when you are faking it, you may leave that room feeling off, dissatisfied, even frustrated. Feeling down about your performance. It is important to leave those performances behind you and move onto the next scene.

And I will tell you that it is difficult, even for the well-trained, experienced actor to always have a performance that feels great, natural, in the moment. Like other actors, when I booked my first theatrical gig, and started doing 8 shows a week, what started off as inspiring and exciting somehow became a job. Playing the same role for a 3-month run, let alone a 3-year run becomes less exciting. Sometimes it’s hard to get back on stage, hard to find the joy in it...though certainly with acting, getting a paycheck brings some joy. I think we have those same challenges particularly when we look at the relatively finite conditions we treat as laryngologists. It can feel repetitive and routine, and we can lose the passion. However, if we can somehow recognize each new patient as a new scene partner, a new performer, a new audience, a new chance to connect, we can keep our routines fresh and new.

Imposter syndrome is a well-described phenomenon and is known to plague medical professionals. It is a psychology term coined in the 1970s to describe one’s feeling like a fraud despite

evidence of one’s competence and success. For the sake of demonstrating vulnerability, I alluded to it before, but I’ll admit I suffered from some imposter syndrome preparing for this speech. Again, why should this be me? What did I do to deserve this?

Perhaps imposter syndrome develops because of the incredible responsibility of caring for patients. Or perhaps it’s the constant pressure to excel academically, to present, to publish. We have numerous academic meetings each year. There are so many journals soliciting publication. Maybe the pressure to be productive contributes as perhaps it is unreasonable to think we can produce as much as is expected. There arises the danger of focusing on quantity rather than quality. We can become like the sitcom writers the studio keeps pushing to produce, so they have to come up with scripts rapidly although they may not be thrilled with the quality of their work. Or perhaps imposter syndrome results from seeing how amazing our colleagues are and feeling some inadequacy despite the awesome work we might be doing on our own set and stage.

And last, but not least, perhaps imposter syndrome creeps in because we are playing a part. And we do not always feel connected to the part we are playing. Perhaps it is because we lose some of the passion that drove us to this field because it has just become a job. We end up watching ourselves, critiquing our performance and not trusting our abilities to play the part well. Imposter syndrome

can be a major contributing factor to physician burnout. A subject we have learned a lot about through the work of Dr. Johns and others.

So, I am going to segue into another parallel between the actor and the doctor – ego. We all tend to have fairly sizable ones (admittedly, some bigger than others) In fact, it would be tough for us to do our jobs without one. However, when thinking about ego, there is a big difference between acting and doctoring, in that acting is a “me” profession. Doctoring is a “them” profession. Actors’ egos require constant approval from the audience, casting director, director, crowds. And although I’ve mentioned we look for some sort of approval from our patients, our scenes are never about us, they are always about them. Ego should not enter the picture. Now, there are aspects of our careers where ego may be affected. Did our paper get rejected, did I get a promotion, did we get a podium presentation. Did we get invited to give a State of the Art or Keynote speech? But if the ego gets involved in treating patients, it increases the risk of a bad performance. A battle of egos between anesthesia and a laryngologist when managing a complex airway patient puts the patient at higher risk. And this is where I debated whether or not to insert the following joke that when an actor has a bad performance his scene or show may die, if a doctor has a bad performance....well you know what comes next.

So let’s go back to the the script. And this next part might land me in some trouble, but remember the opinion of this pseudoacademic private practice laryngologist does not necessarily reflect the opinion of the ALA or any of the other people much smarter than I in this audience. As I mentioned before, we all have a script and some of it was written by others. But unlike most actors, we have the ability to make rewrites. Sometimes we change the script based on what we’ve experienced after many years of practice. Sometimes from newer research that calls for rewrites. One line that I’d like to erase from our scripts is often said by a resident or trainee when asked to review a videostroboscopy. In a somewhat confident tone, they will say, “Well there is significant posterior laryngeal edema.” All too frequently this is the first line spoken as it has been memorized verbatim. It may be a line that stays with the trainee for the rest of their careers. Obviously, the line insinuates that the patient has reflux which must be a major issue in the patient’s voice problems. This is when I follow Sir Olivier’s recommendation, and my acting skills allow me to hide my frustration or irritation from the audience of patient and family, as I point out the small polyp or leukoplakia or paresis that was overlooked.

Another tired-out line from that script is, “I see muscle tension dysphonia,” because some supraglottic compression is appreciated. This line persists despite evidence to show that people with

healthy voices can have supraglottic hyperfunction, and in fact many singers use alterations in the supraglottis for resonance purposes. Regardless, the line often comes without looking for a reason why someone might be hyperfunctional. And from a different perspective, does the absence of supraglottic hyperfunction rule out MTD? These lines I mentioned become rote and often suggest a lack of understanding and listening. Listening to the patient's voice and story.

Now, I certainly do not mean to belittle any of the great work and research that has been performed over the past 30-50 years trying to explain things that are difficult to explain. However, I wish some things such as reflux more often are given a cameo, rather than a lead in our production. At times I feel like the reflux show is like the musical *Cats*....sure some find it enjoyable, but maybe it's been in the spotlight a bit too long. And by the way, many of us complain about the frequency of chronic cough referrals. I asked some primary care doctors why it seems like the protocol for chronic cough is often to send to ENT, even before a chest xray, trial of steroids, or pulmonary referral. The answer often is, "[Because you guys can look and tell us if they have reflux.]" We have convinced the world through great performances that we have the power to diagnose reflux based on the appearance of one's larynx. And although many still believe this is true, and perhaps it is to some extent, it has become a refrain or motif that in my

humble opinion occurs too frequently in the performances of many otolaryngologists.

We have to remember that our words are very powerful. When said convincingly, they are often accepted as truth regardless of if there is truly sufficient evidence to support them. We can be guilty of making absolute statements when we know that medicine is an art. There are not always absolutes.

Now, even with a solid script and good cast, we may encounter bad directors at times. We as physicians don't like others telling us how to act. However, the set and stage of health care are changing – at risk insurance plans, private equity, hospital mergers, growing numbers of hospital administrators. And just like an actor in a potentially great show with a bad director, and I am not saying that all of those things I just listed will be or provide bad directors, we still need to find a way to give a great performance.

Well the last element of acting I'll relate to doctoring is that actors love working with an ensemble. Most productions involve a cast of coworkers who depend on each other to create an amazing piece of work. They depend on each other to make their work environment enjoyable, exciting and inspirational. And if they are lucky, they make a whole new set of friends with each production. Well, we also have the privilege to work in an ensemble. Not only with your partners and staff, but also with our tremendous international ensemble of creative and intelligent physicians, speech

pathologists, and other providers. I would argue that laryngology attracts some of the best people in otolaryngology. I have loved performing with our cast members with whom I have shared the spotlight over these 20+ years. We will always have a better production if we work together without ego, with passion, with honesty, and even with a bit of vulnerability. And perhaps we will be able to add to our script as we answer the toughest questions we face: How will we make a paralyzed vocal fold move again? How can we regenerate the superficial lamina propria in a scarred vocal fold? And why do patients always feel the need to take off their glasses before flexible laryngoscopy?

Well, this brings me near the end of my soliloquy. I have a few thank you's: I started this talk with Fly me to the Moon. I want to thank all of you for letting me play among the stars, tonight and for the last 20+ years. Of course, I want to thank Michael Johns for inviting me to do this honor. Michael has had a leading role in my generation of laryngologists, and I think it's Oscar worthy...or at least a Golden Globe. I again want to thank Dick Stasney and Robert Sataloff for carving my start in this career. I want to thank my partners and staff at Lakeshore Ear, Nose & Throat Center who have enabled me to have this dream career. I particularly want to mention Dr. Daniel Megler, our president, who has been like a second father to me. I want to thank Dr. Juliana Codino, my partner in crime at Lakeshore Professional Voice Center for making me look good and making it

fun to come to work every day. And of course, my wife, Rebecca and my kids, Whitney and Noah, both future physicians, who always ensure that I have more fun at home than at work.

And lastly, I want to take advantage of this opportunity to thank my father, Dr. Walter Rubin who sadly passed away in 2000. I had always told him I would thank him at the Tony or Oscar Award ceremony, but this will have to do. And I think he would probably appreciate it more. My father was an academic gastroenterologist. He was encouraged to have a career as a professional clarinetist after he was principal clarinetist at Tanglewood. But he chose to pursue medicine instead. His main research efforts involved electron microscopy and investigating the immunologic function within the lining of the stomach. However, he was on one of the first papers on lactase deficiency in 1965

And then he blessed me with the disorder in 1968.

He loved his job.

He was very influential in the careers of medical students, residents and fellows, including many who have gone on to do amazing things, such as Anthony Fauci, who was a medical student in his laboratory. And, although I am certain he had an ego, he never showed it. He was truly beloved. It was difficult to start his funeral given the long line of attendings, residents and medical students who attended and wanted to offer their

condolences. But despite his great successes, he had his off-performances as well. For instance, there was a period of time where he frequently was seeing something on electron microscopy sections of the stomach that he could not explain. He wrote it off to artifact. He subsequently came to realize that it was H pylori. But it was a bit late, and that chance for the Nobel prize had sailed. However, I never saw him get down about his work. May have been good acting, but I think it was genuine passion.

So, I was generously asked to give the State of the Art speech. I truly believe that what we do is an artform. I do not expect that any of you will be searching the internet to sign up for the nearest acting class. However, I hope I may have stimulated some thought as to how you can better connect with the patient. We should love sinking into the role of physician – playing doctor. Unlike actors who may never know the next time they get to give the performance of a lifetime, we have the opportunity to do so with our patients 20-30-40 times a day – okay if you are in academics, maybe 10-15 times a day. At the very least, I hope I've kept you awake and amused

for the last 30 minutes or so. I apologize if I offended anyone. I forgot to mention that good actors take risks. They go big. So I took a risk today...perhaps the risk of being ostracized from the community I love so much.

But, I'll leave you with a slight variation of Pucks closing monologue from Midsummer Nights Dream:

*If my speech has offended,
Think but this, and all is mended,
That you could have but slumber'd
here
And ignored all my weird ideas*

*And the stuff of which I spoke
Perhaps no more than a bad joke.
Gentles, do not reprehend:
if you pardon, we will mend:*

And though we all work from afar

*Tonight we'll drink together at the
bar.*

Thank you.

**INTRODUCTION OF THE FORTY-NINTH DANIEL C. BAKER, JR, MD
MEMORIAL LECTURE**

Clark A. Rosen, MD
San Francisco, California

Michael M. Johns III, MD
Los Angeles, California

It is my pleasure to introduce an individual who actually doesn't need one as he has played an outstanding role in the ALA for more than ten years. Dr. Clark Rosen is a Co-Director of the UCSF Voice and Swallowing Center, Chief of the Division of Laryngology, Professor of Otolaryngology-Head and Neck Surgery and the Lewis F Morrison MD Endowed chair of Laryngology

In 2002, Dr. Rosen originated the outstanding Fellowship in Laryngology and Care of the Professional Voice at the University of Pittsburgh and trained over 20 fellows in Laryngology and numerous visiting Otolaryngologists until 2018.

Dr. Rosen has had amazing productivity as a clinician scientist. He has authored over 300 peer reviewed publications, 38 book chapters, 8 books including being the co-editor for Bailey's Head and Neck Surgery-Otolaryngology which is one of two main textbooks in our field. He also authored (with Blake Simpson MD) a key operative atlas, Operative Techniques in Laryngology (1st and 2nd edition) which has international reach and has been translated into to Mandarin and Spanish.

Dr. Rosen has been a co-Investigator on numerous NIH grants as well as grants from the Triological Society, the VA, and private industry. He has been recognized by the AAO-HNS with three Distinguished Service awards, received a Presidential citation from the ALA in 2019 and was recognized in 2024 for his mentorship service with the Excellence in Mentoring Award for UCSF Teaching Faculty. He received the Chevalier Q. Jackson Award in 2024 from the ABEA.

Dr. Rosen has been a sought-after speaker internationally and has had major service to multiple publications and professional societies. He is a founding member of the Fall Voice Conference, was the Vice Chair of the Annual Meeting Program Committee for the American Academy of Otolaryngology-Head and Neck Surgery (AAOHNS) and was the Treasurer and President of the American Laryngological Association (ALA).

Please welcome Dr. Rosen as our 2025 Daniel C. Baker Jr. MD Lecturer.

Daniel C. Baker Jr. MD Lecture

Story Time: Key Moments in 30 Years of Laryngology

Clark A. Rosen, MD

San Francisco, California

Podium Presentations

Evaluation of the Efficacy of Hyaluronidase Injection in Reinke's Edema Treatment

Necati Enver, MD; Fatmanur

Introduction: This study aims to assess the efficacy of outpatient hyaluronidase injections in patients with Reinke's edema.

Methods: Patients presenting to the ENT clinic at Marmara University Hospital as of June 2024 and diagnosed with Reinke's edema, who consented, received hyaluronidase injections. Assessments included pre- and post-procedure laryngoscopy, Voice Handicap Index-30 (VHI-30) for voice quality, and acoustic analysis (cepstral peak prominence [CPP] and noise-to-harmonic ratio [NHR]). Laryngoscopic images quantified lesion area. Follow-ups occurred on day 2, week 1, and month 1.

Results: Eight patients have been included. Median dose of injected hyaluronidase was 50u. All patients were well-tolerated and no side effects were observed. At follow-ups (day 2, week 1, and month 1), patients reported improved voice quality after hyaluronidase injection, noticed by themselves and their social circles. Statistical analysis of pre- and post-treatment outcomes revealed significant changes in VHI-30 scores and in the NHR parameter of acoustic analysis ($p < 0.05$). However, no statistically significant difference was observed in CPP values ($p > 0.05$). Although lesion reduction was limited, all patients demonstrated improved voice quality.

Conclusion: Hyaluronidase injection in patients with Reinke's edema significantly improved voice quality. The hyaluronidase injections could be a treatment option of Reinke's edema.

A Multi-Center Observational Study of the Prevalence of Human Papilloma Virus Infection in Laryngologists

Taylor G. Lackey, MD; Chloe Santa Maria, MD; Gary Gartling, PhD; Ryosuke Nakamura, PhD; Michael M. Johns III, MD; Ryan Branski, PhD; Milan R. Amin, MD

Objective: Surgical treatment of recurrent respiratory papillomatosis (RRP) has been shown to aerosolize human papilloma virus (HPV) placing healthcare workers at risk for exposure, infection, and disease. Knowledge of HPV infection risk in otolaryngologists who perform treatment on HPV-related diseases is limited. The study's goal is to characterize HPV prevalence infection in otolaryngologists.

Methods: This observational cohort study enrolled otolaryngologists at a national meeting. Participants completed a survey of their HPV vaccination and disease history as well as practice techniques for patients with RRP. An oral rinse was collected from participants; DNA was extracted and analyzed using RealLine DNA express extraction HPV kits (Bioron, Römerberg, Germany). Descriptive statistics were conducted.

Results: 137 participants were included with an average age of 42 (11 SD) years old and 51 (37%) were male. History of HPV-related infection such as warts was reported in 38 (28%) participants. About a half ($N=77$, 56%) of participants had a history of HPV-vaccination, of which most were after 16 years old ($N=65/77$, 84%). Surgeon preferences on management technique employed included: KTP laser ($N=107$), microdebrider ($N=80$), CO2 laser ($N=78$), and cold-steel microflap ($N=21$). Three of 137 (2.2%) participants tested HPV positive, subtypes 6 ($N=2$) and 16 ($N=1$). All were male with no history of HPV vaccination and routinely used masks while treating RRP.

Conclusion: Otolaryngologists who treat HPV-related diseases are not at higher risk of HPV-infection compared to the general adult population (6.9%) regardless of PPE use. Higher vaccination status (39.9%) and the use of less aerosolizing techniques are likely protective in this population.

DYSPHONIA INTERNATIONAL TRAVEL AWARD
Efficacy and Safety of Sodium Oxybate in Isolated Focal Laryngeal Dystonia: A Phase IIb Double-Blind Placebo-Controlled Cross-Over Randomized Intention-To-Treat Clinical Trial

Kristina Simonyan, MD, PhD, Dr.Med; Lena C. O’Flynn, BA; Azadeh Hamzehei Sichani, MA;
Steven J. Frucht, MD; Anna F. Rumbach, PhD; Nutan Sharma, MD, PhD;
Phillip C. Song, MD; Alexis Worthley, BA

Laryngeal dystonia (LD) is a common form of dystonia, affecting speech production and impairing vocal communication. Oral treatments for dystonia are not established.

We conducted a phase IIb randomized double-blind placebo-controlled two-period cross-over single-center clinical trial of a single dose of oral sodium oxybate in 106 patients with alcohol-responsive (EtOH+) and alcohol-non-responsive (EtOH-) LD (53 to receive 1.5 g of sodium oxybate first, and 53 to receive matching placebo first, mean (SD) age of 58.6 (11.7) years). The primary outcome was a change from baseline in LD symptom severity 40 min after drug intake. Safety was based on vital signs, cognitive function, suicidality, daytime sleepiness, and adverse events. Patients, investigators, and outcome assessors were masked to study procedures.

Compared to baseline, EtOH+ but not EtOH- patients had a statistically significant improvement in LD symptoms following sodium oxybate vs. placebo (EtOH+: 98.75% CI 0.6 to 26.9, $p = 0.008$; EtOH-: 98.75% CI -6.2 to 18.7, $p = 0.42$). Statistically significant minimum drug efficacy in EtOH+ patients was found at $\geq 16\%$ symptom improvement (OR 2.09, 98.75% CI 0.75 to 5.80, $p = 0.036$), with an average of 40.81% benefits (98.75% CI 34.7 to 48.6). Drug efficacy waned by 300 min after intake, without a rebound. No changes were found in cognitive function, suicidality, or vital signs. Common adverse events included mild daytime sleepiness and dizziness. Sodium oxybate showed clinically meaningful improvement of symptoms in EtOH+ LD patients, with acceptable tolerability. Sodium oxybate offers the first pathophysiologically relevant oral treatment for LD.

DYSPHONIA INTERNATIONAL TRAVEL AWARD
A Prospective Clinical Trial Comparing Daxibotulinumtoxina-Ianm (DAXI) to Onabotulinumtoxina (BTXA) for Adductor Type Laryngeal Dystonia (ADLD)

Alexandra D. D’Oto, MD; Claire E. Perrin, BS; Camryn R. Marshall, BS; VyVy N. Young, MD;
Tanvi Rawat, BS; Desi Gutierrez, MA, CCC-SLP; Sarah L. Schneider, MS, CCC-SLP;
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BtxA injection for AdLD is typically performed every ~3 months. Daxi is a peptide-formulated neuromodulator with reported longer therapeutic duration. This open-label, prospective clinical trial compared the safety and efficacy of Daxi compared to historical BtxA results in AdLD patients.

21 stable-dose, BtxA-responsive AdLD patients underwent Daxi injection using manufacturer’s dosing conversion guidelines. To optimize safety, the first 10 patients’ doses were given in a staged fashion (3-6 days between half doses). Along with safety, duration of voice benefit (DVB) was the primary outcome. PROMs and voice analyses were obtained pre- and monthly post-injection.

Of 21 patients, 19 (73.6% female, mean age= 53.8) were analyzed, with two excluded due to injection “misses.” No adverse reactions were reported. EAT-10 showed no difference pre- and post-Daxi injection ($p=0.41$). VHI-10 significantly improved ($p=0.004$) pre- to post-injection. Procedural LEMG quantitative data for Daxi and BtxA was comparable ($p=0.493$). DVB of Daxi was longer than BtxA in 7/19 (37%), equal to BtxA in 7/19 (37%), and shorter than BtxA in 5/19 (26%). Those who benefited from Daxi had on average 47.2% (43 days) longer therapeutic duration than their previous BtxA treatments. 6 patients (32%) returned to BtxA at subsequent injection whereas 13 patients (68%) desired repeat Daxi injection.

This study represents the first use of Daxi for AdLD. Daxi was found to be safe and effective, with 37% of patients reporting longer duration of voice benefit than with BtxA. Mean duration of voice benefit was 47% longer than previous BtxA treatments.

Vocal Fold Basal Cell Histologic Signature in Response to Inhaled Exposures

Elizabeth Erickson-DiRenzo, PhD; Camille Liao; Akari Kimura, MD, PhD;
Meena Easwaran, MS; Amir Golchin, MD; Patrick Kiessling, MD

Background / Objectives: The barrier function of the laryngeal epithelium is provided by its unique histologic architecture. The basal cell (BC) layer of the vocal folds represents a reservoir of progenitor cells that drive homeostasis and regeneration of the normal epithelium. The unique role of BC as progenitors indicates these cells have a distinct histologic signature. However, the effect of common inhaled challenges on this signature has not been elucidated. Our objective was to evaluate the distribution and proliferation of BC in the vocal folds of cigarette smoke (CS) and e-cigarette aerosol (EC) aerosol exposed mice.

Methods: CS and EC aerosol exposure models are established in our laboratory using the inExpose inhalation system (SCIREQ). Mice were exposed to CS (N=5), EC aerosol (N=5), or air control (N=5) for 1 hour / day for 6-weeks. The BC histologic signature including number of BC, the proliferating cells (i.e., proliferative compartment), and the contribution of BC to the proliferative compartment was quantified in the vocal fold epithelium of CS-exposed, EC-exposed, and air control mice using immunostaining.

Results: CS and EC aerosol altered the BC “histologic signature”. Specifically, CS and EC aerosol both increased the proportion of BC in the vocal fold epithelium but reduced BC in the proliferative compartment. Results were more pronounced for CS as compared to EC aerosol.

Conclusions: Our results suggest the BC ability for epithelial repair following CS and EC aerosol exposure may be reduced. Findings add to the growing body of literature demonstrating BC have a central role in vocal fold biology.

The Protective Role of Hormonal Birth Control in Idiopathic Subglottic Stenosis

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Background: Idiopathic subglottic stenosis (iSGS) occasionally affects women of childbearing age. Surgical intervention is the primary treatment, yet limited research exists on factors influencing disease severity. This study explores the impact of hormonal birth control on iSGS recurrence rates and surgery-free intervals.

Methods: This retrospective study was conducted at a tertiary academic care center. Patients using hormonal birth control (e.g., estrogen-progesterone pills, progesterone implants) during their first procedure were classified into the “Birth Control (BC)” group, while those not using contraceptives were placed in the “No Birth Control (NBC)” group. Poisson regression evaluated recurrence rates, and Mann-Whitney tests assessed surgery-free intervals. Kaplan-Meier analysis estimated time to first recurrence, adjusting for age and follow-up duration.

Results: A total of 26 patients were in the NBC group and 12 in the BC group (average ages 37 and 34, respectively). Patients in the NBC group were 2.6 times more likely to experience recurrence compared to those in the BC group ($p=0.001$). The expected number of recurrences for the BC group was 0.2 times that of the NBC group (95% CI: 0.1-0.4; $p<0.0001$). Furthermore, patients taking birth control were significantly less likely to have a first recurrence (HR: 0.4; 95% CI: 0.2-0.9; $p=0.025$) and had longer times to first recurrence (Figure 1; $p=0.031$).

Conclusions: Birth control appears to protect against iSGS severity, potentially through hormonal mechanisms. Hormonal contraception may serve as a non-surgical alternative for managing iSGS. Future prospective studies may evaluate outcomes in newly diagnosed iSGS patients started on birth control compared to those not using hormonal contraceptives.

CASSELBERRY AWARD
Transcriptomic Predictors of Recurrence in Idiopathic Subglottic Stenosis (iSGS)

Sheng Jie Ying, MSc; Peter YF Zeng, PhD; John W. Barrett, PhD; Patrick Macinnis, MI;
Amir Karimi, BSc; Harrison Pan, BMSc; Nhi Le, BMSc; Kevin Fung, MD;
Jennifer Anderson, MD; Anthony C. Nichols, MD; R Jun Lin, MD

Background/Objectives: Idiopathic subglottic stenosis (iSGS) is a rare disease characterized by narrowing of the upper airway and affects near-exclusively females. Patients often experience recurrent disease, requiring repeated surgical dilations. The pathophysiology underlying the broad spectrum of disease severity within iSGS remains unknown. Our objective was to identify transcriptomic differences between iSGS patients with markedly different recurrence rates.

Methods: Prospectively collected clinical and bulk-RNA sequencing data from subglottic tissues of 56 female iSGS patients with 1–4 years of follow-up were analyzed. DESeq2 was used to perform differential expression analysis, comparing samples from the highest (1.19–1.87 dilations/year) vs the lowest (0.30–0.67 dilations/year) quartile of surgical dilation rate (i.e. high vs low recurrence groups).

Results: In total, 302 genes were significantly differentially expressed between the high and low recurrence groups (false discovery rate (FDR)<0.1 and fold change>|2|). Pathway enrichment analysis showed that the high recurrence group had significantly increased expression of genes involved in adaptive/B cell immune responses (e.g., immunoglobulin subunit genes) and extracellular matrix organization (e.g., IBSP, COMP) (FDR<0.1), suggestive of an immune-mediated tissue remodeling process. In contrast, the low recurrence group had significantly increased expression of genes involved in cilia structure and function (e.g., CFAP43, DNAI2) (FDR<0.1), suggesting a relatively increased abundance of respiratory cilia.

Conclusions: Transcriptomic profiling suggests that lower recurrence rates in iSGS are associated with retention of respiratory cilia while adaptive/B-cell immune responses may mediate higher recurrence rates. These results hold promise for the development of prognostic markers and identification of therapeutic targets for iSGS.

Surgical Management of Idiopathic Subglottic Stenosis in Pregnancy: A Multi-Institutional Study

Yousuf H. Khalil, BS; Andrew Awadallah, BS; Andrew J. Bowen, MD, MS; Monet McCalla, DO;
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Seth H. Dailey, MD; Semirra L. Bayan, MD; Dale C. Ekbom, MD

Background: Managing symptomatic idiopathic subglottic stenosis (iSGS) during pregnancy poses unique challenges. With dyspnea affecting up to 70% of pregnant women, recurrence of iSGS can lead to significant airway complications, impacting patient decisions about pregnancy. This study aims to document surgical protocols for managing symptomatic pregnant patients with iSGS.

Methods: We conducted a multi-center retrospective study, the largest cohort on this topic to date. Patients included underwent endoscopic intervention for iSGS during pregnancy. We collected demographic data, surgical procedures performed, and maternal and neonatal outcomes, including anesthesia details and medication adjustments.

Results: Twelve patients underwent thirteen procedures during pregnancy and three procedures 2-11 months postpartum. Half of the patients were diagnosed with iSGS during pregnancy, including two higher risk twin pregnancies. Most procedures (85%) occurred in the second trimester. Fetal monitoring was performed before, during, and after surgery. Fentanyl and propofol were the most commonly used sedatives (90%), while rocuronium was the primary neuromuscular blocker (70%). One patient underwent flexible bronchoscopy balloon dilation without anesthesia. Jet ventilation was used in 92% of procedures, with size C Kleinsasser scopes in 58%. The median procedure length was 75 minutes for laser wedge excision and 19 minutes for balloon dilation. Most patients delivered vaginally and full-term, with no surgical or postpartum complications.

Conclusions: This study highlights the safe surgical management of iSGS in pregnant patients using various endoscopic techniques. Our findings indicate that surgical intervention is viable, even in high-risk pregnancies. Future studies with larger sample sizes are needed to validate these results and optimize management strategies.

Variables Affecting Time to Maximal Airway Improvement Following Endoscopic Airway Surgery for Patients with Subglottic Stenosis

Zane Kaiser, BS; Robert Buckmire, MD; Rupali Shah, MD

Objective: To determine time to maximal airway improvement in subglottic stenosis (SGS) patients after endoscopic surgery, measured by peak flow meters (PFM). Secondly, to evaluate whether patient demographics, intraoperative treatments, or adjunctive medications influenced time to maximal recovery.

Methods: We performed a retrospective and prospective analysis of 38 SGS patients undergoing endoscopic surgery at UNC Voice Center. PFM measurements were taken once preoperatively and weekly for 6 months postoperatively. Patient demographics, comorbidities, diagnostic etiology, intraoperative treatments (Kenalog, Mitomycin C, none), and postoperative medications (steroids, antibiotics, none) were recorded. Primary outcomes included time to maximal postoperative PFM (tmPFM) and change in PFM (delta PFM). Mann-Whitney U and linear regression were used to assess the influence of stratifying factors on outcomes.

Results: Median and average percent delta PFM following surgery was 150 L/min (range 50 – 313) and 95%. Median tmPFM was 30 days (range 4 – 105). No statistically significant differences were found for delta PFM or tmPFM vs diagnostic etiology, comorbidities, intraoperative treatment, and postoperative meds. Regression coefficients for BMI and Age vs delta PFM were -0.433 and 0.873 ($p = 0.756, 0.261$). Coefficients for BMI and Age vs tmPFM were 0.098 and -0.208 ($p = 0.826, 0.402$).

Conclusion: Time to maximal airway caliber following endoscopic airway surgery is not immediate; most patients reach maximal airflow between 3 and 6 weeks postoperatively. Intraoperative medications (steroid injection and mitomycin C), and postoperative medications (steroids or antibiotics) do not affect postoperative healing as measured by PFM readings in this preliminary study.

Cellular Effects of Estrogen and Progesterone in Idiopathic Subglottic Stenosis

Hawa Ali, MD; Savita Ayyalasomayajula, MS; Michael Thompson, BS; Joshua Wiedermann, MD; Eric Edell, MD; Semirra Bayan, MD; Y. S. Prakash, MD

Objective: To assess the impact of sex hormones on extracellular matrix (ECM) and cell proliferation by fibroblasts in idiopathic subglottic stenosis (iSGS).

Methods: We collected diseased iSGS fresh tissues from 3 patients undergoing surgical therapy at Mayo Clinic Rochester (IRB approved). Explants were used to culture fibroblasts under standard conditions with no phenol red (avoiding estrogenic effects) and serum deprivation prior to experimentation. Fibroblasts were then exposed for 4-6h (mRNA) or 24h (protein) to estradiol, progesterone or TGF β (3-log physiological concentrations). Expression of key ECM components relevant to airways (collagens 1,3,4,14, fibronectin, MMP3) and proliferation markers (PCNA, Ki67) were assessed using established procedures.

Results: iSGS fibroblasts treated with progesterone demonstrated elevated mRNA expression of collagen-3 & collagen-4 in two samples, while estradiol increased mRNA expression of collagen-4 to a lesser extent compared to progesterone. Sex steroid exposure also elevated mRNA expression of collagen-1 and -14 in all three samples. Protein expression of some collagens were increased particularly by progesterone. Interestingly, progesterone increased proliferative markers such as Ki67 and Cyclin E but in one sample taken from the same patient during two separate procedures 6 months apart, it was estradiol that altered proliferative markers.

Conclusion: These findings demonstrate early changes in proliferative and fibrotic mechanisms in response to sex steroids, specifically progesterone, which may help elucidate the molecular pathogenesis of iSGS. Here, it is possible that patients with recurrent iSGS show differential hormonal sensitivity, pointing to the need for individualized therapeutic approaches based on sex steroid responsiveness.

RESIDENT RESEARCH AWARD
Evaluation of the Efficacy of Laryngeal Reinnervation Techniques

Pranati Pillutla, MD; Clare Moffatt, MD; Dinesh K. Chhetri, MD

Background: Laryngeal reinnervation has been proposed as optimal treatment for vocal fold paresis and paralysis as it has the capacity to prevent denervation atrophy and maintain tone of thyroarytenoid muscle (TA), resulting in return of optimal voice quality. Multiple laryngeal reinnervation techniques exist; however, direct comparisons of the efficacy of laryngeal reinnervation techniques are lacking.

Objective: Compare the efficacy of three laryngeal reinnervation techniques using the ansa cervicalis nerve: direct nerve implant (DNI), neuromuscular pedicle (NMP), and nerve-to-nerve anastomosis (ansa-RLN) on maintaining neuromuscular junction (NMJ) morphology.

Methods: Eight rabbits underwent the following procedures: RLN transection alone (control, n=2) or followed by one of three reinnervation procedures (n=2 each). After four months, vocal folds were harvested. Immunohistochemistry protocols were used to identify the presynaptic vesicle and the post-synaptic acetylcholine receptors in the TA. NMJs were analyzed by two blinded raters on morphological changes, such as pretzel-to-plaque transition, degree of fragmentation, and number of junctional folds.

Results: A total of 50 NMJs (average 10 per cohort) were analyzed for morphometric qualities. Preliminary results suggest that DNI and NMP offer more consistent, moderate quality morphology. Ansa-RLN resulted in more varied morphology, including some that very closely approximated normal NMJs. NMJs undergoing reinnervation appeared morphologically distinct from the normal, contralateral vocal fold or RLN transection specimens.

Conclusion: Early results suggest reinnervation surgeries effectively maintain NMJ morphology compared to transection, though morphology varies based on type of reinnervation surgery. Further studies of long-term reinnervation may elucidate effects of reinnervation techniques on final NMJ morphology.

Clinical Outcomes After Hyaluronic Acid Laryngeal Injection Augmentation

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Paul C. Bryson, MD, MBA; William S. Tierney, MD, MS, MS

Objective: To characterize complications after hyaluronic acid (HA) laryngeal augmentation in a large sample at a single tertiary care hospital. HA augmentation is a common and widely considered safe treatment for glottic insufficiency. However, no systematic study has described post-procedural complications in detail.

Methods: A retrospective chart review of patients who received HA medialization injections from 2022 to 2024. The primary outcome was post-complication major interventions, defined as an Emergency Department (ED) visit, hospital admission, operating room (OR) visit, or intubation. We also documented complication symptoms, timeline, and treatments, including the incidence of hyaluronidase administration to reverse unwanted injection effects. Demographic data along with injection indication, mode, and setting (in-office, OR, and inpatient) were also recorded. Groups were compared using descriptive statistics and chi-squared testing.

Results: 249 injections were reviewed, of which 231 (92.77%) were successfully completed. 33 (14.29%) injections resulted in post-procedural symptoms, consisting of dysphagia (2.60%), dysphonia (10.82%), dyspnea (3.46%), odynophagia (0.43%), and other symptoms (6.49%). Incidence of acute medical intervention was 5 (2.16%) ED visits, 2 (0.87%) hospital admissions, 4 (1.73%) OR visits, and 0 intubations. We documented 8 (3.46%) hyaluronidase injections. We found non-significant increases in ED visits, hospital admissions, and hyaluronidase injections in patients receiving OR injections versus in-office.

Conclusion: These findings affirm the safety of HA laryngeal medialization. This study provides clinicians and patients with a better understanding of the overall risks of HA augmentation and when considering OR versus in-office injections.

Factors Contributing to Laryngoplasty Revision: Insights from the Trinetx Database

Christian Leonardo, BS; Alexander Bjorling, MD; Keith A. Chadwick, MD, MS

Background/Objectives: Medialization laryngoplasty (ML) is a laryngeal framework surgery which corrects glottic insufficiency. Prior studies report revision rates of ML ranging from 3-36%, but factors influencing the need for revision have not been evaluated. Objectives of this study were to determine the revision rate of ML and identify patient factors associated with revision.

Methods: Retrospective cohort study. Patients undergoing unilateral ML (CPT 31591) were identified in TriNetX, a global collaborative network with data from over 128 million patients. Revision rate was determined by the percentage of patients undergoing a second ML at least 30 days after initial procedure. Patient factors (demographics, surgical history, comorbidities) were compared between groups.

Results: 4,029 patients underwent medialization laryngoplasty. 323 (8.02%) patients underwent repeat ML. Patients undergoing revision were older at initial surgery compared to those not requiring revision (63.6 years vs. 61.4 years, $p=0.02$). Comorbidities associated with revision include pulmonary diseases (asthma, chronic obstructive pulmonary disease exacerbation, pulmonary fibrosis, bronchiectasis), neurological conditions (cerebrovascular disease, Alzheimer's disease), and mental health disorders (depression, schizophrenia). History of thyroidectomy or tracheostomy were associated with revision. Gender, race, ethnicity, geographic region, tobacco use, bronchiectasis, emphysema, Parkinson's disease, and amyotrophic lateral sclerosis were not associated with the need for revision ML.

Conclusions: This is the first comprehensive analysis of factors associated with revision laryngoplasty using the TriNetX database. Certain demographic and patient factors may influence the likelihood of requiring revision ML, potentially impacting patient selection and providing a basis for individualized patient counseling

ROBERT H. OSSOFF, DMD, MD POST-GRADUATE MEMBER BEST PAPER Feasibility of Real-time Automated Vocal Fold Motion Tracking for In-Office Laryngoscopy

Aki Koivu, PhD; Obinna Nwosu, MD; Mitsuki Ota, BS;
Kristina Simonyan, MD, PhD, Dr.Med; Matthew Naunheim, MD

Objectives: Although advancements have been made in the application of artificial intelligence and computer vision to laryngoscopy data, current models are limited to post-hoc analysis, which requires asynchronous data transfer. Herein, we assess the feasibility of a real-time solution for automated vocal fold(VF) tracking during in-office laryngoscopy.

Study Design: Proof-of-concept study describing real-time integration of a computer vision model for VF motion tracking during live in-office laryngoscopy.

Methods: We trained a keypoint detection model that tracks 39 laryngeal landmarks, optimized for real-time deployment, on 1254 frames from 57 laryngoscopy videos. Images were manually annotated with keypoints along glottic and supraglottic structures. After training, the model was evaluated on an independent dataset of 140 test images. Performance was assessed by comparing manual keypoint annotations to model predicted annotations and computing mean keypoint accuracy(MKA), and by calculating temporal consistency(TC) from a calibration video. The live feed of a flexible laryngoscope was passed via a video capture card into a laptop running the motion tracking model in real-time.

Results: The model demonstrated excellent detection accuracy with an MKA of 80.1% with a 5% distance threshold of an average image size and excellent consistency with TC of 7.9 average pixel movement. During real-time testing, the model ran at 30 frames per second, with minimal latency while processing the laryngoscope's live feed.

Conclusions: This proof-of-concept demonstrates the feasibility of real-time implementation of a computer vision model for vocal cord motion tracking during live office laryngoscopy. Future work will focus on refining the model for real-time detection of VF motion abnormalities and characterizing its clinical utility.

The Natural History of Vocal Fold Motion Recovery after Unilateral Vocal Fold Paralysis

Rishi Suresh, MD; Lesley F. Childs, MD; Ted Mau, MD, PhD

Objectives/Hypothesis: Voice recovery after unilateral vocal fold paralysis (UVFP) has been shown to follow a two-phase model, with an “early” group consistent with neuropraxia and a “late” group with more severe injuries. The aims of this study were to 1) determine if VF motion recovery also follows a two-phase model, and 2) determine if early motion recovery portends a higher likelihood of greater return of motion.

Study Design: Retrospective case series with mathematical modeling

Methods: Patients with UVFP over a 16-year period were included. Laryngoscopies from each visit were reviewed to determine the degree of motion recovery. Time from onset of paralysis to motion recovery (categorized by no motion, minimal motion, <50% normal motion, >50% motion) was collected. Time to voice recovery from initial injury was also recorded.

Results: 1452 patients were included in the study. Time to VF motion recovery was fit to a two-stage exponentially modified Gaussian model. 15.5% (n=225) patients recovered VF motion after initial paralysis, with 10.3% (n=149) noting a discrete onset of vocal recovery. Voice recovery preceded the identification of perceptible VF motion on clinical exam 82% of the time by a mean of 37.5 days. Patients identified to recover VF motion early in their clinical course (<125 days) were more likely to go on to develop >50% motion recovery ($p < 0.001$).

Conclusions: VF motion recovery follows a two-stage model. Patients who begin to show motion recovery in the first 4 months have a significantly higher likelihood to have near-complete return of motion eventually.

Allograft Adipose Material (AAM) as a Novel Injectable for Injection Augmentation in Unilateral Vocal Fold Paralysis

Chloe Santa Maria, MD, MPH; Michael M. Johns III, MD; Elizabeth A. Shuman, MD;
Lauren Timmons Sund, CCC-SLP; Kacie La Forest, CCC-SLP; Neel K. Bhatt, MD;
Yael Bensoussan, MD; Jake Morgan, MD; Karla O'Dell, MD

Objectives: Injection laryngoplasty is a common procedure to augment vocal folds following unilateral vocal fold paralysis (UVFP). Injection materials are generally temporary since they tend to resorb in the months following the procedure. Allograft adipose matrix (AAM), commercially available as Renuva®, is a cosmetic injectable with the potential to stimulate adipose tissue generation. Given the favorable viscoelastic properties of vocal fold lipoinjection, we hypothesize Renuva® to be a useful injection material with possible durable results following injection laryngoplasty.

Methods: In a prospective clinical trial, patients with vocal fold paralysis underwent unilateral in-office injection augmentation laryngoplasty with Renuva®. Blinded independent laryngologists and expert listeners used pre-treatment and 3-month post injection videostroboscopy and CAPE-V sentences to evaluate mucosal wave and voice quality changes. Patient reported outcome measures were evaluated.

Results: A total of 20 patients underwent Renuva® injection without any adverse effects, 16 had a diagnosis of unilateral vocal fold paralysis and were included for analysis. There was an average reduction in VHI-10 scores of 12.5 post augmentation ($p < 0.05$), and vocal fatigue index (VFI-1) of 6.0 ($p < 0.05$). CAPE-V scores showed an average reduction of 31 points ($p < 0.01$). The raters perceived the post Renuva® videostroboscopy exams to be better in 73.3% of cases. 42% of patients with incomplete glottic closure converted to complete at 3 months. The videostroboscopic VALI ratings of pliability showed no significant change.

Conclusion: This is the first study on AAM for vocal fold for augmentation laryngoplasty in UVFP. It appears to be safe and effective, with voice outcomes exceeding videostroboscopic appearance.

Superior Laryngeal Nerve Function in an Alzheimer's Disease Rat Model

Zaroug Jaleel, MD; Mahdi Alghezi, BS; Carson Miller, BS; Byron Kim, BS;
Stephen Leong, MD; David J. Perkel, PhD; Neel K. Bhatt, MD

Objective: Alzheimer's Disease (AD) is associated with reduced laryngeal sensation, decreased pharyngeal strength, and silent aspiration. Aspiration pneumonia is a leading cause of death in advanced AD. The superior laryngeal nerve (SLN) is critical to safe swallowing. SLN dysfunction contributes to poor laryngeal sensation and aspiration pneumonia. The purpose of this study was to compare SLN neurophysiology in an AD rat model compared to controls.

Methods: The apolipoprotein E4 knock-out (ApoE4-KO) rat is a commonly used model in studies of AD. SLN evoked studies were performed via stimulation of the main trunk in 4-month adult (ApoE4-KO) rats (n=8) vs age-matched controls (n=10). Recording electrodes were placed on the internal branch and cricothyroid muscles. Stimulated swallow force measurements from hyoid elevation were compared. Force and frequency of electrically and tactile stimulated swallow reflex were analyzed. SLN and laryngeal histology was collected.

Results: SLN evoked response total duration in the AD rat model was significantly longer than controls (4.55 ± 1.47 ms vs 2.4 ± 1.1 ms, $p < 0.01$). Both CMAP latency and total duration were significantly longer in the AD model vs controls (0.86 ± 0.19 ms vs 0.67 ± 0.06 ms, $p < 0.01$ and $2.93 \pm .94$ vs $4.6 \pm .60$ ms, $p < 0.01$). Electrically stimulated swallow frequency was significantly lower in the AD cohort vs controls (5.7 ± 2.0 vs 8.5 ± 2.6 swallows/10s, $p = 0.03$).

Conclusions: SLN evoked responses were significantly longer with a decrease in swallow frequency in the AD rat model compared to age-matched controls. This work suggests that there is disruption of SLN signaling in the AD rat model. This work may provide a mechanistic understanding of SLN dysfunction and a tractable model to test new treatments for AD-related swallow dysfunction.

The Reliability of Intraoperative Frozen Section in Glottic Lesions Suspected for Malignancy

Hagit Shoffel-Havakuk, MD, MBA; Yonatan Lahav, MD; Yaniv Hamzany, MD;
Gal Levi, MD; Daniel Ben Ner, MD; Nir Tsur, MD

Introduction: Whenever a laser cordectomy for glottic cancer is indicated, obviating preoperative biopsy may expedite treatment and preserve the surgical planes. Yet, practicing a single procedure in which both diagnostic biopsy and curative cordectomy are performed, carry the risk for mistreating these lesions. Obtaining intraoperative frozen section (FS) biopsy, before cordectomy is performed, may potentially reduce that risk. Nevertheless, the reliability of the small glottic FS samples is debatable, hence in this study we aim to evaluate it.

Methods: A retrospective chart-review of patients who underwent direct-laryngoscopy with intraoperative FS sampling of lesion limited to glottis, between December 2017 and March 2024, in a tertiary academic referral center. The FS samples were obtained from the segment most suspicious for malignancy, using cold instruments. The intraoperative FS and the final pathology reports were categorized by a binary approach, into either malignant or non-malignant diagnosis. The FS report was then matched with the final pathology for Sensitivity, Specificity, Positive and Negative Predictive Values (PPV, NPV).

Results: 85 vocal fold lesions, obtained from 71 patients on 76 surgeries, were included. There were 44 True-Positive cases, 26 True-Negative, 4 False-Positive and 11 False-Negative. The calculated Specificity and PPV were 87% and 92%, respectively. While the Sensitivity and NPV were 80% and 70%, respectively.

Conclusions: Intraoperative FS for glottic lesions suspected for malignancy is a reliable tool, especially when it reports malignancy, with a PPV reaching above 90%.

Missed Opportunities: The Disconnect between Laryngologists and Lung Cancer Screening in Early Glottic Cancer Patients

Taylor Stack, MD; John Henrich, MD; Robert A. Buckmire, MD; Rupali N. Shah, MD

Background: Chest CT imaging is not indicated for staging for early glottic cancer due to low incidence of distant metastases in this population. Patients meeting the U.S. Preventive Services Task Force (USPSTF) criteria for lung cancer screening should undergo chest CT. Given smoking is a risk factor for glottic and lung cancer, we hypothesized many patients with early glottic cancer meet screening guidelines yet may not receive imaging due to a lack of awareness.

Methods: A retrospective review (from 1995-2024) of all UNC patients with early glottic cancer (n=143). Patients were grouped based on eligibility for USPSTF lung cancer screening. A survey investigating laryngologist practices was distributed.

Results: Of 143 included patients, 62 met lung cancer screening guidelines. Demographics, including social vulnerability index, did not differ between eligible vs. non-eligible groups. Of those eligible, 50% received a chest CT. There was no difference in screening utilization for eligible vs. non-eligible patients (31/62, 50% vs. 50/81, 62%; $p=0.2$). Of those eligible and who received imaging, 3/31 (9.7%) had nodules concerning for malignancy, and 6/31 (19%) had nodules requiring monitoring. Sixty-six laryngologists completed the survey. Of these, 60% were unfamiliar with USPSTF lung cancer screening guidelines, and only 18% always ordered lung cancer screening in qualified patients.

Discussion: Our findings underscore a gap in awareness of USPSTF lung cancer screening guidelines among laryngologists. Despite the established criteria for annual low-dose chest CT screening for lung cancer, a considerable number of eligible patients are not receiving imaging that may enhance the detection of coexisting lung cancer.

Outcomes in Patients with Obstructive Sleep Apnea Undergoing Laryngeal Surgery in an Outpatient Setting

Catherine Kartchner, BC; Keerthi Kurian, BS; Jacob Schwartz, BS; Nala Mckie, BS; Arpitha Shenoy, BS; James Daniero, MD, MS

Background/Objectives: Institutional guidelines nationwide often require patients with obstructive sleep apnea (OSA) to undergo elective laryngeal surgery in inpatient settings to minimize adverse outcomes, though data are limited. This study evaluated postoperative outcomes in patients with and without OSA undergoing ear, nose, and throat (ENT) surgeries.

Methods: A retrospective review identified patients with OSA and matched controls who underwent elective ENT surgeries between 2017 and 2024. Demographics, polysomnogram results, STOP-BANG scores, postoperative outcomes, admissions, and ED visits were collected. Multivariate regression models evaluated the effect of OSA on post-anesthesia care unit (PACU) Phase 1 time with covariates (age, BMI, ASA, and surgery type).

Results: A total of 244 cases were analyzed (118 OSA patients, 126 controls). No difference was observed in PACU Phase 1 time between OSA (mean 70.4 min) and controls (mean 62.2 min) ($p = 0.17$). Multivariate analysis found no significant effect of OSA on Phase 1 time ($p = 0.73$). Laryngeal surgery was associated with shorter Phase 1 times than non-laryngeal surgery ($p = 0.01$). Age ($p = 0.004$) and ASA classification ($p < 0.01$) also predicted Phase 1 time. There was no difference between OSA and surgery type ($p = 0.39$). Rates of admissions (total $n = 11$; OSA = 7), ED visits ($n = 16$; OSA = 7) or readmissions ($n = 2$; OSA = 1) were similar.

Conclusions: Patients with OSA can safely undergo elective laryngeal surgery in an outpatient setting without prolonged PACU recovery. These findings support revisiting guidelines for elective laryngeal surgery in OSA patients in outpatient settings.

Reproducibility and Variance Across Different Surgeons in Suspension Microlaryngoscopy Procedures

Alexander Elamine, BS; Phillip Song, MD

Background/Objectives: This study used the Laryngeal Force Sensor (LFS) to measure force real-time during suspension microlaryngoscopy (SML) performed by three surgeons with varying experience levels. Previous research links force metrics, such as maximum and average force, with postoperative complications like dysgeusia, pain, and dysphagia. We aimed to identify differences in intraoperative force among surgeons and assess correlations with postoperative complications, aiming to establish normative force ranges for SML.

Methods: In this prospective, blinded control trial, twenty-five trials per surgeon were conducted (N=75), with each surgeon blinded to the force measurements. Maximum force, average force, impulse, and total suspension time were recorded for each trial. Patients completed pre- and postoperative surveys evaluating symptoms such as tongue pain, paresthesia, dysgeusia, and dysphagia.

Results: Across all trials, average force (lbs) per surgeon was [14.70, 18.12, 20.29]. Maximum forces recorded were [24.12, 36.35, 37.23]. A one-way ANOVA showed significant differences in suspension time [22.03, 29.5, 32.68] (min) and impulse [115912.96, 117747.28, 126645.95] (N*s), with Levene's test confirming variance homogeneity.

Conclusion: Force metrics among the surgeons were consistent and reproducible, suggesting a normative range for SML. When analyzed by procedure type (excision striking zone, excision nonstriking zone, cancer, airway dilation), metrics showed increased consistency in airway procedures versus cancer surgeries, possibly due to the latter's procedural variability and longer operation times. Significant differences in suspension time and impulse were observed across surgeons, while average and maximum force did not differ significantly.

Establishing a Clinical Model of Acute Laryngeal Injury to Investigate Pathological Scarring and Therapeutic Interventions

Ryan Stepp, BS; Patrick Cottler, PhD; Nausin Ali, BS, MS; Adithya Reedy;
Hannah Kenny; James Daniero, MD, MS

Background: Acute Laryngeal Injury (ALGI) is marked by fibrosis and inflammation, often leading to airway obstruction and voice dysfunction. Frequently associated with prolonged intubation, ALGI underscores the need for therapies to prevent or reduce scarring.

Objective: This study aims to create a reliable animal model of ALGI in New Zealand rabbits to simulate pathological scarring seen in humans and evaluate early therapeutic interventions.

Methods: An ALGI model was developed in New Zealand White rabbits using mucosal stripping of the posterior larynx, followed by intubation with an oversized 4.0 endotracheal tube for one hour to mimic traumatic intubation. Laryngoscopy was performed two weeks post-injury to assess scarring, followed by application of treatments, including saline as a control. At the endpoint, larynges were harvested, frozen, and embedded in OCT for histological analysis with H&E, Masson's Trichrome, and Picro Sirius Red stains to evaluate fibrosis and collagen deposition.

Results: Injured samples showed elevated Collagen I densities (42.28% to 76.21%) and Collagen III (12.87% to 39.1%) in Picro Sirius Red staining compared to controls (Collagen I: 15.03% to 39.22%; Collagen III: 3.08% to 14.88%). Masson's Trichrome confirmed increased collagen density in injured samples, reaching 95.17%. H&E staining showed greater posterior glottic thickness in injured samples (993.48 μ m to 2250.56 μ m) versus controls (127.95 μ m to 263.48 μ m).

Conclusion: This model replicates ALGI fibrosis and supports studies on anti-fibrotic therapies, providing a foundation for improving outcomes in ALGI patients.

The Effectiveness of Transverse Cordotomy with Partial Arytenoidectomy in the Treatment of Bilateral Vocal Fold Immobility

Jaynelle Gao, BS; Jonathan West, MD; Ryan Chung, BS;
Michael M. Johns III, MD; Karla O'Dell, MD

Introduction: Transverse cordotomy with partial arytenoidectomy is a known treatment for bilateral vocal fold immobility (BVFI). Here we present the largest series to date on the procedure and examine its effectiveness.

Methods: Retrospective case series of consecutive patients treated at a tertiary care center from April 2014 to 2024. Patients who underwent transverse cordotomy with partial arytenoidectomy for posterior glottic stenosis (PGS) or bilateral vocal fold paralysis (BVFP) were included. Exclusion criteria were multi-level stenosis and prior airway resection or reconstruction. Effectiveness was assessed by rate of decannulation, and voice, breathing and swallowing outcomes for which we employed the voice handicap index (VHI), dyspnea index (DI), eating assessment tool (EAT-10), and cough severity index (CSI).

Results: 45 patients were included. The majority had PGS (64%), primarily from endotracheal intubation (76%). BVFP cases were primarily from iatrogenic surgical injury (69%). 76% of tracheostomy dependent patients were decannulated; 64% after a single procedure. In tracheostomy-free patients, tracheostomy was not performed at the time of surgical intervention for airway protection. No post-operative airway complications occurred. Amongst tracheostomy-free patients, post-operative DI was significantly improved from pre-operation (mean 17.6 v. 30.5, $p = 0.003$). There were no other significance differences in pre- and post-operative VHI, DI, EAT-10 or CSI indices, nor were there any differences by surgical indication.

Conclusions: Transverse cordotomy with partial arytenoidectomy is an effective surgical intervention for patients with BVFI. Patients are routinely decannulated without compromising voice, breathing or swallowing outcomes. Tracheostomy placement at the time of intervention is not required.

Evaluating the Efficacy of L-DOPA MAP Gel for Acute Laryngeal Injury

James Daniero, MD, MS; Patrick Cottler, PhD; Areli Rodriguez, PhD;
Donald Griffin, PhD; Ryan Stepp, BS

Background/Objectives: Acute Laryngeal Injury (ALGI) results from prolonged intubation, causing fibrosis and airway obstruction. This study aimed to evaluate the efficacy of an innovative L-DOPA-modified MAP hydrogel in reducing fibrosis and enhancing healing compared to saline and blank MAP gel.

Methods: Three groups were studied: untreated control (saline), blank MAP gel, and L-DOPA MAP gel (dMAP2). Treatments were applied non-invasively to rabbit larynges. Evaluations included retention of the material after 4 days and healing after 14 days. Histological evaluation included posterior glottic thickness (PGT) via H&E staining and collagen density using picrosirius red (PSR).

Results: In Retention samples, average PGT was 1540.9 μm (NT), 929.1 μm (MAP), and 695.3 μm (dMAP2), showing reduced fibrosis with dMAP2. In Healing samples, PGT was 1463.6 μm (NT), 1053.4 μm (MAP), and 1284.7 μm (dMAP2). Collagen density analysis showed a significant decrease in Type I collagen for dMAP2-treated samples compared to controls. Type I collagen averaged 43.4% in untreated controls, while in dMAP2-treated samples it decreased to 31.1%. Similarly, Type III collagen decreased from 5.7% in untreated controls to 2.0% in dMAP2-treated samples, indicating a reduction in immature collagen and suggesting improved tissue remodeling.

Conclusions: The L-DOPA-modified MAP gel effectively reduced fibrosis and improved healing compared to controls. It demonstrated significant reductions in scar thickness and promoted organized collagen deposition, highlighting its potential as a non-invasive treatment for ALGI with promising long-term outcomes

Larger Endotracheal Tubes Are Associated with an Increased Risk of Post-Extubation Diet Modifications

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Background: There are no widely adopted guidelines regarding appropriate endotracheal tube(ETT) sizing. While it is proposed that larger ETTs may be associated with an increased risk for upper aerodigestive injury, a robust relationship has not yet been established. In this study, we assessed the association between ETT size and post-extubation diet recommendations.

Methods: Patients undergoing endotracheal intubation at our institution were retrospectively identified through ICD-10 PCS codes. The relationship between ETT size and diet recommendations given by speech and language pathology were explored through univariable and multivariable regression analyses.

Results: We identified 1,244 patients. The mean $\pm$ SD age was 66 $\pm$ 14 years, the median [IQR] Charlson Comorbidity Index (CCI) was 5 [3, 7], and the median [IQR] length of stay was 19 [9, 33]. Overall, individuals recommended any diet modifications were older (68 $\pm$ 13 vs 64 $\pm$ 14, $p<0.001$) and more frequently underwent an emergency intubation (21% vs 16%, $p=0.04$). A lowest incidence of diet modifications (46%) followed by ETTs sized as expected (54%), and ETTs larger than expected (62%). On multivariable analysis adjusting for length of stay, CCI, emergency intubations, smoking status, circulatory shock, history of GERD, weight, and height, each 1.0 unit increase in ETT size was associated with twice the odds of a recommendation of any diet modification (OR: 2.01, 95% CI: 1.44-2.84).

Conclusions: Increased ETT sizes may be associated with a greater risk of upper aerodigestive injury. Future studies to validate these findings and develop guidelines regarding the appropriate sizing of ETTs are needed.

Pediatric Laryngeal Trauma: An Epidemiological Study of Mechanisms, Management, and Outcomes using the National Trauma Data Bank

William Moss, BS; Mia Girela, BS; Aphi Muralidhar, BS; Alvaro Moreira, MD, MSc*

Introduction: Laryngeal trauma in children is a rare but critical emergency with significant implications for both acute management and long-term outcomes. This study aims to identify epidemiological trends and predictors of both mortality and optimal clinical management in pediatric laryngeal trauma.

Methods: A retrospective analysis of the National Trauma Data Bank for 2007-2015 identified patients ≤ 18 years old diagnosed with laryngeal trauma. Descriptive statistics assessed epidemiological trends, and logistic regression identified predictors of in-hospital mortality, surgery, tracheostomy, and mechanical ventilation

Results: A total of 523 pediatric patients were identified, with a median age of 16 years and an overall mortality rate of 14% (excluding those dead on arrival). Blunt trauma accounted for 56% of injuries, with motor vehicle accidents (27%), firearms (19%), and sharp object injuries (16%) being the most common causes. Mechanical ventilation was required in 46% of cases, while 4% underwent tracheostomy and 5% required surgery. Lower systolic blood pressure (SBP) was associated with higher mortality (OR 0.97, $p=0.003$), while penetrating injuries strongly predicted the need for surgery (OR 3.47, $p=0.015$). Tracheostomy correlated with both higher SBP and heart rate (OR 1.02, 1.03; $p=0.050$, 0.013), and mechanical ventilation was associated with decreased Glasgow Coma Scale (GCS) scores (OR 0.87, $p<0.0001$).

Conclusion: This is the largest epidemiological study on pediatric laryngeal trauma, reporting an in-hospital mortality rate of 14%. These findings underscore the importance of early recognition and management, with SBP, GCS, and injury mechanisms serving as critical indicators for timely intervention.

The Development of Laryngology in the United States and the Origin of the American Laryngological Association

Steven M. Zeitels, MD; Eugene N. Myers, MD

Background: It is the sesquicentennial origin of organized Laryngology in the US, which was a harbinger of the American Laryngological Association (ALA). Despite Laryngology starting in Europe (1850s), the US was the first country in the world to initiate dedicated professional organizations in this field due to the foresight of a small group of clinicians. There is well-recorded information about these key individuals and their efforts to establish the nascent specialty. However, an interpretive analysis has not been done integrating domestic and European politics, cultural backgrounds, and medical training, especially with a 21st century perspective. Interpretive analysis enhances routine historical scholarship that primarily focuses on gathering facts.

Objectives: This investigation was designed to explore the heritage of Laryngology and its surgical roots. It was intended to establish a concise historical foundation so that current practitioners can better understand contemporary clinical philosophies, research initiatives, and educational instruction.

Methods: A retrospective investigation of 19th century American Laryngological pioneers was integrated with cultural influences domestically and abroad, geographic considerations, and methods of training future laryngologists.

Results: Organized Laryngology in the US was initiated in New York in 1873 and became a national organization (ALA) 5 years later. The founding members practiced in the northeast USA. They established a model to evolve the specialty throughout the continental USA bearing similarities to the country's origin a century earlier.

Conclusions: Primary influences on the origin and subsequent development of Laryngology in the US and the ALA were the Civil War, immigration, the American spirit of innovation, and the philosophy of service.

Exploring Preprocessing Steps and Neural Networks for Stridor Characterization Through Voice Data

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James Anibal, BS; Jamie Toghranegar, PhD; Bridge2AI Consortium; Yael Bensoussan, MD

Background: Stridor is a high-pitched respiratory sound indicating upper airway obstruction and necessitates early detection to prevent complications. Traditional diagnosis relies on clinical expertise and detailed history and physical examination including laryngoscopy, bronchoscopy, and pulmonary function testing, posing accessibility challenges. This study addresses this gap by developing deep learning models for stridor classification as either “non-stridor”, “phonatory”, or “non-phonatory.” Phonatory Stridor is defined by a vibration of the vocal folds due to obstruction at the level of the glottis, resulting in a raspy phonation indicating severe airway obstruction. Non-Phonatory Stridor is an audible sound indicative of airway obstruction but lacking the raspy, high-pitched component of phonatory stridor.

Methods: Audio data was collected from 59 adult patients (32 with stridor, 27 controls) performing Forced Inhale (FIMO), Deep Breaths (DP), and Rainbow Passage (RP) using an iPad and AVID AE-36 microphone. Data processing (sliding windows, fixed width) and feature extraction (raw audio, spectrogram) methods were tested. Audio recordings were then randomly assigned to training, validation, and testing sets. Various models (Vision Transformer; Residual Network, YAMNet) were then trained to characterize stridor.

Results: Mel spectrograms achieved higher accuracy than raw audio using the fixed width method, which was further improved with a sliding window approach. FIMO, DP, and RP showed similar results across the models tested. Use of the pre-trained ResNet50 model further improved accuracy.

Conclusion: These models show potential in stridor characterization, potentially facilitating precise medical interventions. Future work will require expansion of the dataset and tweaking model parameters to enhance robustness.

The Impact of Estrogen on Stromal Elements in Idiopathic Subglottic Stenosis Pathogenesis

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Introduction: Idiopathic subglottic stenosis (iSGS) is an unexplained fibrosis of the proximal airway that predominantly impacts Caucasian women. Clinically, premenopausal patients suffer from higher recurrence rates, potentially implicating ovarian hormone 17 β -estradiol (E2) in disease pathogenesis. Despite its relationship with disease phenotype and severity, the mechanistic role of E2 in subglottic fibrosis has not been investigated.

Methods: Human cell lines were utilized for in vitro study. iSGS patient derived fibroblast primary cell lines (n=5) were assessed after E2 exposure via RNA sequencing for transcriptional changes via immunostaining and flow cytometry. The impact of E2 on epithelial barrier function was assessed via transepithelial resistance measurement (TEER) in iSGS-patient derived epithelial primary cell lines (n=3) grown at air-liquid interface (ALI). The impact of E2 on human endothelial lines was assessed using a Matrigel-based tube formation assay.

Results: There were no significant transcriptional changes induced in fibroblasts after exposure to E2 when compared to controls. Nor was a difference in collagen production observed after E2 exposure. Similarly, there was no significant difference in TEER measurements in airway epithelial cells grown at ALI following E2 exposure. Human endothelial cells showed a significant increase in tube formation following E2 exposure.

Conclusion: In vitro models suggest E2 may have limited direct impact on fibroblasts and epithelial cells in iSGS. Instead, estrogen may act directly on endothelial cells to contribute to airway mucosal remodeling, potentially via increased angiogenesis.

Effect of Serial Intralesional Steroid Injections (SILSI) and Clinical Predictors on Surgical Dilation Rate in Idiopathic Subglottic Stenosis (ISGS)

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Background: SILSI has been suggested to be an effective adjunct treatment for iSGS by maintaining airway patency and therefore increasing inter-surgical intervals. Prior studies, however, have been limited by small sample sizes and a lack of a control group. The objective is to investigate whether SILSI has an impact on risk of subsequent surgical dilation in a cohort of iSGS patients.

Methods: Prospectively collected clinical data for 75 female iSGS patients with 1–4 years of follow-up were analyzed. We conducted both time to first repeat dilation and recurrent dilation analyses using a standard multivariable Cox proportional hazards model and Andersen-Gill recurrent events model, respectively. Twenty-two patients received SILSI after the initial dilation and 36 patients received SILSI at any point during the follow-up period.

Results: The median surgical dilation rate was 0.82 (range 0.30–1.87) dilations per year, with each patient having received 1–5 dilations. In the time to first repeat dilation analysis, use of SILSI was associated with significantly reduced risk of subsequent dilation (hazard ratio (HR)=0.23, 95% confidence interval (CI)=0.09–0.58; p=0.002), along with older age at diagnosis (HR=0.96, 95% CI=0.94–0.98, p=0.001) and longer time since diagnosis (HR=0.89, 95% CI=0.80–0.99; p=0.029). Similarly, the recurrent events model showed that SILSI administration between surgical dilations prolonged time to subsequent dilation (HR=0.47, 95% CI=0.28–0.79; p=0.004).

Conclusion: SILSI was associated with reduced risk of subsequent surgical dilation, along with older age at diagnosis and longer time since diagnosis.

Computational Fluid Dynamics for the Evaluation of Patients with Idiopathic Subglottic Stenosis (iSGS)

Zheng Hong Tan, PhD; Aspen Schneller, BS; Kai Zhao, PhD; Tendy Chiang, MD; Laura Matrk, MD

Introduction: Current clinical measures for the evaluation of subglottic stenosis (SGS) include peak expiratory flow (PEF) and patient-reported outcome measures (PROMs), including the Dyspnea Index and Cough Severity Index. Computational flow dynamics (CFD) use computed tomography (CT) imaging, to provide additional metrics including wall shear stress and airflow measures, but its clinical utility and relationship with current clinical tools is underexplored.

Methods: A single-institute retrospective chart review of 170 patients was conducted. Five patients with concurrent CT imaging, endoscopic evaluation of stenosis grade, PEF and PROMs were selected for inclusion. All patients had idiopathic subglottic stenosis. CFD modelling was performed to generate metrics including wall shear stress, peak airflow velocity, and airflow pattern (turbulent vs laminar).

Results: The cohort was 80% female and averaged 54.3 years. 80% were Cotton-Meyer Grade I; 20% were Grade II. Higher PEFs (normalized for height, age and gender) correlated with lower peak velocities ($r^2=-0.90$, $p=0.03$). Greater stenosis resulted in more turbulent flow in the airway, with maximal wall shear stress at the site of the stenosis and at the vocal folds. There was no correlation between CFD metrics and PROMs.

Conclusion: CFD is a novel method of evaluating airflow in patients with idiopathic subglottic stenosis. CFD allowed us to identify sites of peak airflow velocity and highest wall stress in the airway, and correlation with PEFs but not with PROMs was noted. Such data may ultimately be useful in guiding management of airway stenosis alongside current clinical measures.

EUGENE N. MYERS MD INTERNATIONAL PAPER AWARD Unveiling a Mechanism of Immune Homeostasis in Trachea: Investigation of Immune Responses Following Synthetic Tracheal Scaffold Implantation in a Mouse Circumferential Tracheal Defect Model

Jeon Seong, MD, MS; Hye Jeong Lee, PhD; Ji Suk Choi, PhD; Chae-Seo Rhee, MD, PhD;
Joo-Young Park, DDS, PhD; Seong Keun Kwon, MD, PhD

Tracheal stenosis presents significant challenges for surgical treatment, often requiring innovative bioengineering approaches. Polycaprolactone (PCL), a biodegradable polyester, offers potential as a scaffold for tracheal defect regeneration. However, its use can be compromised by the host's immune response, leading to a foreign body reaction. The specific immune cells in the tracheal environment and their interactions with implants are not yet fully understood. This study employs a novel protocol for isolating tracheal immune cells to analyze their composition and roles in response to PCL scaffold implantation.

We used 8- to 10-week-old female C57BL/6 mice for both normal trachea and defect implantation models. Following the formation of a circumferential tracheal defect, a PCL scaffold was implanted. Immune cells were then isolated and analyzed using flow cytometry on postoperative days 1 and 7, alongside assessments of cytokine production and immune cell proliferation.

Diverse immune cells were identified, particularly CD45+CD3-B220- myeloid cells, prevalent in normal tracheas. After PCL scaffold implantation, immune homeostasis was severely disrupted, with a strong CD4+ NKT cell response making up about 80% of immune cells on day 1, slightly decreasing by day 7, and absent in mock operations. Additionally, increases in CD11b+Gr-1+ neutrophils and CD11b+Gr-1dim myeloid-derived suppressor cells were found post-implantation. We analyzed CD4+CD25+Foxp3+ regulatory T cells to explore their role in maintaining immune homeostasis with cytokine production.

Our findings highlight significant cellular immune responses in the trachea and the impact of PCL scaffold implantation on immune homeostasis. Understanding these allows for targeted immunomodulation strategies, potentially enhancing biomaterial integration and clinical applications in tracheal regeneration.

YOUNG FACULTY/PRACTITIONER AWARD
SMAD Signaling Mediates the Atrophic Response of Vocal Fold Myoblasts In Vitro

Masayoshi Yoshimatsu, MD, PhD; Ryosuke Nakamura, PhD; Renjie Bing, MD;
Gary J. Gartling, PhD; Ryan C. Branski, PhD

Background/Objectives: Vocal fold (VF) muscle atrophy, often associated with neuromuscular disorders and aging, can lead to voice-related disability. Myostatin is well-known to mediate skeletal muscle atrophy via Smad2/3 signaling, whereas TGF- β 1, a potent inducer of Smad2/3 signaling, is upregulated following VF injury. However, the impact of Smad2/3 signaling on laryngeal muscles remain unclear. This study provides insight regarding Smad2/3-dependent atrophic responses of VF skeletal muscle cells as the path to, ultimately, develop novel therapeutic strategies for VF muscle atrophy.

Methods: Myoblasts isolated from the rat medial thyroarytenoid muscle were differentiated into myotubes with myogenic differentiation medium +/- 100 ng/ml myostatin and 10 ng/ml TGF- β 1, or siRNAs targeting Smad2 and Smad3. The formation of myotubes and activation of Smad2/3 (nuclear localization of phosphorylated Smad2/3) was assessed via immunofluorescence. Transcription related to myotube differentiation and Smad2/3 signaling (Myh2, Ccn2, and Serpine1) were quantified by qRT-PCR.

Results: Myostatin and TGF- β 1 inhibited myotube formation while activating Smad2. In addition, myostatin and TGF- β 1 downregulated Myh2, a skeletal muscle fiber-specific cytoskeleton, and upregulated Ccn2 and Serpine1, target genes of Smad2/3 signaling. Conversely, gene knockdown of Smad2 and Smad3 via siRNAs resulted in Myh2 upregulation.

Conclusions: Smad2/3 signaling mediates the atrophic response in VF myoblasts. Targeting Smad2/3 may be a therapeutic approach for VF muscle atrophy.

**Autologous Muscle Progenitor Cells Enhance Reinnervated Adductor
Muscle Activity in the Rat Larynx**

Randal C. Paniello, MD, PhD

Background/Objectives: Muscle progenitor cells (MPCs) ("stem cells") can be isolated from adult skeletal muscles, cultured and implanted into other muscles recovering from nerve injury. This was shown to improve adductor function in a canine laryngeal reinnervation model. We tested this approach in a rat model.

Methods: Rat adult MPCs were isolated from donor hamstring muscle and incubated to a mass of 25×10^6 cells, then frozen until needed. Twelve rats underwent left recurrent laryngeal nerve section with primary re-anastomosis. Three weeks later, half underwent injection of 5×10^5 MPCs into the left thyroarytenoid (TA) muscle. At week 6, videolaryngoscopic recordings of respiratory vocal fold motion were obtained. These were scored by three laryngologists blinded to the intervention. Reflex glottic closing force (GCF) was measured with a pressure probe. Fluorescent-labeled MPCs were identified on histology.

Results: The control group (no MPCs) had a mean motion score of 0.41 (slight abduction) during respiration, while the MPC group score was -1.53 (adduction) ($p=0.011$). Inter-observer scoring agreement was 85%. Reflex GCF was measurable in 42% of controls with a mean of 11.1% of pre-treatment values, and in 80% of MPC rats with a mean of 38.7% ($p=0.048$). Histology confirmed that the MPCs had been incorporated into the TA muscle.

Conclusions: Synkinetic reinnervation normally favors abduction in this model, but implantation of MPCs into the TA muscle significantly shifts this function toward adduction at only 6 weeks postop. The model can be used to investigate the potential use of MPCs to selectively improve functional recovery following RLN injuries.

An Evaluation of Safety and Toxicity for Stem Cell-Based Vocal Fold Implants in Swine

Desiree Delavary, BA; Jennifer P. Long, MD, PhD

Background/Introduction: Prior to introduction in humans, new implant technology must be thoroughly assessed with pre-clinical animal trials. Cell-based or cell-derived therapies undergo FDA evaluation to be granted Investigational New Drug designation, prior to human trials. While data required can vary across applications, standard safety and toxicity measures are valuable. We previously described a stem cell-based vocal fold implant for reconstruction of the vibratory vocal fold. This study describes safety and toxicity evaluation following this implantation in Yucatan mini-pigs.

Methods: Eight Yucatan mini-pigs underwent Cell-based Outer Vocal fold Replacement (COVR) containing multi-potent human adipose stem cells. Perioperative corticosteroids and antibiotics were administered, but no chronic immunosuppressive medications were given. As a control, one additional animal had vocal fold resection without COVR implant, and underwent corresponding medication regimen. The animals were monitored for six months, with interval blood draws to measure basic chemistry, hematologic, and liver function tests. Any adverse events were recorded.

Results: At the three month blood draw, one animal demonstrated elevated potassium at 7.9 (range 3.5-7.4), without clinical symptoms. No other postoperative abnormalities in these toxicity measures have been identified. Additional blood samples will be collected and analyzed until the meeting presentation. Adverse events included skin wound dehiscence in one animal, and one animal exhibited a temporary behavior change that resolved following empiric treatment with antibiotics and analgesics.

Conclusions: Hematologic and metabolic safety monitoring thus far supports non-toxicity following xenograft vocal fold implantation in immunocompetent swine; additional data continue to be collected. Adverse events are reported.

A Multimodal Approach for Deep-Learning Classification of Vocal Fold Pathologies in Stroboscopy

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Courtney Tipton, MD; Michael Pitman, MD; Lucian Sulica, MD; Olivier Elemento, PhD;
Anaïs Rameau, MD, MPhil, MS

Background/Objectives: To develop and validate a multimodal deep-learning classifier trained on image and voice data extracted from stroboscopy recordings, differentiating between three different vocal fold (VF) states: healthy (HVF), unilateral paralysis (UVFP), and VF lesions.

Methods: Patients with HVF (n = 41), UVFP (n = 60), and VF lesions (n = 59) were retrospectively identified. Image frames and voice samples were extracted from stroboscopic videos. Extracted audio files were converted into mel-spectrograms. Patient-level data was independently divided into training and validation (80%) and testing (20%). Extracted visual and acoustic features were combined within a multimodal framework and compared to a model trained using image data only. Multimodal classification was validated on an external dataset consisting of 19 HVF, 17 UVFP, and 18 VF lesions. Accuracy and F-1 scores were used to compare performance.

Results: The multimodal classifier demonstrated an overall accuracy of 72% on a hold-out test set. F1-scores for individual categories were 0.67 for HVF, 0.75 for UVFP, and 0.72 for VF lesions. The image classifier had an overall accuracy of 66%, with individual F1-scores of 0.46 for HVF, 0.71 for UVFP, and 0.70 for VF lesions. There was no significant difference in accuracy between the two classifiers (p = 0.60). When evaluated on an external dataset, the multimodal classifier accuracy dropped to 59% (p = 0.23).

Conclusions: Multimodal classification achieved marginally higher accuracy than single modality, although not significant. Performance dropped non-significantly with an external dataset. Future models will incorporate clinicodemographic data to further improve accuracy and model generalizability.

Predictive Efficacy of CAPE-V, pVHI, and CVA in Detecting Vocal Fold Pathology in Children

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Brad W. deSilva, MD; Gregory J. Wiel, MD

Introduction: Pediatric voice disorders can significantly impair communication and quality of life, yet assessing these conditions remains challenging. While tools like the Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V), Pediatric Voice Handicap Index (pVHI), and Computer-Assisted Voice Analysis (CVA) are commonly utilized, comparative data on their effectiveness in predicting laryngeal pathology are limited. This study evaluates the predictive value of these assessments, individually and in combination, against endoscopic findings in children with voice disorders.

Methods: A retrospective cohort study included 116 patients aged 4–18 years who underwent CAPE-V, pVHI, CVA, and flexible fiberoptic endoscopy during the same clinic visit at a pediatric voice clinic. Logistic regression and Receiver Operating Characteristic curve analyses assessed the predictive value of each tool individually and in combination against endoscopic findings, the gold standard for detecting vocal fold abnormalities.

Results: Patients with abnormal endoscopic findings had significantly higher CAPE-V scores (median 134 vs. 70.5; $p = 0.0002$). CAPE-V alone demonstrated the highest predictive value ($AUC = 0.827$). Combining CAPE-V, pVHI, and CVA improved predictive accuracy ($AUC = 0.846$), yielding sensitivity of 88.6% and specificity of 77.1%. Children under 5 years were significantly more likely to have abnormal endoscopic findings than older children ($p = 0.0054$).

Conclusion: CAPE-V, particularly when combined with pVHI and CVA, is a strong predictor of laryngeal pathology in pediatric voice disorders. Incorporating these assessments into routine practice may enhance clinical decision-making regarding endoscopic evaluation, facilitating earlier diagnosis and optimized management for pediatric patients.

Advancing AI in Laryngology: Performance and Explainability of YOLO11 in Vocal Fold Polyp Detection

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Background: YOLO is a widely used object detection model for real-time automatic detection of laryngeal lesions during video-laryngoscopy. However, limitations in accuracy and precision remain, and addressing these challenges is essential for advancing AI application in video laryngoscopy.

Methods: A total of 12,744 vocal fold images, including cases with normal pathology ($n=22$) and vocal fold polyps ($n=33$), were used to train, validate, and test YOLO11. Ground truth bounding boxes were manually annotated for polyp regions in the training set. During training, YOLO11 employed data augmentation techniques, including random rotations, flips, scaling, color adjustments, and the mosaic technique. Grad-CAM was used for post-hoc model interpretability. Model performance was further evaluated based on detection accuracy across polyp characteristics, such as size, shape, color, and location.

Results: YOLO11 demonstrated moderate performance in detecting vocal fold polyps, with a precision of 67.4%, recall of 57.4%, and F1 score of 62%. The model showed the highest recall for medium-sized (63.6%) and reddish (91.2%) polyps, while performance was significantly lower for large (8.0%) or pale (8.3%) polyps, and those in the right inferior quadrant (32.0%). Grad-CAM analysis revealed the model often focused on irrelevant areas, leading to false positives or missed detections.

Conclusion: This study highlights specific performance limitations of YOLO11 in video-laryngoscopy, underlining the importance of post-hoc analysis for improving algorithmic transparency in clinical AI applications. Future work will focus on refining YOLO11's attention mechanisms to better capture the wide clinical variation in polyp presentation.

Age-Related Vocal Atrophy Data Generated by Glottic: An Application to Quantify Vocal Atrophy

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Background: To better standardize understanding age-related vocal atrophy (ARVA), a mobile application, Glottal Image Capture (GlottIC) was developed for the laryngology community. Users can opt to anonymously share de-identified data, including vocal fold images, bowing index (BI), and additional metrics, and they provided over 1400 patient exams and analyses. The feasibility of community data entry and findings are presented here.

Method: Users uploaded de-identified data over a 1-year period. Data sets were reviewed to exclude cases with vocal fold lesions or improperly placed markers. Subgroup analysis included patients aged ≥ 55 with complete data sets including sex, age, and BMI.

Result: 1,446 collected data sets were reviewed. After exclusion, 1,305 data sets remained. BI average across images was 7.05 ± 3.52 . BI on the right and the left vocal folds were not significantly different based on pairwise analysis, difference $-0.12(95\%CI:-0.27-0.029)$. Among patients with complete data sets, 157 images were analyzed, with 85 females (median age:72, range 55-94) and 72 males (median age:71, range:55-93). Overall, males had a significantly higher BI compared to females, 6.84 ± 3.51 versus 5.26 ± 3.07 , difference $1.57(95\%CI:0.54-2.61, p=0.0031)$. Mean BI among those in their 7th decade of life was significantly higher in males than females, difference $-2.26(95\% CI:-3.84 \text{ to } -0.69)$. BMI was not significantly related to BI ($r=0.17, 95\%CI:-0.11 \text{ to } 0.32$).

Conclusion: To our knowledge, this is the largest study of ARVA patients using user data collected over a 1-year period. BI was higher in males compared to age-matched females. With continued data collection, the laryngology community could help to establish normative BI values based on patient demographics.

Placental-Derived Connective Tissue Matrix Injection During Microphonosurgery as an Adjunct to Promote Vocal Fold Healing

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Objective: To our knowledge, no previous studies have described the use of placental derived connective tissue matrix (pd-CTM) in the field of laryngology. The aim of this pilot study was to 1) identify the relative expression levels of key wound-healing factors in pd-CTM, and 2) assess early outcomes in a pilot series when pd-CTM was injected into the vocal folds during microphonosurgery.

Methods: Relative expression of proteins in pd-CTM [CTM Flow™, CTM Biomedical®, Lake Worth, Florida] was characterized using a cytokine array. Clinical outcomes were then reviewed in the first three patients at our institution who received adjuvant pd-CTM injection during excision of benign vocal fold lesions.

Results: Moderate to high expression of anti-inflammatory (IL-1ra), anti-fibrotic (TIMP-2, HGF, bFGF, TGF- β 3) and angiogenic (VEGF, EGF, PDGF-BB) factors were detected in pd-CTM. Clinically, when pd-CTM was injected into the vocal fold at the time of lesion excision, early (<2 week) postoperative videostroboscopy demonstrated near symmetric, periodic waveforms. Postoperative Voice Handicap Index – 10 (VHI-10) improved by -27 ± 21 (mean $\pm$ SD). There were no adverse results noted during this study.

Conclusions: pd-CTM may be a useful adjunctive therapy to promote wound healing after microphonosurgical excision of benign vocal fold lesions. Future studies with larger patient populations will be necessary to better elucidate both short- and long-term healing outcomes.

Intralesional Steroids Injection for Scar or Fibrous Vocal Fold Lesions: The How, Who and Why to Better Understand if There Is a Positive Benefit

Isabela Schettini, MD; Christopher Dwyer, MD; Samantha Kridgen, SLP; Thomas Carroll, MD

Introduction: Steroid injection (single or series) has been described for treatment of vocal fold scar and phonotraumatic lesions. Controversy remains regarding which lesions respond, the needle location during delivery (i.e. intralesional, lamina propria, muscular), the type of steroid, whether offered pre-or post-lesion excision and potential negative side effects. The aim of this study is to describe outcomes from one steroid delivery technique, delivered intralesionally into the scar or lesion itself as a series. A secondary aim was to compare patients that had a co-diagnosis or required only intralesional steroid injection (ISI) vs. those also requiring microlaryngeal surgery.

Methods: Retrospective review of patients who underwent an ISI series of 3 over 2-3 months. Patients were diagnosed with scar or firm subepithelial lesion (i.e. not cystic or polypoid) as primary indication for ISI. The ISI series was typically a standalone intervention but may have preceded or followed microflap excision. The change in pre- to post- VHI-10 (Δ VHI) and patients' self-reported improvements were outcomes measures. Videostroboscopic exams were blindly evaluated. Patients with fewer than three injections were excluded.

Results: Forty patients were included. The overall Δ VHI was -4.1 (p-value: 0.0015). Patients who had a laryngeal codiagnosis had a less improved Δ VHI as compared to those without a co-diagnosis (p-value: 0.0154). Patients who only required ISI compared to ISI and surgery had a better Δ VHI (p-value: 0.0044).

Conclusion: ISI appears a worthwhile treatment for vocal fold scar and firm subepithelial lesions. Co-diagnoses and the need for microlaryngeal surgery have less improvement compared to patients who only require ISI alone.

Is Anyone Ever Cured From RRP?: Prolonged Treatment Gaps and Recurrence Patterns in Recurrent Respiratory Papillomatosis

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Objectives: Recurrent Respiratory Papillomatosis (RRP) is characterized by an irregular disease course, with recurrences after long periods of remission. New immunologic strategies are under investigation that aim to eliminate the chronic HPV infection. We evaluated recurrence patterns in RRP patients and sought to identify variables associated with prolonged remission periods.

Methods: Charts of all RRP patients seen since 2003 at our institution were reviewed. Surgical history and disease status in treatment-free intervals were evaluated. Patient and disease characteristics were compared using Chi-squared and Fisher's exact tests.

Results: Of 312 RRP patients, 71 (22.8%) experienced a treatment gap (TG) of at least 4 years between treatment and recurrence, with 43 (13.8%) having a TG of greater than 10 years. TG patients did not differ from the entire RRP cohort in gender, juvenile/adult onset, or other disease characteristics. To control for the possibility that TG patients were similar to the entire cohort because of untreated occult disease, a subset of patients was identified with prolonged (> 4 yrs) definitive remission. Compared to this control group, TG patients were more likely to undergo surgery rather than office procedures before the gap in treatment (98.5% vs 71.4% p=0.0028) and less likely to have supraglottic disease (8.8% vs 41.7% p=0.0203). Other patient characteristics showed no significant differences.

Conclusions: A substantial portion of RRP patients experience recurrence after prolonged disease-free intervals, and this cohort cannot be easily predicted from available clinical characteristics. This highlights the need for effective immunologic strategies to eliminate the causative chronic infection.

The Knight's Visor Flap: A Bipedicled Advancement Flap for the Treatment of Sulcus Vocalis

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Introduction: Tissue deficiencies from vocal fold surgery due to scar, sulcus, and mass lesion resection are challenging to repair. We propose a bipedicled advancement flap termed Vocal Fold Knights Visor Flap (VFKVF) to replace deficient epithelium and lamina propria for defects at the vocal fold margin.

Methods: The VFKVF is performed after the lesion is removed. The advancement flap repairs the defect at the vocal fold edge. A releasing incision is created at the superior aspect of the vocal fold. A full-thickness mucosal flap is undermined and elevated off the vocal ligament on the ipsilateral vocal fold. The anterior and posterior mucosal attachment is left intact. This bipedicled flap is advanced to cover the defect at the medial vocal fold edge. A 5-0 chromic suture attaches the advancement flap to the lower edge of the vocal fold defect.

Results: This technique has been performed on 21 patients (12M/9F, average age 41.9 years) over the past 22 years. Nine patients were diagnosed with sulcus vergeture, 4 with sulcus vocalis, 2 with a hypertrophic scar, 2 with keratin cyst, 1 with mucosal bridge, 2 with a polyp, and 1 with verrucous neoplasm. Patients were followed for an average of 3.5 years. A review of stroboscopy showed good mucosal coverage without notching.

Conclusions: The VFKVF flap can repair full-thickness defects of the vocal fold margin. The VFKVF flap can be used as an advancement flap for small to medium defects of the vocal fold margin.

POSTERS

A Difficult Truth to Swallow: Gender Disparities in Academic Laryngology

Anya Forma, BS; Morgan Meyer, BA; Rachel Akers, MS

Background: Laryngology introduced specialized fellowship training in 1992. From 2011 - 2020, 69.5% of graduating otolaryngology residents pursued fellowship, and 50% of graduates pursuing laryngology fellowship were female. While female membership in otolaryngology has increased, female physicians have had less opportunity for academic promotion. This cross-sectional study evaluates the impact of gender on academic rank and provides demographic data on female versus male laryngologists.

Methods: Program websites of American otolaryngology residency programs were searched for fellowship-trained laryngologists and available data including gender, years since fellowship, academic title, and leadership in residency/fellowship programs were obtained. Descriptive statistics and binary logistic regression were performed.

Results: 39% of laryngeal surgeons recorded were female. Years in practice ranged from 1 to 37, with median years of practice being 10 and mean being 11.9. Average years of practice for males was 13.7 years, and 9 years for females. Binary logistic regression controlling for years of practice revealed an odds ratio of 0.687, with 95% confidence intervals 0.479 - 0.987, $p = 0.042$. Descriptive statistics are shown in Table 1.

Discussion: Male laryngologists had higher average years of practice than their female colleagues, but when this variable is controlled for, female laryngologists are less likely to have achieved higher academic rank. Our results suggest female gender is significantly associated with 31.3% lower odds of higher academic rank. Future studies, perhaps survey-based, should evaluate this trend further with additional data on race, pregnancy, career goals, and compensation.

A Rendezvous to Restore Swallowing: Factors in Procedural Success

Anna Peever, BA; Karuna Dewan, MD

Purpose: The aim of this study was to describe factors that contribute to the efficacy of an endoscopic antegrade-retrograde Rendezvous procedure to restore a patent esophageal lumen in those with stenosis following head and neck cancer radiation.

Study Design: Single Institution Retrospective Cohort Study

Methods: All patients who underwent radiation treatment for head and neck cancer, developed complete esophageal stenosis, and had a Rendezvous in the past 5 years were included. Diet was assessed pre- and post-operatively using the International Dysphagia Diet Standardisation Initiative scale (IDDSI). Demographic data, primary cancer site, post-operative tobacco usage, post-operative swallow therapy, time interval between radiation completion and the number of subsequent esophageal dilations were analyzed.

Results: Ten patients (median age, 64.5 yrs; 80% male; 50% Caucasian) met inclusion criteria. After the Rendezvous procedure, 40% of the cohort was able to tolerate some oral nutrition and/or have their PEG tube removed. Those who were able to take nutrition by mouth and those who were not after Rendezvous procedure were not significantly different in terms of age ($p=0.09$), primary cancer site ($p=0.12$), postoperative tobacco use ($p=0.10$), postoperative swallow therapy ($p=0.06$), number of months between radiation completion and Rendezvous ($p=0.16$), and number of subsequent dilations ($p=0.69$).

Conclusions: Rendezvous endoscopic recanalization can be an effective method to establish esophageal patency in patients with complete esophageal stenosis. The success rate in this cohort is consistent with the published literature, approximately 50%. Factors related to successful recanalization of the esophageal inlet remain to be identified

Ability to Adjust Head Position in A 3D-Printed Flexible Nasolaryngoscopy Model Improves Fidelity and Trainee Experience

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Background: Flexible nasolaryngoscopy (FNL) demands technical skill to minimize patient discomfort. While simulation technologies have enhanced FNL training, replicating realistic patient factors remains challenging. This study assessed the utility of a novel 3D-printed trainer incorporating user-directed head position adjustments.

Methods: This proof-of-concept study utilized a CT-based, 3D-printed airway model permitting adjustments in head protrusion, flexion, and extension, with associated anatomical changes in oropharyngeal shape. Participants of varying experience completed FNL trials and were asked to simulate instructions to patients about head adjustment. The model was manipulated based on trainee instruction and standardized photographs were taken of the head position trainees deemed optimal (OHP). Differences between experience levels were compared with fiducial marker-based image analysis. Surveys evaluated trainee experience.

Results: 26 medical students and residents (PGY-1 to PGY-4), completed FNL trials. Participants with moderate experience (6-15 prior FNLs) showed greater variability in OHP than those more or less experienced. There were no significant differences in final OHP among participants. Trainees rated the helpfulness of positional adjustments as 8 ± 1.79 on a ten-point Likert scale.

Conclusions: Head position maneuverability improves fidelity and the FNL training experience. Participants at all training levels ultimately achieved OHPs comparable with experienced practitioners', demonstrating the model's effectiveness in reaching instructional goals. Greater OHP variability among those with moderate experience suggests this model feature can be used by trainees to adjust and optimize technique. Further study will explore additional facets of head position maneuverability on FNL skill development.

Acquired Laryngotracheal Stenosis Following Intubation for Acute Cardiac Events

Jocelynne Dorotan, BA, BS; Andrew Li, BA; Ahmed Soliman, MD*

Introduction: Acquired laryngotracheal stenosis (ALTS) is a significant complication of intubation and tracheotomy which presents with symptoms of dysphonia, dyspnea, and stridor. Patients who are intubated after acute cardiac events are a very ill group who may be at increased risk of developing ALTS. This study aims to analyze risk factors contributing to ALTS in this patient population.

Methods: Following IRB approval, we retrospectively reviewed patients aged 18-80 who developed ALTS after intubation for acute cardiac events between January 2013 and December 2023. Patient demographics, comorbidities, intubation duration, otolaryngologic evaluations, follow-up and outcomes were recorded and analyzed.

Results: Thirteen patients were identified: 77% were female, 54% African American, with a mean age of 53 years and a mean hospital stay of 41.77 days. The mean ETT size was 7 mm, inserted for 7.45 days. Patients had a mean BMI of 31.92; 46% had diabetes, and 62% were smokers. During hospitalization, 85% required vasopressors, and 69% were on antiarrhythmics. Common findings included limited vocal fold movement, granulation tissue, and subglottic narrowing. Most patients underwent tracheotomy, direct bronchoscopy or operative laryngoscopy, while others were treated medically with intravenous steroids. 54% of patients had follow-up which occurred 55-70 days post discharge.

Conclusions: ALTS after intubation for acute cardiac events was more common in female and African American patients. Patients had prolonged hospital stays and obesity was prevalent. This study provides preliminary insights into risk factors for ALTS after acute cardiac events, emphasizing the need for further research.

Airway Changes in Patients Intubated after Inhalation Injury

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Objective: Intubation is often required for early airway protection in patients with inhalation injury (II), but it may further exacerbate the damage to the upper airways. This study aims to evaluate incidence of dysphonia, dysphagia, and laryngeal abnormalities in both patients intubated following II and those not intubated to identify risk factors for clinically relevant upper airway injury.

Methods: A retrospective case series with chart review was performed of all patients admitted with inhalation injury at a single tertiary care burn center from 2018 to 2021. Patient demographics, intubation status, symptoms, laryngoscopy findings, swallowing evaluations, and hospital course were collected. Patients were separated into intubated and not intubated groups for data analysis.

Results: After chart review, 49 patients were identified of whom 43(82%) were intubated during admission. 41 patients (95%) who were intubated and 3 (50%) of the patients not intubated reported dysphonia at time of otolaryngology evaluation ($p=0.0003$). There was no statistically significant difference in dysphagia, abnormal flexible laryngoscopy findings, abnormal swallow study findings, or regular diet on discharge between the two groups. 8 patients were seen in follow-up by Otolaryngology, of whom 50% required surgery for airway stenosis. All patients who required surgery were intubated during their admission.

Conclusion: Upper airway changes and associated symptoms occur in patients with inhalation injuries and may be worsened by intubation. Patients who require intubation after II have a higher rate of dysphonia and tracheal stenosis compared to those who do not. Early otolaryngology evaluation and attention to follow up should be emphasized in this population.

Analysis of the Surgical Etiology of Vocal Fold Paralysis and Need for Medialization

John Gniady, MD; Brandon LaBarge, MD; Jeffrey Lorenz, MD

Background: Vocal fold paralysis (VFP) can be due to a variety of causes including iatrogenic, idiopathic, and neoplastic. The goal of our study was to provide an updated analysis of surgical causes, as well as an analysis of the need for medialization procedures.

Methods: We utilized the TriNetX medical record database spanning 2012-2023 to assess the prevalence of VFP (using ICD-10) during the first year following common inciting surgeries (by CPT code), with requirement for 1 year of post-operative follow-up. There was a total of 647,843 surgical patients and 8451 VFP diagnoses. We expanded our cohort to 3 years of required follow-up to assess timing and need for injection and open medialization procedures.

Results: VFP injuries are predominantly diagnosed within 3 months after an inciting surgery (76.8%). Esophagectomy (12.7%), thymectomy (4.17%), and total thyroidectomy (4.12%) had the highest percentage of VFP diagnoses. Thyroid surgery had the highest total patients affected at 3325, then thoracoscopy at 708, and anterior approach to spine at 671. The most common etiologies requiring injection medialization within 3 years include thoracic aortic aneurysm (AA) repair (44.5%), pulmonary lobectomy (41%), and thoracoscopy (39.2%). For patients requiring open medialization, the most common etiologies were pulmonary lobectomy (12.3%), esophagectomy (10.9%), and thoracic AA repair (9.3%).

Conclusions: Most VFP surgical injuries were diagnosed within 3 months, and did not require medialization procedure within 3 years of the injury. Esophagectomy had the highest percentage of VFP, thoracic AA repair most frequently required injection, and pulmonary lobectomy most frequently required open medialization.

Anatomic Distribution of Fungal Laryngitis and Factors Influencing Treatment Duration

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Background/Objectives: Fungal laryngitis, often linked to immunocompromised states or inhaled corticosteroid use, clinically presents with laryngoscopic findings of vocal fold erythema, edema, and white plaques. This study defines the anatomic distribution of fungal laryngitis and explores factors influencing treatment duration with antifungal medication.

Methods: We conducted a retrospective review of adults diagnosed with fungal laryngitis via videostroboscopy at a tertiary academic center from June 2020 to November 2023. Demographics, comorbidities and treatment information were collected. Videostroboscopic exams were reviewed for erythema, plaques, and vocal fold pliability.

Results: Forty-nine patients were included (mean age 62.9 years. 73.5% female). Inhaled corticosteroid use was the most common risk factor (63.8%) and dysphonia was the most reported symptom (71.4%). The mean treatment duration with oral fluconazole was 33.4 ± 29.2 days. White plaques and erythema most frequently affected the true vocal folds, with bilateral involvement more common than unilateral (85.7% and 75.5%, respectively; $p < 0.001$). Diminished pliability of at least one true vocal fold was observed in 81.6% of patients. Although bilateral plaques were associated with longer treatment duration, this was not statistically significant ($p = 0.062$). More severe disease, characterized by greater laryngeal involvement and reduced pliability, was significantly associated with a longer treatment duration ($p = 0.013$).

Conclusion: The average treatment duration for fungal laryngitis was 33.4 days. Extensive laryngeal involvement with diminished vocal fold pliability were predictors of prolonged antifungal therapy.

Assessing Gender and Age Bias for Detection of Vocal Fold Paralysis in the Preliminary Bridge2AI-Voice Dataset

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Background/Objectives: Machine learning (ML) models in healthcare are limited by the quality and potential biases of training datasets. This study examines whether models trained on the preliminary Bridge2AI-Voice dataset, intended to develop ML models that use voice as a clinical biomarker, display gender or age bias.

Methods: Voice data from 178 participants performing validated vocal tasks were analyzed using principal component analysis (PCA) and t-distributed stochastic neighbor embedding (t-SNE) for visualization, and random forest analysis to detect potential biases. Linear-layer and convolutional neural networks (YAMNet, ResNet) were used to identify vocal fold paralysis (VFP) in a subset of 30 participants (17%). Disparate impact ratio (DIR) analysis was conducted, with an 80% threshold for unbiased outcomes.

Results: PCA and t-SNE showed no gender- or age-based clustering. Age was highly ranked in VFP detection by random forest feature importance, but not gender. Linear-layer and ResNet models met the 80% DIR threshold for all age groups, except 41-60-year-olds (77% for YAMNet, 73% for ResNet), suggesting age bias.

Conclusions: While the Bridge2AI dataset is largely gender unbiased, our findings suggest age-related bias, likely due to overrepresentation and higher VFP incidence in the 41-60 age group. The YAMNet and ResNet models did not demonstrate clinical utility, as they predominantly predicted negative VFP status, potentially due to overfitting and the small dataset size. The dataset may benefit from a more age-diverse population and simpler models may perform better.

Association of Laryngeal Dystonia with Common Neurologic Disorders

John Gniady, MD; Brandon LaBarge, MD; Jeffrey Lorenz, MD

Background: Laryngeal dystonia is a heterogeneous disorder consisting of involuntary spasm of laryngeal muscles. There are multiple forms including adductor, abductor, and mixed phenotypes. The disorder is thought to be multifactorial, with various reported associations with family history of dystonia or movement disorder. The relationship between laryngeal dystonia and various neurologic disorders is not well defined in the literature.

Methods: We utilized the TriNetX de-identified electronic medical record database system spanning 2010-2023 to assess the prevalence of laryngeal dystonia with common neurologic disorders, compared to an age-sex matched control population. We included patients with the laryngeal spasm J38.5 ICD-10 code and 64617 CPT code, in order to categorize laryngeal dystonia patients undergoing chemodenervation.

Results: The patient cohort consisted of approximately 4000 patients. 75% were female, 71% were white, and the mean age was 61 years. The laryngeal dystonia population had an elevated relative risk of Parkinson's disease (RR = 2.7, 1.8-3.9, 95% confidence interval). In contrast, the relative risk of Alzheimer's disease was decreased in the laryngeal dystonia population (RR = 0.28, 0.16-0.48 95% confidence interval). There were no differences between the laryngeal dystonia and control populations for Multiple sclerosis, Amyotrophic lateral sclerosis, epilepsy, migraine, muscular dystrophy, or cerebral palsy.

Conclusions: Laryngeal dystonia patients have a significantly greater association with Parkinson's disease, and less association with Alzheimer's disease compared to control population. There were no meaningful associations with the remainder of the neurologic conditions included in the study.

Changes in Practice Patterns Among Laryngologists, 2010 to 2022 Medicare Analysis

Malaak Saadah, BS; Scott Howard, MD, MBA; Paul Bryson, MD, MBA

Objective: Multiple surgical specialties, including otolaryngology, have witnessed an increase in the transition of surgical care from inpatient departments to outpatient care settings. This study's purpose is to characterize changes in outpatient laryngological procedures within the Medicare population.

Study Design: Retrospective study using the Medicare Physician/Supplier Procedure Summary (PSPS) dataset from 2010 to 2022.

Methods: The most common laryngology procedures were identified in the PSPS database. Changes over time in type of procedure and site of service were analyzed using relative growth rate and linear regression.

Results: In total there were 229,476 claims submitted to Medicare for laryngology procedures between 2010 and 2022. There was a significant increase in the proportion of office procedures from 28.7% to 38.7% ($p < 0.001$) and in voice procedures from 5.4% to 8.5% ($p < 0.001$). The proportion of airway procedures decreased significantly from 61.5% to 47.3% ($p < 0.001$) and there was no change in dysphagia procedures ($p > 0.05$). Inpatient procedures demonstrated a negative trend going from 31.4% to 25.7% while outpatient hospital procedures demonstrated a positive trend going from 42.7% to 47.8% over the time period ($p < 0.001$ for both).

Conclusion: Laryngology practice patterns have shifted towards providing more office procedures and outpatient procedures for Medicare patient, which is similar to other specialties. While office procedures may offer greater accessibility, these changes may also be an unintended repercussion of decreasing reimbursements.

Characterization of Serum C-Reactive Protein Values in Patients with Acquired Subglottic Stenosis

Andrew Neevel, MD; Fatemah Ramazani, MD; Robbi A. Kupfer, MD

Background/Objectives: Idiopathic and autoimmune subglottic stenosis (SGS) are thought to involve dysregulated cytokine-signaling pathways in the inflammatory response. Limited data exists on using serum inflammatory markers, specifically C-Reactive Protein (CRP), for diagnosing, differentiating, and prognosticating SGS. The objective of this study was to assess CRP elevation in idiopathic (iSGS) and granulomatosis with polyangiitis-related (GPA) SGS and evaluate its utility in distinguishing these subtypes and predicting disease progression and recurrence.

Methods: Retrospective review of patients with idiopathic or autoimmune SGS from 2000 to 2024 at a single institution. Surgical free interval (SFI) was calculated as time between surgical interventions. Statistical analysis included independent t-tests, Chi-squared, and univariate linear regression.

Results: Seventy-one patients were included with either iSGS (55%) or GPA SGS (45%). CRP was elevated in 36% of iSGS and 50% of GPA SGS patients. Mean CRP was 0.6mg/dL lower ($p=0.036$) in iSGS (0.6mg/dL, 95% CI ± 0.28 mg/dL) compared to GPA SGS (1.1 mg/dL, 95% CI ± 0.61 mg/dL). Mean maximum CRP was 1.3mg/dL lower in iSGS compared to GPA SGS ($p=0.01$). The maximum CRP in iSGS was 3.6 mg/dL, while five GPA patients had CRPs greater than 3.6 mg/dL (max=10.2 mg/dL). CRP and SFI did not correlate on univariate linear analysis.

Conclusions: Mild elevation of CRP is common in SGS patients, averaging 0.6mg/dL higher in GPA-related SGS. High CRP levels are more frequent in GPA-related SGS, potentially aiding clinical differentiation of etiologies. However, CRP does not appear to correlate with disease recurrence in iSGS or GPA-related SGS, limiting its value as a biomarker and prognostic tool.

Chronic Bacterial and Sicca Laryngitis: A Systematic Review

Lauren Howser, MD; Anuja Shah, BA; Johnathan Brown, MD; Shaun Nguyen, MD; Ashli O'Rourke, MD; Kristen Meenan, MD

Background: Chronic laryngitis is characterized by persistent dysphonia with laryngeal inflammation for greater than three weeks. It includes the following subtypes: catarrhal, hypertrophic, hyperplastic, bacterial, fungal, and sicca laryngitis. Many of these have overlapping presentations and may be difficult to differentiate from one another. The goal of this study is to better define the diagnosis and treatment of sicca laryngitis and its overlapping counterpart, chronic bacterial laryngitis (CBL).

Methods: The literature was searched for articles reporting on sicca laryngitis and CBL. Outcome measures included proportions (%) with 95% confidence intervals.

Results: Of 529 abstracts identified, 14 studies (N=673 patients) were included. The prevalence of CBL was 1.9% (CI 0.1-5.8). The most common presenting factor was dysphonia (85.3%, CI: 63.6-98.1). Risk factors among patients with chronic laryngitis include current (28.9%, CI: 14.4-46.2) or former (28.9%, CI: 15.1-44.9) smoking status, PPI use (75.3%, CI: 64.4-84.8), and diabetes, prior head and neck radiation, or immunocompromised status (45.2%, CI: 34.1-56.5). In studies which cultured the larynx, the strains most identified were MSSA (40.3%, CI: 11.1-74.1), MRSA (25.6%, CI: 11.7-42.7), Klebsiella (33.3%), Pseudomonas (19.6%, CI: 2.8-46.4), and Serratia (19.3%, CI: 8.9-32.7). The median treatment duration across studies ranged from 10 to 90 days. Of the patients who received antibiotic treatment, 48.6% (CI: 33.0-64.4) reported complete resolution of symptoms and 50.2% (CI: 33.6-65.4) required retreatment.

Conclusions: CBL is a difficult pathology to treat and has no standard work up, medical therapy, or duration of therapy. Future research defining sicca laryngitis and treatment strategies would be beneficial.

Coblation for Laryngotracheal Stenosis

Maria K. Pomponio, MD; Zachary Lamb, BS; Aaron J. Jaworek, MD

Background: Radiofrequency coblation can be used to treat laryngotracheal stenosis. It is unclear whether coblation is superior to other methods such as laser or cold steel. Cases of posterior glottic, subglottic, and proximal tracheal stenosis between 2016-2024 were reviewed. Primary outcomes were total number of procedures and time between procedures. Subgroup analysis was performed for each stenosis type also.

Methods: Retrospective chart review of surgical cases by a single fellowship trained laryngologist from 2016-2024. STATA 15 SE was used for statistical analysis.

Results: We identified 65 patients who underwent a total of 117 surgical procedures. Mean number of surgeries was 1.8 with an average of 296 days between procedures. Total number of surgeries ranged from one to six. In the overall cohort, use of coblation + balloon dilation was associated with a significantly increased time to second procedure compared to balloon dilation or coblation alone (517 days vs 446 days vs 115 days, respectively, $P=0.02$). Use of coblation reduced the total number of surgeries from 2.3 to 1.64, however this was not significant ($P=0.07$). This trend was strongest in tracheal stenosis patients ($n=24$), for whom total number of surgeries was reduced from 3.3 to 1.7 if coblation was used ($P=0.13$).

Conclusions: Coblation may be associated with fewer surgeries and longer time interval between surgeries in patients with laryngotracheal stenosis. This effect may be strongest if balloon dilation is used at the same time as coblation. Further study is needed to determine specific factors that influence improved outcomes in this population

Comparative Analysis of Endotracheal Tube Cuff Pressure Dynamics: Implications for Safe Inflation Protocols

Alexandria Harris, MD, MS; Carl Snyderman, MD, MBA

Background: Maintaining endotracheal tube (ETT) cuff pressure within the safe range of 20–30cmH₂O is critical to prevent tracheal injury, ischemia, and aspiration. This study compares the pressure-volume characteristics of Shiley TaperGuard and Sheridan ETTs in both rigid and elastic airway models to inform safe inflation protocols and enhance clinical practice.

Methods: Shiley ETTs (sizes 6.0–8.0mm) and Sheridan ETTs (sizes 6.0–8.0mm) were tested in rigid and elastic airway models. The Ambu airway training model served as the rigid airway model, while the Trucorp AirSim AdvancedX represented the elastic airway model. Cuffs were fully deflated between measurements. Incremental air volumes were added using a syringe, and cuff pressures were measured with a calibrated manometer after stabilization. Three trials were conducted for each tube type and size. Linear interpolation determined the air volumes required to raise cuff pressures from 20cmH₂O to 30cmH₂O.

Results: In the rigid Ambu model, Shiley tubes required an average additional volume of 0.22ml (range 0.18–0.30ml) to increase cuff pressure from 20cmH₂O to 30cmH₂O, while Sheridan tubes required 0.28ml (range 0.23–0.37ml). In the elastic Trucorp model, due to airway compliance, required volumes increased: TaperGuard needed 0.29–0.52ml, and Sheridan required 0.32–0.42ml. Volume requirements varied slightly with tube diameter but were not strongly correlated. Both tubes exhibited a rapid pressure rise with small volume increments, indicating a narrow safe inflation window.

Conclusions: Precise volume adjustments are essential to maintain safe ETT cuff pressures, as small air additions can significantly affect pressure. Our findings highlight the need for vigilant cuff pressure monitoring and tailored inflation protocols based on tube type and airway conditions.

Comparative Three-dimensional Fine Structures of the Rabbit Vocal Fold Using Correlative Light and Electron Microscopy

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Xiaochuan Xu, MD, PhD; Bernard Rousseau, PhD, MMHC

Objectives: Examining the cellular and extracellular matrix compositions of the vocal fold across various species is crucial for accurately interpreting animal experiment outcomes and understanding the functional mechanisms of the vocal fold. We scrutinized the comparative fine structures of the rabbit vocal folds employing a combination of correlative light and electron microscopy (CLEM) technique alongside transmission electron microscopy (TEM).

Methods: Seven normal New Zealand White Rabbit vocal folds were observed using CLEM technique and TEM to investigate their fine structures.

Results: The rabbit vocal fold lacked the macula flava and vocal fold ligament. However, the distribution of fibrous components of the lamina propria of the rabbit vocal fold were similar to the human vocal fold. Spindle-shaped and oval-shaped cells were observed in the lamina propria of the membranous portion of the rabbit vocal fold using CLEM. Furthermore, amorphous materials were synthesized from the vesicles at the periphery of fibroblast cytoplasm.

Conclusion: The potential application of the CLEM technique enables the observation of these fine structures in other species commonly employed in animal experiments. Rabbits are suitable species for animal experiments from the aspect of the fibrous components of the vocal fold, but it's crucial for researchers to understand the structural and functional distinctions of vocal folds in other species utilized for animal experiments. As the CLEM is a useful technique to evaluate the fine structures of the vocal fold across small species, it is expected to be applied in animal experiments in future studies.

Comparing the Sensitivity of Different Liquid Types on the Detection of Aspiration and Residue during Flexible Endoscopic Evaluation of Swallowing (FEES)

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Background/Objectives-Accurate assessment of swallowing safety and efficiency during instrumental assessment of swallowing is crucial for ensuring patient safety and making appropriate clinical recommendations. The choice of medium during flexible-endoscopic-evaluations-of-swallowing (FEES) may impact this ability. This study aimed to investigate the effect of different mediums on the sensitivity and reliability of detecting aspiration, penetration, and residue during FEES, emphasizing the difference between soy milk and other liquid types.

Methods-A retrospective study included adult patients undergoing FEES at a dysphagia clinic in a university-affiliated tertiary hospital over a two-month period. All patients were evaluated by a laryngologist and a speech-language-pathologist (SLP) and underwent standardized FEES with water, milk, and soy milk. Outcome measures included the Penetration-Aspiration Scale (PAS) and The Yale Pharyngeal Residue Severity Rating Scale. Reliability was ensured by blind review of 25% of recordings by an additional laryngologist and two SLPs.

Results-Forty-four patients were assessed, showing strong correlations between PAS scores for soy and cow milk, and moderate correlations with water ($P < 0.05$). Positive correlations were found among all liquids regarding YALE residue scores ($P < 0.001$). A significant difference was observed in PAS scores between cow milk and other liquids ($P < 0.05$), but no difference between water and soy milk. Post hoc analysis didn't reveal significant differences in mean PAS or Yale Residue scores among the liquids ($P > 0.05$). Inter-rater reliability was excellent with an ICC of 0.93 ($p < 0.001$).

Conclusions-Comparable ability was exhibited between different liquid types in assessing pharyngeal residue and airway aspiration during FEES and thus soy milk can be used as an alternative in swallowing assessment in special populations.

Complications of Various Materials for Injection Laryngoplasty: A Systematic Review

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Ashli O'Rourke, MD; Kirsten Meenan, MD

Introduction: Injection laryngoplasty (IL) is a commonly performed procedure to treat glottic insufficiency. The aim of this study is to investigate the complications of materials used for IL: fat, calcium hydroxyapatite (CaHa), hyaluronic acid (HA), and carboxymethylcellulose (CMC).

Methods: The literature was searched for articles reporting complications in patients undergoing IL with fat, CaHa, HA, or CMC. Primary outcome measures include proportions (%) of complications for each injected material with 95% confidence intervals (CI).

Results: Of 547 abstracts identified, 38 studies (N=2490 patients) were included. The highest incidence of concern for airway compromise occurred in fat-IL (5.9%[CI:0.9-14.8]), then HA-IL (2.0%[CI:1.1-3.3]) and CaHa-IL (1.0%[CI:0.1-3.9]). The highest incidence of respiratory symptoms (dyspnea, stridor, throat discomfort) occurred in fat-IL (2.7%[CI:0.3-7.3]), then HA-IL (1.6%[CI:0.8-2.8]) and CaHa-IL (1.0%). The highest incidence of injection-related complications (extrusion, over-injection, superficial injection, excision of material) occurred in CaHa-IL (9.0%[CI:3.8-16.1]) then HA-IL (5.1%[CI:0.6-13.8]) and fat-IL (4.0%[CI:1.4-7.9]). The highest incidence of vocal fold reactions (hematoma, edema, inflammation, granuloma) occurred in CaHa-IL (17.4%[CI:0.5-50.5]), then fat-IL (7.5%[CI:2.1-15.8]) and HA-IL (2.5%[CI:1.5-3.8]). The highest incidence of minor complications (allergy, oral trauma, donor-site hematoma, infection) occurred in fat-IL (5.7%[CI:3.4-8.8]), then HA-IL (1.2%[CI:0.3-3.0]) and CaHa-IL (0.9%[CI:0.7-7.5]). Although no studies reported complications of CMC-IL, 4 case reports identified concern for airway compromise.

Conclusions: Fat-IL demonstrated the highest incidence for concern of airway compromise, post-operative respiratory symptoms, and minor complications. CaHa-IL demonstrated the highest incidence for vocal fold reactions and injection-related complications. Clinicians should be aware of the risks of injection materials to guide management of patients undergoing IL.

Correlation Analysis of Stroboscopic Parameters, Long-Term Average Spectrum, and Patient-Reported Outcomes in Endoscopic Vocal Fold Shortening

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Objective: Understanding the long-term outcomes of gender-affirming voice care can improve patient counseling and optimize post-intervention results. Limited data exist correlating objective acoustic measures with stroboscopic findings in trans women undergoing Endoscopic Vocal Fold Shortening (EVFS) surgery. The objectives of this study are (1) to compare acoustic measures including long-term average spectrum (LTAS) with stroboscopic parameters in trans women one year following EVFS, and (2) to correlate objective data with patient reported outcome measures (PROM).

Methods: Patients who underwent EVFS were retrospectively studied. Sustained vowel fundamental frequency (F0/a/), Cepstral Peak Prominence smoothed (CPPS), and LTAS analysis of connected speech at pre-intervention and 12-month postoperative visits were assessed. Pre- and post-treatment videostroboscopy samples were evaluated by two blinded clinicians using a standard set of five ratings. Data were then correlated with Trans Woman Voice Questionnaire (TWVQ).

Results: 10 patients were included in the final analysis. Changes in average F0/a/, CPPS and TWVQ was 45.29 Hz (p=0.002), -2.62 dB (p=0.02), and 24.01 (p=0.006), respectively. Higher 5-8 kHz spectrum energy was moderately negatively correlated with periodicity ratings on stroboscopy (p<0.05, R=-0.62). Formant clustering prominence (FCP) demonstrated a strong correlation with full closure pattern (p<0.01, R=0.72) and phase symmetry (p=0.001, R=0.87). Change in TWVQ was not correlated with objective findings.

Conclusions: LTAS has potential to aid in clinical assessment of EVFS voice outcomes alongside videostroboscopy. Future studies will compare LTAS analysis and stroboscopic findings with perceptual voice assessment to further understand roughness, efficiency and strain in this population.

Cricopharyngeal Myotomy Outcomes for Dysphagia in Inflammatory Myositis

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Objectives: Cricopharyngeal (CP) myotomy can be an effective treatment for dysphagia due to a variety of inflammatory myositis such as inclusion body myositis (IBM) and polymyositis. CP myotomy outcomes for treatment of dysphagia among patients with polymyositis remain unclear. This report aims to characterize these outcomes in this rare subset of patients and to compare these outcomes to that among patients with IBM.

Study Design: Retrospective review of case series.

Methods: Patients with a diagnosis of polymyositis or IBM who underwent CP myotomy over a 12-year period were reviewed. Case details including pre- and post-operative fiberoptic endoscopic evaluation of swallowing (FEES), pre- and post-operative modified barium swallowing study (MBSS), operative note, post-operative length of stay, and discharge diet were extracted. SwallowTail Advanced Measurement software was used to by blinded reviewers to evaluate pre- and post-operative MBSS for objective swallowing parameters.

Results: A total of 7 patients were identified, of which 2 had polymyositis and 5 had IBM. Both patients with polymyositis had moderate residue with purees that cleared with liquid assist on pre-operative FEES, and pharyngeal weakness with upper esophageal sphincter (UES) dysfunction on pre-operative MBSS. Post-operatively, polymyositis patients had improvement of swallowing with mild pharyngeal residue and improved UES opening. Among the 5 patients with IBM, all had improved residue on post-operative FEES, and improved UES opening on post-operative MBSS. None of the patients had complaints of laryngopharyngeal reflux post-operatively.

Conclusions: CP myotomy can be an effective treatment for dysphagia among patients with polymyositis, as it is for dysphagia among patients with IBM.

Daily Laryngeal Kinematics and Acoustics Throughout the Menstrual Cycle: A Longitudinal Single-Subject Case Study

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Objective: Previous investigations have demonstrated voice changes corresponding to menstrual cycle phases, but few have explored longitudinal cycle-to-cycle variations. The aim of this longitudinal case study was to describe changes in acoustics, laryngeal kinematics, vocal effort, and ability to produce high soft phonation in relation to menstrual cycle phases over the course of multiple cycles in a single normally-cycling individual.

Methods: The participant is a 34-year-old professional voice user who collected daily videostroboscopy, acoustics, vocal effort rating, and high soft phonation tasks for a total of 394 days of data collection over 579 days. Data were analyzed by menstrual cycle phase and across time for all cycles.

Results: Cycle length ranged from 24–32 days. Despite this variability, patterns were observed among phases. *fo* and CPPS were stable across phases for sustained /a/ but increased from ovulation to the end of the cycle for the all-voiced sentence task. Mean glottal area index (GAI) increased at the end of the cycle, indicating premenstrual vocal fold edema. Perceived vocal effort similarly increased during the luteal phase but decreased during the ischemic phase just prior to menses. A Pearson correlation showed a moderate positive relationship between CPPS and GAI ($r = 0.50$), and showed that heavy voice use ($r = 0.29$) and alcohol intake ($r = 0.14$) had weak positive associations with perceived vocal effort.

Conclusion: This case study represents a unique, longitudinal data set demonstrating changes in phonatory characteristics across repeated menstrual cycles. Future studies will include multiple participants and concurrent hormone level tracking.

Decoding Gender Differences in Cough Sounds with a Transformer Model

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Background/Objective: Various components of speech and communication are known to influence perception of gender, including pitch, vocal volume, resonance, word choice, and body language. However, little is known regarding gender differences in non-speech upper airway sounds, which has clinical applications in gender-affirming voice and communication training, as these sounds are anecdotally more difficult to modulate. Here we investigate whether cough acoustics differ by gender using a transformer model.

Methods/Study Design: We utilized a subset of the Coswara dataset (Aug 16, 2021– Feb 24, 2022), including 800 user records (577 males, 233 females) of cough sounds. Audio preprocessing included normalization, silence removal, and uniform length. The Wav2Vec transformer model was chosen for its ability to process unstructured audio data. We weighted the model to account for the gender imbalance in the dataset.

Results: The model achieved 88.3% training accuracy with an F1 score of 0.82. Validation accuracy was 85%, with an F1 score of 0.76. Despite the male-to-female imbalance, performance remained stable with weighted adjustments.

Conclusions: This study demonstrates the ability to classify cough sounds based on gender using a transformer model and support gender differences in acoustic characteristics of cough sounds. Future work should refine model accuracy and consider socio-demographic factors to ensure generalizability across different populations. These findings have clinical applications in inclusion of cough production strategies in gender-affirming voice and communication training.

Delineating Effects of Stress-Analogous, Low-Dose Cortisol Exposure on Human Vocal Fold Fibroblasts

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Objective: Psychosocial stress results in an increase of circulating glucocorticoids in blood plasma that flow throughout the body. It is unclear whether stress-induced glucocorticoid exposure alters biological mechanisms of human vocal fold fibroblasts (hVFF). This study delineated the effects of stress-analogous cortisol exposure (100 nM) on healthy hVFF and inflamed hVFF, in vitro.

Methods: We exposed hVFF to four conditions - Cortisol-treated (100 nM, 7 days), LPS-treated, combined Cortisol + LPS-treated, and an untreated control. Relative gene expression of inflammatory (IL1- β , TNF- α , TGF- β 1), glucocorticoid signaling (11 β HSD1, GILZ) and fibrotic gene expression (ACTA2) were obtained. Alpha smooth muscle actin protein expression (α -SMA) was also measured via immunocytochemistry (N=3 replicates/group).

Results: Stress-analogous cortisol exposure (cortisol-treated cells) significantly upregulated gene expression of GILZ and pro-fibrotic marker (ACTA 2) and downregulated expression of IL1- β when compared to untreated controls ($p < .05$). LPS-treated cells significantly upregulated expression of inflammatory cytokines compared to untreated control cells (IL1- β , $p = .003$; TNF- α , $p < .001$; TGF- β 1, $p = .031$). Cortisol +LPS-treated cells upregulated expression of IL1- β , when compared to LPS-treated cells ($p = .028$). Immunocytochemistry revealed positive expression of α -SMA in the cortisol + LPS-treated cells only.

Conclusion: Stress-analogous cortisol exposure only can inhibit inflammatory cytokines, upregulate glucocorticoid signaling and pro-fibrotic gene targets in hVFF. The combination of stress-analogous cortisol exposure and LPS upregulated inflammatory cytokines, glucocorticoid signaling gene expression and protein expression of α -SMA.

Global Variations in Vocal Fold Sulcus Disorders

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Background: The occurrence of sulcus vergeture (SVE) in family groups and preponderance of reports from specific geographical areas suggests a hereditary etiology. The primary objective of our study is to audit the possibility of a geographical variability in the demographics of SVE in comparison to sulcus vocalis (SVO). The secondary objective is to study the patterns of presentation and variability in treatment.

Methods: Following ethics clearance, a 3-year retrospective review of the demographics of vocal fold sulcus was conducted at voice centres in India, USA, Germany and Australia. SVE and SVO cases were noted with details of associated lesions, sex, race, performers, age and treatment given. The denominator was the number of benign mucosal glottic lesions.

Results: Of a total 351 cases of sulcus, 239 (68%) were SVE, with associated lesions in 56% (47% in SVO). A total of 50/239 (21%) SVE and 56/112 (50%) SVO were found in vocal performers ($p < .00001$). A total of 160/239 (67%) SVE and 64/112 (57%) SVO were found in men. Sulcus of both types made up 20% of benign lesions in Sydney and 17% in Mumbai which were significantly ($p < .00001$) higher than New York (4%) and Germany (3.5%). SVE comprised 82% of cases (Mumbai), 72% (Sydney), 70% (New York) and 8.5% (Germany) with a significantly higher geographical variability than SVO.

Conclusion: Both SVO and SVE were found predominantly in men. SVO was significantly more prevalent in performers, suggesting phonotrauma in its formation. SVE showed significant geographical variation, suggesting regional variation in its prevalence, supporting heredity in its formation.

Depression in Patients with Subglottic Stenosis

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Background: Idiopathic subglottic stenosis (iSGS) is a chronic, debilitating condition leading to significant quality of life changes. This study aims to describe the impact of iSGS on patients' mental health.

Methods: Patients with iSGS were surveyed, and data collected on symptom severity and mental health. Demographic, treatment history were obtained from charts. Survey included verified measures including dyspnea index (DI), voice handicap index (VHI), general anxiety disorder-7 scale (GAD-7), patient health questionnaire-9 (PHQ9), Rosenberg self-esteem scale (RSE), short form-12 (SF-12).

Results: 21 patients completed surveys (21/22). Mean age was 59.6 (SD 8.6) years-old; all were female and White. Patients had an average 3.3 (SD 3.8, range 0-15) endoscopic dilation procedures. Number of procedures was associated with number of years since initial diagnosis (range 1-11, $r^2 = 0.17$). During phone survey, patients reported iSGS affects activities-of-daily-living (52%), ability to work or pursue hobbies (42.9%), communication (33.3%). Additionally, patients with mood disorder ($n = 7$, 33.3%) attributed 31.7% (SD 24.5) of their anxiety and depression to iSGS. The mean survey scores were 21.9 (SD 5.8) on DI, 20.4 (SD 8.3) on VHI, with all patients having at least mild dyspnea and voice handicap. Physical and mental scores on SF-12 were not significantly different than average population, but 33% ($n = 7$, $n = 6$ with mood disorder) had mental health scores > 1 SD below average. GAD-7, PHQ9 screened 5 patients positive for anxiety, 2 for depression, respectively.

Conclusions: iSGS negatively affects patients' mental health and screening may be beneficial in this population due to high prevalence of mood disorders.

Dysphonia is Associated with Anxiety and Depression in the All of Us Research Program

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Background/Objectives: Previous studies have examined the relationship between dysphonia and mental health, but often in small samples and not across age groups. In this large epidemiological study, we examine if dysphonia is related to anxiety and depression in a younger versus older adult and combined cohort.

Methods: This is a cross-sectional analysis of adults ≥ 18 years old in the All of Us dataset. The exposure was dysphonia (ICD-10 code R49.0), and the outcomes were anxiety (ICD-10 F41) and depression (ICD-10 F32-33). We performed multivariable logistic regression analyses, controlling for age, gender, insurance, education, and medical comorbidities (dementia, diabetes, hypertension, GERD, asthma, COPD, essential tremor, multiple sclerosis, vocal cord paralysis, Parkinson's, and ALS). A sub-analysis compared depression and anxiety odds in < 65 versus ≥ 65 -year-olds.

Results: Of 173,120 adults in our sample, the mean age was 60.5 (SD 15.9) years. 64.7% were women. Controlling for covariates, those with dysphonia had 1.23 times (95% CI 1.16-1.30) the odds of depression and 1.31 times (1.24-1.39) the odds of anxiety compared to their non-dysphonia counterparts. Those < 65 years old had 1.20 times (1.09-1.31) the odds of depression and 1.21 times (1.11-1.33) the odds of anxiety. Those ≥ 65 years old had 1.26 times (1.17-1.36) the odds of depression and 1.38 times (1.28-1.49) the odds of anxiety. All p-values were < 0.001 .

Conclusions: Those with dysphonia had higher odds of depression and anxiety. Those ≥ 65 years old had slightly higher odds, albeit with overlapping CIs. Older adults with dysphonia may be at higher risk for mental health disorders but more study is needed.

Effect of Superior Laryngeal Nerve Block in Patients With Neurogenic Cough: A Systematic Review and Single-Arm Meta-Analysis

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Jaime Plane, MS; Renata Knoll, MD; João Evangelista Ponte Conrado, MS

Objectives: We aimed to assess the effects of superior laryngeal nerve block (SLNB) in patients with chronic neurogenic cough.

Methods: MEDLINE, Embase, Cochrane, and Web of Science databases were searched for randomized clinical trials (RCT) and observational studies reporting SLNB for the treatment of chronic neurogenic cough. Outcomes of interest included subjective reporting of improvement and cough severity index (CSI). Pooled proportion and mean difference (MD) were used for binary and continuous outcomes, respectively.

Results: Eight studies, including 7 retrospective and one RCT, involving 445 patients (68% female) were analyzed. Average age ranged from 53 to 64.4 years. The effect of SLNB on subjective cough improvement varied greatly among studies. The pooled proportion of subjective improvement of cough following SLNB was 76.60 [95% Confidence Interval [CI] 68.82 to 82.92] events per 100 observations. Patients who underwent SLNB presented a statistically significant reduction in CSI (MD -7.86, 95% CI -13.69 to -2.03, $p < 0.01$, $I^2 = 81\%$). Furthermore, subgroup analysis of 3 or more injections showed reduction in CSI (MD -11.02, 95% CI -17.32 to -4.72, $p = 0.18$, $I^2 = 41\%$), while 1 (MD -6.68, 95% CI -16.97 to 3.61) and 2 injections (MD -9.19, 95% CI -19.57 to 1.19) had no significant difference.

Conclusion: Our findings suggest that SLNB led to an improvement in cough, with a significant reduction in cough severity as evidenced by decreased CSI post procedure. Further large-scale clinical trials are needed to confirm efficacy and long-term effects of this treatment modality.

Enhancing Laryngeal Cancer Diagnosis with Dynamic Optical Contrast Imaging

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Background: A major challenge in cancer care is achieving complete tumor removal while preserving healthy tissue, particularly in head and neck cancers, including laryngeal cancer. Current diagnostic methods, such as preoperative imaging and biopsy, face limitations in real-time intraoperative detection, often resulting in incomplete tumor excision, which negatively affects survival rates and quality of life. Laryngeal cancer diagnosis is further complicated by the intricate anatomy of the larynx and difficulty in distinguishing precancerous lesions from benign conditions. Improved, non-invasive, real-time imaging techniques are essential for enhancing early detection and treatment outcomes. Dynamic Optical Contrast Imaging (DOCI) offers a promising approach by to differentiate cancerous from normal tissues without the need for injecting dyes. Adapting DOCI for endoscopic use could provide rapid, molecularly-targeted imaging of vocal fold lesions, potentially revolutionizing diagnostic accuracy and treatment for laryngeal cancers.

Objective: We studied the capacity of DOCI to detect characteristic microstructural changes in ex vivo vocal fold tissue sections with known disease states, using freshly collected specimens (N=20). DOCI images were analyzed and compared to the gold standard of histopathology.

Results: The assessment of benign/normal vocal fold (VF) tissue versus cancer using DOCI demonstrated a 100% accuracy in identification.

Conclusion: DOCI imaging of ex vivo vocal fold biopsies demonstrates high sensitivity and specificity when compared 1:1 with histopathological assessments. Improvements in custom endoscopic designs, are currently underway in our laboratory to enhance the diagnostic capabilities of DOCI for in clinic examinations and diagnostics.

Epiglottic and Posterior Pharyngeal Wall Thickness after ACDF

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Background: Postoperative dysphagia is a known complication of ACDF. The role of the thickness of the posterior pharyngeal wall in the development of post-ACDF dysphagia, particularly with the placement of cervical spine hardware remains unclear.

Purpose: First, to quantify the impact of anterior cervical discectomy and fusion (ACDF) on posterior pharyngeal wall (PPW) thickness and epiglottic thickness. Secondly, to examine the role of posterior pharyngeal wall thickness in the development of post-ACDF dysphagia.

Study design: Single Institution Retrospective Cohort Study

Methods: All patients who underwent modified barium swallow (MBSS) at a tertiary care academic medical center during a 6-month period from December 2022 - June 2023 were included. Demographics, epiglottis and PPW thickness were measured, and descriptive statistics collected. Pre and post-operative diet were recorded using the International Dysphagia Diet Standardization Initiative (IDDSI) framework. PPW thickness and epiglottis thickness (ET) were compared between patients who had undergone ACDF and controls using paired t-test and ANOVA.

Results: 16 patients in the 6 month period with a history of ACDF underwent MBSS. The cohort was 75% female with an average age of 59.87 ± 9.55 years. The average ET was 4.35 ± 0.95 mm. The average PPW thickness was 6.58 ± 3.58 mm. Compared to controls, both ET and PPW thickness were significantly thicker in ACDF patients; $p=0.004$ and $p=0.0005$, respectively.

Conclusions: Results of this retrospective review indicate there is a relationship between post-operative diet in patients with previous ACDF surgery and the thickness of their epiglottis and PPW.

Examination of Ancestral Trends in Idiopathic Subglottic Stenosis

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Background/Objective: Idiopathic subglottic stenosis (iSGS) presents primarily in middle-aged, Caucasian females. Given this highly specific presentation, a genetic or geographical association has been posited but not confirmed. The purpose of this study is to assess the ancestry of iSGS patients using genetic testing results.

Methods: A de-individualized survey collecting genetic and ancestral origin commercial testing results in addition to self-reported autoimmune and family history of iSGS was distributed to members of the Facebook group, “Living with Idiopathic Subglottic Stenosis.” Exclusion criteria included age less than 18 and non-idiopathic etiologies.

Results: 375 participants met inclusion criteria. European heritage was reported in 374 participants (99%). Subdividing by region, Northwestern European heritage was reported in 91% of participants, while Eastern and Southern European heritage was reported in 20% and 15% of participants, respectively. Within the Northwestern Europe region, most frequently reported heritages include British/Irish (75%), French/German (47%), and Scandinavian (37%). However, of those reporting British/Irish heritage, it accounted for 60% of their overall ancestry, the largest proportion of any region. Autoimmune history was self-reported in 17% of patients, and 5% endorsed a family history of iSGS. Ancestry was similarly distributed among those with and without self-reported autoimmune or family history.

Conclusions: The overwhelming majority of patients with iSGS report European heritage, with British and Irish ancestry the most commonly reported region. Despite a homogenous patient population supporting a genetic link, the proportion with a family history of iSGS appears low. Further research may seek to link particular disease characteristics with genetic patterns.

Expanding Understanding of Voice Characteristics in Non-Binary Individuals Seeking Gender-Affirming Voice Care

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Objective: Gender-affirming voice care has historically focused on trans women, with limited research on non-binary (NB) patients. This study aims to assess voice measures and individual voice goals of NB patients during their initial visit for voice care. Gaining insight into the distinct voice-related goals and needs of non-binary individuals will enhance their quality of care.

Methods: Retrospective review of NB patients seeking voice treatment at a tertiary laryngology center. Demographics, medical history (including hormone therapy), presenting voice concerns and goals/objectives, and voice-related outcomes were collected.

Results: Twenty-six NB individuals (14 transfeminine) at initial visit are described. Mean age was 32.3 years (range: 21–50), with the majority (58%) identifying as white, non-Hispanic. 73% were on hormone therapy, with 71% receiving estrogen. 70% had previously engaged in gender-affirming surgery and mental health services. 5 patients had prior voice therapy. Voice concerns were prevalent (96%), with 92% dissatisfied with their voice quality and 60% using gendered language to describe their goals. The Voice Handicap Index-10 (VHI-10) was abnormal in 73% of participants. Eight patients completed the Voice-related Experiences of Nonbinary Individuals (VENI) survey, scoring an average of 45 out of 68. Stroboscopic exams showed normal findings in all cases, and 92% were recommended for voice therapy based on assessments.

Conclusion This study provides a comprehensive overview of NB individuals seeking gender-affirming voice care, emphasizing the importance of understanding their unique voice concerns and goals to deliver personalized and effective treatment.

How Does Singing Voice Change Across Popular Female Singers' Careers: A Longitudinal Analysis of Frequency and Repertoire Adaptation Using Machine Learning

Trevor Pharr, BS; Mohamed Ebraheem, MS; Megan Urbano, CCC-SLP; Yael Bensoussan, MD

Background/Objectives: This study investigates longitudinal changes in the voices of popular female singers over a career spanning greater than 10 years, focusing on fundamental frequency (f0), harmonics-to-noise ratio (HNR), and repertoire adjustments. Findings aim to support laryngologists in distinguishing age-related from pathologic vocal changes to guide singers toward practices that support vocal health.

Methods: We analyzed the discographies of a cohort of female singers with at least 2 albums released 10 years apart. A cascade of Ultimate Vocal Remover pre-trained deep learning models was used to remove instrumentation, reverberation, and background vocals, allowing extraction of traditional acoustic measures including f0 range, mean f0, and HNR. The average value for these parameters was calculated for each album then compared to each of the singers' different albums across time.

Results: The cohort included 21 cisgender female singers from diverse genres and eras (e.g. Ella Fitzgerald, Ariana Grande), encompassing an average of 3.32 albums per singer (SD 0.99) at a mean interval of 12.20 years (SD 1.92) and totaling 895 songs. In singers with four-decade careers (n=4), mean f0 exhibited a downward trend. However, the mean f0 among the first 20 years of the singers' adult careers and mean HNR did not show notable trends.

Conclusions: Findings suggest that female singers adapt their repertoire as they age, particularly after age 50, to accommodate a lower voice. Further work is needed to help counsel professional female singer throughout their career.

Identifying an Accurate Anatomic Endoscopic Landmark for Injection of the Internal Branch of the Superior Laryngeal Nerve Using a Hybrid Novel 3D-Printed-Cadaveric Laryngeal Model

Yuki Tanigami, MD, PhD; Seth H. Dailey, MD

Introduction: The internal branch of the superior laryngeal nerve (iSLN) provides sensory innervation to portions of the laryngeal and pharyngeal mucosa. Transcutaneous corticosteroid injections can effectively alleviate symptoms of refractory chronic cough and throat clearing; however, anatomical variations, such as a short neck or obesity, can make these injections challenging and less consistent. To address this, we explored the feasibility and accuracy of performing an iSLN block endoscopically using a novel 3D-printed hybrid cadaveric laryngeal model.

Methods: Using MRI-based 3D printing, we created a model that simulates realistic endoscopic access. Eight cadaveric larynges were placed within the model for injection accuracy assessment. The piriform sinus was divided into quadrants cranial to the upper edge of the thyroid cartilage and caudal to the pharyngoepiglottic fold, two structures that are clearly visible in vivo. A tattoo ink injection in the upper lateral quadrant was administered, and the distance to the iSLN's confluence point as well as other key landmarks were measured.

Results: The mean tattoo ink point-to-iSLN distance was 5.38mm (± 1.63 mm). The average distance between the superior thyroid horn to the point of passage of the middle branch of the iSLN through the thyrohyoid membrane is 25.05mm (± 5.32 mm).

Conclusion: This hybrid model effectively simulated transnasal access to the larynx, and demonstrated a simple anatomic landmark for accurate iSLN injection. The hybrid model is also reproducible for anyone with a 3-D printer to help learners hone transnasal procedural laryngeal procedures in a safe ex-vivo environment.

Injection Laryngoplasty Simulation Program for Otolaryngology Residents

Jennifer Silver, MD; Antonia Lagos-Villaseca, MD; Deema Almutawa, MD; Gabriella Le Blanc, MD; Diego Albrich, MD; Luc Mongeau, PhD; Swen Groen, PhD; Karen M. Kost, MD

Background/Objectives: In-office laryngeal percutaneous injection (LPI) is a common approach for medialization laryngoplasty. Adequate training is essential but challenging to achieve with awake patients. This study aimed to evaluate the efficacy of simulation-based training in improving residents' performance in LPI, comparing them to non-laryngologist otolaryngologists (NL-OTL) and laryngologists.

Methods: An international multicenter study recruited residents, NL-OTLs, and laryngologists. A validated LPI simulator was used for trans-cricothyroid (CT) and trans-thyrohyoid (TH) injections. All participants watched an instructional video and were recorded performing both injections. Residents then underwent a 30-minute training session with expert laryngologist feedback, then performed post-training injections. Anonymized recordings were assessed using specific and global rating scales (SRS, GRS). Baseline surveys were completed by all participants, with residents completing post-training surveys. Pre- and post-training performances were compared, as well as differences between groups.

Results: Twenty-seven participants were included: 17 residents, five NL-OTLs, and five laryngologists. Residents demonstrated significant increases in confidence ($P<0.0001$) and improved GRS (CT: $P=0.009$, TH: $P=0.011$) and SRS scores (CT and TH: $P<0.001$). Procedural times significantly decreased post-training (CT: $P=0.017$, TH: $P=0.02$). No significant differences were found between residents and NL-OTLs for CT performance. However, residents had higher post-training SRS scores than NL-OTLs for TH injections ($P=0.026$). Compared to laryngologists, residents had lower pre-training GRS and SRS scores for both approaches ($P<0.05$), improving to no significant differences post-training.

Conclusions: Simulation-based training significantly improves residents' confidence, technical skills, and efficiency in LPI, achieving performance comparable to laryngologists. Targeted simulation and instruction enhances procedural competence in non-experts.

Innovating Treatments for Vocal Fold Scarring: Controlled Dexamethasone Delivery with a Novel Light-Activatable Implant

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Objective: Intralesional steroid injections for vocal fold (VF) scarring have rapid clearance and short half-lives, potentially limiting their effectiveness. This study assesses the efficacy of our light-activatable implant compared to a single-dose injection in promoting VF healing.

Study Design: Ex vivo.

Methods: Six anesthetized New Zealand white rabbits underwent endoscopic VF injury followed by either (1) dexamethasone injection or (2) implantation of a light-activatable dexamethasone-loaded polymer capsule, with three injured and three uninjured VF controls. On days 0 and 21, VF implants were irradiated with a near-infrared pulsed laser (1064nm, 100mW) for 1 minute endoscopically. Larynges were harvested after 42 days. Twenty vibratory cycles were analyzed ex vivo using high-speed videos at $>10\text{kHz}$. Normal force, structural stiffness, and displacement at a set force were measured before histological examination of local tissue response. Multivariate analysis of variance was conducted followed by post-hoc Tukey tests for comparisons.

Results: Compared to untreated/injured VFs, those with the implant demonstrated reduced normal force ($5.74\pm1.89\text{mN}$ vs. $2.05\pm.78\text{mN}$, $p<0.001$) and structural stiffness ($19.33\pm6.28\text{mN/mm}$ vs. $6.19\pm2.65\text{mN/mm}$, $p<0.001$), and increased displacement at 1.96mN ($.14\pm.04\text{mm}$ vs. $.31\pm.08\text{mm}$, $p<0.01$) along the injury zone. No differences in biomechanical outcomes were observed between implant and single-dose injection groups. Histology, glottal area waveforms (GAW), and kymographs were obtained and compared.

Conclusion: Our light-activatable implant improves biomechanics in a VF injury model comparable to dexamethasone injection, with changes in GAW and histology, supporting its therapeutic potential. Tuning the dosage and activation timing of the implant may be warranted to further enhance the VF healing response.

Large Language Models for Debiasing Patient Recruitment in Voice Data Generation Projects

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Background/Objectives: Past studies have shown that many clinical machine learning models have biases against underrepresented groups. Attempts to address this issue have come largely in the form of algorithmic techniques for debiasing; however, the origin of the problem comes from insufficient access to diverse patient populations and the recruiting methods used by researchers engaging in data collection efforts. This study introduces a generative AI pipeline for predicting intersectional biases in voice datasets based on available samples and recruiting patterns.

Methods: The Bridge2AI Voice dataset and Llama 3.1 (run locally) were used to generate a synthetic audio dataset for simulating the data collection process of a clinical trial or other similar type of study. This synthetic data could be securely input into the application programming interfaces of large language models (LLMs), enabling more comprehensive experimentation. Chain-of-thought prompting strategies were developed for instructing the models to assess class distributions in the data and recruitment trends over time, identifying potential risks of bias in downstream deployment.

Results: Initial results show that LLMs may be used to generate synthetic audio data for experiments involving APIs. Moreover, when presented with dataset statistics and recruitment patterns, LLMs may be able to identify potential biases in voice datasets. Based on these findings, corrective strategies can be proposed by the model.

Conclusions: In the future, this work will be deployed via an interactive dashboard, supporting researchers running data collection studies. This may reduce biases in patient recruitment and ultimately improve the generalizability of voice AI models.

Laryngeal Leishmaniasis: A Systematic Review

Joseph Celidonio, BS; Nicholas Hamilton, BS; Alexandra Filipowski, MPH; Raj Malhotra, BS; Samantha Shave, BS; Kenneth Yan, MD, PhD; Rachel Kaye, MD

Background/Objectives: Laryngeal leishmaniasis (LL) is a rare, insidious manifestation of Leishmania infection with potential for life-threatening complications. Awareness is critical to allow efficient and timely diagnosis. Our aim is to provide a comprehensive systematic review of LL, with a focus on presentation, treatments, and the role of serological studies to support the diagnosis.

Methods: A systematic review of English literature was conducted via PubMed, Scopus, and EMBASE. Studies with original LL patient data were included. Data on demographics, symptoms, diagnosis, treatment, and outcomes were extracted.

Results: Of the 81 patients included, the majority were male (87.7%) and were exposed to a region endemic to Leishmania (97.3%). The mean age was 51.8 years. The most common symptoms were dysphonia (79.0%) and dysphagia (17.0%). Mean time from symptom onset to diagnosis was 18.4 months. Amongst patients who received serological testing for leishmaniasis, 78.3% tested positive. The most common treatment modalities were amphotericin (35.8%) and meglumine antimoniate (30.9%), whereas surgical treatment was utilized in only 6.7%. Most patients achieved symptom resolution (78.3%) at last follow-up (mean 12.7 months). 12.3% of patients required tracheostomy and these did not have significantly longer time from symptom onset to diagnosis compared to those without tracheostomy (29.4 vs. 16.3 months, $p = 0.082$).

Conclusions: LL is a difficult diagnosis, particularly in nonendemic regions, making awareness of its presentation of utmost importance. In fact, there is often a delay from symptom onset to diagnosis. Serological studies may play an important role in supporting the diagnosis in LL patients.

Long Term Effects of Temporary Vocal Fold Augmentation in Patients with Vocal Fold Atrophy with or without Vocal Fold Paralysis

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Vocal fold augmentation is a commonly utilized treatment for dysphonia associated with bilateral vocal fold atrophy (BVFA) with or without unilateral vocal fold paralysis (VFP). However, long-term outcomes following injection of temporary vocal fold carboxymethylcellulose gel (Prolaryn gel®) in patients with BVFA are unknown.

A retrospective cohort study was conducted of patients with BVFA with or without unilateral VFP (UVFP) who underwent bilateral vocal fold injection (BVFI) with carboxymethylcellulose product from July 2018-August 2024. VHI-10, self-rated % of normal (% normal), and flexible fiberoptic laryngoscopy was collected at preoperative, 1-month and >3-month visits. Only patients who completed at least the preoperative and >3-month visits were included.

Of the 85 patients who underwent BVFI, 28/45 (62%) BVFA with UVFP and 32/40 (80%) BVFA attended all followup visits. The 28 BVFA with UVFP (46% female, 73 ± 7.9 years old) and 32 BVFA (59% female, 74 ± 7.1 years old) patients reported comparable preoperative % normal (22%, 32%) and VHI-10 (26 ± 8 , 22 ± 9), respectively. A cohort of patients with BVFA with UVFP and BVFA demonstrated persistent improvement in % normal and VHI-10 at 1-month (77%, 14 ± 10 and 77%, 17 ± 10) and >3-months (76%, 8.5 ± 10 and 83%, 12 ± 7), respectively. Long-term, 10/28 (36%) BVFA with UVFP without recovery of VF motion and 8/32 (25%) BVFA patients reported persistent improvement at >3-months after the augmentation material is expected to be resorbed.

In patients who underwent BVFI, about one-quarter of patients reported persistent improvement despite expected resorption of temporary augmentation material.

Metrics of Proficiency in a 3D-Printed Spatially-Calibrated Flexible Nasolaryngoscopy Trainer

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Introduction: Flexible nasolaryngoscopy (FNL) is a fundamental skill in otolaryngology. It is typically learned in clinical settings, with impacts on patient comfort and safety. Objective assessment, specific feedback, and a better understanding of learner trajectory in a simulation setting could improve efficiency of FNL training and ultimately improve patient experience. This study sought to employ a novel FNL model with trajectory tracking to identify metrics and critical steps that distinguish less- and more- experienced trainees, and identify indicators of proficiency.

Methods: FNL trainees in an otolaryngology simulation course performed three FNL trials on a novel CT-based 3D-printed airway model with embedded location and trajectory tracking. Participants were stratified by prior experience. Outcomes included procedure time, trajectory variables, and proximity to key anatomic landmarks.

Results: Twenty-nine trainees, ranging from medical students to PGY-4, participated in this study. More experienced trainees demonstrated shorter total procedure time, fewer pauses and backtracks, less time spent in pauses/backtracks, and less time in contact with the nasal septum, nasopharynx, and epiglottis ($p < 0.05$). There were no statistically significant differences between participant groups who had performed 6-15 and >15 prior FNL.

Conclusions: Procedure time, pauses, backtracks, and contact with critical structures are objective, measurable metrics of proficiency in FNL simulation training. Preliminary analysis suggests a threshold for proficiency is 6 trials. Future study could examine how metrics change with FNL practice to optimize targeted feedback that improves efficiency and ultimately reduces risk and discomfort for patients.

Myofascial Release Therapy Augments the Effect of Voice Therapy in Patients with Cervicalgia

Megan R. Gillespie, MD; Mandy Williams, BS; Ben Casey, BS; Mark R. Gilbert, MD

Objectives: To analyze the synergistic effects of myofascial release physical therapy (MFRPT) and voice therapy (VT) in reducing symptom severity in patients diagnosed with cervicalgia and associated laryngeal conditions.

Methods: We performed a retrospective analysis of adult patients with cervicalgia and common laryngeal diagnoses (muscle tension dysphonia, dysphagia, chronic cough, or globus sensation) at a multidisciplinary voice center. Patients received MFRPT, VT, or both (MFRPT+VT). Patient-reported outcome measures (PROMs) assessed symptoms before and after therapy, including Voice Handicap Index-10 (VHI-10), Reflux Symptom Index (RSI), Laryngopharyngeal Measure of Perceived Sensation (LUMP), Dyspnea Index (DI), Cough Severity Index (CSI), and Dysphagia Handicap Index (DHI). Scores were analyzed with paired t-tests and Mann-Whitney U tests.

Results: Eighty-seven patients were analyzed. 74.7% were female, and the mean age was 55.8 (SD = 16.3). Treatment groups included MFRPT (n=41), VT (n=26), and MFRPT+VT (n=20). Statistically significant improvements were seen in VHI-10, RSI, and LUMP scores for VT alone. MFRPT alone did not have statistically significant improvements in PROMs. MFRPT+VT yielded statistically significant improvements across all PROMs and provided additional benefit over VT alone when assessing RSI (p=0.02), LUMP (p=0.04), DI (p=0.003), and CSI (p=0.02).

Conclusion: Combining MFRPT with VT demonstrates superior efficacy in treating cervicalgia and related laryngeal symptoms when compared to VT only. Significant improvements across multiple PROMs suggests this integrated approach addresses diverse patient symptoms. Multi-institutional studies are recommended to further explore these findings and optimize treatment strategies.

Narrow Band Spectrogram Parameters: What Do We Know?

Juliana Codino, PhD, CCC-SLP; Pasquale Bottalico, PhD; Adam Rubin, MD

Introduction: To examine the usefulness of narrow band spectrograms (NBS) in assessing voice quality through a visual analog scale of the spectrum, VAS spectrum (VAS-S). Dynamic range (DR) and frequency range (FR) values are evaluated.

Methods: This is a retrospective study which involved 20 adults with voice disorders, and 5 healthy controls evaluated by videostroboscopy and acoustic assessment. Sustained /a/ vowel spectrography with different sets of parameters were assessed: FR (0 to 4000 Hz and 0 to 5000 Hz), and three DR values (35,45 and 55dB). Three SLPs experienced with sound spectrography served as blind raters evaluating the NBS through a VAS-S.

Results: A scaled score was obtained for the VAS ratings for each voice sample by averaging the responses from the blind raters in the six spectrogram settings. The inter and intra-rater reliability was evaluated with Intraclass Correlation (ICC). The intra-rater reliability was excellent and good (0.966, 0.963 and 0.837). Inter-rater scores exhibited good to excellent reliability (ICC=0.891). Within the three DR parameters, 45 dB was closer to the average among raters and it was statistically different from the other 2 DRs (both p<0.005). There was no significant difference among the two different FR (p=0.23) or between gender assigned at birth (p=0.99).

Conclusions: Good to excellent inter and intra rater reliability suggests that a VAS can be used to provide a score for a NBS spectrogram. A reliable value for DR, will reduce some of the user-dependency, leading to more consistent assessments between clinicians.

Nebulized Ciprofloxacin-Dexamethasone Following Endoscopic Airway Surgery: Tolerability, Safety, and Adherence

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Jonathan P. Kunakose, MD, MS; Andrew Stein, MD*

Background – Endoscopic airway surgery represents a common intervention for patients with laryngotracheal stenosis. Multiple adjuvant treatments exist to optimize healing and extend inter-surgical intervals, including nebulized ciprofloxacin-dexamethasone. However, minimal information exists on the safety, tolerability, and adherence to ciprofloxacin-dexamethasone nebulizers after endoscopic airway surgery.

Methods – This study retrospectively evaluated all patients with laryngotracheal stenosis managed by a single surgeon from 2021-24 who underwent endoscopic airway surgery and were prescribed nebulized ciprofloxacin-dexamethasone post-operatively. Ciprofloxacin-dexamethasone dosage and duration, adherence, adverse events, and tolerability were collected. Potential side effects were evaluated including allergic reaction, Cushingoid symptoms, change in glucose level, and any infections.

Results – Sixty-nine patients were prescribed ciprofloxacin-dexamethasone nebulizers twice daily for four weeks after surgery. Fifty-two patients (75.3%) received the nebulizer treatments for an average of 28 days. The main reasons 17 patients (24.7%) did not obtain the nebulizers were due to insurance and prescription problems. Four patients (7.7%) experienced temporary side effects, which dissipated after discontinuation: two altered taste/smell, one nausea/chills, and one blurry vision. No significant complications were reported. Specifically, no patients developed Cushingoid features, glucose changes, or postoperative infections.

Conclusions – After endoscopic airway surgery, the majority of patients received and completed the ciprofloxacin-dexamethasone nebulizer treatments. Less than 8% of patients experienced self-limited side effects. No serious or long-term side effects were noted. Overall, it appears that ciprofloxacin-dexamethasone nebulization is safe and tolerable. Further research is needed to determine the efficacy of this treatment regarding optimizing airway healing and extending inter-surgical interval.

Novel Low-Tech Vocal Fold Injury and Inoculation Methods Reveal Innate Permeability of Vocal Fold Epithelium in a Mouse Model

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Background/Objectives: Vocal fold (VF) injury and inoculation are emerging techniques to study laryngeal pathologies in mouse models. Methods frequently require endoscopy or microscopy equipment, which is expensive, unwieldy, and difficult to disinfect. Intraperitoneal (IP) naphthalene (NAPH) and topical polidocanol (PDO) are two methods of injuring mouse airways. Oropharyngeal aspiration (OA) is used to inoculate mouse lungs. We assessed whether these low-tech methods could injure and inoculate mouse VFs, and whether VF injury increased epithelial permeability.

Methods: Mice (n=37) were injured using IP NAPH at 200, 250, 300, or 350 mg/kg, or OA of 10- μ l PDOC at 0.5% or 2% w/v, or saline (control). Twenty-four hours later, mice received 10 μ l Evans blue dye (EB) or saline via OA and were sacrificed after 30 minutes. Larynges were formalin-fixed, paraffin-embedded, processed into coronal VF sections, and assessed for injured VF epithelium. Permeability was assessed by imaging EB's red autofluorescence in unstained slides and quantifying percent positive area and signal intensity in VFs.

Results: VF injury was 100% with 350 mg/kg NAPH, 20-40% with other treatments, and 0% with saline. Fluorescence was detected in 87% of EB-treated VFs, specifically in all lamina propria and some intramuscular connective tissue. There was no fluorescence in injured or mock-injured tissues without EB. Presence, area, and intensity of fluorescence did not differ by injury.

Conclusions: High-dose NAPH consistently injures mouse VFs. OA is a viable method of VF inoculation. VF epithelium is permeable, even without injury. Inherent permeability of VFs has implications for studies of drug delivery and biological and chemical hazards.

Objective Findings of Instrumental Swallow Assessment in Unilateral Vocal Fold Paralysis: Comparison of High vs Low Vagal Injury

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Background/Objectives: Investigate instrumental swallow assessment findings and post-treatment outcomes in patients with lower vs upper vagal etiology of unilateral vocal fold paralysis (UVFP).

Methods: Retrospective chart review of adult patients with lower vs upper vagal UVFP who underwent either fiberoptic endoscopic evaluation of swallowing (FEES) or modified barium swallow (MBSS) between September, 2019 - February, 2024. Demographics, dysphagia symptoms, Eating Assessment Tool-10 (EAT-10) score, diet, objective swallow findings, treatment modalities, and post-treatment outcomes were compared.

Results: 163 patients were included. 80% low-vagal and 20% high-vagal UVFP etiology. Similar EAT-10 scores (11, SD=9.1 vs 13.7, SD=10.4) and diet modification incidence (20% vs 27%) were seen in the low vs high-vagal group. The high-vagal group had higher rates of post-cricoid residue (15% vs 5%). Presence of vallecular residue (10% vs 12%), penetration (51% vs 33%) and aspiration (40% vs 39%) were similar between low vs high-vagal groups, respectively. Treatment modalities were comparable as well with 86% vs 78% undergoing injection laryngoplasty; and 51% vs 52% undergoing swallow therapy in the low vs high-vagal groups, respectively. After intervention, presence of vallecular residue, penetration and aspiration improved in both groups. Diet liberalization was more common in the low-vagal group (93% vs 76%).

Conclusions: Swallow deficits in UVFP differed by level of vagal injury. Despite similar treatment modality and post-treatment swallow outcomes between groups, post-treatment diet recommendations were more restrictive in patients with high-vagal injury. Systematic investigation of interactions between treatment modality, level of vagal injury and clinical outcomes is warranted.

Outcomes Following Cricopharyngeal Dilation and Botulinum Injection Predict Efficacy of Staged Myotomy: Utilizing a “Trial” Approach in Patients with Cricopharyngeal Dysfunction

Sophie E. Yu, BA; Lauren Schlegel, MD; Brett Campbell, MD; Stephanie Teng, MD; Pavan S. Mallur, MD

Introduction: To date, no study has assessed the role of cricopharyngeal (CP) dilation and botulinum toxin injection (BTX) as a temporary measure to predict myotomy outcomes. We hypothesize that symptom resolution or persistence following “trial” dilation and BTX accurately prognosticates change following CP myotomy.

Methods: A retrospective review of patients who underwent CP dilation and BTX followed by staged myotomy at our institution was performed. Pre- and post-operative EAT-10 scores for dilation and BTX as well as CP myotomy were used to calculate Δ EAT-10 scores. Univariate linear regression was performed to assess the association between dilation and BTX Δ EAT-10 scores and CP myotomy Δ EAT-10 scores. Multivariable linear regression was utilized to adjust for multiple covariates, including self-reported reflux symptoms and proton pump inhibitor (PPI) use.

Results: Seventeen patients underwent CP dilation and BTX followed by endoscopic or open myotomy. Fourteen of 17 (82.4%) had self-reported GERD. Mean Δ EAT-10 was -4.333 (SD 9.179, $p=0.049$) following dilation and BTX and -2.529 (SD 8.285, $p=0.140$) following myotomy. Univariate linear regression revealed a very strong positive association of Δ EAT-10 scores for dilation and BTX with CP myotomy Δ EAT-10 scores (coefficient = 0.803, $p < 0.001$). After adjusting for covariates, there remained a strongly positive association between dilation and BTX and CP myotomy Δ EAT-10 scores (coefficient = 1.071, $p < 0.001$).

Conclusion: Patients can reliably undergo CP dilation and BTX to “trial” expected results of permanent and higher risk myotomy. Presence or absence of subjective improvement appears to track across both procedures and may help set patient expectations.

Outcomes of Single Dose Platelet Rich Plasma Injections for Benign Dysphonia

Jacqueline Allen, MD; Georgia Mackay, MBChB; Camille Prigent, BHB

Objectives: Evaluate outcomes for individuals undergoing single-dose vocal fold injection (VFI) with platelet rich plasma (PRP) for vocal complaints.

Methods: PRP injections were undertaken in office under local anaesthetic, via transcutaneous or transnasal routes, with 0.1-0.5cc of PRP injected in each VF superficial lamina propria. Patients were followed at 1, 3, 6 and 12 months with stroboscopy, questionnaires (Voice Handicap Index, Vocal Fatigue Index, Reflux Symptom Index), and Likert ratings of effectiveness and willingness to undergo further injection. Adverse events were recorded.

Results: Forty-one of 82 (50%) individuals receiving PRP injections for vocal complaints received a single injection over 12 months. Mean age 58y (SD, 18y), 60% female. Fifty-seven percent demonstrated vocal fold atrophy with glottal insufficiency as their primary laryngeal abnormality, 31% were inflammatory pathologies, 7% scar or sulcus and 5% neurologic conditions. Fifty-five percent of injections were performed via transcutaneous thyrohyoid approach, with 45% using a flexible endoscope and flexible needle. Mean VHI decreased from baseline 20.0 to 11.2 at 12 months ($p<0.01$), exceeding the minimal clinically important difference. Vocal Fatigue Index (1) decreased from 28.9 to 13.8 ($p=0.00$), and Maximum phonation time (MPT) increased from 14.5s to 17s at one month ($p=0.1$), and 16.3s at 12 months ($p=0.48$).

Conclusions: PRP injection of the glottis can provide durable vocal benefit even with a single dose, particularly in those with atrophic vocal folds. Due to efficacy, ease of performance, lack of adverse effects and ability to repeat treatment, PRP injections should be considered in individuals with age-related voice deterioration and glottal insufficiency.

Oxygen Microenvironment of the Maculae Flavae of the Vocal Fold as a Stem Cell Niche

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Kiminobu Sato, MD, PhD; Takeharu Ono, MD, PhD; Hirohito Umeno, MD, PhD

Background/Objectives: Recent investigations are consistent with the hypothesis that tissue stem cells reside in the anterior and posterior maculae flavae of the human vocal fold mucosa. This study investigated the oxygen microenvironment of the maculae flavae of the vocal fold as a stem cell niche.

Methods: Five normal human adult vocal folds obtained from autopsy cases were investigated using immunohistochemistry.

Results: The cells in the maculae flavae of the vocal folds expressed hypoxia-inducible factor-1 α (HIF-1 α) and vascular endothelial growth factor indicating that the maculae flavae are hypoxic microenvironment. They expressed lactate dehydrogenase A (LDHA, glycolytic enzyme that catalyzes pyruvate into lactate) and pyruvate dehydrogenase kinase 1 (PDK1, kinase that inactivates the pyruvate dehydrogenase enzyme complex through phosphorylation) indicating the cells in the maculae flavae relied more on anaerobic glycolysis in comparison with oxidative phosphorylation. They expressed cytoglobin which is a regulator of O₂ homeostasis and suppresses mitochondrial activity.

Conclusions: The present study suggested that the cells in the maculae flavae of the human vocal fold seem to rely more on anaerobic glycolysis for energy supply in comparison with oxidative phosphorylation in a hypoxic microenvironment. Furthermore, the transcription of genes involved in the metabolism and behavior of the cells is likely regulated by HIF-1 α . The cells in the maculae flavae of the vocal fold are likely to prevent the formation of toxic reactive oxygen species and be favorable to maintaining the stemness and undifferentiated states of the cells in the stem cell system.

Patients' and Providers' Experience with Medialization Thyroplasty

Melissa Patty, MD; Elnaz Roohi, PharmD; Peter Rose, MD; Shamir Karmali, MD; Amanda Hu, MD

Background: Medialization thyroplasty (MT) is a procedure used to treat glottal insufficiency. It is conducted with the patient under procedural sedation for vocal feedback.

Objective: To qualitatively and quantitatively evaluate the patients', surgeons' and anaesthesiologists' experience with procedural sedation for MT.

Methods: Prospective observational study. Patients undergoing MT completed the validated Bauer Patient's Satisfaction Questionnaire. After the surgery, the surgeon and anaesthesiologist filled in a Provider's survey, including the Ramsay Sedation Scale (RSS) and the Visual Analog scale (VAS). Non parametric tests were conducted for statistical analysis.

Results: Forty-two patients (50% male), with a median age of 68 years (IQR 12) were recruited between March 2023 and September 2024. For the Bauer Questionnaire, 71.8% and 66.7% of the patients were respectively very satisfied with the anesthesia care and pain management. For the "voice testing" and "closure", the RSS sedation perception was the same for both providers in more than half of the cases (61.9% and 57.1%). There was no significant difference on VAS in the surgeons and anesthesiologists evaluation of the patient's anxiety (97(IQR 20) vs 83(IQR 24)($p=0.21$)), movement (84(IQR 35) vs 81(IQR 24)($p=0.19$)), discomfort (90(IQR 29) vs 80(IQR 23)($p=0.35$)), optimal operating condition (83(IQR 45) vs 75(IQR 26)($p=0.37$)), and communication with patient (89(IQR 48) vs 87(IQR 20)($p=0.06$)).

Conclusions: Patients were satisfied with the procedural sedation with MT. Surgeons and anesthesiologists had similar perceptions of the anesthesia, indicating excellent teamwork between providers for a successful surgery. This study was one of few prospective studies evaluating the patients' and providers' experience with MT.

Patterns in the Use of Awake vs Asleep Vocal Fold Injection in the Treatment of Unilateral Vocal Fold Paralysis - A Large Payor Database Study

Tyler Crosby, MD; Clark A. Rosen, MD

Background/Objectives: Awake vocal fold injection (VFI) has advantages in cost, safety, and access compared to VFI under general anesthesia. The origination of billing codes specific to awake VFI starting in 2017 allows for comparisons between the implementation and outcomes of these techniques on a large scale.

Methods: Records from 2013-2021 in the Merative MarketScan Research Database were reviewed. Patients with a claim for CPT code 31571 (direct laryngoscopy with injection) or 31574 (flexible laryngoscopy with injection for augmentation) and a diagnosis of unilateral vocal fold paralysis (UVFP) were identified and claims patterns were analyzed.

Results: 5076 patients and 7,083 vocal fold injections were identified. From 2017 onward, awake VFI accounted for 30% of injections performed, but only 16% of the cumulative costs of encounters for VFI. 32% of patients underwent awake VFI as their first procedure. 21% of these patients subsequently underwent at least second injection, one third of which were done under general anesthesia. Patients underwent 1.3 +/- 1 injections on average with no difference in the likelihood of repeat procedures for patients undergoing awake versus asleep VFI ($p = 0.23$).

Conclusions: Awake VFI accounts for nearly a third of vocal fold injections performed for patients with UVFP. Most patients do not undergo additional surgical laryngeal procedures after an initial VFI. Encounters for awake VFI incurred lower costs than encounters for VFI with direct laryngoscopy. These findings suggest that patients tolerate awake VFI at a high rate and that further utilization of awake VFI could result in decreased health care cost burden.

Patterns of Benign Voice Disorders by Age and Sex in Treatment-Seeking Professional and Pre-Professional Singers

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Background: Singers have higher incidence of voice disorders. Anecdotally, singers present for laryngologic evaluation when entering training (~ages 17-20), starting their career (~21-25), and around age 30 (~28-35). Previous studies have examined voice disorder incidence in the general population or compared amateur versus trained singers, but no investigation has examined voice disorder patterns according to age and sex in professional and pre-professional singers. Identifying patterns can inform targeted screening and reduce healthcare burden and costs for this high-risk population.

Methods: This retrospective case review collected primary diagnosis, age, and sex for professional (PRO) and pre-professional (PRE) singers who presented to an academic voice center from January 1, 2014 to August 1, 2024. Iatrogenic injuries, malignancy/premalignancy, and neurodegenerative diseases were excluded.

Results/Conclusions: Records of 1,904 PROs and 201 PREs were examined (n = 2,105, 1,393 F, 712 M). Overall incidence was predominantly female (73%), which keeps with previous literature. Within the age range of interest (17-35), total cases peaked at ages 21, 23-25, 27, and then decreased to 35. Sex distribution was more balanced at ages 29 (60% F, 40% M), 30 (56.4% F, 43.6% M), and 33 (50% F, 50% M). The most common diagnoses (ages 17-35) were mid membranous lesions (MML) (n=740, 586 F, 184 M) and muscle tension dysphonia (MTD) (n=115, 63 F, 52 M). PREs had higher incidence of MML (60.7% PRE, 44.8% PRO) and MTD (10.0% PRE, 8.7% PRO), but PROs had higher incidence of hemorrhage (4.9% PRO, 2.7% PRE). Findings suggest a need for earlier preventative screening of preprofessional singers.

Placental-Derived Connective Tissue Matrix as a Novel Treatment Option for Unilateral Vocal Fold Paralysis

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Patrick Finnegan, BS; Stacey Halum, MD

Background/Objectives: Unilateral vocal fold paralysis (UVFP) due to recurrent laryngeal nerve (RLN) injury is a major cause of dysphonia with no known cure. A placental-derived injectable immune compatible matrix may have potential therapeutic benefits to patients with UVFP. This study aimed to identify and quantify the factors present in a placental-derived connective tissue matrix (pd-CTM: CTM Flow™, CTM Biomedical®, Lake Worth, Florida) and to study the effects of pd-CTM on the pathophysiology of UVFP in mice with RLN injury.

Methods: Various factors in pd-CTM were first characterized using a cytokine array and ELISA. The mice were divided into 3 groups with two timepoints each (7 and 28 days): uninjured negative controls (n=4), RLN transection with saline injection in the injured-side VF (n=4), and RLN transection with pd-CTM injection in the injured-side VF (n=4). Laryngeal electromyography (LEMG) responses and video laryngoscopy data were obtained immediately following RLN transection. Functional outcomes at 7 and 28 days included LEMG testing and video laryngoscopy. After this assessment, animals were euthanized under anesthesia, and larynges were harvested for histopathological analysis.

Results: pd-CTM characterization showed moderate-to-high levels of neurotrophic (BDNF, CNTF, GDNF), angiogenic (Angiogenin, VEGFA, VEGFD), wound healing (bFGF, IGF-1, HGF, TGFβ-3), and anti-inflammatory (IL-1Rα) factors. Functional and histopathology outcomes suggested a positive therapeutic effect of pd-CTM in the animal model.

Conclusion: pd-CTM may be a novel treatment option for patients with UVFP based on the neurotrophic, angiogenic, wound healing, and anti-inflammatory factors present.

Practice Trends in Laryngology - Neuromodulators for Treatment of Chronic Cough

Christopher Dwyer, MD; Thomas L. Carroll, MD; Jennifer J. Shin, MD; Michael M. Johns III, MD

Objectives: Assess practice trends amongst US laryngologists surrounding their use of neuromodulator medications for the treatment of chronic cough (CC).

Methods: Anonymous 29-item survey was electronically distributed to practicing laryngologists in the US. Questions comprised a mixture of multiple choice, Likert scale, and free-text answers on first line neuromodulator agent, thresholds and indications for initiating neuromodulators, dosing and duration of treatment, and observed side effect profile and efficacy.

Results: 85 laryngologists responded with 26 states represented. 96.5% of respondents prescribe neuromodulators for CC and many use them as first line treatment for refractory CC (37.8%) and unexplained CC (50.6%). Most commonly prescribed neuromodulators are gabapentin (97.6%), amitriptyline (91.5%) and tramadol (73.2%). If cough is controlled with a neuromodulator, most laryngologists wait 3-6 months before making changes, including weaning (68.3%) or tapering off completely (24.4%). When treatment fails, 43.9% prefer trying another neuromodulator, while others begin superior laryngeal nerve blocks (24.4%). When a CC recurs soon after weaning, most will re-initiate the same neuromodulator and dose (97.6%). If CC returns after some time, the same neuromodulator is commonly reinitiated either at the previous dose (40.5%) or re-titrated (51.9%).

Conclusions: US laryngologists routinely prescribe neuromodulators as first-line treatment of CC, including refractory CC and unexplained CC. Gabapentin and amitriptyline are the preferred first line agents. Laryngologists have a low threshold to reinitiate a previously effective neuromodulator if cough quickly recurs following cessation. If a first neuromodulator trial fails, a second neuromodulator trial is often initiated, followed in popularity by superior laryngeal nerve block trials.

Prevalence of Esophageal Dysmotility in Muscle Tension Dysphonia Patients

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Introduction: Laryngopharyngeal reflux (LPR) is often thought to be a contributor to muscle tension dysphonia (MTD), however symptom overlap can be present with esophageal dysmotility. The objective of this study was to determine the prevalence of esophageal dysmotility disorders among muscle tension dysphonia patients.

Methods: Retrospective chart review of all MTD patients diagnosed by a laryngologist who underwent barium esophagram for suspected LPR was done. Demographics, PROMs, and radiology results were reviewed.

Results: There were 128 dysphonia patients that underwent barium esophagram with 55 showing dysmotility. Average age was 61 and 70% female. Reflux was observed in 27.3% of dysmotility patients and in 42.5% without dysmotility. There was no significant difference in total VHI-10 scores among patients with dysmotility compared to patients without dysmotility (9.4 vs 13, p-value 0.07). There was a statistically significant difference in total VRQOL scores among patients with dysmotility compared to patients without dysmotility (17.5 vs 21.3, p-value 0.02). In addition to total VRQOL score (p-value 0.019), a correlation exists between dysmotility and patients not knowing what will come out when they speak (p-value 0.008), depression over their voice (p-value 0.029), having trouble doing their jobs (p-value 0.010), and being less outgoing due to their voice (0.045).

Conclusions: Esophageal dysmotility may be a trigger for MTD and affects voice related quality of life. Consideration for a Dysmotility Symptom Index for upper aerodigestive tract symptoms should be given to differentiate between reflux and dysmotility as management may differ.

Prognostic Value of the Complete External Laryngeal Exam on Laryngoscopy Findings with the Introduction of a New Laryngeal Examination Score (LES)

Anna Orr, MD; Emma Elbert, BS; Kelly Schmidt, MD; Mark R. Gilbert, MD

Introduction: Laryngeal palpation is a common clinical exam for an Otolaryngologist. However, the utility of laryngeal palpation has not been well defined. This study aims to determine whether tenderness during palpation of the laryngeal framework as defined and scored by a novel Laryngeal Examination Score (LES), is associated with pathologic findings on laryngoscopy.

Methods: 77 new patients seen at a multidisciplinary voice clinic with tenderness on laryngeal palpation had their laryngeal examinations recorded with the LES, which evaluates tenderness on laryngeal framework exam and the size of thyrohyoid and cricothyroid spaces. Retrospective chart review was performed. Demographics, past medical history, laryngoscopy findings, diagnosis, and treatment plan were collected and analyzed. Blinded laryngoscopy and stroboscopy exams were then reviewed for pathology and compared to the LES.

Results: 77 patients were included for study (87% female, average age 58.2 (SD = 15.1 years)). 13 patients had lesions, 10 had vocal fold paralysis. 96.1% of patients (74/77) with cervicalgia were found to have an abnormality on scope examination. 87% (67/77) of patients were found to have supraglottic squeeze. There was no difference in total LES score between patients with non-functional diagnoses (lesion, infection, paralysis) vs those with functional diagnosis (e.g. supraglottic squeeze) ($t(75) = -0.17$, $p = 0.43$).

Conclusion: Our novel Laryngeal Examination Score has shown potential in predicting the presence of pathology observed on laryngoscopy and stroboscopy. This suggests simple laryngeal palpation can be used as a screening tool for determining when there is a need for laryngoscopy or referral to a laryngologist.

Prospective Analysis of Neurogenic Cough Factors on Quality of Life in Patients Undergoing Superior Laryngeal Nerve Block

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Objective: To determine which factors most contribute to poor quality of life (QOL) in chronic cough patients with a neurogenic component.

Methods: This prospective study included 127 adult chronic cough patients who later received Superior Laryngeal Nerve Block for cough at an academic medical center from April 2021 - August 2024. Patients completed a Cough Severity Index (CSI) and a rating of the impact of their cough on their QOL using a 1–10 scale (QOL, 10=worst impact). Demographic and clinical data on factors commonly associated with neurogenic cough were recorded.

Results: Baseline CSI and QOL scores were compared for each demographic and clinical factor. Patients who reported their cough awakened them from sleep had significantly worse QOL and CSI scores ($p=0.002$ and $p=0.001$, respectively); those who avoided neck-wear due to sensitivity had worse QOL scores ($p=0.048$). Patients with a history of asthma, OSA, a positive methacholine challenge, or an obstructive pattern on pulmonary function testing had worse CSI scores but no difference in QOL score. No significant difference in baseline scores was noted for factors related to reflux, allergic rhinitis, neuromodulator use, BMI, other pulmonary co-morbidities, flexible laryngoscope findings, or other neurogenic signs/symptoms.

Conclusion: This prospective study identifies specific factors of neurogenic cough that are directly linked to a negative impact on quality of life. Patients awakened from sleep by their cough or reporting neck sensitivity reported worse baseline cough-related QOL. Comorbidities such as asthma and OSA are associated with worse CSI scores but not cough-related QOL.

Radial Incision versus Wedge Excision in Treatment of Idiopathic Subglottic Stenosis

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Background/Objectives: Patients with idiopathic subglottic stenosis (iSGS) often undergo recurrent endoscopic dilation to manage recurrent airway narrowing. We endeavored to compare the efficacy of two CO2 laser techniques, (tissue sparing) radial incision versus wedge excision (with volitionally greater scar excision), with regard to post-surgical outcomes in iSGS patients. Peak Flow Meter (PFM) data, including PFM max, time to PFM max, as well as the Surgery-Free Interval (SFI) were compared within patients undergoing both techniques.

Methods: Retrospective chart review was conducted on 31 patients with iSGS undergoing multiple endoscopic dilations. Of the 31 patients, 17 have had both radial and wedge excisions followed by dilation techniques. Patient demographics, comorbidities, surgical measurements, surgical dilation technique, and SFI were extracted from charts. PFM data is being collected from patients prospectively. We analyzed differences in mean SFI using a paired t-test.

Results: A paired samples t-test was conducted to compare the average SFI between wedge excision and radial incision. Our results show an average increase of 70.3 days ($p=0.2693$) in SFI with dilation utilizing wedge excision when compared to the radial incision technique.

Conclusions: Though the wedge excision technique demonstrated an increase in SFI between patients' mean SFI when compared to radial incision, these findings were not significant. As endoscopic dilation techniques are common among our patient population, we hope addition of more data points in the coming months can increase the power of our study.

Recurrent Laryngeal Nerve Damage Associated with Endotracheal Tube Cuff Pressure and Retraction in Anterior Cervical Spine Surgery

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Introduction: The objective of this study is to assess intraoperative endotracheal tube (ET) cuff pressure during anterior cervical spine surgery (ACSS) as a risk factor for recurrent laryngeal nerve (RLN) injury.

Methods: A prospective observational study was conducted using intraoperative cuff pressures collected from 22 patients undergoing ACSS from January 2024 to October 2024, before and following placement of cervical spine retractors. In a cadaveric model, ET cuff pressures were compared using hand-held and fixed spinal retractors with upper and lower cervical spine approaches. Results were analyzed using a paired t test and an ANOVA test.

Results: Average ET cuff pressure following intubation was 82.65 ± 34.64 cm H₂O. Following adjustment to 20-30 cm H₂O, cervical retraction increased pressures to an average 55.85 ± 16.5 cm H₂O. No RLN palsies were noted postoperatively. In a cadaveric model, ET cuff pressure was significantly elevated following retraction with lower versus upper cervical spine approaches ($p < 0.0001$). Moreover, fixed 'spinal' retractors elicited a 9.60 cm H₂O average increase in ET cuff pressure following retraction, compared to 5.04 cm H₂O for hand-held retractors.

Conclusions: ET tube cuff pressure is notably elevated after intubation and after retraction in ACSS. The level of surgical approach and type of retractor affect ET cuff pressure. ACSS should be performed with ET cuff pressure monitoring before and after placement of cervical spine retractors to minimize risk of RLN injury.

Reconstruction of a Complete Cricothyroid Membrane Soft Tissue Defect Using a Synthetic Hybrid-Scale Fiber Matrix

Karim Asi, MD; Andrew Tkaczuk, MD

Introduction: Complex laryngotracheal trauma presents significant challenges due to intricate anatomy and the potential loss of voice, respiration, and swallowing functions. Current approaches for management lack a definitive standard, particularly in the case of significant tissue loss. We report a case of a complete cricothyroid membrane soft tissue defect successfully reconstructed with a synthetic, resorbable, hybrid-scale fiber matrix (Restrata).

Case Report: A 30-year-old male suffered a gunshot wound to the neck with a resultant cricothyroid membrane defect of 3.0 cm x 2.5 cm as well as fractures of the first four tracheal rings. A tracheostomy and endoluminal, transglottic stent were placed. The cricothyroid defect was covered with the Restrata matrix, which was secured with resorbable sutures. One month postoperatively, the defect had completely mucosalized without granulation tissue formation or airway narrowing. The patient was decannulated two months after the injury.

Discussion: Laryngotracheal injuries are rare and lack standardized surgical protocols, often requiring innovative approaches to repair. Soft tissue loss further complicates management. Although various allografts have been utilized with reported success, excess granulation or keratinization is a limitation. Overall, investigation into laryngotracheal tissue regeneration is in its infancy and limited human data is available to guide reconstruction. Restrata's synthetic hybrid-scale fiber matrix offers an alternative to traditional allogeneic, xenogeneic, and biologic reconstructive options while potentially avoiding the complications associated with them.

Conclusion: The use of a synthetic hybrid-scale fiber matrix may be effective in reconstructing airway mucosal defects. Further investigation is warranted to establish optimal reconstructive strategies for laryngotracheal soft tissue loss.

Regenerative Effects of Basic Fibroblast Growth Factor (Bfgf) Injection into the Paralyzed Muscles of Patients with Laryngeal Paresis

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Background/Objectives: Paralysis or paresis of the recurrent laryngeal nerve or the external branch of the superior laryngeal nerve causes atrophy of the intra-laryngeal muscles, resulting in hoarseness. Conventional voice therapy, vocal fold injection, or laryngoplasty has limitation to improve atrophy and decreased muscle tonus of the internal laryngeal muscle. It is required to promote regeneration of nerve-muscular components of the intra-laryngeal muscles. Previously, we have shown that basic fibroblast growth factor (bFGF) injection was effective for regeneration of both neuron and muscle of the vocal fold by using rats recurrent nerve transection model. The current study examined the effects of intracordal bFGF injection for the patients with laryngeal paresis.

Methods: Eight patients with laryngeal paresis (five with thyroarytenoid muscle paresis and three with cricothyroid muscle paresis) were treated with four injections of bFGF into the paralyzed muscles. Stroboscopic findings, aerodynamic examinations, and acoustic analysis were examined retrospectively.

Results: Postoperative stroboscopic findings showed improvement in vocal fold vibration, and acoustic analysis showed significant improvement in Jitter after treatment.

Conclusion: It was suggested that intracordal bFGF injection into the intra-laryngeal muscles may be effective for improving vocal function in patients with laryngeal paresis.

Restylane Vocal Fold Augmentation: Assessing Safety and Duration of Efficacy

Alayna Kinkead, BS; Wiktoria Gocal, MD

Background: Restylane, despite no FDA approval for laryngeal use, has gained popularity in vocal fold (VF) injection augmentation due to its ease of use, perceived duration of benefit and cost efficiency relative to other FDA approved materials.

Objectives: To review the safety and duration of efficacy of Restylane in vocal fold augmentation.

Methods: A retrospective chart review of patients who underwent injection laryngoplasty with Restylane was conducted.

Results: 163 patients underwent 196 Restylane injections, diagnosed with VF paralysis (N=107, 65.6%), VF paresis (N=28, 17.2%) and VF atrophy (N=26, 16%). Several patients received multiple injections: 20 (12.3%) received two, 5 (3.1%) received three, and one patient (0.6%) received four injections. The average amount of Restylane injected in each VF was 0.53mL. Out of 114 patients who followed up, 89 (78.1%) noted improvement, 23 noted (20.2%) no change, and 2 (1.8%) reported worsening symptoms at first follow up. Those with return of VF function were excluded from follow-up assessments. 45 patients (30.4%) reported ongoing improvement at the time of last follow up ranging 8 to 1211 days, 55 patients (37.2%) reported a finite benefit, with duration of symptom improvement ranging 2 to 710 days (average of 170 days). Three patients (1.5%) experienced complications including laryngospasm, laryngeal edema, and dysphagia/fever.

Conclusions: Restylane is a safe and effective treatment for glottic insufficiency. Average benefit duration lasts 170 days, and many patients may experience ongoing benefits beyond.

Revision Medialization Thyroplasty to Correct Acute Glottic Insufficiency in the Setting of Rapid Weight Loss on Semaglutide

Katherine Xu, MD; Rachel Weitzman, MD, MPH; Michelle Yu, MD, MS; Babak Sadoughi, MD

Background/Objective: Medialization thyroplasty is considered a permanent treatment for glottic insufficiency, but some patients require revision due to persistent gap, over-closure, or implant extrusion. To date, no revision cases have been linked to GLP-1 agonists, which cause significant and rapid weight loss.

Methods: Case report

Results: A 74yo female with a history of presbylaryngeal atrophy and successful bilateral medialization thyroplasty with Gore-Tex implants nine years ago, returned to clinic with six months of worsening voice projection and discomfort with prolonged use. This coincided with the start of semaglutide (Ozempic) and a 25 pound weight loss. Stroboscopy revealed superficial atrophy of the right vocal fold and severe atrophy of the left.

She underwent a revision bilateral medialization thyroplasty using Gore-Tex implant and left vocal fold submucosal free fascial graft interposition. Intraoperative findings included severe sulcus dehiscence of lamina propria on the left side, addressed with grafting. Postoperatively, she reports uneventful recovery, resolving odynophonia. Postoperatively, her GRBAS score improved from G3-R0-B3-A1-S2 to G1-R0-B1-A1-S1, with normalized phonation time and slightly elevated F0. Stroboscopy reveals good closure with implants in place.

Conclusions: Severe vocal cord atrophy was noted in the setting of Ozempic use, resulting in a revision medialization thyroplasty. Rapid weight loss and potential nutritional deficiencies likely contributed to decreased vocal cord mass. The rise in GLP-1 agonist use may have an impact on treatment approaches for glottic insufficiency, and this case offers important insight into potential indications for revision medialization thyroplasty.

Risk Factors for Vocal Fold Immobility After Lung Transplantation

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Background: Vocal fold immobility (VFI) is an understudied complication following lung transplantation. Understanding the risk factors associated with VFI is crucial for improving patient management and outcomes.

Methods: A retrospective chart review was conducted on all patients who underwent lung transplantation at an academic center between February 2020 and June 2024. Demographic data, comorbidities, postoperative complications, and swallowing examination data was collected. Welch's t-tests, univariable, and multivariable logistic regression were used in analysis.

Results: A total of 414 patients were included. 119 (40.3%) patients had abnormal vocal cord mobility observed on postoperative swallowing exam. Of these, 28 (23.5%) had confirmed VFI after otolaryngology consult, with only five (17.8%) receiving otolaryngology care upon discharge. Age at transplant (odds ratio [OR]: 0.969, confidence interval [CI]: 0.941 – 0.998, $p = 0.036$), length of intubation (OR = 1.11, CI: 1.04 – 1.18, $p = 0.0016$), and length of surgery (OR = 1.27, CI: 1.09 – 1.50, $p = 0.0027$) were significant predictors of VFI on univariable analysis. In multivariable analysis to control for demographics, comorbidities, and surgical factors, length of intubation (OR = 1.26, CI: 1.11 – 1.42, $p = 0.0002$) and length of surgery (OR = 1.29, CI: 1.04 – 1.60, $p = 0.019$) remained significant. Tracheostomy during admission was also associated with a lower odds of postoperative VFI (OR = 0.118, CI: 0.032 – 0.44, $p = 0.0028$) on multivariable regression.

Conclusions: This study highlights risk factors for VFI in lung transplant patients. Results emphasize the need for diligent postoperative evaluation and adequate outpatient follow-up.

Risk of Complications Following Medialization Thyroplasty in Patients on Anticoagulation

Dylan Bertoni, MD; JaeHee Kim, BS; Kathleen Tibbetts, MD

Introduction: Systemic anticoagulation (AC) and antiplatelet (AP) medications are commonly prescribed for a variety of conditions. We assess complication rates after medialization thyroplasty (MT) in patients taking AC/AP perioperatively.

Methods: A retrospective cohort study was conducted using the TriNetX United States Collaborative Network database. Patients ≥ 18 years old who underwent MT between 2015-2023 were included. Patients taking AC/AP (aspirin, warfarin, apixaban, edoxaban, rivaroxaban, dabigatran, dipyridamole, ticagrelor, prasugrel, clopidogrel, cilostazol, dalteparin, enoxaparin) within 1 month of the procedure were identified and compared to those not taking these medications. The cohorts were propensity score matched by age, sex, race, ethnicity, and comorbidities. Complications within 30 days of MT were compared with Odds Ratios.

Results: Each cohort included 1,320 patients. Patients on AC/AP had higher rates of airway compromise (OR: 1.72; 95% CI: 1.20 – 2.47; $p = 0.003$) and dysphagia (OR: 1.43; 1.14 – 1.79; $p = 0.002$) postoperatively. No significant difference was found in rates of repeat procedures (OR: 0.622; 0.28 – 1.38), hemorrhage (OR: 1; 0.42 – 2.41), hematoma (OR: 1; 0.42 – 2.41), infection (OR: 1; 0.41 – 2.41), or mortality (OR: 1; 0.41 – 2.41). When stratifying by class of medication (AC, AP, aspirin), only the AC group remained statistically significant for airway compromise (OR: 2.68; 95% CI: 1.79 – 4.04; $p < 0.001$) and dysphagia (OR: 1.51; 1.17 – 1.96; $p = 0.002$).

Conclusion: Based on analysis of a large healthcare database, MT performed on AC/AP is associated with higher rates of post-operative dysphagia and airway compromise but not postoperative hemorrhage/hematoma.

Safety Profile in Hyaluronic Acid-Based Vocal Fold Injection Augmentation

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Background/Objectives: Hyaluronic acid (HA) is widely used in vocal fold injection augmentation (VFIA) due to its biocompatibility and favorable outcomes, but reports of inflammatory complications highlight the need for deeper understanding of its safety profile. This study investigates the incidence and nature of complications, particularly inflammatory responses, following VFIA with HA-based materials.

Methods: All patients who received VFIA over the past seven years at a single institution were reviewed to identify complications following VFIA. Medical charts were reviewed to collect patient demographics, injection details (type, location, and volume), videolaryngostroboscopy exams, and post-injection outcomes, including complication rates and nature of inflammatory reactions. Additionally, we analyzed patient-specific factors such as comorbidities, COVID-19 vaccination status, and history of repeat injection.

Results: There were 305 total procedures performed in 247 patients, 41 receiving 2 or more VFIA with HA-based materials. There were 12 reported complications, representing 3.93% of all HA-based VFIA reviewed. Of these, 7 complications (2.30% of total VFIA injections) were specifically attributed to inflammatory reactions following HA-based material administration. The most common complication complaints were dyspnea and dysphagia. One patient required intubation and hospitalization due to post-injection inflammatory response. All other patients were able to be treated without admission and none reported symptoms beyond 3 months.

Conclusion: By investigating the incidence and predictors of inflammatory complications in HA vocal fold injections, this study provides a more clear understanding of risk factors that may inform patient selection, procedural planning, and post-procedure management.

Seasonality in Cough: The Influence of Environmental Physiology

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Background/Objectives: Cough is a prevalent clinical problem which is associated with many comorbidities and environmental conditions. This study seeks to highlight the clinically measurable impact of the environment on human physiology by modelling the incidence and prevalence of seasonal cough as a function of certain environmental factors.

Methods: An IRB-exempt population-based retrospective electronic record review was performed to analyze the incidence and prevalence of cough in our rural health system in a seasonal fashion from January 1, 2020 through December 31, 2023. Using time series methods including dynamic regression models, these data were measured against the seasonal incidence of influenza based on data from the Center for Disease Control (CDC) and air quality metrics including Air Quality Index (AQI) and particulate matter counts (PM10) based on data from the Environmental Protection Agency (EPA).

Results: There were 101,635 patients that met inclusion criteria involving 145,428 medical encounters for cough. There is a positive relationship between the seasonal prevalence and incidence of cough with influenza levels. AQI and PM10 demonstrated seasonality, and these were correlated with each other but had a seemingly negative association with air quality metrics, although this relationship is not significant. These results were validated within age groups, as each group independently demonstrated these associations.

Conclusion: This study demonstrates a clear seasonal trend in our rural population in the diagnosis of cough which also correlated seasonal trends of influenza. This study is important in that it illustrates the significance of environmental factors in the development and pathologies with the need for informed healthcare practices.

Severe Wound Dehiscence Requiring Local Flap Reconstruction following Intralesional Steroid Injection in an Irradiated Patient With Airway Stenosis

Jake Morgan, MD; Liyang Tang, MD; Karla O'Dell, MD

Background/Objectives: In-office intralesional steroid injections (ILSI) are a well-described treatment for airway stenosis outside of traditional airway dilation in the operating room. In general, they are thought to have minimal side effects and low risk of significant adverse events. Here, we describe a 54-year-old man with a history of radiation to the neck who developed a neck abscess that progressed to severe wound dehiscence requiring local flap reconstruction after receiving a single in-office ILSI.

Methods: A retrospective chart review was performed on a single patient whose treatment course ranged from May, 2022 to September, 2024. Specific attention was placed upon interventions for airway stenosis, resulting complications, surgery to address such complications, and overall treatment course.

Results: A 54-year-old man with a history of pediatric Hodgkin's lymphoma treated with radiation therapy and newly diagnosed tracheal stenosis treated with two separate airway dilations with steroid injection in the operating room presented to clinic for his first in-office intralesional steroid injection. He presented three weeks later with a small neck abscess under his injection site that progressed and caused hemorrhage from the right internal jugular vein requiring surgical intervention and negative pressure wound therapy. Continued wound breakdown prompted a cervicodectopectoral flap that was complicated by dehiscence, and the defect was ultimately reconstructed with a pectoralis major flap. The patient was then followed closely until the wound stabilized.

Conclusion: This case demonstrates that patients who have risk factors for poor wound healing such as prior radiation therapy can experience significant complications following ISLI despite its minimally-invasive nature.

Singing Different Tunes: Vocal Health Beliefs of Vocalists and Vocal Health Professionals

Isaac Lalakea Alter, AB; Michael W. Denham, MD, MS, Mphil;
Evan Kennedy, SLP; Ryan Branski, PhD; Hayley L. Born, MD

Objectives: Despite widespread "industry knowledge" regarding vocal health habits among performers, a paucity of research has evaluated these beliefs, potentially undermining patient counseling. We sought to compare attitudes of vocal performers and vocal healthcare providers regarding common vocal health practices.

Methods: An online survey was administered to fellowship-trained laryngologists and voice-specialized speech-language pathologists (SLPs) to assess attitudes regarding 82 factors frequently associated with vocal health. Respondents were asked to rate each item on the following scale: good in the long-term, good in the short-term, bad long-term, bad short-term, or no effect. The results were compared to previously presented data from an analogous survey completed by professional and amateur vocalists, and differences of >20% between cohorts were recorded.

Results: Twenty-four vocal health professionals (15 SLPs and nine laryngologists) completed the survey. The performer cohort included 95 professional and 60 amateur singers. Differences between vocalists and healthcare professionals were observed on 25 items. These included factors seen as less harmful (e.g. dairy, using a breathy voice) or less beneficial (e.g. tea, Vitamin B12, jogging on performance day) by healthcare providers than singers. Many items were viewed more cautiously by providers than by vocalists (e.g. menthol, decongestants, apple cider vinegar, spicy foods, belting, crying, breath-holding, whiskey prior to vocalization).

Conclusions: A substantial disconnect between vocal healthcare providers and singers was observed regarding habits conducive to vocal health. These data have significant implications for appropriate counseling of voice users, and demonstrates the importance of further study to understand performer behaviors and their impacts on vocal health.

Single-Cell Sequencing and Spatial Transcriptomics of Human Vocal Folds Reveals Heterogeneity of Fibroblast Populations

Benjamin M. Laitman, MD, PhD; David M. Gonzalez, PhD;
Daniel Charytonowicz, PhD; Ya-Wen Chen, PhD; Mark Courey, MD

Vocal fold (VF) scar remains challenging to treat, in part due to an incomplete understanding of cell types involved in laying down extracellular matrix components, and whether specific fibroblast subtypes may differentially contribute to healthy and injured states.

Utilizing a dataset we previously generated from single-cell sequencing of five healthy human VF, we subclustered overarching stromal population of cells, uncovering multiple families of fibroblasts. We performed differential expression analysis and gene set ontology analysis across each fibroblast cluster to determine possible functional differences underlying this heterogeneity. In addition, we performed 10X Visium HD spatial sequencing on an additional true VF sample, allowing us to measure gene expression within a spatial context at a resolution of 8 μ m. Expression analysis identified several subsets of fibroblasts. Multiple families were differentiated by expression of pro-myofibroblast markers PRRX1, and SLIT2 which is known to play a role in tracheal fibrosis. Others expressed COL12A1 and laminin-encoding genes, enriched for processes involved in cellular projection and myofibril assembly. Additional cell types were those highly expressing for elastin (ELN), enriched in processes governing epithelial cell shape and migration, and a population which expressed mucin genes and signaling components of Ephrin and Wnt pathways. Certain subpopulations of fibroblasts appear to display differential spatial organization, while others share similar histological niches.

There is a breadth of fibroblast heterogeneity that is being uncovered through novel single-cell sequencing and spatial transcriptomics. This is also the first reported spatial transcriptomic analysis of the human vocal folds.

Symptom Characteristics of Benign Vocal Fold Lesions

Mark Lee, MD; Lucian Sulica, MD

Objectives/Hypotheses: To evaluate and compare symptom characteristics between benign vocal fold lesions for insight into pathophysiology.

Study Design: Cross-sectional study

Methods: Adults who underwent initial voice evaluation between June 2023-June 2024 and were diagnosed with a benign vocal fold lesion. Symptom features including acuity, duration and inciting event were noted, along with prior history of voice problems, gender, occupational voice load. Patients with cyst, polyp, and midfold lesions (fibrous mass, pseudocyst, non-specific midfold mass) were compared to those with lesions known to be acute (edema, hemorrhage), and lesions known to be chronic (sulcus vergeture, sulcus vocalis, scar, and Reinke's edema).

Results: 151 adults (44M:106F:1Other; mean age 39.1 $\pm$ 15.8 years) were included. Midfold lesions (49.3%) and cysts (53.3%) had similar rates of gradual onset to known chronic lesions 50.0%), whereas polyps (30.4%) resembled known acute lesions (8.3%, $\chi^2=15.3$, $p=0.0042$). Similarly, midfold masses (37.3%), cysts (13.3%), and known chronic lesions (42.9%) had lower association with an inciting event compared to polyps (52.2%) and known acute lesions (87.5%, $\chi^2=25.8$, $p<0.0001$). Cysts (46.7%), midfold lesions (57.3%), and known chronic lesions (78.6%) were more likely to report prior voice problems compared to polyps (30.4%) and known acute lesions (50.0%, $\chi^2=9.3$, $p=0.0547$).

Conclusions: These findings are consistent with models of phonotraumatic lesion development that suggest midfold lesions develop as a result of chronic cumulative damage whereas polyps are more likely to develop acutely. Cysts may be structural lesions as demonstrated by their lack of association with occupational voice use and chronic nature.

The Effects of Testosterone Replacement Therapy on the Fundamental Frequencies of Post-Menopausal Women

Stephanie Horton, MD; Anuja Shah, BS; Shaun Nguyen, MD; Nathaniel Baker, MS; Ashli O'Rourke, MD

Background/Objectives: Hormone Replacement Therapy (HRT), typically comprising estrogen and progesterone, is commonly used to alleviate menopausal symptoms such as hot flashes and night sweats. Testosterone is often added to HRT to address symptoms such as low energy and decreased libido. This study aimed to examine the effects of estrogen-progesterone-testosterone (EPT) replacement, aging, and hormonal birth control (BC) on the fundamental frequency (F0) of the voice in pre and postmenopausal women.

Methods: This cross-sectional, multi-site study recruited women in four groups: postmenopausal women receiving EPT for at least 9 months, postmenopausal women without HRT, premenopausal women on BC, and premenopausal women not on BC. Participants completed the Voice Handicap Index-10 (VHI-10) questionnaire, and those scoring >11 were excluded. F0 was measured in connected speech.

Results: 24 women were recruited in each group (96 total). The average ages of participants were: women on EPT (mean age 51, range 32-65), postmenopausal women without HRT (60; 49-74), premenopausal women on BC (26; 23-30), and premenopausal women not on BC (29; 22-45). Postmenopausal women had a significantly lower F0 (173; SD 20) compared to pre-menopausal women without BC (191; SD 20) ($p=0.004$). A moderate negative correlation was observed between age and F0 (Spearman's correlation coefficient -0.40). F0 did not correlate with BC use ($p=0.24$) or EPT ($p=0.90$), and there was no significant difference in F0 between postmenopausal women on EPT and those not on HRT.

Conclusions: This study found that F0 decreases with age in women, irrespective of the addition of testosterone replacement to traditional HRT or with BC use.

The Epidemiology of Recurrent Respiratory Papillomatosis (RRP) in Adults: A Scoping Review

Namra Desai, BHSc; Paolo Campisi, MD, MSc; R Jun Lin, MD, MSc; Jessica Trac, MD

Background: The incidence and prevalence of adult-onset RRP (AoRRP) before and after the introduction of human papillomavirus (HPV) vaccination programs is unknown in most countries. A decline in the incidence of juvenile-onset RRP (JoRRP) as a result of HPV vaccination has been described in Australia, Canada and the United States. This study aims to conduct a formal scoping review on the incidence and prevalence rates of adult RRP before and after HPV vaccination implementation.

Methods: A scoping review of the medical literature describing the incidence and prevalence of AoRRP before and after the implementation of HPV vaccination programs was performed by searching CINAHL, Web of Science, Cochrane, Embase and Medline databases. Descriptive studies, reviews, letters, non-English language and pre-2000 publications were excluded.

Results: The search yielded 542 unique abstracts. After screening, 5 studies met the final inclusion criteria. Two studies reported adult-specific incidence rates (0.54:100,000 in Norway, 1987-2009; 0.18:100,000 in Free State, South Africa, 2011-2015) and prevalence (0.38:100,000 in Free State, South Africa). Three studies reported overall RRP incidence (0.19-1.15:100,000 in São Paulo, Brazil, 2017) and prevalence (1.42:100,000 in UK, 2015; 51:56,510 in Tanzania, 2005-2015; 0.69-2.29:100,000 in São Paulo, Brazil). Three studies included data post-HPV vaccine introduction.

Conclusion: There is a paucity of published data regarding AoRRP epidemiology at the national level, in particular in North American countries. The impact of HPV vaccination programs on AoRRP is not available globally. The lack of data underscores the value of national population-level databases to elucidate the impact of HPV vaccination programs.

The Power of Cognitive Aid Tools in Optimizing Emergency Airway Management: A Systematic Review

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Background: Effective management of emergency airway conditions is crucial to reduce complications. Cognitive aids, such as checklists and algorithms, have been proposed to improve procedural competency and decision-making. This systematic review aims to compile data on the impact of cognitive aids on emergency airway management.

Methods: A comprehensive search was conducted across ClinicalTrials.gov, MEDLINE (PubMed), Embase, CINAHL, Cochrane Library, Scopus, and Web of Science. Studies examining the use of cognitive aids in surgical airway settings, including the Vortex method, ASA difficult airway algorithm, and visual airway aids, were included. Quality evaluation and data extraction followed standard procedures.

Results: From 1038 identified articles, five studies (three controlled studies, one mixed-methods pilot research, and one randomized controlled study) met the inclusion criteria. Cognitive assistance training significantly improved performance in non-technical, procedural, and decision-making tasks during emergency airway management simulations. Compared to controls, healthcare professionals using cognitive aids scored higher in performance (2.1 points), had reduced anxiety (10.3 points), showed improved performance consistency (1.6 points), faster decision time (44.6 seconds), and increased self-efficacy (1.9 points). These results indicate the substantial positive impact of cognitive aids on emergency airway management skills in simulated settings.

Conclusion: This systematic review provides evidence supporting the use of cognitive aids to enhance emergency airway management skills in simulated environments. The findings emphasize the importance of integrating cognitive aids into training programs to facilitate repeated practice and feedback. Further studies with larger sample sizes and diverse participants are necessary to confirm these findings and inform best practices in emergency airway management.

The Role of Laryngology Evaluation Prior to Voice Therapy for Parkinson-Related Dysphonia: Clinical Process Evaluation and Patient Outcomes

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Background/Objectives: Eighty percent of Parkinson disease (PD) patients experience voice-related symptoms; PD-specific voice therapies (VT) have emerged to improve quality of life. Our institution requires Laryngology clearance with endoscopic evaluation prior to initiation of VT, which may delay care. We aim to describe the clinical evaluation process for PD dysphonia at an academic voice center and the frequency/timing of procedural voice interventions.

Methods: Retrospective chart review identified 64 patients with PD evaluated between 2015-2024. Patients evaluated by speech language pathology (SLP) first who subsequently received medical clearance by Laryngology for SPEAK OUT! or Lee Silverman Voice Treatment were included (n=15). Sociodemographic information, encounter dates, medical history, laryngoscopy findings, and procedural interventions were collected.

Results: Most (73%) patients were male. The mean age and time since PD diagnosis were 67.9 and 6.6 years, respectively. The mean days from SLP intake to Laryngology evaluation was 68, and VT was initiated on average 74 days thereafter. Vocal fold atrophy, glottic insufficiency, and other lesions were identified in 93%, 20%, and 13% of videostroboscopy exams. Twelve (80%) patients received SPEAK OUT!; seven (47%) underwent vocal fold injections and/or medialization laryngoplasty. Alternatively, patients seen initially by Laryngology (n=17) or following VT initiation (n=3) had no differences in exam findings or frequency of procedures, but time to VT initiation was significantly reduced ($p<0.05$).

Conclusions: Requiring Laryngology evaluation prior to initiating PD VT can delay care without significantly affecting the procedural interventions ultimately performed. Patients may benefit from timelier VT initiation if medical clearance from Laryngology is not a necessary prerequisite.

The Use of Laryngology Patient-Reported Outcome Measures to Screen for Vocal Fold Structural or Neurogenic Pathology in Patients with Dysphonia

Ohad Cohen, MD; Aditya Mahesh, BS; Meredith Tabangin, MPH;
Rebecca J. Howell, MD; Aaron D. Friedman, MD

Background: Patient-Reported Outcome Measures (PROMs) have become popular in laryngology clinics for standardizing patient symptom reporting. We hypothesized that absolute values or ratios of certain PROMs scores might identify which dysphonic patients have glottic structural or neurogenic (vocal fold motion impairment or laryngeal dystonia/tremor) pathology [GSNP].

Methods: Retrospective review of prospectively collected data from new dysphonic patients with Vocal Handicap Index-10 (VHI-10) and Reflux Symptom Index (RSI) PROMs prior to first stroboscopy at the University of Cincinnati Division of Laryngology, September 2021 – October 2023. Prior to database analysis, possible dysphonia diagnoses were classified as high versus low/equivocal VHI-10:RSI score ratio [VHI-10/RSI]. VHI-10/RSI and VHI-10 were compared in patients with [GSNP+] and without GSNP [GSNP-] using Wilcoxon rank sum tests. Logistic regression models identified potential GSNP using VHI10/RSI and VHI-10 scores. PROM score models were assessed using receiver operator characteristic (ROC) curves and compared using Chi-square tests.

Results: 677 dysphonic patients with a first visit diagnosis and concurrent PROMs were identified; 416 (61%) were GSNP+ and 261 (39%) GSNP-. VHI-10/RSI and VHI-10 were both higher in GSNP+ patients ($P < .0001$). VHI-10/RSI exhibited greater ROC area under the curve (0.62; 0.58 – 0.67 95% CI) than VHI-10 (0.56; 0.52 – 0.61 95% CI), $p=0.02$. VHI-10/RSI 1.1 maximized sensitivity (57%) / specificity (64%), while a ratio of 2.2 achieved 90% specificity, and 3.3 95% specificity.

Conclusions: VHI-10/RSI is a better predictor of GSNP than absolute VHI-10 scores. VHI-10/RSI may be useful in screening for these patients ahead of first clinic visits

Treatment of Anterior Glottic Webs Using a Single-Stage Coblation Technique

Salena Ringenbach, BS; Cecilia G. Freeman, MD; Aaron J. Jaworek, MD

Background: Anterior glottic webs are a challenging condition to treat given their propensity for recurrence. The optimal surgical technique is a highly debated subject, typically employing a two-staged approach with stent placement and subsequent removal. Use of coblation +/- topical mitomycin in a single stage is presented as a straightforward approach to this problem.

Methods: A retrospective chart review of adult patients who underwent division of an anterior glottic web using a Coblator MLW™ with or without topical mitomycin was performed. Demographics, clinical course, and outcomes of surgery were collected and analyzed.

Results: Eight adult patients (7 men, 1 woman) underwent single stage anterior glottic web division with coblation. Six patients were treated for glottic cancer previously and two for papilloma. All patients tolerated the procedure well without any complications reported. The anterior commissure remained sharp for all patients at follow up >12 months. Six patients reported a voice outcome that was very satisfactory compared to pre-op. The two patients with persistent dysphonia following the procedure had concomitant vocal fold scar and papilloma.

Conclusion: Several surgical techniques have been described to treat anterior glottic webs and reduce risk of recurrence including stent placement, laser division, and mucosal grafts. The use of coblation in a single stage for this indication has not been described in the literature. Using this technique on eight patients demonstrated optimal healing, retention of a sharp anterior commissure at 1 year, and good voice outcomes. This technique warrants further study to determine best practices and whether topical mitomycin remains a crucial step.

Trends in Laryngological Surgeries and Voice Services Among Patients with Gender Dysphoria

Gillian Michaelson, BS; Lex Rakowski, MS, CCC-SLP; Nina W. Zhao, MD, MAEd

Introduction: Recognition of gender dysphoria as a medical condition has led to increased rates of gender-affirming surgery (GAS). While voice and communication are essential components of gender identity, trends in related care remain underexplored. This study examines recent trends in laryngological surgeries and voice services among patients with gender dysphoria (GDPs).

Methods: We performed a retrospective cohort study using deidentified records from TriNetX, a global database. Adult GDPs were identified using International Code of Disease (ICD) codes for gender dysphoria (F64.*) or history of sex reassignment (Z87.890) between 1/1/14 and 9/15/24. GAS and voice-related care were identified using Current Procedural Terminology (CPT) codes and categorized as male-to-female (MtF) or female-to-male (FtM) top and bottom surgeries (TBS), facial surgeries (FS), laryngological surgeries (LS), and speech-language pathology voice services (SLP VS).

Results: Among 132,370 GDPs, 7,577 (5.27%) underwent FtM TBS, 2,954 (2.23%) MtF TBS, 1,008 (0.76%) FS, 347 (0.26%) LS, and 2,845 (2.15%) received SLP VS. Between 2014 and 2023, TBS increased by 1,209%, FS by 556%, LS by 1,090%, and SLP VS by 1,892%. Compared to FtM TBS, MtF TBS patients were more likely to undergo LS ($p=.01$) and SLP VS ($p<.0001$). Notably, most LS patients (296, 89%) did not have evidence of SLP VS.

Conclusions: The increasing rates of laryngological surgeries and SLP voice services among patients with gender dysphoria indicate growing awareness of comprehensive gender-affirming healthcare. However, the low rate of SLP involvement in patients receiving laryngological surgeries reveals a critical opportunity to enhance perioperative care and foster interdisciplinary collaboration.

Trends in Laryngotracheal Injury from Consumer Products (2015-2022): Implications for Healthcare Planning in an Aging U.S. Population

Thriaksh Rajan, BA; Humzah Quereshey, MD, MBA; Johnnie Rose, MD, PhD; N. Scott Howard, MD, MBA

Introduction: Management of laryngotracheal injuries requires prompt diagnosis and treatment utilizing significant healthcare resources with high operative costs and extended hospital stays. There is limited literature enabling us to estimate injury etiology and risk factors. We sought to understand national trends in the incidence of laryngotracheal injury related to consumer products by demographic subgroups and injury type.

Methods: Retrospective data were obtained from the Consumer Product Safety Commission's National Electronic Injury Surveillance System (CPSC-NEISS), which covers a nationally representative sample of hospital ED visits. NEISS was queried for head and neck injuries from 2015 to 2022, filtered for laryngotracheal injuries using specific keywords, and categorized by ED presentation. Demographic differences and injury incidence were analyzed using Pearson's chi-square and logistic regression, with national estimates adjusted by statistical weights to ensure representativeness.

Results: ED visits among patients aged 40-89 and with diagnoses of larynx/trachea damage and sprains/strains increased in incidence by >50% from 2015 to 2022. Injuries associated with furniture and building interiors showed a >50% increase in incidence. Age was a significant predictor of both diagnosis and etiology, with younger patients more likely to suffer from hemorrhage, puncture, and laceration, while older patients had higher rates of angioedema, hematoma, and fractures ($p<0.05$).

Conclusion: Trends in laryngotracheal injury appear to be influenced by the aging U.S. population. Non-traumatic injuries, described as internal damage and sprains/strains, are on the rise, particularly among adults aged 40-89. This demographic shows increasing susceptibility to injuries related to household items, which may be linked to age-related anatomical changes and environmental exposure.

Use of Stimulability Testing Among Laryngologists: High Value, High Variability

Rachel Coleman, MS, CCC-SLP; Scott Sussman, MS, CCC-SLP; Elizabeth Young, MS, CCC-SLP;
Laura Toles, PhD, CCC-SLP; Lucian Sulica, MD

Background/Objectives: Voice-specialized speech-language pathologists (SLPs) frequently use stimulability testing to determine patient candidacy for behavioral therapy. Despite frequent close collaboration with SLPs, it is unclear to what extent laryngologists utilize stimulability testing as an assessment tool for patients with voice disorders. This study aimed to establish the frequency, circumstances, and rationale for stimulability testing among laryngologists.

Methods: An anonymous survey consisting of 32 questions about stimulability practices was electronically distributed to laryngologists.

Results: Completed responses were obtained from 63 fellowship-trained laryngologists across ten countries. 94% of laryngologists reported that stimulability testing was performed always (51%) or sometimes (43%) with their voice patients. Stimulability testing was completed most frequently by the SLP (53%) compared to laryngologists (38%) or fellows (7%). Laryngologists who did not work closely with SLPs were more likely to report “I don’t know” or “never” when asked how often stimulability was performed ($\chi^2(12) = 47.0, p < 0.001$). Neither years of practice experience nor practice location (US region, Canada, or “other”) were predictive of who performed stimulability testing or how often stimulability was performed. All surveyed laryngologists reported there was a benefit to performing stimulability testing and that it impacted their plan of care. Despite this, 87% felt they needed more education and training in how to incorporate stimulability testing into their clinical practice. 86% reported they had no standardized protocol or were unsure if their clinic used a standard stimulability protocol.

Conclusion: The results underline the need for continued collaboration and interdisciplinary training between laryngologists and SLPs to enhance patient care.

Use of Three-Dimensional Printed Models for Training Laryngological Procedures: A Review of Current Literature

Nicholas Ogrinc, BS; Ross Rosen, BS; John Richter, BS; Daniel Shen, BS;
Daniel Karasik, BA; Nina W. Zhao, MD, MAEd

Background/Objectives: Trainee exposure to laryngology procedures can be limited during residency, making it challenging to achieve proficiency. Three-dimensional (3D) printed models may offer a cost-effective method to supplement traditional training. The purpose of this review is to describe the development, validation, and educational value of 3D-printed models for laryngological procedure training.

Methods: A structured search of PubMed, Embase, Medline, and Scopus was performed. English-language articles between 10/2004 and 10/2024 describing the use of 3D-printed laryngeal models for training voice, airway, or swallowing procedures were included. Two researchers independently reviewed studies and assessed quality using the Modified Medical Education Research Study Quality Instrument (MMERSQI).

Results: Eleven articles were included. Procedures included: laryngeal injections (3), thyroplasty (1), phonomicrosurgery (2), cricothyroidotomy (3), tracheostomy (1), and laryngotracheal reconstruction (2). Eight studies collected user feedback, with users reporting appropriate representation of laryngeal anatomy and adequate tactile feedback. Three studies assessed learning outcomes, showing trainee improvements on subsequent skills assessments. Three studies compared 3D-printed models with cadaver, porcine, or mannequin simulators, showing similar or superior fidelity. Five articles provided information on costs, ranging from \$1 to \$14.38 per unit. MMERSQI quality assessment revealed that most studies performed adequate statistical analyses but validity evidence for evaluation instruments was lacking.

Conclusions: 3D-printed laryngeal models are promising, low-cost training tools for laryngological procedures, offering reasonable fidelity and accessibility. Further research is needed to enhance validity evidence, optimize learning outcomes, and identify best practices for integration into training programs.

Utility of the Unified Spasmodic Dysphonia Rating Scale (Usdrs) for Adductor Type Laryngeal Dystonia (ADLD)

Camryn Marshall, BS; Sarah L. Schneider, MS, CCC-SLP; Clark A. Rosen, MD; VyVy N. Young, MD

Objective: The USDRS was described in 1997 to standardize evaluation of AdLD but has been sparsely utilized since then. We sought to compare the USDRS with objective acoustic voice data, patient-reported outcome measures (PROMs), and auditory-perceptual voice analyses to determine the degree of correlation between these data and the independent utility and clinical value of the USDRS for patients with ADLD.

Study Design: Retrospective, cross-sectional

Methods: 21 patients with stable-dose, botulinum toxin-A (BtxA)-responsive AdLD presented to a tertiary laryngology center for follow-up BtxA injections. USDRS, PROMs (Voice Handicap Index-10 [VHI-10], OMNI-Vocal Effort Scale (OMNI-VES), and Communicative Participation Item Bank (CBIB-10)) and voice recordings were obtained. Acoustic analysis was completed and voice specialized speech-language pathologists blindly rated voices using the Consensus Auditory Perceptual Evaluation – Voice. Linear regression and Pearson-Correlation Coefficients were used to compare each measurement with USDRS results.

Results: 31 BtxA injections were performed in 21 patients, including 15 (71.4%) Caucasian/non-Hispanic women, mean age 58.4 years. USDRS demonstrated no correlation with PROMS (R-squared range: 0.0289-0.165) or Cepstral Peak Prominence (CPP) (R-squared range: 0.0004-0.0118).

Conclusions: The USDRS does not correlate with other validated PROMs for voice in general (VHI-10) or specifically in AdLD (OMNI-VES, CPIB-10), objective acoustic voice measures, or with auditory-perceptual assessments. There is no clinical value or utility of the USDRS in the workup and monitoring of treatment response over time in patients with adductor-type spasmodic dysphonia/laryngeal dystonia.

Variations in Insurance Coverage for Voice Therapy in the United States

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Background: Voice therapy is used to treat dysphonia from various causes. It is often the first-line treatment and used as an adjunct to medical or surgical management. Despite its documented efficacy, few patients with dysphonia seek treatment, including voice therapy. Insurance coverage can affect patients' decisions and ability to pursue voice therapy. To date, no studies have investigated variations in insurance coverage of voice therapy for the treatment of dysphonia in the United States.

Methods: A cross-sectional study was performed to review insurance policies from the top three commercial insurers by enrollment percentage and Medicaid in all fifty states in the United States. The top three commercial insurers were determined using publicly available 2021 data from the Kaiser Family Foundation. Insurance policies for each of the top three commercial insurers and Medicaid in all fifty states were then identified using an internet search. Coverage for voice therapy was categorized as covered, requiring pre-authorization, determined on a case-by-case basis, or not covered based on documented policies.

Results: Amongst 150 commercial insurers, 90% (n=135) provided coverage for voice therapy, 7.3% (n=11) required prior authorization, 2% (n=3) were determined on a case-by-case basis, and 0.67% (n=1) did not provide any coverage. 86% (n=47) of the top insurers in each state provided coverage for voice therapy. Medicaid covered voice therapy in 84% (n=42) states.

Conclusions: Variations in the coverage of voice therapy exist in the United States. Overall, the majority of top insurers in each state and Medicaid provide coverage for voice therapy for the treatment of dysphonia.

Video Laryngoscope Assisted Injection Medialization Laryngoplasty

Neelaysh Vukkadala, MD; Kaitlynne Y. Pak, MD; Victor Hsue, MD; Anca Barbu, MD

Background: Vocal fold injection (VFI) offers an effective, safe, and minimally invasive treatment for glottic insufficiency. We present a novel and valuable method for intraoperative VFI with monitored anesthetic care (MAC) without endotracheal intubation and a video laryngoscope.

Methods: The procedure is performed under monitored anesthetic care (MAC) without endotracheal intubation. Airway management requires close communication between the otolaryngologist and anesthesiologist. As the patient enters deep sedation, they may become apneic and require intermittent support with the bag mask. The video laryngoscope is introduced, and glottis exposed by the surgeon with their non-dominant hand and held in suspension by the surgeon with clear exposure of the glottis. The filler is prepped into a 22-cm oro-tracheal laryngeal injection syringe on a 27-gauge needle. Under direct visualization, the laryngeal needle is introduced orally and advanced to the level of the glottic introitus while following the curvature of the plastic blade from the C-MAC video laryngoscope. The bevel of the needle is angled towards the lateral aspect of the selected cord and then advanced into the cord for a paraglottic injection.

Results: This procedure has been very well tolerated by our senior authors. All patients noted improved voice projection with decreased strain and breathiness. No patients experienced significant post-operative complications.

Conclusions: In patients who cannot tolerate an awake bedside VFI, our novel method offers a safe, intraoperative approach whilst minimizing anesthesia and operative time. This is particularly helping in critically ill patients who require vocal fold augmentation but cannot tolerate a bedside procedure nor full anesthesia.

Vocal Fold Injection Augmentation (VFIA) - A Landscape Review

James Daniero, MD, MS; Noah Thornton, BS

Introduction: The primary aim of this study is to assess the current state of Vocal Fold Injection Augmentation (VFIA) practices, identify challenges, and propose areas for improvement within the field. VFIA is a common procedure used to address glottic insufficiency. By examining the experiences and opinions of leading laryngologists, this study seeks to provide a comprehensive overview of VFIA practices and highlight opportunities for the development of more effective and standardized approaches.

Methods: This study employed a mixed-methods approach, combining quantitative data collected via surveys with qualitative data gathered from in-depth, semi-structured interviews with 21 Laryngologists.

Results: Regarding injectable materials, many physicians discussed problems with their high viscosity. This presents significant technical challenges and necessitates larger needle sizes to allow for smooth flow of materials. Larger needles may increase patient discomfort or allow material to egress from the injection site in the vocal folds. Additionally, many physicians expressed concerns that current long-term injectable materials are not forgiving in cases of over injection or poor anatomical location. It was also noted that material choices are often determined by institutional contracts, limiting their flexibility in selecting the most appropriate products for individual cases.

Conclusion: This study highlights the significant variability in VFIA practices and experiences among expert laryngologists. The study identifies a lack of standardization across the field, with institutional constraints heavily influencing practice. Moving forward, efforts should focus on developing standardized approaches for VFIA, optimizing injectable materials, and limiting human factors to enhance patient outcomes and reduce variability in practice.

Vocal Process Granulomas: Insights and Management

Amulya Vankayalapati, BS; Nour Awad, MD; Megha Mohanakrishnan, BS; Gregory R. Dion, MD, MS

Introduction: Vocal process granulomas (VPGs) exhibit a heterogeneous clinical presentation for which no clear treatment consensus exists currently. This study evaluates outcomes for varying treatment strategies.

Methods: A retrospective chart review of patients diagnosed with vocal process granuloma at a tertiary care center between 2017 and 2024 was conducted. Patient demographics, presenting symptoms, laryngeal evaluation findings, management strategies, and treatment outcomes were extracted from medical records. Changes in VPG imaging morphology over time were included.

Results: Nineteen patients (15 male/4 female, average age 56.74 ± 14.46 ranging from 34-79 years) were identified. Four presented with bilateral VPGs, while the remaining were unilateral. The most common first-line treatments were combination proton pump inhibitors (PPIs) and speech therapy (n=9), followed by inhaled corticosteroids (ICS) alone (n=8). Second-line treatments commonly included speech therapy (n=7) and Restylane injections (n=2), while third-line treatments utilized newer approaches such as Voluma injections (n=1), KTP laser (n=1), and fat augmentation (n=1). Fourteen patients received second-line treatments, with four progressing further to third-line treatments. Patients with unilateral VPGs received fewer rounds of treatment compared to those with bilateral VPGs ($\chi^2=9.07$, $p=0.011$). Additionally, those without high vocal demand showed better outcomes, with more patients reporting marked or stationary improvement ($\chi^2=9.3$, $p=0.026$).

Discussion: While VPG presentation and treatment outcomes vary amongst patients, certain characteristics such as lesion sidedness and voice use may inform the treatment provided and resulting improvements. In the absence of clear treatment guidelines, tailoring treatment strategies to individual patient histories and symptoms is critical.

Voice Change as a Result of Testosterone Supplementation in Cisgender Women: A Scoping Review

Heli Majeeth, BS; Teresa Proctor, SLPD; Yin Yiu, MD

Background: Testosterone is increasingly prescribed as a supplement for women to combat symptoms such as decreased libido, low energy, dysphoria, and reduced muscle mass. Since testosterone is not FDA-approved specifically for women, it is given off-label with variable dosing and quality, and potential risks are still being explored.

Objective: This scoping review aims to categorize and describe existing literature investigating the potential effects of testosterone supplementation on the voice in cisgender women.

Methods: This review follows PRISMA-ScR guidelines. Randomized clinical trials, retrospective studies, prospective studies, review articles and case reports that assessed changes in voice quality as an outcome for women undergoing testosterone supplementation were included. From PubMed, Web of Science and Scopus databases, 2191 studies were imported for initial screening. Of these, 1420 articles were screened at the title/abstract level, 78 at the full-text level, and 32 met inclusion criteria.

Results: Thirteen studies noted a rare but significant decrease in fundamental frequency or deepening of the voice after testosterone use in cisgender women. Fourteen studies demonstrated no definitive voice changes attributable to androgenic substances when used in therapeutic doses. Five histologic studies confirmed the effect of androgens on receptors in vocal fold tissue.

Conclusion: Testosterone has been evidenced to confer a small risk of subjective and objective deepening of the voice for cisgender women, in a dose- and duration-dependent manner. There is inadequate consensus for systematic determination of safe dosing and patient selection to avoid this potentially irreversible adverse effect.

Voice Feminization: A Systematic Review Assessing Quality of Life

Raisa Chowdhury, MSc; Jennifer Silver, MD, MSc;
Eleni Philippopoulos, MSc; Karen M. Kost, MD

Introduction: Voice is a significant indicator of gender identity. Alignment of voice with gender identity is essential for social acceptance and to improve quality of life (QoL). Voice feminization options for transgender women include both surgical and non-surgical techniques. The efficacy of these modalities, however, has not yet been adequately explored.

Objective: To systematically explore the impact of surgical and non-surgical voice feminization interventions on standardized acoustic metrics and patient-reported QoL.

Methods: A systematic review was conducted following PRISMA guidelines across Ovid Medline, Embase, CENTRAL, PsycINFO, and CINAHL. Included studies examined QoL and QoL outcomes in transgender women undergoing either surgical (e.g., Wendler glottoplasty, cricothyroid approximation) or non-surgical (voice therapy) interventions.

Results: Nineteen studies (n=273) met inclusion criteria. Surgical interventions resulted in significantly greater increases in fundamental frequency (F0) compared to non-surgical methods (mean increase 50.8 versus 38.9 Hz, $p<0.001$). Voice Handicap Index (VHI) and Trans Woman Voice Questionnaire (TWVQ) scores showed greater improvements in surgical cohorts, reflecting consistent gains in voice-related QoL. While non-surgical interventions offered effective, non-invasive options, outcomes were more variable and reliant on patient adherence and skill. Only two studies directly compared the effect of combining surgical and non-surgical methods. While both noted F0 benefits, this finding requires further validation with larger studies.

Conclusions: Surgical interventions offer the most reliable and substantial acoustic and QoL improvements. The intervention chosen, however, must be patient-driven, in the context of a comprehensive discussion of the available options.

Voice Function After TLM Based on Detailed Classification of Vocal Fold Mucosal Dissection

Mioko Fukahori, MD, PhD; Shun-ichi Chitose, MD, PhD; Takashi Kurita, MD, PhD;
Fumihiko Sato, MD, PhD; Tomoki Ito, MD; Sachi Watanabe, MD;
Umeno Hirohito, MD, PhD; Kiminori Sato, MD, PhD

Background: The Type I-VI classification for glottic cancer proposed by the European Laryngological Society (ELS) focuses on standardizing cancer resection but lacks detailed consideration of tissue anatomy important for voice preservation, particularly vocal fold mucosal layers essential for voice function. We hypothesize that the depth of vocal fold mucosal dissection significantly impacts postoperative voice outcomes.

Objectives: This study aimed to examine the relationship between the depth of vocal fold mucosal dissection and postoperative voice function for ELS Type I resection.

Methods: A retrospective review was conducted on 62 patients with vocal fold leukoplakia and T1a glottic cancer who underwent Type I resection as initial treatment between 2013 and 2023. Resection depth was classified by Hirano M et al. (1985), dividing into three categories: Type A (partial resection of the superficial lamina propria preserving its microvasculature), Type B (resection with exposure of the vocal fold ligament), and Type C (partial resection of the vocal fold ligament). This study included 25 Type A, 16 Type B, and 21 Type C patients. Postoperative vocal outcomes were evaluated using the GRBAS scale, phonotesting, and stroboscopy for each surgical type.

Results: Deeper resections were associated with rough and breathy voice quality, shorter maximum phonation time, and phase differences and significantly reduced amplitude in the affected vocal fold during vibration.

Conclusions: The superficial lamina propria, rich in hyaluronic acid and microvasculature, contributes to scar suppression and tissue regeneration, potentially minimizing postoperative voice disturbance in shallower resections.

Voice Outcomes after Endoscopic Intervention in Laryngotracheal Stenosis: A Systematic Review

Aida M. Hasson, BA; Megan Saltsgaver, BS;
Abbey Carlson, MS, CCC-SLP; Inna A. Husain, MD

Objective: Endoscopic dilation is a common approach to improve airway patency and breathing outcomes in patients with laryngotracheal stenosis, but effects on voice are unknown. This review aims to assess the current evidence on how endoscopic dilation influences voice outcomes in individuals with laryngotracheal stenosis.

Methods: A systematic review was conducted by searching PubMed and Cochrane for voice outcomes following endoscopic airway surgery for laryngotracheal stenosis. Studies were reviewed by three authors and data related to patient-reported outcome measures, auditory-perceptual findings, and acoustic and aerodynamic analysis were extracted and analyzed.

Results: A total of 2,351 abstracts were screened with 7 meeting inclusion to be included in the final analysis. All studies employed a case series design, with heterogeneity observed in the reported outcomes. Amongst 740 subjects, mean age was 49.1 years and 95.5% identified as female. Patient-reported outcome measures (VHI, VHI-10, VRQOL) indicated improvements; however, no consistent statistical significant improvement was found across studies. Auditory-perceptual ratings assessed using CAPE-V and GRBAS scales predominantly ranged from mild to moderate dysphonia severity pre-procedure and remained stable, worsened, or improved post-procedure though change was not significant. Acoustic measures of perturbation and aerodynamic laryngeal resistance trended downwards post-procedure.

Conclusion: Endoscopic dilation shows potential in improving voice outcomes, though definitive conclusions are hindered by current evidence limitations in a heterogeneous disease process. Future research should focus on utilizing comprehensive, validated voice outcomes, controlling for surgical technique variability, and strengthening methodological rigor to support more robust analysis and facilitate patient counseling.

What is a Control Cohort in Voice and Speech Biomarker Research: A Review of Definitions and Standardization Challenges

Yosef Nafii, BS; Micah Boyer, PhD; Yael Bensoussan, MD; Bridge2AI-Consortium

Background/Objectives: Voice and speech biomarkers are emerging tools in diagnosing and monitoring various conditions, yet inconsistencies in control cohort definitions pose significant challenges. Current studies often use control cohorts as a baseline to define normal voice and speech patterns for comparison with disease cohorts. However, there is no universally accepted definition of what constitutes a normal control cohort or a standardized method for selecting one. This study aims to investigate definitions and criteria for control cohorts within voice and speech biomarker literature.

Methods: A systematic review was conducted using PubMed and Embase, yielding an initial 326 articles. The articles were selected based on specific inclusion and exclusion criteria. The inclusion criteria involved studies using voice biomarkers, applying speech biomarkers for voice-affecting diseases, and including a control cohort. The exclusion criteria eliminated studies focusing on pediatric populations, those without control cohorts, and non-English language articles. After screening, 41 articles were selected for review. Outcome measures included definitions of control cohort criteria, inclusion and exclusion factors, demographic matching, and recruitment sources.

Results: Analysis revealed considerable variability in control definitions, with 12 studies not specifying criteria for a normal voice or speech. Criteria ranged from subjective measures, like expert ratings or self-reports, to objective acoustic features. Few studies used clinical assessments, such as laryngoscopy, for control verification, impacting comparability across studies.

Conclusion: These findings underscore the need for standardized guidelines for control cohorts in voice and speech biomarker research. Defining control criteria and considering real-world variability will enhance transparency, comparability, and robustness in future studies.

IN MEMORIAM

William Lawson, M.D.
November 23, 1934 - July 11, 2024

Sadly, the Fellowship was informed that Dr. William Lawson passed away peacefully on July 11th, 2024 as the age of 89 years. In 1981, Dr. Lawson was inducted as an Active Fellow after being proposed by the Late Hugh Biller, MD and Max Som, MD.

Dr. Lawson completed his undergraduate education at New York University where he also attended dental school and medical school. After serving in the U.S. Army Medical Corps during the Vietnam War (1967-69), Dr. Lawson advanced his training in otolaryngology at Mount Sinai Hospital under the leadership of Joseph Goldman. When Dr. Biller joined Mount Sinai in 1972, a year later, Dr. Lawson joined Dr. Biller where the two surgeon- scientists advanced the field contributing to the areas of conservation laryngeal surgery, head and neck reconstruction, and contributed seminal work in glomus neoplasms, sinus disease, and facial plastic surgery.

Aside from being a pioneer in the field of otolaryngology- head and neck surgery, he influenced a generation of residents, fellows, faculty, and staff. His eccentric personality and enthusiasm for academic otolaryngology was infectious, entertaining, and inspiring. With a

sardonic sense of humor and down-to-earth sensibilities, he has touched us all and made a great impact on the field of otolaryngology- head and neck surgery.

Renowned for his expertise in primary and revision rhinoplasty and facial plastic surgery, his knowledge was encyclopedic. As an elected fellow to ten prestigious professional societies and a prolific author of over 270 publications, he shaped otolaryngology and maxillofacial surgery in countless ways. Rising to the position of Chief of Otolaryngology at the Veterans Administration Medical Center where he served for three decades, he also held pivotal roles as the Endowed Grabsheid Professor of Otolaryngology, Vice Chairman of the Department, and Director of the Facial Plastic Surgery Clinic, all while co-leading the Sinus Research Laboratory at Mount Sinai.

Beyond his accolades and achievements, Dr. Lawson was a wonderful and unique individual. He was dedicated to the field of otolaryngology in a profound way. Dr. Lawson's recent passing is a resounding loss to the medical community. He leaves behind a legacy of excellence and compassion that will endure in the hearts of all who knew him.

Stanley Blaugrund, MD

1930 – June 6, 2024

The Association has been notified of the passing on June 6, 2024, of Stanley Blaugrund, MD at his home in New York. Elevated by the American Laryngological Association (ALA) to Emeritus Fellow in 2016 after more than 40 years (1977) as an Active Fellow, Dr. Blaugrund was one of the outstanding head and neck cancer surgeons of his generation.

Born in El Paso, Texas in 1930, Dr. Blaugrund moved to New York in 1958 for his residency in Otolaryngology at Mt. Sinai Hospital that was followed by completion of the distinguished John Conley Fellowship in Head and Neck Oncology and Facial Plastic Surgery. In addition to his groundbreaking surgical techniques and research, Dr. Blaugrund served as the chairman of Lenox Hill Hospital's Department of Otolaryngology for 25 years. He firmly believed that the ability to speak is part of one's humanity. He also e was instrumental in building the Lenox Hill's Ames Vocal Dynamics Laboratory serving leading actors, politicians, business leaders, and singers who rely on their voices for their work and art.

Among his many honors, Dr. Blaugrund was elected president of the national Triological

Society in 1997 and was awarded the esteemed deRoaldes Medal for Distinguished Service in Laryngology in 1998 by the American Laryngological Association.

During his training, he married the love of his life, art historian Dr. Annette Blaugrund, who, at the time, was running the audiology clinic. They were happily married for 63 years and have three children and seven grandchildren. During the time he wasn't attending to his patients, he spent time with his family sharing his love of cooking. He often challenged himself to master cooking techniques from around the world, which included family specialties such as stuffed cabbage and Tex-Mex staples learned from his mother.

Recognized as a Renaissance man: a passionate photographer, World War II history buff, painter, gardener, sailor, singer, and guitarist, Dr. Blaugrund also was a two-handicap golfer and overall gifted athlete. He noted that among his proudest athletic achievements was starting on the El Paso High School basketball team when they won the 1947 Texas State Championship as he scored the last point to win the game.

GEORGE ARTHUR GATES, M.D.

July 25, 1935 - February 8, 2025



The Association is saddened to learn of the passing of a long-time Fellow, George Arthur Gates, MD, on February 8, 2025. Dr. Gates was inducted in 1981 as an Active Fellow after being proposed by Drs. Roger Boles and Byron Bailey. In 2003, he was elevated to Emeritus status.

Born in Chicago, Illinois, Dr. Gates grew up in Welch, West Virginia with his siblings where his father was a country doctor who flew an aircraft to reach patients in the mountains of West Virginia. George would often pilot the airplane and helped his father bring television to their neighbor by carrying cable up the mountain to connect people.

Dr. Gates matriculated to the University of Michigan earning his undergraduate degree, and his Doctor of Medicine. He also completed his residency program in otorhinolaryngology while cherishing his time spent in Ann Arbor as a Wolverine. He served in the United State Naval Reserve at a naval hospital in Minneapolis. After his service, he joined the faculty at the University of Texas Health Science Center at San Antonio in 1971 where he would become a professor and the head of the otorhinolaryngology residency program. Every July, new ENT residents were welcomed to his

home for a barbeque that was a display of his pride in the selection of his ENT residents.

In addition to teaching, Dr. Gates was a noted researcher, having had a landmark research paper published in the New England Journal of Medicine in 1987 for his work in treating chronic ear infections in young children. In 1988, he took a faculty position at Washington University in St. Louis where he remained until he was recruited to become the inaugural Director of the Virginia Merrill Bloedel Hearing Research Center at the University of Washington in Seattle.

He was very passionate about medicine, especially medical and surgery involving the ear. In 2004, he retired from active practicing medicine but his contribution to the education of thousands of physicians, lectures and surgeries both domestic and international, was highly recognized. Even with these honors and accolades, he valued his most notable contribution to the science was his pioneering work in cochlear implants and helping to restore hearing to thousands of individuals. Dr. Gates will be well remembered for his life spent in service to his Christian faith, his family and his fellow man.

W. Frederick McGuirt, MD November 1, 1941 – January 26, 2025



The Association was recently informed of the passing of one of our past presidents, Dr. William Frederick McGuirt, Sr. on January 26, 2025 at the age of 83 years. Inducted as an Active Fellow in 1990, Dr. McGuirt served as president in 2003. He was a regular participant in the Association achieving Emeritus status in 2011. During his presidency, the Association made positive strides in financial growth as well as an increase in membership and attendance at the annual meetings. Born in Monroe, North Carolina on November 1, 1941, Dr. McGuirt was truly an eastern North Carolinian. After completing high school where he excelled in sports and academics, he attended The Bowman Gray School of Medicine and was named a Reynolds Scholar.

After serving in the U.S. Army at Fort Benning, Georgia, Dr. McGuirt completed his residency in Otolaryngology Head and Neck Surgery at the University of Iowa before returned home to practice at Atrium's Wake Forest University Baptist Medical Center. There he served for 31 years including eight as the Otolaryngology Department Chair. As the well respected physician and distinguished professor whose dedicated service to his patients, peers, and students is still remembered for his humbleness and thoughtfulness. Over the course of his career, he published over 100 articles, book chapters, and several books in the field. Dr. McGuirt was an inspiring teacher, who

touched the lives of many students and residents at Wake Forest.

In addition to his leadership role in the ALA, he held leadership roles in multiple national organizations, including President of the American Broncho- Esophagological Association, Chair of the Board of Governors of the Academy of Otolaryngology- Head and Neck Surgery, and examiner for the American Board of Otolaryngology. He was very proud of the establishment of the nationally recognized Head and Neck Surgical Oncology program at Atrium Wake Forest Baptist.

Dr. McGuirt had a love for the outdoors, travel, that Wake Forest deeply influenced his hobbies and free time. He cherished time spent on the family farm in Lumberton, fishing in Alaska, hunting any place a bird might fly, traveling to six continents with his wife, Kay. When asked about his professional accolades and honors he received in his lifetime, the legacy he would say he was most proud of was that of his family.

Dr. McGuirt is survived by his wife, Kay; his three children, William Frederick McGuirt Jr. (Robin), Patricia McGuirt Faircloth (Scott), and Wyman Thomas McGuirt (Courtney); his eleven grandchildren; Kay's children, Currin White (Will) and Scott Evans (Kristen) along with her six grandchildren.

PAST PRESIDENTS

1879	Louis Elsberg	1920	Harris P. Mosher
1880	J. Solis-Cohen	1921	Harmon Smith
1881	F. I. Knight	1922	Emil Mayer
1882	G.M. Lefferts	1923	J. Payson Clark
1883	F.H. Bosworth	1924	Lee Wallace Dean
1884	E. L. Shurly	1925	Greenfield Sluder
1885	Harrison Allen	1926	Chevalier Jackson
1886	E. Fletcher Ingals	1927	D. Bryson Delevan
1887	R. P. Lincoln	1928	Charles W. Richardson
1888	E. C. Morgan	1929	Lewis A. Coffin
1889	J. N. Mackenzie	1930	Francis R. Packard
1890	W. C. Glasgow	1931	George R. Shambaugh
1891	S.W. Langmaid	1932	George Fetteroff
1892	M. J. Asch	1933	George M. Coates
1893	D. Bryson Delavan	1934	Dunbar Roy
1894	J. O. Rose	1935	Burt R. Shurly
1895	W. H. Day	1936	William B. Chamberlain
1896	C. H. Knight	1937	John F. Barnhill
1897	T.R. French	1938	George B. Wood
1898	W. E. Casselberry	1939	James A. Babbitt
1899	Samuel Johnston	1940	Gordon Berry
1900	H. L. Swain	1941	Thomas E. Carmody
1901	J.W. Farlow	1942	Charles J. Imperatori
1902	J. H. Bryan	1943	Charles J. Imperatori
1903	J. H. Hartman	1944	Harold I. Lillie
1904	C.C. Rise	1945	Harold I. Lillie
1905	J.W. Gleitsman	1946	Frank R. Spencer
1906	A.W. deRoaldes	1947	Arthur W. Proetz
1907	H.S. Birkett	1948	Frederick T. Hill
1908	A. W. Coolidge Jr	1949	Ralph A. Fenton
1909	J. E. Logan	1950	George B. New
1910	D. Braden Kyle	1951	H. Marshall Taylor
1911	James E. Newcomb	1952	Louis H. Clerf
1912	George A. Leland	1953	Gordon F. Harkness
1913	Thomas Hubbard	1954	Henry B. Orton
1914	Alexander W. MacCoy	1956	LeRoy A. Schall
1915	C. Hudson Makuen	1957	Harry P. Schenck
1916	Joseph L. Goodale	1958	Fred W. Dixon
1917	Thomas H. Halstead	1959	William J. McNally
1918	Cornelius G. Coakley	1960	Edwin N. Broyles
1919	Norval H. Pierce	1961	Dean M. Lierle

PAST PRESIDENTS (Continued)

1962	Frances E. LeJeune	1992	William B. Hudson
1963	Anderson C. Hilding	1993	Byron J. Bailey
1964	Albert C. Furstenberg	1994	H. Bryan Neel III
1965	Paul H. Holinger	1995	Paul H. Ward
1966	Joel J. Pressman	1996	Robert W. Cantrell
1967	Lawrence R. Bois	1997	John A. Tucker
1968	Francis W. Davison	1998	Lauren D. Holinger
1969	Alden H. Miller	1999	Gerald B. Healey
1970	DeGraff Woodman	2000	Harold C. Pillsbury III
1971	F. Johnson Putney	2001	Stanley M. Shapshay
1972	Frank D. Lathrop	2002	Gerald S. Berke
1973	G. Slaughter Fitz-Hugh	2003	W. Frederick McGuirt Sr.
1974	Daniel C. Baker Jr.	2004	Robert H. Ossoff
1974	Joseph H. Ogura	2005	Robert T. Sataloff
1975	Stanton A. Friedberg	2006	Gayle E. Woodson
1976	Charles M. Norris	2007	Marshall Strome
1977	Charles F. Ferguson	2008	Roger L. Crumley
1978	John F. Daly	2009	Marvin P. Fried
1979	John A. Kirchner	2010	Andrew Blitzler
1980	Daniel Miller	2011	Michael S. Benninger
1981	Harold G. Tabb	2012	Clarence T. Sasaki
1982	M. Stuart Strong	2013	C. Gaelyn Garrett
1983	John S. Lewis	2014	Mark S. Courey
1984	Gabriel F. Tucker Jr.	2015	Peak Woo
1985	Douglas P. Bryce	2016	Kenneth Altman
1986	Loring W. Pratt	2017	Gady Har-El
1987	Blair Fearon	2018	C. Blake Simpson
1988	Seymour R. Cohen	2019	Paul W. Flint
1989	Eugene N. Myers	2020	Paul W. Flint
1990	James B. Snow Jr	2021	Clark A. Rosen
1991	John M. Frederickson	2022	Lucian Sulica
1992	William B. Hudson	2023	Dinesh Chhetri
		2024	Michael M. Johns III

Vice Presidents (First and Second)

1879	F.H. Davis	1929	William B. Chamberlin, Ralph A. Fenton
1880	W. C. Glasgow, J. O. Roe	1930	Harris P. Mosher, James A. Babbitt
1881	E. L. Shurly, W. Porter	1931	Joseph B. Greene, E. Ross Faulkner
1882	C. Seiler, E. F. Ingals	1932	Gordon Berry, Frank R. Spencer
1883	S. W. Langmaid, S. Johnston	1933	E. Ross Faulkner, Thomas S. Carmody
1884	J. H. Hartman, W. H. Daly	1934	Fordon B. New, Samuel McCullagh
1885	H.A. Johnson, G. W. Major	1935	Edward C. Sewall, H. Marshall Taylor
1886	E. C. Morgan, J. N. Mackenzie	1936	William P. Wherry, Harold I. Lillie
1887	J. N. Mackenzie, S. W. Langmaid	1937	Frank R. Spencer, Bernard J. McMahon
1888	W. C. Glasgow, C. E. DeM. Sajous	1938	Ralph A. Fenton, Frederick T. Hill
1889	F. Holden, C.E. Bean	1939	John H. Foster, Thomas R. Gittins
1890	J. O. Roe, J. H. Hartman	1940	Charles H. Porter, Gordon F. Harkness
1891	M. J. Asch, S. Johnston	1941	Arthur W. Proetz, Henry B. Orton
1892	S. Johnston, J. C. Mulhall	1942-3	Harold I. Lillie, Dean M. Lierle
1893	J. C. Mulhall, W. E. Casselberry	1944-5	John J. Shea, Thomas C. Galloway
1894	C.C.Rice, S. H. Chapman	1946	H. Marshall Taylor, C. Stewart Nash
1895	J. Wright, A. W. de Roaldes	1947	John J. Shea, Frederick A. Figi
1896	T. M. Murray, D. N. Rankin	1948	Henry B. Orton, Anderson C. Hilding
1897	A. W. MacCoy, H. S. Birkett	1949	LeRoy A. Schall, Fletcher D. Woodward
1898	J. W. Farlow, F.W. Hinkel	1950	W. Likely Simpson, Lyman, G. Richards
1899	T. A. DeBlois, M. R. Brown	1951	William J. McNally, Thomas C. Galloway
1900	H. L. Wahner, A. A. Bliss	1952	J. MacKenzie Brown, Edwin N. Broyles
1901	J. W. Gleitsmann, D. Braden Kyle	1953	Claude C. Cody, Daniel S. cunning
1902	G.A. Leland, T. Melville Hardie	1954	James H. Maxwell, Clyde A. Heatly
1903	J. H. Lowman, W. Peyre Porcher	1955	Robert L. Goodale, Paul H. Holinger
1904	Thomaso Hubbard, W. J. Freeman	1956	Henry M. Goodyear, Robert E. Priest
1905	J. L. Goodale, C. W. Richardson	1957	Frances H. LeJeune, Pierre P. Viole
1906	G. H. Makuen, A. R. Thrasher	1958	Charles Blassingame, Chevalier L. Jackson
1907	J. P. Clark, J. E. Rhodes	1959	James H. Maxwell, Oliver Van Alyea
1908	E. Mayer, F. R. Packard	1960	Walter Theobald, Anderson C. Hilding
1909	C. G. Coakley, H. O. Moser	1961	Julius W. McCall, P. E. Irlend
1910	Robert C. Myles, J. M. Ingersoll	1962	Paul M. Moore, Jerome A. Hilger
1911	F. C. Cobb, B. R. Shuly	1963	Paul M. Holinger, Lester A. Brown
1912	A. W. Watson, W. Scott Renner	1964	B. Slaughter Fitz-Hugh, Daniel C. Baker
1913	F. E. Hopkins, George E. Shambaugh	1965	C. E. Munoz-McCormick, Arthur J. Crasovaner
1914	Clement T. Theien, Lewis A. Coffin	1966	Lawrence R. Boies, G. Edward Tremble
1915	J. Gordon Wilson, Christian R. Holmes	1967	John F. Daly, Stanton A. Friedberg
1916	Thomas H. Halsted, Greenfield Sluder	1968	DeGraaf Woodman, John Murtagh
1917	John Edwin Rhodes, D. Crosby Greene	1969	Joseph P. Atkins, Stanton A. Friedberg
1918	George E. Shambaugh, John R. Winslow	1970	Robert B. Lewy, Oliver W. Suehs
1919	Francis R. Packard, Harmon Smith	1970	James A. Harrill, James D. Baxter
1920	Harmon Smith, W. B. Chamberlin	1972	Francis L. Weille, Sam H. Sanders
1921	Dunbar Roy, m Robert C. Lynch	1973	William H. Saunders, Blair Fearon
1922	George Fetterolf, Lorenzo B. Lockard	1974	Joseph H. Ogura, Douglas P. Bryce, John A. Kirchner
1923	Hubert Arrowsmith, Joseph B. Greene	1975	S. Lewis, Edwin W. Cocke, Jr.

Vice Presidents (First and Second)

1924	Ross H. Skillern, Gordon Berry	1976	Emanuel M. Skolnik, John T. Dickinson
1925	John E. Mackenty, Robert Levy	1977	J. Ryan Chandler, Herbert H. Dedo
1926	Lewis A. Coffin, William V. Mullin	1978	John E. Bordley, Lester A. Brown
1927	Charles W. Richardson, Hill Hastings	1979	Albert H. Andrews, Seymour R. Cohen
1928	Robert Cole Lynch, Francis P. Emerson	1980	John Frazer, George A. Sisson

Vice-Presidents (Presidents-Elect)

1981	M. Stuart Strong	1996	John A. Tucker	2010	Michael Benninger
1982	John S. Lewis	1997	Lauren D. Holinger	2011	Clarence T Sasaki
1983	Gabriel F. Tucker, Jr	1998	Gerald B. Healy	2012	C. Gaelyn Garrett
1984	Douglas P. Bryce	1999	Harold C. Pillsbury, III	2013	Mark S. Courey
1985	Loring W. Pratt	2000	Stanley M. Shapshay	2014	PeakWoo
1986	Blair Fearon	2001	Gerald S. Berke	2015	Kenneth Altman
1987	Seymour R. Cohen	2002	W. Frederick McGuirt, Sr.	2016	Gady Har-El
1988	Eugene N. Myers	2003	Robert H Ossoff	2017	C. Blake Simpson
1989	John B. Snow, Jr.	2004	Robert T. Sataloff	2018	Paul W. Flint
1990	John M. Frederickson	2005	Gayle Woodson	2019-20	Clark A. Rosen
1991	William R. Hudson	2006	Marshall Strome	2021	Lucian Sulica
1992	Byron Bailey	2007	Roger L. Crumley	2022	Dinesh Chhetri
1993	H. Bryan Neel III	2008	Marvin Fried	2023	Michael M. Johns III
1994	Paul H. Ward	2009	Andrew Blitzer	2024	Joel Blumin
1995	Robert W. Cantrell				

Secretaries

1879	G.M. Lefferts	1957	James H. Maxwell
1882	D. Bryson Delavan	1959	Lyman G. Richards
1889	C. H, Knight	1968	Frank D. Lathrop
1895	H. L. Swain	1972	John F. Daly
1900	P.E. Newcomb	1977	William M. Tribble
1911	Harmon Smith	1982	Eugene N. Myers
1918	D. Bryson Delavan	1988	H. Bryan Neel III
1919	J. M. Ingersoll	1993	Gerald B. Healy
1920	George M. Coates	1998	Robert H. Ossoff
1933	William V. Mullin	2003	Marvin P. Fried
1935	James A. Babbitt	2008	C. Gaelyn Garrett
1939	Charles J. Imperatori	2012	Gady Har-El
1942	Arthur W. Proetz	2017	Lucian Sulica
1947	Louis H. Clerf	2022	Joel Blumin
1952	Harry P. Schenck		

Secretaries and Treasurers

1879	G.M. Lefferts	1889	C. H. Knight	1900	P. E. Newcomb
1882	D. Bryson Delavan	1895	H. L. Swain	1911	Harmon Smith

Librarian and Historian

1936	George M. Coates	1944	Louis H. Clerf
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Librarian, Historian and Editor

1947	Harry P. Schenck	1971	Charles F. Ferguson	1997	Stanley M. Shapshay
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DANIEL C. BAKER. JR. M.D. LECTURE

The Daniel C. Baker Jr., MD Lectureship was established in 1975 by the Baker family and Dr. Baker's friends, patients, and colleagues in his memory and in appreciation for his dedication to the field of Laryngology. Dr. Baker was President of the American Laryngological Association in 1974 and a recipient of the Newcome Award in 1971.

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