

Summer Student Research Program

Project Description

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PROJECT TITLE (200 Characters max):

Efficacy of Superior Laryngeal Nerve Blocks for Cough Management

HYPOTHESIS:

Superior laryngeal nerve blocks will be more efficacious for chronic cough in patients with vocal fold paresis or Arnold's Nerve Reflex. Superior laryngeal nerve blocks will decrease postoperative pain and improve voice outcomes in patients undergoing voice surgeries.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

Superior Laryngeal Nerve blocks (SLN blocks) have been shown to be efficacious in patients with neurogenic chronic cough. We have two ongoing translational research projects relating to the use of the SLN blocks in the office and OR setting.

The first project is examining the presence of Arnold's Nerve Reflex (cough with manipulation of the ear) and vocal fold paresis in patients undergoing SLN blocks for chronic cough in the office. Patients undergoing SLN blocks are assessed for these two clinical examination findings. Efficacy of the SLN block is assessed and correlated with the presence of these exam findings, in order to help clinicians better identify patients who are candidates for this procedure for their cough.

The second project is examining a possible role for the SLN block in the perioperative setting. Patients are randomized into receiving a SLN block versus a saline injection during laryngeal surgeries for benign disease. Perioperative cough is assessed by the clinician and postoperative cough and voice outcomes are assessed via patient surveys. Outcomes will be compared between groups.

SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:

1. Thompson E, Shah A, Zaransky S, Dhanda A, Bono K, Bono J, Lamichhane S, Mudhar A, Kaye R, Johnson WE, Cugini C, Yan K. Early Insights Into the Healthy Laryngeal Microbiome: A Pilot Study Evaluating Salivary and Oropharyngeal Sampling as Proxies. *Laryngoscope*. 2026 Jan;136(1):281-290. doi: 10.1002/lary.70043.
2. Ho RA, Shah E, De Armas JS, Yan K, Kaye R. Artificial Intelligence Models for Dysphonia Patient Education. *Otolaryngol Head Neck Surg*. 2025 Dec;173(6):1455-1462. doi: 10.1002/ohn.70030. Epub 2025 Oct 13.
3. Malhotra R, Khan H, Celidonio J, Kumar K, Suresh R, Yan K. Outcomes of Open Osteophytectomy in Dysphagia Related to Cervical Osteophytes: A Systematic Review. *Ann Otol Rhinol Laryngol*. 2025 Nov 8:34894251383821. doi:10.1177/00034894251383821. Epub ahead of print. PMID: 41204874.

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4. Thompson ER, Abdel-Azim N, Yan K. Nutritional Status and Outcomes Following Open Laryngeal Surgery for Laryngeal Cancer: A NSQIP Database Study. *Laryngoscope Investig Otolaryngol.* 2025 Sep 17;10(5):e70257. doi: 10.1002/lio2.70257.
5. Abdel-Azim N, Thompson E, Meeter A, Mohsen M, Povolotskiy R, Pashkover B, Yan K, Kaye R. Comparing Utilization of Operative versus Awake Laryngoplasty Techniques in the U.S. Medicare Population: 22-Year Trends. *Otolaryngol Head Neck Surg.* 2025 Aug 26. doi: 10.1002/ohn.70006
6. Malhotra R, Khan H, Zaransky S, Celidonio J, Yan K, Kaye R. Diagnosis and Management of Retrograde Cricopharyngeal Dysfunction: A Systematic Review. *OTO Open.* 2024 Oct 15. 8(4):e70014.
7. Ho RA, Shaari AL, Cowan PT, Yan K. ChatGPT Responses to Frequently Asked Questions on Meniere’s Disease: A Comparison to Clinical Practice Guideline Answers. *OTO Open.* 2024 Jul 5;8(3):e163.
8. Schlegel P, Yan K, Upadhyaya S, Buyens W, Wong K, Chen A, Faull KF, Al-Hiyari Y, Long J. Tissue-engineered vocal fold replacement in swine: Methods for functional and structural analysis. *PLOS One.* 2023 Apr 21. 18(4): e0284135.
9. Yan K, Auger S, Diaz A, Naman J, Vemulapalli R, Hasina R, Izumchenko E, Shogan B, Agrawal N. Microbial Changes Associated with Oral Cavity Cancer Progression. *Journal of Otolaryngology – Head and Neck Surgery.* 2023 Jan 24. doi: 10.1002/ohn.211
10. Yan K, Lin J, Albaugh S, Yang M, Wang E, Cyberski T, Abasiyanik F, Wroblewski KE, O’Connor M, Klock A, Tung A, Shahul S, Kurian D, Tay S, Pinto JM. Measuring SARS-CoV-2 Aerosolization in Rooms of Hospitalized Patients. *Laryngoscope Investigative Otolaryngology.* 2022 Aug; 7(4): 1033–1041.
11. Yan K, Friedman AD. Vocal Fold Cyst Formation after Photoangiolytic KTP Laser Treatment of Early Glottic Cancer. *Annals of Otology, Rhinology & Laryngology.* 2022 Apr;131(4):360-364.
12. Russell J, Yan K, Sharp J. Non-thyroid metastasis to the thyroid gland: case series and review with observations by primary pathology. *Otolaryngol Head Neck Surg.* 2016 Dec; 155(6):961-968.
13. Yan K, Wu Q, Yan DH, Lee CH, Rasim N, Tritschler I, DeVecchio J, Kalady MF, Hjelmeland AJ, Rich JN. Glioma cancer stem cells secrete Gremlin1 to promote their maintenance within the tumor hierarchy. *Genes & Development.* 2014 May 15; 28(10):1085-100.

THIS PROJECT IS: **Clinical** **Laboratory** **Behavioral** **Other**

THIS PROJECT IS CANCER-RELATED **Yes**

Please explain Cancer relevance

No cancer relevance

THIS PROJECT IS HEART, LUNG & BLOOD- RELATED **Yes**

Please explain Heart, Lung, Blood relevance

THIS PROJECT INVOLVE RADIOISOTOPES? **Yes**

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THIS PROJECT INVOLVES THE USE OF ANIMALS X No

PENDING

APPROVED

IACUC PROTOCOL #

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS? X Yes

PENDING

APPROVED X IRB PROTOCOL # Pro2024002226, Pro2024001762

THIS PROJECT IS SUITABLE FOR:

UNDERGRADUATE STUDENTS X

ENTERING FRESHMEN

X

SOPHOMORES

X

ALL STUDENTS

X

All students are welcome, but preference given to students who will have completed first year of medical school

THIS PROJECT IS WORK-STUDY:

Yes

or

No X

THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR

FOR INTERESTED VOLUNTEERS:

Yes X

or

No

WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

The student will learn about clinical study design, data collection, and research methodology. The student will be actively involved in data collection for these projects in the operating rooms and clinic as well as statistical analyses for these ongoing studies. The student may also participate in abstract or manuscript writing. The ultimate goal of these projects are presentations at national meetings and publications in peer-reviewed journals.