



CURRICULUM VITAE

MICHAEL E. DUNHAM, MD

Current Title: Professor of Clinical Otolaryngology
LSU Department of Otolaryngology Head and Neck Surgery

Adjunct Professor of Engineering
LSU A&M School of Engineering

Section Chief, Pediatric Otolaryngology
LSU Department of Otolaryngology Head and Neck Surgery

Co-Director, Medical Innovations Design Studio
Office of Innovation and Partnerships
LSU School of Medicine

Medical Director of Pediatric Otolaryngology – Our Lady of
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EDUCATION

University of South Carolina; Columbia, S.C., B.S. (Chemistry)
Magna cum laude; 6/1971 – 6/1974

DePaul University; Chicago, IL, M.S. (Computer Science); 9/1995 -2/2000

Tulane University School of Medicine; New Orleans, LA., M.D.; 7/1974 – 6/1978

Tulane University Affiliated Hospitals; Internship (General Surgery);
Outstanding Intern Award; 7/1978 – 6/1979

Tulane University Affiliated Hospitals; Residency (Otolaryngology); 7/1979 – 6/1982

Children's Memorial Hospital (Northwestern University Medical School);
Fellowship (Pediatric Otolaryngology); 6/1990 – 7/1991

WORK HISTORY

Tulane University Department of Otolaryngology New Orleans, LA	7/1982 – 7/1983
Midlands ENT Columbia, SC	7/1983 – 6/1991
Children's Surgical Foundation Chicago, IL	6/1991 - 8/1999
Michael E. Dunham, MD, Ltd. Wilmette, IL	8/1999 -12/2005
Specialty Medical Group Madera, CA	12/2005 – 5/2015
Community Pediatric Specialists Medical Group Fresno, CA	5/2015 - 6/2015
Louisiana State University Department of Otolaryngology / Head and Neck Surgery New Orleans, LA	7/2015 - present

BOARD CERTIFICATION

Otolaryngology: October, 1982

LICENSURE

Louisiana State Board of Medical Examiners
License: MD 207839

ACADEMIC APPOINTMENTS

Assistant Professor, Otolaryngology; Tulane University. 7/1982-7/1983

Clinical Assistant Professor, Department of Surgery; University of South
Carolina. 7/1983 -6/1991

Clinical Assistant Professor, Department of Pediatrics; University of South Carolina. 6/1991-7/1992

Assistant Professor of Clinical Otolaryngology, Northwestern University Medical School. 7/1992-12/2005

Associate Professor of Otolaryngology, Louisiana State University Health Sciences Center. 7/2015 – 6/2021

Professor of Otolaryngology, Louisiana State University Health Sciences Center. 7/2021 - present.

Adjunct Professor of Engineering, Louisiana State University School of Engineering. 8/2021 – present.

PROFESSIONAL ASSOCIATIONS

American College of Surgeons, Fellow

American Society of Pediatric Otolaryngology, Active member

American Broncho-Esophagological Association, Active member

American Academy of Otolaryngology-Head and Neck Surgery, Active member

Triological Society, Active member

Awards and Honors

Membership, American Laryngological, Rhinological and Otological Society
April, 2020.

TEACHING EXPERIENCE AND RESPONSIBILITIES

Departmental Teaching

Northwestern University Medical School, Children's Memorial Hospital –

Supervised resident training in the outpatient clinics and operating room.

Included didactic teaching, departmental seminars and grand rounds.

July 1990 – June 2003.

Louisiana State University Medical School, Children's Hospital New Orleans –

Supervised resident training in the outpatient clinics and operating room.

Included didactic teaching, departmental seminars and grand rounds.

July 2015 – present.

Formal Course Responsibilities

1. Senior engineering capstone design program (LSU Biomedical Engineering)
Faculty Sponsor – 2019.

2. Senior engineering capstone design program (LSU Electrical and Computer Engineering)
Faculty Sponsor – 2020.
3. Senior engineering capstone design program (LSU Electrical and Mechanical Engineering)
Faculty Sponsor – 2021.

Teaching awards

Annual Otolaryngology Resident's Faculty Award - 2019

RESEARCH AND SCHOLARSHIP|

Grants and Contracts

Funded

1. Pennington Louisiana Biomedical Collaborative Research Program
“Computational Aerodynamics and Anatomical Characterization of Laryngotracheal Stenosis in Children”
CO-PI
Awarded June 2017
\$50,000
2. Leveraging Innovation for Technology Transfer (LIFT2)
“Optical Biopsy of Vocal Fold Lesions: Sheath based delivery system during Laryngoscopy”
CO-PI
Awarded June 2019
\$50,000
3. Resident awards (grant sponsor - \$5,000 per study)
2017
Image Based Three-Dimensional Characterization of Laryngotracheal Stenosis in Children.

2018
Computational Fluid Dynamics Evaluation of Pediatric Laryngotracheal Stenosis. A Surgical Simulator for Tympanostomy Tube Insertion Incorporating Capacitive Sensing Technology to Track Instrument Placement.

Automated Classification of Airway Endoscopic Findings Using Convolutional Neural Networks

2019
Autonomous Classification of Pediatric Vascular Anomalies Using a Convolutional Neural Network

2020

A Surgical Site Evacuator for Open Airway Surgery.

A Microlaryngoscopy Surgical Simulator for Resecting Vocal Fold Carcinoma Incorporating Phantom Tumor Modeling and Oncologic Margin Detection.

2021

Designs for a Minimal Impact Dual Access Faceplate and Smart Tie to Reduce the Risk of Tracheostomy Related Wound Complications in Children.

A Platform for the Visual Evaluation of the Ears, Nose and Oral Cavity Via Telemedicine.

Safe Airway Digital Application.

Journal Publications

Refereed

1. Butcher RB, **Dunham ME**: Composite Nasal Septal Cartilage Graft for Reconstruction after Extended Frontolateral Hemilaryngectomy. Laryngoscope, 1984; 94:959-62.
2. Osterman J, Calhoun A, **Dunham ME**, Cullum UX Jr, Clark RM, Stewart DD, Scheithauer BW, Zimmerman EA, Defendini R, Zang X, et al: Chronic Syndrome of Inappropriate Antidiuretic Hormone Secretion and Hypertension in a Patient with Olfactory Neuroblastoma. Archives of Internal Medicine, 1986;146:1731-5.
3. Bell RM, Page GV, Bynoe RP, **Dunham ME**, Brill AH: Post Traumatic Sinusitis. Journal of Trauma, 1988; 28:923-30.
4. Weiman DS, **Dunham ME**, Almond CA, Friedman HI, Bowe EA: Combined Tracheal and Esophageal Transection from Blunt Trauma to the Neck. Journal South Carolina Medical Association, 1988;84:111-3.
5. **Dunham ME**, Austin TL: Congenital Aglossia and Situs Inversus. International Journal of Pediatric Otolaryngology, 1990;19:163-8.
6. **Dunham ME**, Friedman HI: Audiological Management of Bilateral External Auditory Canal Atresia with the Implantable Bone Conducting Hearing Device. Cleft Palate Journal, 1990;27:369-73.
7. Bhisitkul DM, **Dunham ME**: An Unsuspected Alkaline Battery Foreign Body Presenting as Malignant Otitis Externa. Pediatric Emergency Care, 1991; 8:141-2.

8. **Dunham ME**, Miller RP: Bilateral Choanal Atresia Associated with Malformation of the Anterior Skull Base: Embryogenesis and Clinical Implications. *Annals of Otolaryngology, Rhinology & Laryngology*, 1992; 101:916-19.
9. **Dunham, ME**: Management of Severe Tracheal Stenosis. *Annals Otolaryngology, Rhinology & Laryngology*, 1994; 103:351-356.
10. **Dunham, ME**, Holinger LD: Ventilating Tracheal Resectoscope. *Annals Otolaryngology, Rhinology & Laryngology*, 1994; 103:676-678.
11. **Dunham ME**, Wolf RN: Visualizing the pediatric airway: three-dimensional modeling of endoscopic images. *Ann Otol Rhinol Laryngol* 1996; 105:12-17.
12. Fong KJ, **Dunham ME**: Inflammatory disorders of the pediatric upper airway. *Current Opinion in Otolaryngology and Head and Neck Surgery* 1996; 4:429-433.
13. **Dunham ME**: Evaluating the limited sinus computed tomography scan in children. *Laryngoscope* 1997; 107:1-4.
14. Backer CL, Mavroudis C, **Dunham, ME**, Holinger LD: Reoperation after pericardial patch tracheoplasty. *J Pediatr Surg* 1997; 32:1108-1112.
15. Cheng ATL, Backer CL, Holinger LD, **Dunham ME**. Histopathologic changes after pericardial patch tracheoplasty. *Arch Otolaryngol-HNS*, 1997; 123:1069-1072.
16. Dayan SH, **Dunham ME**, Backer CL, Mavroudis C, Holinger LD: Slide tracheoplasty in the management of congenital tracheal stenosis. *Ann Otol Rhinol Laryngol* 1997; 106:914-919.
17. Mass SC, **Dunham ME**: Head and neck masses in children. *Current Opinion in Otolaryngology and Head and Neck Surgery*, 1997; 5:348-354.
18. Backer CL, Mavroudis C, **Dunham ME**, Holinger LD: Repair of congenital tracheal stenosis with a free tracheal autograft. *J Thor CV Surg*, 1998, 115:869-874.
19. Wheeler M, Roth AG, **Dunham ME**, Rae B, Cote CJ: A bronchoscopic, computer-assisted examination of the changes in dimension of the infant tracheal lumen with changes in head position. Implications for emergency airway management. *Anesthesiology* 1998; 88:1183-1187.
20. Rosenbaum AM, Walner DL, **Dunham ME**, Holinger LD: Ammonia Capsule Ingestion Causing Upper Aerodigestive Tract Injury. *Otolaryngol-HNS*, 1998; 119:678-680.
21. Bentz BG and **Dunham ME**: Extrinsic tracheobronchial Compression. *Current Opinion in Otolaryngology and Head and Neck Surgery*, 1998, 6:368-372.

22. Furman RH, Backer CL, **Dunham ME**, Donaldson J, Mavroudis C , Holinger LD: The Use of Balloon-Expandable Metallic Stents in the Treatment of Pediatric Tracheomalacia and Bronchomalacia. *Arch Otolaryngol Head Neck Surg*, 1999;125:203-207.
23. Backer CL, Mavroudis C, **Dunham ME**, and Holinger LD: Pulmonary Artery Sling: Results with Median Sternotomy, Cardiopulmonary Bypass, and Reimplantation. *Ann Thorac Surg* 1999; 67:1738-45.
24. Backer CL, Mavroudis C, **Dunham ME**, and Holinger LD: Intermediate-Term Results of the Free Tracheal Autograft for Long Segment Congenital Tracheal Stenosis. *J Pediatr Surg* 2000; 35:813-819.
25. Rodriguez D, **Dunham M**, Wall L. Rhinitis due to *Serratia Marcescens* Masquerading as Choanal Atresia in a Baby with Undiagnosed CGD. *Annals of Allergy, Asthma & Immunology* , 2017; 119(5):S75
26. McDaniel LS, Poynot WJ, Gonthier KA, **Dunham ME**, and Crosby TC: Image-Based 3-Dimensional Characterization of Laryngotracheal Stenosis in Children. *OTO Open* <https://doi.org/10.1177/2473974X17753583>. First Published January 29, 2018.
27. Vaitaitis VJ, **Dunham ME**, Kwon YC, et al. A surgical simulator for tympanostomy tube insertion incorporating capacitive sensing technology to track instrument placement. *Otolaryngol Head Neck Surg*. 2020;162(3):343-345.
28. Poynot WJ, Gonthier KA, **Dunham ME**, Crosby TW. Classification of Tracheal Stenosis in Children Based on Computational Aerodynamics. *Journal of Biomechanics*. 2020;104. <https://doi.org/10.1016/j.jbiomech.2020.109752>.
29. **Dunham ME**, Kong KA, McWhorter AJ, Adkins LK. Optical Biopsy: Automated Classification of Airway Endoscopic Findings Using a Convolutional Neural Network. *The Laryngoscope*. 2020. doi:10.1002/lary.28708 (Triological Thesis).
39. Li Z, Li Z, Chen Q, et al. Detection of pancreatic cancer by convolutional-neural-network-assisted spontaneous Raman spectroscopy with critical feature visualization. *J. Neural Networks*. 2021;144:455–464.
40. Li Z, Li Z, Ramos A, Boudreaux JP, Thiagarajan R, Mattison YB, **Dunham ME**, McWhorter AJ, Chen Q, Zhang J, Feng JM, Li Y, Yao S, Xu J. Detection of pancreatic cancer by indocyanine green-assisted fluorescence imaging in the first and second near-infrared windows. *Cancer Commun*. 2021;41(12):1431-1434.

41. Patel P, Ragland K, Robertson B, Ragusa G, Wiley C, Miller J, Jullens R, Dunham M, Richter G. Autonomous diagnosis of pediatric cutaneous vascular anomalies using a convolutional neural network. *International Journal of Pediatric Otorhinolaryngology*. 2022;156:111096. <https://doi.org/10.1016/j.ijporl.2022.111096>.

Non-Refereed

1. Bowe EA, Weiman DS, **Dunham ME**, Almond CA: Airway Management with Complete Tracheal Transection. *Progress in Pediatric Trauma*, 1987.
2. **Dunham ME**: Sinusitis in Children. *The Child's Doctor, Journal of the Children's Memorial Hospital*, 1992; 4-10.
3. **Dunham, ME**: New Light on Sinusitis. *Contemporary Pediatrics*, 1994;11:102-117.
4. **Dunham ME**: Choanal Atresia. *The Child's Doctor*. Fall 1998; 9-12.

BOOK CHAPTERS

1. **Dunham ME**, Holinger LD: Stridor, Aspiration, and Cough; in Head and Neck Surgery - Otolaryngology, Bailey, BJ, Ed., J.B. Lippincott Company, Philadelphia, 1993.
2. Bressler, KL, **Dunham, ME**, Holinger LD: Complications of Laryngoscopy, Bronchoscopy, and Esophagoscopy; in Complications of Head and Neck Surgery, Weissler MC and Pillsbury HC, Eds., Thieme Medical Publishers, New York, 1995.
3. **Dunham ME**: Tracheotomy; in Pediatric Laryngology & Bronchoesophagology. Holinger LD, Lusk RP, & Green CG, Eds., Lippincott-Raven Press, 1997.
4. Hughes, CA, **Dunham ME**: Congenital anomalies of the larynx and trachea; in Pediatric Otolaryngology: Principles and Practice Pathways, Wetmore RF, Muntz HR and McGill TJ, Eds., Thieme Medical Publishers, New York, 1998.
5. **Dunham ME**, Holinger LD: Stridor, Aspiration, and Cough; in Head and Neck Surgery – Otolaryngology, 2nd Ed, Bailey BJ, Ed., J.B. Lippincott Company, Philadelphia, 1998.
6. Myers, Gordon, **Michael E. Dunham**, and Luke A. Wall. "Progressive Headaches and Right Eye Proptosis." Pediatric Allergy. Springer, Cham, 2019. 55-59.
7. Rodriguez, Daniel, **Michael E. Dunham**, and Luke A. Wall. "Failure to Thrive and Nasal Obstruction." Pediatric Immunology. Springer, Cham, 2019. 315-320.

SCIENTIFIC PRESENTATIONS

Local: CME

“Congenital Cervical Anomalies”
University of California, Irvine
Grand Rounds, Department of Otolaryngology
Irvine, CA, Jan, 2014.

“Surgical Management of Pediatric Laryngotracheal Stenosis”
Orange County Medical Society
Newport Beach, CA, Jan, 2014.

Local: Non-CME

“Surgical Management of the Fourth Branchial Pouch Anomaly”
Lauren D. Holinger Symposium
Chicago, IL, Oct, 2014.

“Management of Branchial Anomalies”
LSUHSC Didactic Day
Baton Rouge, LA, Mar, 2015.

“Tonsillectomy Guideline”
LSUHSC Didactic Day
Baton Rouge, LA, Aug, 2019.

National: CME

“Managing Uncertainty on Truncated Domains in CFD Analysis of Human Upper Airways”
Poster Presentation. International Mechanical Engineering Congress and Exposition (IMECHE) 11/8/2017

“Rhinitis due to *Serratia Marcescens* masquerading as choanal atresia in a baby with undiagnosed CGD”.
Poster Presentation. American Academy of Allergy Asthma and Immunology. March, 2018.

“Computational Fluid Dynamics Evaluation of Pediatric Laryngotracheal Stenosis”
Poster Presentation. The Triological Society Combined Sections Meeting. January 2019
First place award, laryngology/bronchoesophagology.

A Surgical Simulator for Tympanostomy Tube Insertion Incorporating Capacitive Sensing Technology to Track Instrument Placement.
American Academy of Otolaryngology – Head and Neck Surgery Simulator Showcase
New Orleans LA, September 2019.

Automated Classification of Video-Otосcopy Using Convolutional Neural Networks. Poster Presentation. Triological Society Combined Sections Meeting. January 2020.

High Speed Photographic Analysis of Aerosol Generating Procedures: Effects of Surgical Site Evacuation. Poster Presentation, AAOHNS, 2021

An Efficient, Modular Surgical Simulator for Microlaryngoscopy using Standard Instruments and the CO2 Laser. Simulation Showcase, AAOHNS 2021

Inventions and Patents (Filed with LSUHSC Technology Office)

1. Capacitance Sensing System for Detecting and Scoring Instrument Placement Accuracy During Surgical Simulation (provisional patent). January, 2018.
2. Delivery Systems and Validation for Raman Spectroscopy during Flexible Fiberoptic and Rigid Telescopic Laryngoscopy. March, 2019.
3. A Mobile Device for the Autonomous Diagnosis of Pediatric Skin Lesions Using a Convolutional Neural Network. June, 2019.
4. Designs for a Dual Flow Endotracheal Tube and Tracheostomy Cannulas with Minimal Impact Dual Access Faceplate. April, 2020.
5. Nasopharyngeal Surgical Site Evacuator. July, 2020.
6. Cervical Surgical Site Evacuator. July, 2020.
7. Oral Cavity Surgical Site Evacuator. July, 2020.
8. Otologic Surgical Site Evacuator. July, 2020.

SERVICE ACTIVITIES

Department, Institutional Service

LSUHSC Research Advisory Council
IRB – Otolaryngology Departmental Reviews
LSU Otolaryngology – Research Committee

Hospital Committees

Children's Memorial Hospital, Chicago, IL

Institutional Review Board Committee. 1992 – 2000.
Continuing Medical Education Committee. 1992 – 2000.
Physician Advisory Committee for Electronic Medical Records. 1998 – 2001.

Our Lady of the Lake Children's Hospital, Baton Rouge, LA
Program Directors Committee. 2019 – present.

Physician Leadership

Children's Hospital Central California, Madera, CA

Medical Director, Pediatric Otolaryngology. Jan, 2006 – Jan, 2015.

Chairman, Department of Surgery. Feb, 2012 – Mar, 2014.

Clinical Service

Inpatient, outpatient, surgery and call coverage: 1982 – present.

Administrative Responsibilities

Medical Director, Pediatric Otolaryngology. Children's Hospital Central California:
January 2006 – January 2015.

Responsibilities included deployment of physician and ancillary clinical provider resources for service coverage including inpatient, outpatient and on-call management, conflict mediation, mentoring of junior attending staff and interfacing with clinical leadership and executive administrative staff.

Medical Director, Pediatric Otolaryngology. Children's Hospital New Orleans:
July 2015 – December 2018.

Responsibilities included deployment of physician and ancillary clinical provider resources for service coverage including inpatient, outpatient and on-call management, conflict mediation, mentoring of residents and junior attending staff and interfacing with clinical leadership and executive administrative staff.

Medical Director, Pediatric Otolaryngology. Our Lady of the Lake Children's Hospital
January 2020 – present.

Responsibilities include development of new service lines including subspecialty clinics (Aerodigestive, Complex Head and Neck and Complex Otology), consultative services and negotiations with community private practice otolaryngology groups.

Community Service

May 5, 2018

Assisted planning and organization of Children's Hospital New Orleans tracheostomy patient reunion.